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Impact of AI Assistant on Foreign Employees' Job Performance and Satisfaction: South Korean Context

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Abstract: *This study explores the potential of LLM-based AI assistants to alleviate labor shortages in East Asia, with a focus on South Korea, by attracting foreign workers. Previous research indicates that AI assistants can enhance job performance and adaptability. Through case studies and semi-structured interviews with a unique sample of seven foreign workers in South Korea who utilize AI assistants in their roles, along with three local colleagues, this study reveals that the advantages of AI assistants are particularly pronounced among foreign employees. All participants noted that AI assistants significantly improved communication and translation, leading to enhanced job performance and adaptability. The findings suggest that AI was beneficial across all levels of Korean language proficiency, with those possessing lower proficiency relying on it more heavily. The study advocates for further research to quantitatively validate these results, especially concerning foreign workers in other multilingual environments.*

Keywords: AI Assistant; Labor Shortages; Foreign Workers; Job Performance and Satisfaction; Language

1. Introduction

1.1 Objectives and Significance

Low birth rates in East Asia, particularly in South Korea, have led to a significant imbalance in the population, causing shortages in both school-age and working-age groups [1]. This demographic cliff, often described as a looming crisis, has profound implications for the job market, presenting substantial challenges for human resource managers tasked with recruiting suitable talent [2]. South Korea is now facing an unprecedented situation where its shrinking workforce threatens both its economic growth and the sustainability of its industries. In response to the decreasing domestic labor force, the country has increasingly turned to foreign students and workers as potential solutions. However, sourcing, securing, and integrating foreign workers into a different linguistic and cultural environment presents considerable challenges that can hinder their successful adaptation and performance [3]. These challenges are compounded by language barriers, cultural differences, and the complexities of navigating a foreign work environment, all of which can lead to decreased productivity and job dissatisfaction if not addressed effectively.

This study proposes the implementation of an AI Assistant system as a viable and innovative solution to support the adaptation and performance of foreign labor, addressing South Korea's labor force shortage in a unique way. By utilizing AI technology, specifically GPT-based assistants powered by Large Language Models (LLMs), the potential for overcoming these linguistic and cultural hurdles becomes more tangible. Currently, many global companies have successfully implemented GPT-based work assistant systems that streamline communication and daily tasks. These systems offer not only translation capabilities but also provide context-aware responses, helping employees navigate complex organizational structures and tasks with greater ease. Quantitative research has demonstrated that the adoption of these systems significantly enhances work performance, efficiency, and satisfaction [4].

Given that AI Assistant systems, based on LLMs, are particularly adept at language-related functions such as real-time translation, personalized assistance, and even predictive suggestions, this study seeks to explore whether their implementation positively impacts the work performance and job satisfaction of foreign labor in

South Korea. With the rise of remote work and increasing global mobility, such AI-driven tools could serve as a key resource in the effort to maintain operational efficiency while diversifying the workforce. This could not only mitigate the effects of labor shortages but also offer companies a competitive edge by fostering a more inclusive and adaptable work environment.

The significance of this study lies in its potential to offer a scalable and effective solution to the labor shortages exacerbated by demographic changes in South Korea. As the nation grapples with the challenge of sustaining economic growth in the face of a declining domestic labor pool, the integration of foreign workers supported by AI technologies could serve as a model for other countries facing similar issues. By improving the adaptation and performance of foreign workers through AI Assistants, this research aims to provide valuable insights into how advanced technologies can be leveraged to bridge the gap caused by declining birth rates. This not only addresses immediate labor shortages but also contributes to long-term economic stability by integrating a diverse workforce more effectively, ensuring that businesses can continue to thrive in a rapidly changing global landscape.

1.2 Concepts and trends of AI-augmented work support systems

Many companies worldwide are developing and internalizing AI Assistants to enhance work efficiency or offering these tools as services. To evaluate the impact of AI, various indicators such as employee performance and satisfaction due to the adoption of AI in the workplace are being studied by multiple research teams [5-8]. The most prominent example of such a tool is Microsoft's Copilot. Copilot is an LLMs-based AI tool integrated with MS Office apps that processes user prompts to generate responses using a large language model. It performs post-processing checks to align with user intent and helps with tasks like creating Excel formulas, summarizing Outlook emails, planning meetings, and writing drafts, enhancing efficiency and productivity [9]. IT companies such as IBM and Samsung have developed generative AI-based programs within their workplace assistant systems, while there are differences between the companies' implementations, these systems offer similar functionalities [10, 11].

One notable characteristic of AI based on Large Language Models (LLMs) is their specialization in translation tasks, owing to their foundation in language modeling [12]. These models exhibit considerable performance and potential by producing translations that take context into account [13]. Therefore, it is anticipated that these functionalities will be particularly beneficial for individuals who are frequently exposed to or use foreign languages in their professional activities. However, despite these advancements, their performance still has limitations and is not yet sufficient to fully replace the translation of complex sentences that include specialized domain content [14].

According to the report by Reference [15], Since 2019, the number of organizations adopting AI systems had remained relatively stable. However, there has been an explosive increase in adoption since 2023. Notably, the adoption of generative AI technologies, such as GPT, which was first observed in 2023, nearly doubled in 2024. These trends are expected to continue.

1.3 The Effectiveness of AI-Augmented Office Support Systems

Recent studies strongly indicate that the adoption of artificial intelligence (AI) is highly correlated with improved work performance and employee satisfaction. A growing body of research underscores how AI-driven tools and technologies are transforming the modern workplace. For instance, research from Stanford and MIT highlights that AI tools, such as chatbots, contributed to a 14% boost in worker productivity at a prominent tech company [16, 17]. This finding aligns with broader trends that demonstrate how AI not only enhances productivity but also facilitates faster workflows, better decision-making processes, and increased overall job satisfaction [4]. AI tools can handle routine tasks, allowing employees to focus on higher-value work, thus fostering a more creative and fulfilling work environment.

The report from Reference [18] provides another compelling example of AI's growing impact, particularly through the seamless integration of AI with other enterprise systems. This integration allows secure, real-time access to vast amounts of organizational data, which can be leveraged to provide more accurate and contextually relevant responses to user queries. As a result, task efficiency is greatly improved, enabling employees to complete their work more quickly and make well-informed decisions. Moreover, by automating mundane, repetitive tasks, AI tools allow employees to shift their focus to more complex problem-solving activities, where human intuition and creativity are required. AI support systems can also provide intelligent suggestions based on data patterns, which can further enhance user creativity and innovation, ultimately leading to more dynamic and productive work environments.

Beyond the individual examples mentioned, ongoing research is being conducted in various industries, professions, and geographical locations to understand the full scope of AI's impact on work. These studies encompass a range of sectors, including healthcare, finance, manufacturing, and education, all of which are rapidly adopting AI systems to improve operational efficiency and employee engagement. Both quantitative and qualitative research methodologies are being employed to assess how AI implementations influence not only productivity but also workforce dynamics, such as collaboration and skill development [19, 20]. For example, quantitative studies often measure the tangible effects of AI on performance metrics like task completion times and error rates, while qualitative studies explore employee experiences, perceptions of AI, and its impact on their day-to-day work routines.

1.4 Foreign workers as Alternative to the Labor Shortage

South Korea is currently grappling with a severe demographic crisis characterized by persistently low birth rates and an aging population, which have led to a significant labor shortage. In 2023, South Korea's fertility rate plummeted to just 0.72 births per woman, one of the lowest in the world. Meanwhile, the proportion of the elderly population continues to rise at an alarming rate. This demographic shift places immense pressure on both economic growth and social welfare systems [21, 22]. By 2044, South Korea's working-age population is projected to decrease dramatically from 36.57 million to 27.17 million, a sharp decline that will have profound economic repercussions [23]. The reduction in the available labor force could lead to decreased productivity, a shrinking consumer market, and a potential long-term economic stagnation if left unaddressed [24]. Furthermore, an aging population presents numerous challenges for workforce management, particularly in terms of accommodating the needs of older workers and addressing generational gaps in skills and expertise [25].

In response to this looming crisis, South Korea has been actively exploring the influx of international students and foreign workers as a viable solution to counteract the decline in the labor force. This strategy is not only seen as a stopgap measure but also as a long-term effort to bolster the country's workforce with fresh talent and diverse perspectives [26]. In recent years, there has been a continuous increase in interest and the actual influx of foreign students and professionals, particularly from neighboring countries. These foreign workers are essential in fields ranging from IT and engineering to healthcare and education, contributing to sectors where domestic labor shortages are most acute. However, despite their growing presence, foreign professionals residing in South Korea tend to have the least proficiency in the Korean language compared to other groups [1]. This lack of language skills significantly hampers their ability to integrate into the workplace and fully contribute to the economy.

One major reason for this gap is that East Asian capitalist countries with low birth rates, such as South Korea, Japan, and Singapore, tend to prioritize skilled foreign labor in high-demand industries [27]. While these nations seek out specialized workers, language barriers remain a persistent challenge that can negatively impact both job performance and overall satisfaction in the workplace [28]. For many foreign professionals, the inability to communicate fluently in Korean not only affects their day-to-day work but also limits their social integration, leading to feelings of isolation and frustration. In fact, some foreign workers report that, despite their technical skills, they are often overlooked for promotions or leadership roles due to their lack of language proficiency. This issue highlights the need for South Korea to invest in better language education and cultural integration programs for foreign workers to maximize their potential and ensure a more inclusive labor force.

By addressing these challenges head-on, South Korea has the opportunity to harness the full potential of its foreign workforce and create a more sustainable solution to its labor shortage crisis. The influx of diverse talent, coupled with efforts to break down language barriers, could not only stabilize the labor market but also drive innovation and economic growth in the long term.

2. Research Methodology

This study aims to analyze the effectiveness and significance of a GPT-based AI Assistant system through interviews with foreign users, supplemented by a review of supporting statistical data and research related to their experiences. As the study focuses on foreign employees and their Korean colleagues working in workplaces in Korea where AI assistant systems have been implemented, it faces practical challenges in securing a sample size large enough for quantitative research. To address this limitation and explore the contextual depth of actual user experiences, a qualitative research methodology was adopted. A total of 10 individuals who used the AI Assistant within the same period, company, and job role were selected to ensure

sample consistency. The participants, chosen as relatively tech-savvy professionals from the IT industry, were specifically selected for their deeper understanding of the role, functionality, advantages, and limitations of AI Assistants.

Focusing on the use of an AI Assistant based on a large language model, the interviewees were chosen to have varying levels of Korean proficiency according to the Common European Framework of Reference for Languages, also known as CEFR [29]. This allowed for a comprehensive question-and-answer session regarding their user experiences. The classification of experiences is divided into two themes: Communication, which pertains to language functions, and Daily Tasks, which involves non-language functions. By analyzing these themes qualitatively, the study examines the commonalities and differences with previous quantitative research, thereby identifying the unique characteristics of the foreign employee group. Table 1. presents a detailed profile of the interviewees who participated in this study, summarizing their industry and role as well as their level of Korean proficiency.

Table 1. Information of case study participants (Foreign employees)

Group	Case	Work Period in Korea	Industry	Job Classification	Korean Proficiency
A	A-1	Less than 1 year	IT	R&D	CEFR A Level (Beginner)
	A-2	3 to 5 years			
B	B-1	Less than 1 year			CEFR B Level (Intermediate)
	B-2	5 to 7 years			
C	C-1	Less than 1 year			CEFR C Level (Fluent)
	C-2	3 to 5 years			
	C-3	5 to 7 years			

This study also briefly aimed to investigate, from the perspective of domestic employees, whether the use of AI assistants by their foreign colleagues has facilitated smoother communication and task performance. To achieve this, interviews were conducted with junior-level domestic employees responsible for practical duties. The interviewees were selected based on their job roles and English proficiency, and all participants were limited to those working within the same group that included foreign employees. Table 2 presents detailed information on the domestic interviewees who participated in this study, offering a succinct overview of their job roles, tenure, and English-language proficiency.

Table 2. Information of case study participants (Domestic employee)

Case	Work Period in Korea	Job Classification	English Proficiency
D-1	Less than 1 year	R&D	CEFR A Level (Beginner)
D-2	3 to 5 years		CEFR B Level (Intermediate)
D-3	3 to 5 years	Management	CEFR C Level (Fluent)

To ensure the depth and reliability of data in qualitative experience research, the interviews are pre-structured as follows and conducted uniformly. Through meticulous preparation and more than two rounds of communication, the qualitative research data's depth and reliability are secured [30]. The obtained sentences will be categorized by themes and subthemes, excluding any portions related to sensitive information, personally identifiable information, and company confidential information. Furthermore, prior to the inclusion of any content in this research paper, final consent was obtained from the participants. Participants were assured that all information not included in the content of this paper would be kept confidential. The key statements for each participant will then be summarized.

This study utilized relatively unstructured primary interviews with a larger sample than previously introduced cases to gather comprehensive opinions on factors that facilitate the adaptation of foreign employees. Among these factors, the focus was placed on the topic of AI Assistants, which is the main subject of this study. Consequently, secondary interviews were conducted, limited to the previously introduced subjects, to delve deeper into specific insights and validate initial findings. These secondary interviews aimed to ensure a thorough understanding and to cross-check the reliability of the primary data collected. Table 3 summarizes the procedure followed in this study—beginning with preliminary preparations, proceeding through two stages of interviews, and concluding with post-interview questioning—to ensure the reproducibility and reliability of the findings.

Table 3. Information of case study participants (Domestic employee)

Schedule		Main Contents
Pre-preparation		Send the research explanation and consent form in advance
		Obtain research explanation and consent (in person)
		Prepare a questionnaire (Pre-interview Q&A) to secure basic information of participants
1st Interview	Pre-preparation	Conduct the Pre-interview Q&A
	Interview	Conduct the 1st interview (up to 30 minutes)
	Post-interview	Transcribe interview data
		Derive in-depth questions for the 2nd interview
2nd Interview	Pre-preparation	Prepare semi-structured questionnaire for the 2nd interview
	Interview	Conduct the 2nd interview (up to 60 minutes)
	Post-interview	Transcribe interview data
Continuous Q&A		Continuously listen to contents that were not mentioned in the 1st/2nd interviews

This study utilized relatively unstructured primary interviews with a larger sample than previously introduced cases to gather comprehensive opinions on factors that facilitate the adaptation of foreign employees. Among these factors, the focus was placed on the topic of AI Assistants, which is the main subject of this study. Consequently, secondary interviews were conducted, limited to the previously introduced subjects, to delve deeper into specific insights and validate initial findings. These secondary interviews aimed to ensure a thorough understanding and to cross-check the reliability of the primary data collected.

3. Case Study of Foreign Workers in South Korea

In this research, participants were interviewed twice to categorize their statements into themes and sub-themes based on their experiences using AI assistants. The themes were categorized by the highest recognition and frequency of utterances, resulting in three primary themes: Communication, Language Learning, and Daily Tasks, and each Theme is categorized into Sub-Themes based on specific functions. These themes were then synthesized into an overarching perception of the participants' experiences.

Table 4. Code Book of Qualitative Research on Foreign Workers

Theme	Sub-Theme	Code
Communication	Messenger	AI use in instant messaging
		Improved colleague interaction via AI
		Efficiency in translation of work-specific terms
	Email	AI use in email communication
		Efficiency in summarizing emails
		Minor errors in complex translation
	Video Conference	Convenience of real-time translation of AI
		Challenges on accuracy in real-time AI translation
		AI supporting real-time meeting like summarization
Language Learning	Learning Through AI Translation	AI as a language learning tool
		Contextual learning via AI translation
	Repetitive Practice with AI	Repetitive learning with AI
		User-driven language validation through AI
Daily Tasks	Document Translation	AI in document generation processing
		AI-enhanced document formatting
	Data Acquisition	Fastness of AI for data acquisition
		Security concerns in AI data acquisition
	Data Analysis	Convenience of AI in traditional data analysis
		AI limitations in complex data analysis
Overall Perception	Initial Performance Boost	AI's overall impact on performance
		Maximizing communication frequency
	Long-Term Satisfaction and Integration	Long-term AI satisfaction
		Language integration affecting AI satisfaction

3.1 Exploration of Communication Functions

It was confirmed that foreign workers found AI-provided language-related functions, such as translation, summarization, and writing, to be the most helpful in enhancing job performance and reported the highest levels of satisfaction with these features. Based on the table, it is evident that AI-assisted tools play a significant role in facilitating communication for individuals with varying levels of Korean proficiency. The table categorizes feedback from three groups, denoted as A, B, and C, corresponding to different levels of Korean language skills according to the CEFR scale.

Table 5. Code Book of Qualitative Research on Foreign Workers

Sub-Themes	Group	Sample Quotation
Messenger	A	"When translating, do not translate the text within quotation marks. It relatively accurately translates nuanced abbreviations such as "ㅇㅇ(yes)", "ㄴㄴ(no)", and "ㅋㅋ(lol)", and provides convenience in work by having a feature linked with the internal database for searching work-related terms that are difficult to find in external databases." "Using an AI supported messenger was advantageous for both sides, as it made it as easy for me to talk to other Koreans as it was for Koreans to communicate with foreigners like myself. Therefore, this not only improved work performance but also provided more opportunities for frequent communication with colleagues."
	B	"In the case of messengers, although many words with implicit meanings are used in short sentences, the Chat-bot provides relatively high integration with the company's database, making it more useful with higher translation accuracy compared to emails." "The AI summarization feature in messengers is very helpful as it allows for quickly checking information when you haven't been able to check the messenger for a long time."
	C	“The AI support used in messengers is the most frequently used function, providing the most help. It's particularly useful not only for communication but also for information retrieval, as it allows the use of chatbots that can search for content linked to internal company data.”
E-Mail	A	"The built-in translator in email is very helpful when reading and writing emails. However, it is unfortunate that it cannot translate Korean text within attached image files." "If the communication is in written format, then the language barrier is reduced by ~80%. There is still a ~20% chance of wrong translation and I can't fully understand all the communication."
	B	"Short sentences in Korean are interpreted without much difficulty, but email-format texts are still challenging. Therefore, I find AI translation and summarization features in emails to be most helpful when my Korean language skills are not yet fully developed." "However, I still feel that AI's functionality is not perfect for interpreting long texts filled with technical terms, difficult words, and abbreviations. The limited accessibility of AI to internal information is particularly disappointing."
	C	"I usually read or write emails on my own, but I often need help interpreting or composing business terms used exclusively in Korean companies. However, when it comes to excessively abbreviated or rarely used expressions, it is difficult for AI to interpret or compose them, so I tend to seek assistance from my Korean colleagues."
Video Conference	A	"The real-time translation/recording feature for video conferences provided by the company is extremely helpful. However, it seems that interpreting real-time speech is more challenging than interpreting written text. There are times when the translation doesn't work unless you speak clearly into the microphone, which is unfortunate. If this issue could be resolved, it would be the most beneficial tool for our work."
	B	"For written materials, even without the help of an AI translator, if there are tools available that can provide the dictionary meaning of specific words and enough time to interpret the sentences, it would be possible to understand them. However, in real-time Korean communication, such as in meetings, the assistance of AI is essential."

	C	"From my perspective as someone who has recently started studying Korean in earnest, it is clear that AI is a very convenient tool for learning, as it allows me to ask questions related to Korean without any burden."

Messenger Communication: For messenger communication, A highlights the utility of AI in translating nuanced abbreviations and integrating with internal databases for work-related terms, thus improving communication efficiency. This feature not only aids in translation accuracy but also enhances frequent interactions with colleagues. B appreciates the AI summarization feature and the chatbot's high integration with the company's database, making it more effective than email communication for retrieving information. C emphasizes the frequent use and significant help provided by AI support in messengers, particularly for information retrieval linked to internal company data.

E-Mail Communication: In the context of email communication, A finds the built-in translator beneficial for reading and writing emails, though it struggles with Korean text within attached image files. Despite reducing the language barrier significantly, there remains a margin of error in translation. B finds AI translation and summarization features particularly helpful when their Korean language skills are underdeveloped, although AI's limitations in interpreting technical terms and accessing internal information are noted. C often relies on AI for interpreting or composing business terms but turns to colleagues for help with excessively abbreviated or rarely used expressions.

Video Conference Communication: For video conferencing, A finds the real-time translation and recording feature extremely helpful, although real-time speech translation poses more challenges than written text. Issues with the clarity of speech impacting translation quality are also highlighted. B points out the necessity of AI assistance for real-time Korean communication in meetings, as traditional tools might suffice for written materials. C views AI as a convenient tool for learning, facilitating the ability to ask questions related to Korean without burden.

In conclusion, the effectiveness of AI-assisted tools varies across different communication mediums and individual proficiency levels. While these tools significantly aid in bridging language gaps, certain limitations in real-time translation accuracy and specialized term interpretation highlight areas for potential improvement. Though there was a recognition that AI-provided functions were not perfect in all cases. However, it was observed that the lower the Korean language proficiency, the higher the perceived accuracy and reliance on AI. Conversely, those with higher Korean language proficiency exhibited the opposite perception and tendency.

Meanwhile, participants whose native language was not English perceived translations from their native language to Korean as less reliable than translations from English to Korean. This perception is attributed to the correlation between the language commonly used online and the performance and quality of GPT or LLMs models [31]. Statistics indicate that over half of the languages used on the internet are English. This suggests that AI models based on large language models (LLMs) can generate relatively higher-quality responses when questions or answers are in English [32].

3.2 Exploration of language learning

As Reference [33] previously described, the use of tools based on large language models (LLMs) offers significant advantages for learning foreign languages like Korean. These tools provide immediate feedback and deliver personalized learning experiences by suggesting words and sentences needed for immediate use to each individual learner. Such real-time feedback allows learners to quickly correct mistakes and reinforce their understanding of complex grammatical structures and vocabulary. Furthermore, participants in the study reported the experience of asking the same question multiple times to verify unknown information. This process underscores the potential for repetitive learning to enhance language proficiency [34].

In addition to repetitive practice, AI translation tools facilitate learning by providing contextual usage examples, which help learners grasp nuanced meanings and appropriate usage of words and phrases in different situations. For instance, as noted in the qualitative research, Group A emphasized the usefulness of AI translators for foreigners who want to study Korean by typing messages and viewing translated sentences. Group B highlighted the sentence correction feature of AI tools that helps in learning confusing grammar and specialized terms. Meanwhile, Group C pointed out the AI translation feature's accuracy in understanding difficult sentences and vocabulary.

However, it was observed that the effectiveness of learning is derived not merely from exposure to sentences translated by AI, but from the process of critically evaluating and assimilating whether these

translations are accurate. This suggests that the effectiveness of learning through AI translation tools can vary depending on the user's motivation and willingness to learn. Active engagement and critical thinking play crucial roles in this learning process. Learners who actively question and validate the AI-provided translations tend to develop a deeper understanding and better retention of the language. Hence, while LLM-based tools provide substantial support, the learner's proactive involvement and critical assessment are essential for maximizing the benefits of these advanced language learning aids.

Table 6. Summary of "Language Learning" themes and sample quotations

Themes	Group	Sample Quotation
Language Learning	A	"An AI translator is a very useful tool for foreigners who want to study Korean. By typing messages and viewing the translated sentences, you can naturally learn Korean. However, if you do not intend to study Korean, it will not be very useful."
	B	"The sentence correction feature using AI provides learning opportunities for confusing grammar, as well as for expressions that include specialized terms and difficult Chinese characters used only in Korean office culture."
	C	"Using the AI translation feature provides an accurate understanding of difficult sentences and knowledge of vocabulary."

3.3 Exploration of daily task

Data acquisition presented challenges for some users, like Group A, who preferred manual data access due to the varying characteristics of data and the limitations of AI in handling such diversity. Group A highlighted the inadequacies of AI systems in dealing with heterogeneous datasets, which often required a more nuanced approach that AI could not provide. Furthermore, the manual access allowed for more control and customization, which was crucial for the specific needs of their tasks.

Security concerns also influenced the utilization of AI for data acquisition. Group B acknowledged the sensitivity of company policies regarding AI handling of data and expressed apprehensions about the potential risks involved. This concern was particularly pertinent in industries where data security and confidentiality are paramount. Group B suggested that AI applications could be more appropriately leveraged in industries where security concerns are less stringent, thereby minimizing the risks associated with data breaches or unauthorized access.

In terms of data analysis, AI was found useful for basic and repetitive tasks. Group B observed that AI systems efficiently wrote code for simple analyses but were less effective for more complex tasks involving diverse datasets and additional data like images. The AI's ability to automate routine tasks such as data cleaning, preliminary analysis, and report generation was highly appreciated, as it allowed human analysts to focus on more strategic and nuanced aspects of data interpretation. However, the limitations became apparent when the tasks required a higher level of creativity, critical thinking, and the integration of multifaceted data types.

Group C echoed this sentiment, stating that while AI systems are useful for basic analysis, their limitations prevent effective use in advanced research tasks. Group C noted that for advanced research, especially those involving intricate hypothesis testing and exploratory data analysis, human expertise remains indispensable. The AI tools, although robust in handling large volumes of data and performing standardized operations, often fell short in scenarios that demanded a deep understanding of context and subject matter expertise.

Table 7. Summary of "Daily Task" themes and sample quotations

Sub-Themes	Group	Sample Quotation
Documents	A	"MS Office and Internal work support system have a translation plug-in that is extremely helpful for PPT, Excel and Word documents in Korean."
	B	"Business documents are generally difficult to understand because they differ from the Korean typically learned, but with the help of AI, it becomes easier to understand the content and format the document correctly."
	C	"When writing documents, I usually compose most sentences myself, but I found it helpful to use AI to edit sentences I wasn't confident were correct. The advantage lies in refining sentences that are already somewhat detailed."
Data Acquisition	A	"Although it may vary from person to person, in my case, I do not use the company's AI system for data acquisition. There are parts where I need to access each piece of data manually, making it difficult to utilize the AI system, and since

		each data has different characteristics, it is challenging to analyze them through uniform questions. However, I believe this may differ depending on the job or the performance of the AI.
	B	"I think there is a sensitive aspect to the company's policy regarding data being acquired or manipulated by AI, especially for data sensitive to external leaks like in the IT industry, and this is quite understandable. If it were an industry relatively less sensitive to security, it seems that AI could be more usefully employed for data acquisition."
	C	"AI is undoubtedly a very useful tool, but it has the drawback of restricted access when obtaining or analyzing information related to internal security. However, excluding these drawbacks, the use of AI for searching information both internally and externally is very helpful due to its usefulness and efficiency."
Data Analysis	A	"I do not use AI systems for data analysis. While they are very useful for language functions, I felt they are not suitable for numerical data analysis capabilities."
	B	"Recently, AI systems tend to write code efficiently and effectively for basic, repetitive analyses. However, when it comes to understanding the correlation between different datasets or utilizing additional data such as images, making the analysis more complex, AI systems are not as effective."
	C	"AI systems may be useful for basic analysis, but their current limitations prevent their effective use in advanced tasks or research, so I do not utilize them much for work beyond language functions."

Overall, the perception and experience of daily tasks did not reveal significant differences attributable to the participants being foreigners. Respondents indicated that aside from language-related functionalities, their experiences with the AI Assistant did not significantly differ from those of Korean workers. The language translation and correction features were particularly beneficial for non-native speakers, facilitating smoother communication and reducing misunderstandings.

However, when it came to technical and analytical tasks, the effectiveness of AI tools was perceived similarly by both foreign and local workers. This suggests that while AI can bridge certain gaps related to language barriers, its impact on broader work functions remains consistent across different user demographics. And also, in the case of subjects who had the experience of working for a certain period before and after the introduction of the AI Assistant, there was a strong tendency to assert that the introduction of the AI Assistant was more necessary and helpful.

In conclusion, while AI systems offer valuable support in automating routine tasks and providing language assistance, their current capabilities are limited in handling diverse and complex datasets and ensuring data security. The effective use of AI in daily work is influenced by the specific requirements of the task and the context in which it is applied. Therefore, the integration of AI tools should be strategically planned, considering both their strengths and limitations, to maximize their benefits in various professional settings.

3.4 Exploration of overall perception

Overall, the introduction of AI systems was found to have a significant impact on both job performance and satisfaction for all participants, with the greatest effect observed in language-related functions. Subject A highlighted the positive influence of AI on quick adaptation to Korean companies by improving communication, though they noted that long-term job satisfaction hinges more on cultural integration and trust-building rather than just improved communication. Subject B also recognized the benefits of AI in enhancing adaptation and performance but pointed out that the effectiveness of AI could be limited in professions that do not regularly use computers. Subject C emphasized that AI support could positively influence foreigners' decisions to work in Korea, particularly those with specialized skills who might struggle with Korean language proficiency.

Participants anticipated that the most significant benefits of AI systems would be observed in the initial stages of use, with performance and satisfaction levels potentially plateauing over the medium to long term. This expectation is grounded in the assumption that as users become more accustomed to AI functions, their initial gains in performance and satisfaction will stabilize. However, even after reaching this plateau, the consensus among participants was that job performance and satisfaction levels would remain higher with the AI system than without it.

The introduction of AI systems plays a crucial role in enhancing early job satisfaction, which is particularly important for foreign professionals. Job satisfaction among immigrants is closely linked to their overall life

satisfaction. Enhancing early job satisfaction through the implementation of AI assistants can be an effective strategy to prevent the early attrition of foreign professionals. By providing immediate support in overcoming language barriers and automating routine tasks, AI systems help foreign employees feel more competent and integrated into their work environments from the outset.

Moreover, AI tools can facilitate the acquisition of job-specific vocabulary and cultural nuances, further aiding in the seamless integration of foreign professionals into Korean companies. This aspect is critical as it addresses one of the primary challenges faced by foreign employees: the difficulty in building trust and demonstrating accomplishments in a new cultural context. By alleviating these challenges, AI systems contribute to higher job satisfaction and, by extension, greater overall life satisfaction for foreign workers.

In conclusion, while the initial impact of AI systems on job performance and satisfaction is expected to be the most pronounced, their continued use provides sustained benefits that surpass those of traditional, non-AI-supported methods. The integration of AI tools in the workplace not only enhances immediate job satisfaction and performance but also supports long-term retention and satisfaction of foreign professionals. Therefore, strategic implementation of AI systems is a vital consideration for companies aiming to attract and retain global talent in a competitive market.

3.5 Perception of Domestic Employees work with Foreign employees

Through interviews with domestic employees working alongside foreign colleagues, it was observed that domestic employees also have perception that the introduction of AI assistants positively impacts job adaptation and performance. The participants expressed that AI assistants provide foreign employees with opportunities to more easily initiate communication with native employees, thereby facilitating smoother workplace interactions and improving overall outcomes.

Participant D-1 expressed that, due to the difficulty of communicating with foreign employees in a non-native language, they relied on AI assistants just as much as their foreign colleagues during work. Similarly, Participant D-2, despite possessing sufficient foreign language proficiency for communication in their R&D role, indicated that the AI assistant allowed them to perform tasks more efficiently and effectively through smoother communication. On the other hand, Participant D-3, who had advanced foreign language skills, did not find the translation function of the AI assistant to be particularly helpful for themselves. However, they noted that foreign employees have made more proactive efforts to communicate with them since the introduction of the AI assistant.

Table 8. Sample quotations on overall perception

Themes	Subject	Sample Quotation
Overall perception	A	"In general, the use of this system will be a positive factor for foreign employees to quickly adapt to Korean companies. But not necessarily help them work for a long time. They will be able to understand all communication. However, working here for a long time is not fully dependent on this feature. Building trust and showing accomplishments is extremely hard for foreigners in Korean culture. Foreigners are usually not given the most important job or not given the same level of detail as their Korean counterpart, the foreign employee is unable to use all the information to do their job. This makes job satisfaction very low and it is one of the biggest reasons when foreigners don't like to work here a long time. It's more dependent on Korean culture instead of Korean communication."
	B	"The use of AI in the workplace is definitely helpful and has a positive impact on both adaptation and performance. However, it is difficult to fully trust it due to some imperfections. Additionally, for professions that do not regularly use computers, unlike those in IT, the use of AI technology might not significantly contribute to work adaptation or performance"
	C	"If foreigners can receive help using such AI technology during work, it would positively influence their decision to work in Korea as foreigners. I have noticed that Korea tends to prefer foreigners with specialized skills over those who have adapted to Korean culture. I believe that foreigners with these specialized skills often have lower Korean language proficiency compared to those who choose to come to Korea due to their interest in Korean culture. Therefore, this feature could be one of the ways to attract foreign talent with specialized skills."

4. Discussion and Conclusion

4.1 Implications of research

This study corroborates previous quantitative research, indicating that AI Assistants can improve job performance and satisfaction, even in unique cases such as foreign workers in South Korea. It also suggests that AI office support systems with translation and language functions based on LLMs generate a stronger positive perception among foreign workers. Participant C-1 highlighted that South Korea's immigration policy primarily focuses on professional skills rather than understanding Korean language and culture:

"While preparing for immigration to South Korea, I realized that the country's immigration policy mainly focuses on whether you have professional skills, regardless of how well you understand or try to understand the Korean language and culture."

This aligns with the finding that the professional foreign workforce in South Korea has the lowest level of Korean language proficiency [1]. According to the Ministry of Foreign Affairs of South Korea, the F-2-7 visa, also called the foreign talent visa, awards a maximum of 20 points for Korean language proficiency or completion of the social integration program. However, points for educational qualifications and income, indicating competency, are up to 35 and 10 points respectively, totaling more than twice the points for Korean adaptation. This explains why professional foreign workers have the lowest Korean proficiency and aligns with visa policies favoring professional skills over language ability [35]. These findings suggest that, despite their current insufficient proficiency in Korean, AI systems can enhance the performance and job satisfaction of existing foreign workers and aid in attracting skilled foreign professionals to South Korea.

The study by Reference [36] confirmed that AI applications impact various components of job design for healthcare professionals, including job autonomy and control, skill variety and utilization, job feedback, social and relational aspects, and job demands. Therefore, considering the significant impact of AI implementation even on foreign workers in unfamiliar countries, the findings of this study suggest a broader scope for human resources strategies for organizations have foreign employees facing language and adaptation challenges during their initial employment phase. This implies the potential for greater utilization of foreign workers across various specialized fields.

The adoption of AI in the workplace can revolutionize the job environment, particularly for foreign employees who often face additional challenges in adapting to new cultural and linguistic landscapes. AI tools, by providing immediate translation and language support, can alleviate the initial barriers to effective communication, thus fostering a more inclusive and supportive work environment. This not only boosts job performance and satisfaction but also contributes to the overall retention of foreign employees by reducing the stress and frustration associated with language barriers.

Furthermore, the integration of AI systems can assist in bridging the gap between the professional skills of foreign workers and the expectations of Korean employers. By offering tools that enhance language proficiency and facilitate understanding of cultural nuances, AI can play a crucial role in helping foreign employees integrate more seamlessly into the Korean workplace. This integration is vital for building trust and demonstrating competence, which are key factors for long-term job satisfaction and career advancement.

Overall, this study concludes that AI office support systems can positively impact the recruitment and utilization of foreign workers as a solution to labor shortages in the context of the demographic cliff. By enhancing the work experience of foreign professionals, AI systems can help mitigate the negative effects of the aging population and low birth rates on the labor market, ensuring a steady influx of skilled talent to support economic growth.

4.2 Limitation and suggestion

This study confirms that, consistent with previous research, AI positively influences job performance and satisfaction among foreign groups. However, to ascertain whether AI is particularly effective in these groups, further quantitative research is required, employing more robust statistical methods to determine if significant differences exist. These findings suggest that follow-up research should use quantitative methods to investigate this hypothesis between groups of foreign and domestic workers. If the differences in job performance or satisfaction due to AI usage between these groups are statistically significant, the validity of this study's results can be further reinforced.

Additionally, this study focused exclusively on foreign employees in R&D positions within the IT industry. The classification of Themes and Sub-Themes may vary depending on the manufacturer of the AI assistant, the industry, and the job role of the user. Therefore, the categorization used in this study cannot be universally applied across all industries and job roles. Consequently, when conducting qualitative research in different contexts, it is necessary to examine these differences in Theme classification. To confirm these differences, comparative studies are needed to examine variations across nationalities, industries, and job roles. Methods such as ANOVA tests, which assess the significance of differences between groups, are necessary for this purpose.

Moreover, it is important to consider the long-term impact of AI integration on job performance and satisfaction. While initial findings suggest positive outcomes, longitudinal studies are required to understand how these effects evolve over time and whether the initial benefits are sustained. Exploring the role of continuous AI training and updates in maintaining high levels of job performance and satisfaction could provide valuable insights for both researchers and practitioners.

In summary, this study provides a comprehensive analysis of the impact of AI Assistants on foreign workers in South Korea, highlighting both the benefits and limitations of AI integration in the workplace. By addressing the identified gaps and conducting further research, it is possible to develop more effective AI systems that cater to the diverse needs of the global workforce, thereby enhancing job performance, satisfaction, and overall productivity.

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