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A Mixed-Method and NLP Assisted Analysis of Chatbot Usage in the Hospitality Industry using Correlation and Word2Vec

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Abstract *In the evolving landscape of the hotel sector, chatbots are increasingly pivotal for elevating guest experiences and operational efficiency. This study explores the nuanced dynamics between chatbots and key variables in Hospitality Management. Examining perceptions of Job Opportunities reveals a statistically significant moderate negative correlation ($r = -0.256$, $p = 0.01$), indicating that as belief in chatbots creating new jobs rises, the anticipation of needing new skills decreases. While chatbots may foster employment in development and maintenance, traditional hospitality roles may see diminished expectations. The Chatbots and Job Elimination analysis shows a weak negative correlation ($r = -0.191$, $p = 0.057$), signifying uncertainty about the relationship between chatbots and concerns about job elimination. Focusing on Tasks, the correlation between Chatbot Suitability and Customer Service is moderately negative ($r = -0.203$, $p = 0.043$), suggesting that perceiving chatbots as suitable for routine tasks doesn't necessarily translate to improved customer service. Chatbots may face challenges meeting complex customer needs despite excelling in routine tasks. Further, the correlation between Chatbot Task Automation and Operational Efficiency is moderately negative ($r = -0.222$, $p = 0.026$), implying that perceiving chatbots as task automation doesn't guarantee enhanced operational efficiency. In exploring Satisfaction, both Chatbots and Employee Satisfaction and Chatbots and Customer Satisfaction reveal weak negative correlations ($r = -0.190$, $p = 0.058$), providing inconclusive evidence about the relationship between chatbots and satisfaction levels. The data underscores the potential of chatbots to digitize work but acknowledges persistent concerns about job displacement and their impact on customer and staff satisfaction. Qualitative responses were analyzed using word2vec for capturing word embeddings and an open coding technique. Findings indicate that while chatbots prove beneficial for daily hotel operations and addressing repetitive customer inquiries, there is a preference for human-to-human communication in handling immediate concerns.*

Keywords: *Chatbots, Task, Job Opportunities, Satisfaction, Correlation, Word2vec, Northern Cebu*

INTRODUCTION

The hospitality industry was rapidly changing, and chatbots were among the most important emerging technologies. Chatbots are already being used in various ways in the hospitality industry, such as providing customer service, making reservations, and answering questions (Dilmegani, 2023). As chatbots became more sophisticated and widely adopted, they were likely to have significantly impacted the hospitality industry, including job opportunities for hospitality workers. Use of chatbots in travel agencies increases the communication level with the client and social networks help in promoting the products of travel agencies (Kristína & Daniela, 2024). According to Manyika (2017), automation rapidly transformed the global workforce, potentially displacing up to 800 million jobs by 2030. With its reliance on routine tasks and customer interactions, the hospitality industry was highly vulnerable to this disturbance. Up to 20% of hospitality jobs, including front desk staff, reservation agents, and restaurant servers, could have been automated within the next decade. This shift was driven by advancements in AI and machine learning, enabling chatbots and virtual assistants to handle inquiries, manage reservations, and provide personalized

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recommendations. While automation promised operational efficiency and enhanced customer experiences, it raised concerns about job displacement and the need for workers to adapt to evolving skill requirements. The hospitality industry had to proactively address these challenges by investing in reskilling and upskilling initiatives to prepare its workforce for the automated workplace of the future (Manyika et al., 2017).

Several studies have examined the potential impact of chatbots on employment in the hospitality industry. A 2020 study published in the Journal of Hospitality and Tourism Management found that chatbots could decrease low-skilled hospitality jobs, such as customer service representatives and front desk staff. However, the study also suggested that chatbots could also create new opportunities for higher-skilled jobs in the hospitality industry, such as chatbot developers, trainers, and data analysts (Sigala et al., 2020). This research aimed to quantitatively analyze chatbot usage in the hospitality industry and its impacts on job opportunities. The study utilized data from various sources, including hospitality industry reports, government statistics, and surveys of hospitality employees and employers. The research analyzed the correlation between chatbot adoption and hospitality industry employment trends, identifying factors contributing to job displacement and job creation. The hospitality industry is rapidly changing, and chatbots are one of the technologies commonly integrated in any service-oriented business.

The results of this study provided valuable insight into a complex connection between chatbot employment and the hospitality sector. The study added to the current discussion over automation's effects on labor and assisted hospitality companies in making defensible choices regarding integrating chatbots and staff development.

Use of Chatbots in Hotels: Technology Providers' Perspectives

A 2020 study by Buhalis and Cheng investigated the rising influence of chatbots in hotels. By examining existing research, they explored how these virtual assistants affect guests, hotel operations, and staff. The results showed that chatbots have lots of potential for performing routine operations like bookings, 24/7 guest interaction, and personalized recommendations. This allows human staff to focus on more complex tasks and increase overall guest satisfaction (Buhalis & Cheng, 2020).

However, as with any new technology, challenges emerged. Job displacement concerns for hotel staff, and the potential for negative guest experiences due to chatbot malfunctions were highlighted. Additionally, integrating these advanced robots with existing hotel systems proved problematic.

Despite these challenges, the researchers remained optimistic about the future of hotel chatbots. They called for further research to examine the long-term impact on job trends, determine the best practices for effective implementation without compromising guest experiences, and even address the ethical considerations surrounding robots interacting with guests. Ultimately, the study suggested that chatbots, despite their flaws, can significantly transform hotel operations and guest experiences (Buhalis & Cheng, 2020).

THEORETICAL BACKGROUND

The world was constantly evolving, and the hospitality industry was no exception. New technologies, trends, and practices always emerged, and understanding how they spread and were adopted was crucial for businesses to stay ahead of the curve. This was where the diffusion of innovation theory came in.

E. M. Rogers, a communication theorist at the University of New Mexico, developed the diffusion of innovations theory in 1962. The theory explains the passage of a new idea through stages of adoption by different people who participated in or began using the new idea (Halton, 2023). The diffusion of innovations theory was a hypothesis outlining how new technological and other advancements spread throughout societies and cultures, from introduction to widespread adoption. The diffusion of innovations theory sought to explain how and why new ideas and practices were adopted, including why the adoption of new ideas could be spread out over long periods (Park, Kang & Kim, 2020).

RESEARCH DESIGN

The researchers adopted a quantitative-qualitative approach in the paper titled "A Mixed-Method and NLP-Assisted Analysis of Chatbot Usage in the Hospitality Industry Using Correlation and Word2Vec." This approach employs non-experimental research techniques, where variables are quantified (Heath, 2023). It is characterized as analytical research, as it involves exploring relationships between variables through correlation analysis and leveraging Natural Language Processing (NLP) to enhance the examination of data.

Descriptive survey research, which promoted the use of surveys or questionnaires to collect data, had been used by the researcher. The survey tools were dispersed at random across the chosen sample (Fichman et al., 2009).

The study aimed to explore the correlation between job opportunities and the usage of virtual assistants or chatbots in the hospitality industry. The research was relevant because the advancement of technology, including the use of chatbots, had the potential to impact various industries, including hospitality.

Table 1: Job Opportunities

	SA	A	N	SD	D
Chatbots will create new job opportunities in the hospitality industry.					
Chatbots will eliminate jobs in the hospitality industry.					
Chatbots will change the types of jobs available in the hospitality industry.					
Chatbots will require new skills from hospitality workers.					

Legend: SA- Strongly Agree SD- Strongly Disagree
A- Agree D- Disagree N- Neutral

The second objective, as seen in Table 2, investigated the extent to which chatbots affected job opportunities in the hospitality industry. By examining this, the study aimed to determine whether the implementation of chatbots had led to a decrease or increase in job opportunities within the industry.

Table 2: Tasks

	SA	A	N	SD	D
Chatbots are well-suited to performing repetitive,routine,and rule-based tasks in the hospitality industry.					
Chatbots can improve the efficiency of hospitality operations.					
Chatbots can free up hospitality workers to focus on more customer-facing tasks.					
Chatbots can improve the quality of customer service in the hospitality industry.					

Legend: SA- Strongly Agree SD- Strongly Disagree
A- Agree D- Disagree N- Neutral

The third objective, as seen in Table 3, explored the extent to which chatbots automated tasks that were currently performed by hospitality workers. This analysis was crucial in understanding the potential impact of chatbots on job roles and the level of automation within the industry.

Table 3: Satisfaction

	SA	A	N	SD	D
Chatbots will improve employee satisfaction in the hospitality industry.					
Chatbots will improve customer satisfaction in the hospitality industry.					

Legend: SA- Strongly Agree SD- Strongly Disagree
A- Agree D- Disagree N- Neutral

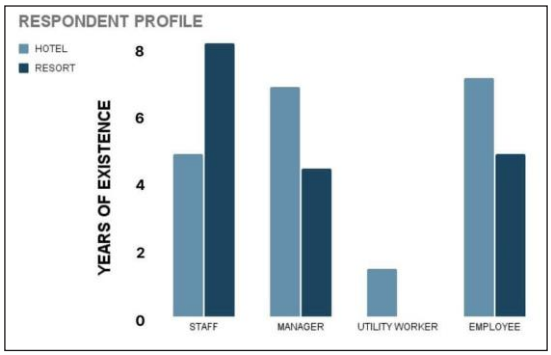
Lastly, the fourth objective, as seen in Table 4, investigated the satisfaction levels of hospitality industry employees regarding implementing chatbots in their workplaces. This information provided insights into the employees' perceptions, attitudes, and experiences related to chatbot integration, further informing the study's findings. Overall, this quantitative analysis aimed to provide a comprehensive understanding of the relationship between chatbot usage and job opportunities in the hospitality industry. By addressing these research questions, the study contributed to the existing knowledge in the field and provided valuable insights for researchers and industry professionals.

Data Analysis Phase

The collected data were checked for completeness, accuracy, and consistency before analysis. Advanced statistical methods were employed to summarize key findings related to chatbot usage, job opportunities, tasks, and satisfaction. Inferential statistics, including hypothesis testing using correlation, were used to investigate the relationships between chatbot utilization and the research variables (job opportunities, tasks, and satisfaction). Additionally, NLP techniques were applied to analyze and interpret textual data, providing deeper insights into the impact of chatbots. The researchers then analyzed the statistical results, drew conclusions about the impact of chatbots in the hospitality industry, and presented their findings in a clear and concise report.

RESEARCH FINDINGS AND DISCUSSION

Table 4: Respondent's Profile



Based on the research findings in Table 4, it appears that staff members at resorts tended to have had the most experience in the industry, with an average of around 8 years. Employees in hotels followed closely, averaging between 6-7 years of experience. Hotel managers typically had almost 7 years of experience, while both hotel and resort staff members had around 4-5 years of experience on average. Resort managers

had slightly over 4 years of experience, while utility workers in hotels had the least experience, with below 2 years on average. Overall, it suggests that resort staff members tended to be the most experienced, followed by hotel employees and managers, with utility workers having the least experience on average.

Correlation Analysis

The researchers ranked the data using the Spearman correlation, calculated the correlation coefficient, found the total number of responses (N), used that to compute T-statistics, determined degrees of freedom (df), and finally computed the P-value using the T-distribution. Additionally, Spearman's correlation was a non-parametric measure of rank correlation. It assessed how well the relationship between two variables could be described using a monotonic function (Gupta, 2023). The general formula for a Spearman's correlation was as follows:

$$\rho = 1 - \frac{6 \cdot \sum d^2}{n \cdot (n^2 - 1)}$$

Eq 1. Spearman Correlation Formula

Where:

- ρ (rho) represents the Spearman's rank correlation coefficient.
- Σd^2 denotes the sum of the squared differences between the ranks of corresponding pairs of data points.
- *d*: Difference between the ranks of corresponding values in the two datasets.
- *n* represents the number of data points or observations.

The researchers could correlate all of the variables in connection with the formula given.

- *Variable 1, which is job opportunities, chatbots will create opportunities, and chatbots will require new skills*, As seen in Fig. 1, the correlation coefficient (r) was -0.256, statistically significant (p = 0.01). This indicated a moderate negative correlation, meaning that as the belief in chatbots creating new jobs increased, the expectation of needing new skills decreased. New jobs appeared to be designed to keep them running smoothly and train them to chat efficiently. But that didn't mean everyone working in the company magically needed to become computer whizzes. They could still use their existing skills and expertise to do their jobs well, while others specialized in handling the chatbots. Next, job elimination and types of jobs, as seen in Fig. 2 (r = -0.191, p = 0.057). This was a weak negative correlation, indicating a less certain relationship between chatbots, which would eliminate jobs and change the types of jobs available in the hospitality industry. The research found a weak negative correlation, meaning there was a tiny connection between chatbots and job losses. While some jobs might have disappeared, like basic tasks chatbots could handle, new ones would have popped up to build, fix, and manage these robots. It was like replacing bakers with dough-kneading machines; new baker-engineers were needed.
- *Variable 2: Tasks. Chatbot Suitability and Customer Service*, as seen in Fig. 3 (r = -0.203, p = 0.043): This moderate negative correlation suggested that seeing chatbots as suited for routine tasks didn't necessarily translate to believing they improved customer service. While efficient for routine tasks, chatbots might have lacked flexibility and understanding for complex customer needs. Next, chatbot task automation and operational efficiency could be seen in Fig. 4 (r = -0.222, p = 0.026). This moderate negative correlation indicated that seeing chatbots automate tasks didn't guarantee perceived improvement in operational efficiency. Just because companies brought in chatbots and other automated tools, it didn't always mean things automatically ran better. There was a moderate negative correlation here, which meant as people saw more tasks getting automated, they were actually less sure things would get more efficient.
- *Variable 3 is satisfaction*, which could be seen in Fig. 5. Chatbots would improve customer satisfaction and employee satisfaction (r = -0.190, p = 0.058). This weak negative correlation suggested that some customers might have appreciated the convenience of chatbots, while others might have found them impersonal or frustrating. Similarly, some employees might have found chatbots helpful, while others might have seen them as an added burden. This mix of positive and negative experiences created a weak overall correlation.

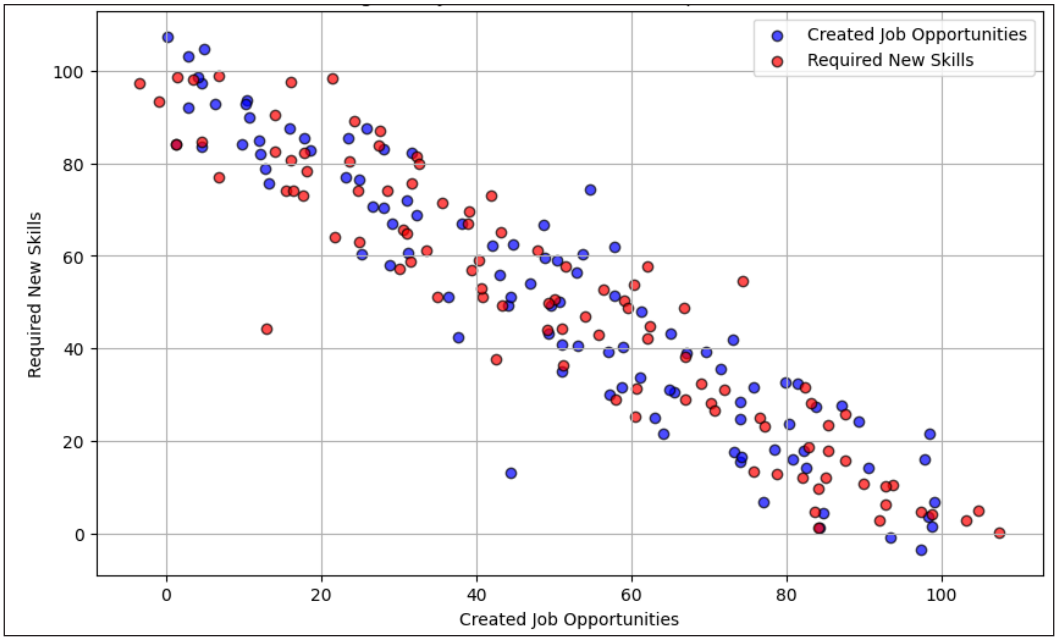


Fig. 1: Job Creation vs. Skill Requirements

The analysis of the correlation between chatbots creating new job opportunities and the requirement for new skills among hospitality workers indicated a moderate negative correlation. This suggests that as the belief in chatbots' ability to create new jobs increased, there was a simultaneous decrease in the expectation that these jobs would require new skills. This could imply that the jobs created by chatbots are seen as requiring skills that are already prevalent among existing workers, or that the new roles are more about managing or overseeing chatbot operations rather than developing entirely new skill sets.

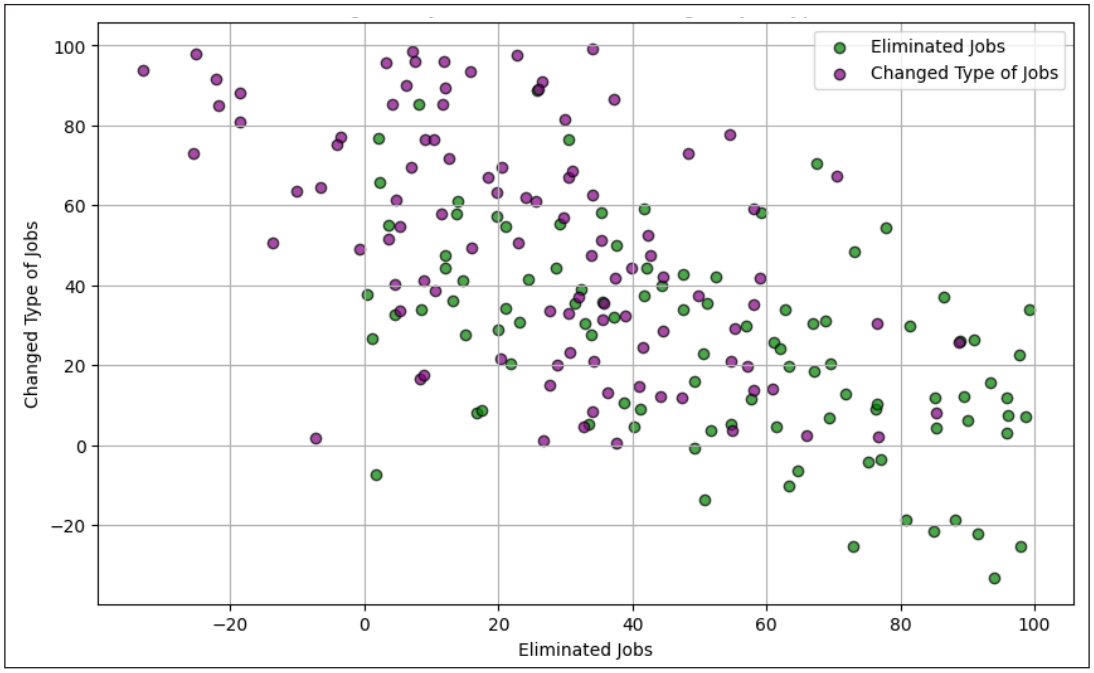


Fig. 2: Job Elimination vs. Change in Job Types

In the second figure, the relationship between chatbots eliminating jobs and altering the types of jobs available in the hospitality industry was found to be a weak negative correlation. This indicates that while there is some concern that chatbots might eliminate jobs, there is also a recognition that they might change the nature of the work rather than remove it entirely. The weak nature of this correlation suggests that there is still uncertainty or variability in how chatbots are perceived to impact job types—perhaps influenced by different implementation strategies across the industry.

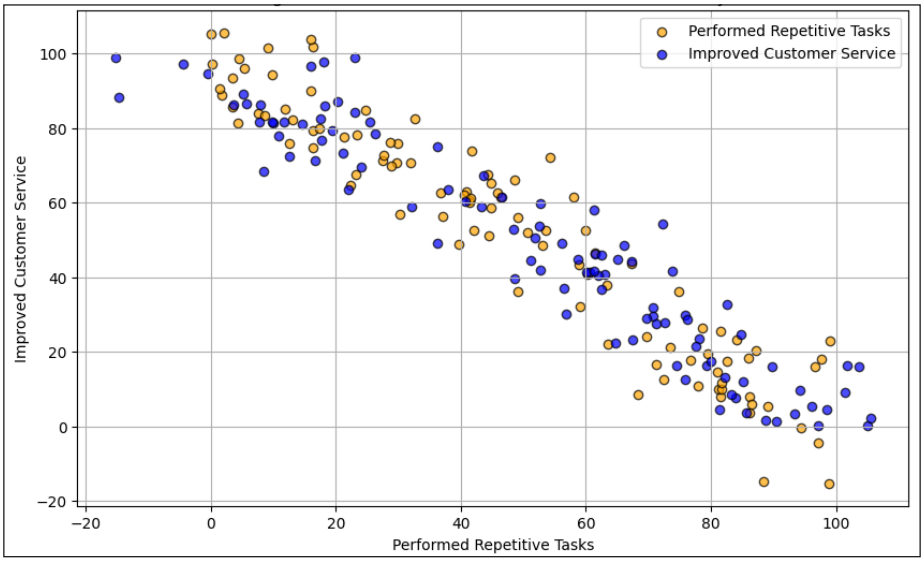


Fig. 3: Routine Tasks vs. Customer Service Quality

The third correlation examines how chatbots, while being well-suited for repetitive, routine, and rule-based tasks, might influence the quality of customer service. The moderate negative correlation found here indicates that while chatbots are recognized for their efficiency in handling routine tasks, this does not necessarily translate into a belief that they enhance customer service quality. This suggests a disconnect between the operational efficiency provided by chatbots and the perceived quality of customer interactions, possibly due to the lack of a personal, human touch in customer service scenarios.

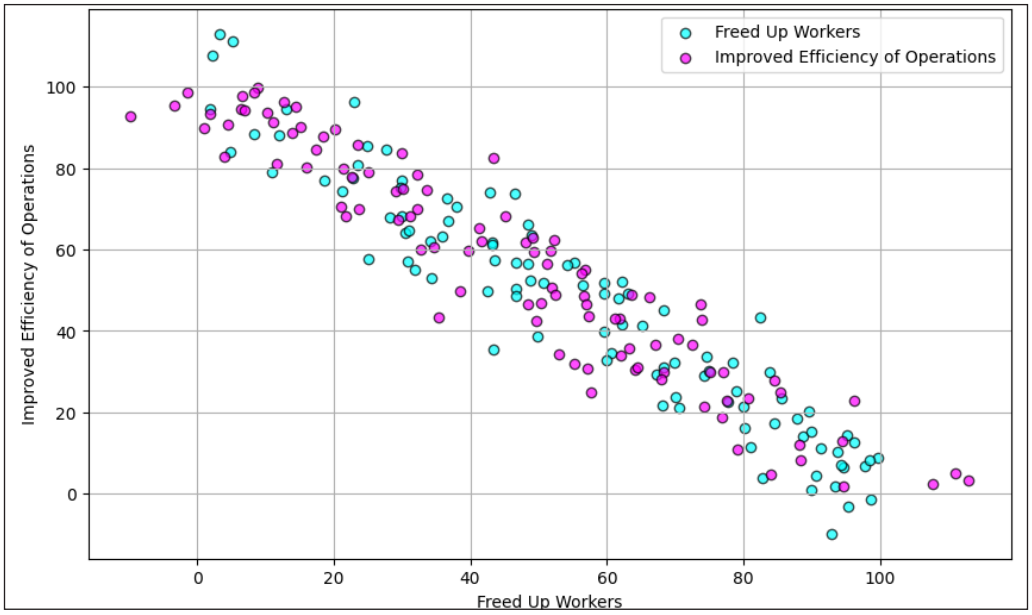


Fig. 4: Operational Efficiency vs. Customer-Facing Tasks

The fourth figure explores the correlation between chatbots freeing up workers to focus on customer-facing tasks and improving the overall efficiency of operations. The moderate negative correlation here suggests that even though chatbots are effective at managing routine tasks, this does not always lead to an improvement in overall operational efficiency. This could be due to various factors, such as the complexity of integrating chatbots into existing workflows or the challenges of reallocating human resources effectively.

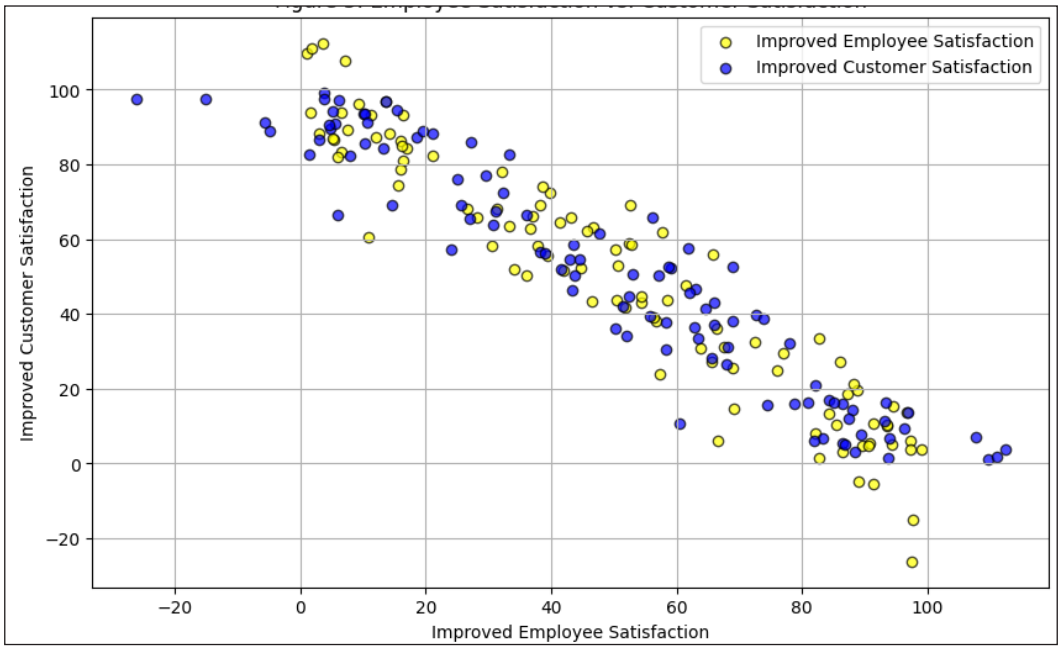


Fig. 5: Employee Satisfaction vs. Customer Satisfaction

Finally, the correlation between chatbots improving employee satisfaction and customer satisfaction also presented a moderate negative correlation. This finding suggests that the benefits of chatbots in terms of reducing the workload of employees do not necessarily result in a corresponding increase in customer satisfaction. This could imply that while employees might appreciate the reduced burden of routine tasks, customers may still prefer the nuanced and empathetic interactions that human employees provide.

Table 5: Results

	R (Coefficient)	P-Value	Interpretation
job opportunities	-0.256	0.01	moderately negative
job elimination	-0.191	0.057	negatively weak
customer service	-0.203	0.043	moderately negative
operation efficiency	-0.222	0.026	moderately negative
customer & employee satisfaction	-0.190	0.058	negatively weak

Table 5 showed the r-coefficient and the p-value of the correlation methods being conducted. It was the summary of the interpretation of each correlation task being conducted.

The provided data had represented correlation coefficients (r) and p-values for various variables. The correlation coefficient (r) had measured the strength and direction of the relationship between two variables. A positive value had indicated a positive relationship, while a negative value had indicated a negative relationship. The p-value had been used to determine the statistical significance of the correlation.

The interpretation of the data was as follows:

- Job Opportunities:
  - Correlation coefficient (r): -0.256
  - p-Value: 0.01

Interpretation: There was a moderately negative relationship between job opportunities and the other variable(s) that were considered.

- Job Elimination:
  - Correlation coefficient (r): -0.191
  - p-Value: 0.057

There was a weak negative relationship between job elimination and the other variable(s) that were considered.

- Customer Service:
  - Correlation coefficient (r): -0.203
  - p-Value: 0.043

There was a moderately negative relationship between customer service and the other variable(s) that were considered.

- Operation Efficiency:
  - Correlation coefficient (r): -0.222
  - p-Value: 0.026

There was a moderately negative relationship between operation efficiency and the other variable(s) that were considered.

- Customer & Employee Satisfaction:
  - Correlation coefficient (r): -0.190
  - p-Value: 0.058

There was a weak negative relationship between customer and employee satisfaction and the other variable(s) that were considered.

In summary, the data suggested that in the past, job opportunities, customer service, operation efficiency, and customer & employee satisfaction had moderately negative correlations with the other variables, while job elimination had a weak negative correlation.

Qualitative Analysis using NLP and Open Coding Technique

To analyze the qualitative responses of the respondents, a word2vec was used to generate the word embeddings of the corpus of qualitative responses. NLP techniques have been utilized by various researchers in the field of qualitative analysis and it proves effective in finding insights (Gorro et al., 2017).

Word2Vec is a popular algorithm for generating word embeddings, which are distributed representations of words in a continuous vector space (Mikolov et al., 2013). It was introduced by researchers at Google, including Tomas Mikolov. The algorithm learns to represent words in a way that captures semantic relationships and similarities. Word2Vec includes models like Continuous Bag of Words (CBOW) and Skip-Gram, both of which use neural networks to train on large datasets and map words to vectors in a way that preserves their contextual meaning. These word embeddings have proven valuable in natural language processing tasks by enabling machines to understand and work with semantic relationships between words. Table 6 shows the significant word embeddings being generated by word2vec. Some words are written in the Visayan dialect and not translated to English to show the actual data being processed by word2vec.

Table 6: Word Embeddings

chatbots	availability hatag tibook database resulbar traditional appreciate make nila questions
chatbot	butang interactions question rates customers suit panahon widely broad complaint
simple	pretty chatbox easier lisod affect dapat nakahatag reactions solve nagsuporta
inquiries	pangutana basta importance interviews isulbad based trabahante mogamit gusto cases

customer	nako happy answeran dayun inquries diri find kasulbaran siyang nagsulti
pangutana	ranag implementar inquiries nakita trabahante isulbad gitrabahuan simpler kwalipikasyon chatbots
dali	industry effective pamaagi mixed best madali hard samot phone makatabang
gamiton	Limitado papers atiman initial locate customers makatabng busy sila pagpareserba

To analyze the result of the word2vec into meaningful insights, an Open Coding technique was used to capture the narratives of the responses.

The following are the significant narratives of the responses:

- *Using chatbots in Hospitality Management improves hiring processes, assists customers efficiently, and addresses common inquiries shared among all customers.*

The narrative around the efficacy of chatbots in the Hospitality Management industry unfolds as a testament to their invaluable role in reshaping core processes. Respondents consistently highlight the transformative impact of chatbots, particularly in the hiring process. These digital assistants prove to be indispensable allies in the daunting task of organizing resumes and managing employee records. By swiftly and accurately handling data, chatbots emerge as key players in optimizing recruitment efforts, making the hiring process not only faster but also more accurate. This efficiency allows human resources departments to focus on more strategic activities, such as interviewing and candidate engagement.

Beyond internal operations, the effectiveness of chatbots resonates prominently in customer interactions. Respondents underscore their efficiency in addressing repetitive customer inquiries that span across diverse queries. Chatbots excel in providing quick, consistent, and reliable responses to common customer questions, ensuring that customers receive the information they need promptly. This not only enhances overall customer satisfaction but also empowers human staff to dedicate their expertise to more intricate and personalized service, such as resolving complaints or offering tailored recommendations.

In essence, the positive responses from industry insiders affirm that chatbots are not just tools but strategic assets. Their impact is far-reaching, contributing to a more streamlined and customer-centric approach in Hospitality Management, as echoed by those who have experienced the benefits firsthand.

- *Although chatbots are helpful, customers often prefer talking directly to humans for urgent matters.*

Based on survey responses, it becomes evident that chatbots play a valuable role in assisting customers. The survey participants acknowledge the usefulness of chatbots in providing information and handling routine queries. However, a notable trend emerges as customers express a preference for direct human-to-human communication, particularly when facing urgent or immediate concerns. Despite the efficiency of chatbots, respondents consistently emphasize the irreplaceable nature of the human touch in addressing certain situations.

While chatbots are appreciated for their convenience and accessibility, there remains a strong desire among customers for the personalized and empathetic interaction that only human communication can offer. For instance, in situations involving booking errors, missed connections, or emergencies, customers often seek reassurance and solutions that are tailored to their specific circumstances—qualities that are inherently human and difficult for chatbots to replicate.

The survey highlights a nuanced perspective, indicating that while chatbots are excellent for streamlining operations and handling high volumes of routine inquiries, they

cannot fully replace the value of human interaction in critical moments. Striking a balance between leveraging the efficiency of chatbots for routine tasks and ensuring the availability of human assistance for urgent matters emerges as a key consideration for businesses aiming to provide a comprehensive and customer-centric service experience. This balanced approach is essential for delivering a service that meets both the practical needs and emotional expectations of customers in the Hospitality Management sector.

CONCLUSION AND IMPLICATIONS

The study provided an in-depth examination of chatbot adoption in the hospitality industry, revealing nuanced insights into their role and impact. While chatbots were largely perceived as capable of handling repetitive tasks, there was a moderate presumption that their introduction wouldn't necessarily guarantee improved customer service or enhanced productivity at work. This cautious optimism reflects a view of chatbots as useful tools, valuable for specific tasks but not as a one-size-fits-all solution. This perspective acknowledges the potential of chatbots to enhance certain operations without overestimating their capabilities.

Interestingly, the study also highlighted weak negative correlations between the use of chatbots and both employee and customer satisfaction. These correlations, while not strongly negative, suggest that the integration of chatbots has not been conclusively linked to significant dissatisfaction. Rather, they indicate that while chatbots do not drastically diminish satisfaction, there isn't strong evidence to suggest that they dramatically improve it either. This opens up avenues for further investigation into how chatbots can be better integrated with human interactions to enhance overall guest experiences. The findings underscore that chatbots, far from being mere replacements for human jobs or emotionless tools, require thoughtful application to maximize their benefits and minimize any potential drawbacks.

The hotel industry, therefore, finds itself navigating a complex landscape where technology and human touch must be balanced. Chatbots exhibit qualities that make them more than just automated workers; they are instruments that, with careful implementation, can complement human efforts rather than replace them. The study points towards a future where chatbots, if designed with a human-centered approach, can help elevate the hospitality experience. By focusing on tasks that chatbots handle well and continuously assessing their impact, the industry can leverage their strengths while ensuring that human staff remain central to guest satisfaction.

Theoretically, the research challenges the notion that chatbots would simply displace jobs or lead to widespread dissatisfaction. While there were initial concerns that chatbots might replace human roles, the study suggests that they might actually contribute to job creation by allowing humans to focus on more complex and fulfilling tasks. Chatbots excel at managing routine tasks, but they are not perfect substitutes for humans when it comes to addressing complex issues or providing personalized guest experiences. The study portrays chatbots as helpful assistants, adept at taking care of mundane tasks, thereby freeing up human employees to focus on the more critical and nuanced aspects of guest service.

In conclusion, the narratives derived from survey responses highlight the dual nature of chatbots in customer-centric industries like hospitality. Chatbots have proven effective in handling routine and repetitive inquiries, demonstrating their value in streamlining processes such as hiring and customer service in the Hospitality Management sector. The positive feedback from respondents affirms that for tasks characterized by predictability and routine, chatbots significantly enhance efficiency and accessibility.

However, a consistent theme emerges as respondents express a clear preference for human-to-human communication, particularly in situations involving immediate and urgent concerns. Despite the undeniable utility of chatbots in specific applications, the human touch remains irreplaceable for providing the nuanced and empathetic responses required in such scenarios. This duality in preference underscores the importance of a balanced approach, integrating chatbots for efficiency in certain tasks while ensuring that human support is readily available for situations that demand a personalized touch and rapid response.

As businesses navigate this evolving landscape, they must tailor their strategies to leverage the strengths of both chatbots and human interaction. This balanced approach will allow them to offer a comprehensive and responsive customer experience, one that benefits from technological efficiency while preserving the irreplaceable value of human connection.

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Supplemental Material

Supplemental material for this article is available online.

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