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Students' Perception of Using ChatGPT as an AI-Integrated Tool in the Malay Language

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Abstract

This study examines the perceptions of students using ChatGPT in the Malay language. To meet the aims, We adopted the theory of technology acceptance model (TAM). The study focuses on system quality, information quality, service quality, user satisfaction, perceived net benefits, and awareness of ethics and plagiarism. Data were collected through a Qualtrics survey. The finding informed that the system quality of ChatGPT achieved a mean score of 3.375, indicating ease of use and flexibility. Information quality received a mean score of 3.27, suggesting accuracy and usefulness. Service quality scored 3.207, reflecting adequate technical support and consistent performance. User satisfaction was remarkably high, with a mean score of 3.334, demonstrating strong confidence and contentment with ChatGPT's functionality. Perceived net benefits scored 3.337, highlighting language skills and communication efficiency enhancements. Meanwhile, the ethical considerations were moderately addressed, with a mean score of 3.115, indicating a need for improved education on responsible use. The findings suggest that ChatGPT is a valuable tool for the Malay language, with areas for further enhancement in information quality and ethical practices. At the same time, understanding users' perceptions will also help create between relevant AI resources, inform policies for ethical AI use, and enhance learning experience for Malay learners.

Keywords: Artificial Intelligence; ChatGPT; Malay language; Technology Acceptance Model

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INTRODUCTION

Artificial intelligence (AI) has grown in educational settings, particularly with advanced language models like ChatGPT. AI tools can provide instant feedback, personalized learning paths to be generated based on various factors, and automatic responses to questions on different topics. AI applications, like ChatGPT, can become language learning assistants for students outside the classroom (Zhang et al., 2024). Yet, just like with any technological advancement, they come with a new set of challenges regarding how accurate the AI-generated content is in languages besides English. Over the past few years, researchers have become increasingly interested in student perceptions of using ChatGPT as an AI-embedded tool across multiple educational domains (Abouammoh et al., 2023; Bao, 2024; Sila et al., 2023). It is crucial to understand such tools from the students' perspectives and how they engage with them to ensure that their utilization is maximized while resolving any issues that could result from them.

According to Abdaljaleel et al. (2023), AI tools can be advantageous, but they depend on students' acceptance and integration into educational settings. In higher education, perceptions of generative AI technology (ChatGPT) were explored by Chan & Hu (2023) and Habibi et al., (2023); their research revealed that students were most likely to use AI tools when they were comfortable with the technology, and thought it would be beneficial. The study also found that students tended to express mixed feelings about the possible uses of AI tools and were skeptical of their feasibility, especially regarding accuracy and trustworthiness when dealing with more complicated academic workloads. The necessity of identifying the factors that affect students' attitudes towards ChatGPT that could improve learning outcomes, they were more likely to use the tool for their academic tasks (Abdaljaleel et al., 2023; Bouzar et al., 2024; Abd-Rahim et al., 2023; Rodríguez et al., 2023; Sila et al., 2023; Zhang et al., 2024).

This result highlights the need to address student concerns and ensure this new model of AI is reliable for them to be successfully implemented in education settings, echoing Zhang's et al. (2024) observation on students' perceptions of their experiences with AI tools. In the same vein, enhancing the reliability of this model has become a subject of interest among scholars and linguists alike. Nomoto (2023), for instance, examines how ChatGPT could differentiate the nuances of Malay and Indonesian languages, highlighting the predominance of linguistic issues despite the growing research on AI tools in higher education. This is crucial as reliability impacts students' confidence and satisfaction in using ChatGPT as a learning tool. Malay's complex grammar, as reflected in its morphosyntactic such as affixation and reduplication features may not integrate seamlessly into English or other working languages ChatGPT is dominantly using. Additionally, Malay's highly reliance on cultural context can differ significantly from more direct communication styles prevalent in other cultures and might not be fully captured in the model's training data. These nuances can affect the accuracy and appropriateness of ChatGPT's responses, shaping students' perceptions of its usefulness in learning Malay.

Furthermore, the limited sets of Malay data required for training this AI model is another challenge in making ChatGPT more reliable to Malay users. As a neural network, this model ideally strives on a wide array of representations form the language's various dialects, regional variations or linguistics trends. Data scarcity may lead to biased or incomplete responses, influencing students' perceptions of ChatGPT's reliability and potentially discourage them from using this tool. Considering this gap, this study focuses on investigating higher education students' perceptions of ChatGPT in the Malay language and how these perceptions relate to perceived reliability, linguistic accuracy, cultural relevance, and the availability of Malay-specific training data.

ChatGPT Usage in Higher Education Setting

ChatGPT has gained significant popularity in higher education over the past few years for its promise of setting a new normal by bringing innovation to teaching and learning methods. Ali et al. (2024) points out that ChatGPT can provide tailored help with learning by understanding difficult questions and supporting students in school work. Tan (2023) explains how ChatGPT in higher education goes beyond traditional testing but aids learning and teaching, even traveling hand-in-hand with the

collaborative examination. Montenegro-Rueda et al. (2023) highlight the importance of teachers in determining ChatGPT's impact on education. Furthermore, Vargas-Murillo et al. (2023) analyze the barriers and affinities of AI-mediated learning, like ChatGPT, to develop virtual simulations with quiz-based engagement activities that can enhance student participation in higher education. The evidence suggests that ChatGPT can have significant potential in higher education to deliver personalized advice, improve teaching methodologies, and provide new avenues for learning, as seen through these studies. However, the researchers note the need for training and successful implementation to ensure integration into educational settings—for instance, the perspective on ChatGPT changing the education game. Bao (2024) suggested that ChatGPT should not substitute traditional classroom forms and should be viewed simply as another resource while forming relations across subjects between students and teachers to clarify the relationship and improve readability.

According to Murad et al. (2023), ChatGPT offers personalized student help on-demand and one-on-one, overcoming the shortfall of resources that affects individual students. Similarly, Fu (2024) describes how ChatGPT contributes to active learning with engaging, human-like conversations within an academic setting. Faisal (2024) explores the possible use of ChatGPT as a provider of multiple sources of information in Saudi Arabian universities due to its potential for debating and aiding self-learned content that assists course development**.** ChatGPT is already transforming education by enhancing one-on-one interactions and creating more participatory classes focusing on new teaching styles and learning outcomes. These interactive and engaging learning experiences result in improved teaching and learning outcomes.

Technology Acceptance Model (TAM)

The theoretical underpinning of the Technology Acceptance Model (TAM), developed by Davis (1989), is rooted in the theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1977). TAM posits that user acceptance of technology is primarily influenced by perceived usefulness, the extent to which users believe it can enhance their performance, perceived ease of use, and the degree to which users think the technology is easy to operate. These perceptions, in turn, influence users' behavioral intentions, which predict actual technology use. In other words, understanding the antecedents of those key TAM components is essential for user acceptance and usage of a system (Venkatesh & Davis, 2000). Although TAM gives some insight into how users value a system overall, it is not detailed enough to drive actual development efforts without additional context. By combining TAM and relevant external constructs, technology adoption can be forecasted to some extent, with possible suggestions for non-acceptance (Venkatesh & Davis, 2000).

This study extends TAM by evaluating students' perceptions of ChatGPT in Malay. Several frameworks have been developed to analyze users' inclination to adopt and utilize new technologies in education, including the Technology Acceptance Model (TAM) (Davis, 1989), the theory of planned behavior (Ajzen, 1991), and the innovation dissemination theory (Rogers et al., 2019). Out of the several models that have been suggested, the Technology Acceptance Model (TAM) has emerged as a highly significant model for comprehending the aspects that forecast human behavior to accept potential technologies (Habibi et al., 2024). TAM primarily emphasizes the perceived utility and perceived ease of use. The study initially investigated the

application of technology in specific areas of economic business and demonstrated its reliability in predicting phenomena such as online shopping (Gefen, 2003).

Although TAM was initially developed to explain users' adoption of technology, it has also been utilized as a research tool for educational purposes (Alharbi & Drew, 2014). Several prior studies have used the Acceptance Model (TAM) or its expanded version to examine technology adoption in education. Many researchers have concentrated explicitly on adopting mobile learning in teaching or learning processes (Park et al., 2012) and learning management systems (Aman et al., 2020). However, research into evaluating students' perceptions of using ChatGPT for Malay remains limited.

METHOD

The study employed a cross-sectional survey that involved adjusting and refining the survey items. The questions comprised seven variables, namely system quality (6 items), information quality (5 items), service quality (3 items), use of ChatGPT (3 items), User Satisfaction (5 items), Perceived net Benefits (4 items), and Awareness on Matters Involving Ethics and Plagiarism (4 items). The instrument was adopted from the original scale of the Technology Acceptance Model (TAM) (Davis, 1989). We employed a 5-point Likert scale, ranging from 1 (indicating strong disagreement) to 5 (indicating strong agreement). The instrument was available in English and Malay, where back-translation and proofreading were incorporated to ensure the equivalence is retained during the translation processes. Additionally, modifications were made to the phrasing to enhance the instrument's interpretability and comprehensibility. The discussion on content validity in creating the instrument was a collaborative effort with four specialists in educational technologies, ensuring the validity and reliability of the research.

Sampling and Data Collection

An online survey instrument was distributed to universities in Brunei Darussalam, Malaysia, and Indonesia from January to March 2024, aiming to capture a diverse range of perspectives from Malay speakers across educational and cultural contexts. With significant demography and various degrees of technological integration in their education systems, these countries provide a rich dataset for analysis. While convenient, this study also acknowledges the selection bias of this instrument as a form of limitation: it excludes users with limited internet access or those who are less comfortable with online platforms. Additionally, the voluntary nature of this study could lead to a sample that is more engaged or inclined towards use of ChatGPT in their teaching and learning.

For this study, the Qualtrics Survey platform was chosen for its robustness and versatility in handling large-scale survey data. Based on an estimated effect size of 0.3 and an alpha level of 0.05, a power analysis using G*Power determined that a minimum of 135 respondents was required for the study's seven variables to ensure an adequate sample size. A total of 307 samples were collected. However, after excluding incomplete responses (92 respondents or 30%) and participants with no ChatGPT experience (60 respondents or 19.6%), the final sample consisted of 155 participants (50.4%), with a gender distribution comprising 52 males (33.5%) and 103 females (66.5%). While the exclusion number may limit the generalizability of the findings, the remaining sample still surpass the minimum requirements recognized

by the power analysis, ensuring sufficient statistical power to address the research questions.

Moreover, the diverse sample from the three countries provides a more nuanced perspectives across the contexts within the region. Out of the total respondents, 29 (18.7%) were from Brunei, 32 (20.6%) were from Malaysia, and 94 (60.6%) were from Indonesia. The table displays the educational levels of 155 respondents. The majority, 130 respondents (83.9%), have a Bachelor's degree. A smaller group of 10 respondents (6.5%) hold a Master's degree, and 4 (2.6%) possess a Ph.D. or equivalent. Additionally, 11 respondents (7.1%) are categorized under 'Others,' including diploma and higher diploma holders. This indicates that all respondents are enrolled in higher or tertiary education institutions, with the majority holding a bachelor's degree.

Table 1. Distribution of Participants

Demographic	Type	Frequency	Percent
Respondents	Incomplete Data	92	30.0
	Never Used ChatGPT	60	19.6
	Used ChatGPT	155	50.4
	Total	307	100.0
Gender	Male	52	33.5
	Female	103	66.5
	Total	155	100.0
Country	Brunei	29	18.7
	Malaysia	32	20.6
	Indonesia	94	60.6
	Total	155	100.0
Level of Study	Bachelor Degree	130	83.9
	Master's Degree	10	6.5
	PhD or Equivalent	4	2.6
	Others	11	7.1
	Total	155	100.0

Data Analysis

The data collected through a Qualtrics survey was transferred to CSV and SPSS formats. The data preparation involved assessing outliers, handling missing data, and generating histograms according to recommended guidelines set by Hair et al. (2010). This adherence to established guidelines ensures the validity and reliability of the data. After completing the data screening process, we analyzed using SPSS software. Descriptive analysis was conducted to understand the essential characteristics of the data, calculating the Mean and Standard Deviation for each variable. These descriptive statistics summarise the data distribution's central tendency, dispersion, and shape. This analysis provides comprehensive overview of students' perceptions of ChatGPT in Malays across the variables, allowing the study to quantify the dominant trends and variabilities in the data and provide insights into the overall sentiment and attitudes of the participants.

To ensure the consistency and reliability of the variables, we calculated Cronbach's alpha for each scale. Cronbach's alpha tests internal consistency or how

closely related items correlate when grouped. This measure defines how well the items within each scale relate to one another and capture the same construct. An alpha value of 0.70 or above is typically considered acceptable, indicating good internal consistency. Hence, higher Cronbach's alphas are a measure of increased reliability. The values of the mean and standard deviation provide information regarding the central tendency and variability of the data, as well as differences among responses observed in a ranked scale (Likert-type); meanwhile, the alpha Cronbach´s indicates whether or not the variables make sense within this study and confirms the quality and reliability of the collected information. This pre-processing provided a basis for further statistical tests and survey interpretation.

Table 2. Reliability Analysis

Dimensions	Items	Cronbach's Alpha
System Quality	6	0.804
Information Quality	5	0.731
Service Quality	3	0.791
Use of ChatGPT	3	0.743
User Satisfaction	5	0.904
Perceived net Benefits	4	0.876
Awareness of Matters Involving Ethics and Plagiarism	4	0.793
Total	30	

The reliability analysis of some dimensions measured with Cronbach's alpha is seen in Table 2. The seven dimensions had between 3 and 6 items. The highest alpha score of 0.904 was for the scale "user satisfaction" and the lowest (0.731) for "information quality." This means the measurement instruments for all these dimensions are reliable and can be used in further analysis.

RESULTS AND DISCUSSION

System Quality of Using ChatGPT

The Technology Acceptance Model (TAM) framework considers system quality as a crucial factor affecting users' perceptions and acceptance of technology. The assessment of system quality for ChatGPT in Malay indicates generally positive user experiences. Table 3 shows that users find ChatGPT easy to use for Malay language tasks, with a mean score of 3.21 and a standard deviation of 0.868. ChatGPT's flexibility in interacting with the Malay language received a mean score of 3.32 (SD = 0.762). Users found learning to operate ChatGPT particularly easy, scoring the highest mean of 3.88 (SD = 0.890). The clarity and ease of understanding of the responses generated by ChatGPT in Malay were rated with a mean score of 3.32 (SD = 0.852). The accuracy and reliability of the information provided by ChatGPT in Malay were rated at 3.17 (SD = 0.799). Overall satisfaction with the information quality in Malay was rated at 3.35 (SD = 0.786). The overall mean score for system quality was 3.375 (SD = 0.826), reflecting general satisfaction with ChatGPT's performance in the Malay language.

These findings align with previous studies on the system quality of ChatGPT in various contexts. In a study by Ghandour et al. (2024), decision-making transparency

and explainability scores measured by system quality are moderate, reflecting Flexibility and Ease of understanding. Our optimal hypothesis for why scores were high in this study is that models such as ChatGPT are adept at handling very complex linguistic tasks (Gao et al., 2024; Yifan et al., 2023). This high ease of learning and flexibility scores demonstrate how a carefully designed ChatGPT can effectively assist users with myriad language-related tasks, ultimately improving the user experience and productivity.

Table 3. System Quality of Using ChatGPT

System Quality	N	Min	Max	Mean	SD
I find ChatGPT easy to use for the Malay Language	155	1	5	3.21	.868
ChatGPT is flexible for interacting with the Malay Language	155	1	5	3.32	.762
Learning to operate ChatGPT was easy for me.	155	1	5	3.88	.890
The responses generated by ChatGPT in Malay are clear and easy to understand.	155	1	5	3.32	.852
ChatGPT provides accurate and reliable information in Malay.	155	1	5	3.17	.799
Overall, I am satisfied with the information quality provided by ChatGPT in the Malay language.	155	1	5	3.35	.786
Valid N (listwise)	155			3.375	0.826

Information Quality of Using ChatGPT

As shown in Table 4, users rated the correctness of the information generated by ChatGPT with a mean score of 3.25 and a standard deviation of 0.687. The highest mean score of 3.55 was observed for the usefulness of the information for its intended purpose, indicating that users generally find the outputs beneficial. Trust in the information provided by ChatGPT scored a mean of 3.10 (SD = 0.695), reflecting moderate trust levels. The response time of ChatGPT in generating answers in Malay was deemed acceptable, with a mean score of 3.39 (SD = 0.638). Lastly, the reliability of ChatGPT in delivering consistent performance in Malay was rated at a mean of 3.06 (SD = 0.681). The overall mean score for information quality was 3.27 (SD= 0.675), demonstrating general satisfaction with the information provided by ChatGPT. While this score shows a positive perception, the individual item scores demonstrate more nuanced insights for discussion. The mean score of 3.25 and 3.55 for correctness and usefulness, relatively, suggests that while students find the information provided by ChatGPT to be accurate and useful, there is still potential for future development.

On the other, the moderate score of 3.10 for trust suggests that some users have reservations regarding the credibility and reliability of the information provided by ChatGPT. This reservation may arise due to concerns about the lack of transparency in how ChatGPT generates its responses which can be biased or misleading. Concurrently, the lowest mean score for reliability (3.06) highlights a key area for improvement. One of the possible reasons for this score is due to the inconsistent

performance this model generates, affecting students' confidence in using it effectively.

Table 4. Information Quality of Using ChatGPT

Information Quality	N	Min	Max	Mean	SD
The information generated by ChatGPT is correct	155	1	5	3.25	.687
The information generated by ChatGPT is useful for its purpose	155	1	5	3.55	.676
I trust the information output of ChatGPT	155	1	5	3.10	.695
The response time of ChatGPT when generating answers in Malay is acceptable.	155	2	5	3.39	.638
The reliability of ChatGPT in delivering consistent performance in Malay is high.	155	1	5	3.06	.681
Valid N (listwise)	155			3.27	0.675

The results align with findings from prior studies on the quality of AI-generated information. For instance, Kasapovic et al. (2024) identified a positive correlation between higher mDISCERN scores and better physician ratings, which parallels the positive utility ratings. The moderate trust scores are consistent with the results reported by Fahy et al. (2024), who evaluated the readability and quality of information provided by ChatGPT on specific medical topics. These studies underscore the importance of ensuring high-quality information to enhance user trust and satisfaction. Similarly, Lahat et al. (2023) emphasized the critical role of online information quality in determining overall user perceptions, which resonates with the findings of this study regarding the perceived usefulness and correctness of ChatGPT's responses. Research by Sila et al. (2023) and Sparks et al. (2024) on students' perceptions and accuracy in medical information further corroborates the need for continuous improvement in information reliability and consistency. The most positive ratings in information quality imply that ChatGPT could be a robust system for disseminating valuable and correct insights in Malay. At the same time, the moderate trust and reliability scores also indicate the need for refinement in ChatGPT's capabilities to enhance its overall effectiveness and user satisfaction in academic contexts.

Service Quality of Using ChatGPT

The service quality in the Malay language reveals positive user feedback across several dimensions. As shown in Table 5, the users rated the sufficient technical support provided by their system's provider with a mean score of 3.37 (SD = .666). ChatGPT's consistency in meeting user expectations for assisting in Malay was rated at a mean of 3.25 (SD = 0.794). The overall satisfaction with the output of the ChatGPT system in the Malay language received a mean score of 3.31 (SD = 0.698). The combined average score for service quality is 3.207 (SD = 0.719), indicating that users generally perceive the service quality of ChatGPT in Malay as satisfactory.

Fatima (2024) highlighted the significance of high service quality in enhancing user satisfaction, particularly in educational settings. The present study suggests that the investigation of continuous improvement processes supports research concerning positive feedback from previous studies (e.g., Chen et al., 2023); the study examines

system quality information concerning service quality and student learning needs. Fu (2024) noted that completeness, precision, and timeliness of information, along with convenience in retrieving it and the format, all contributed to user satisfaction, which matches well with moderately high scores for technical support consistency and moderate ratings for assistant consistency.

Table 5. Service Quality of Using ChatGPT

Service Quality	N	Min	Max	Mean	SD
There is adequate technical support from the system's provider to use ChatGPT	155	2	5	3.37	.666
ChatGPT consistently meets my expectations for providing assistance in the Malay language.	155	1	5	3.25	.794
The output of the ChatGPT system is satisfactory for the Malay Language	155	1	5	3.31	.698
Valid N (listwise)	155			3.207	0.719

This was also confirmed by the remarks of Murad et al. (2023) and Siminto et al. (2023) about the potential of ChatGPT to enhance learning experiences. They noted that ChatGPT's practical guidance on various topics facilitated ease of learning across different subject areas, strongly contributing to actual study phases. This has significant implications for deploying ChatGPT services and improving their quality over time, particularly in multilingual or educational contexts. High ratings for tech support and user satisfaction indicate that users have a favorable impression of ChatGPT and that it may be well-suited to their specific use case.

Use of ChatGPT

ChatGPT's use of the Malay language reveals positive user experiences across several metrics. As shown in Table 6, ChatGPT allowed users to complete Malay tasks faster, with a mean rating of 3.46 and a standard deviation of .783. The improvement in Malay language performance due to ChatGPT usage received a mean score of 3.21 (SD = 0.795). Additionally, users expressed confidence in relying on ChatGPT for information and assistance in Malay, with a mean score of 3.18 (SD = 0.734). The overall mean score for ChatGPT is 3.283 (SD = 0.770), indicating a generally positive perception of its utility in Malay language tasks.

Table 6. Use of ChatGPT

Use of ChatGPT	N	Min	Max	Mean	SD
Using ChatGPT enables me to accomplish Malay Language tasks more quickly.	155	1	5	3.46	.783
Using ChatGPT has improved my Malay language performance.	155	1	5	3.21	.795
I feel confident in relying on ChatGPT for information and assistance in the Malay language.	155	1	5	3.18	.734
Valid N (listwise)	155			3.283	0.770

In the same vein, Abd-Rahim et al. (2023) demonstrated that students perceived ChatGPT as beneficial for enhancing their writing skills and making language learning more engaging, which parallels the high rating for task efficiency in this study. Shao and Xia (2023) highlighted the significance of usage duration and depth in enriching foreign language learning experiences, which aligns with the moderate scores for language performance improvement observed here. Nomoto (2023) and Liu (2024) examined the challenges and potential of ChatGPT in languages like Malay, focusing on response quality and evolving capabilities, which are reflected in the confidence scores reported by users. Furthermore, Bouzar et al. (2024) investigated the impact of different versions of ChatGPT on task initiation among postgraduate students, emphasizing the role of AI tools in enhancing academic performance, which supports the findings of increased task efficiency and user confidence in this study.

User Satisfactions with Using ChatGPT

The evaluation of user satisfaction with ChatGPT in Malay reveals positive perceptions across multiple dimensions. As shown in Table 7, users rated the usefulness of ChatGPT in Malay language tasks with a mean score of 3.40 and a standard deviation of 0.708. Satisfaction with the functions of ChatGPT for the Malay language received a mean score of 3.30 (SD = 0.715). Users also indicated that ChatGPT has eased the Malay language processes, with a mean score of 3.38 (SD = 0.800). The quality of responses provided by ChatGPT in Malay met user expectations with a mean score of 3.26 (SD = 0.721). General satisfaction with using ChatGPT for Malay language tasks was rated at a mean of 3.33 (SD = 0.748). The overall mean score for user satisfaction is 3.334 (SD = 0.7384), indicating a generally positive perception of ChatGPT's utility in Malay.

Table 7. User Satisfactions with Using ChatGPT

User Satisfactions	N	Min	Max	Mean	SD
ChatGPT is useful in my Malay Language	155	1	5	3.40	.708
I am satisfied with the functions of ChatGPT for my Malay Language	155	1	5	3.30	.715
ChatGPT has eased the Malay Language processes.	155	1	5	3.38	.800
The quality of responses provided by ChatGPT in Malay meets my expectations.	155	1	5	3.26	.721
I am generally satisfied with using ChatGPT for my Malay Language	155	1	5	3.33	.748
Valid N (listwise)	155			**3.334**	**0.7384**

The findings align with previous research on factors influencing user satisfaction with ChatGPT. Fu (2024) identified perceived ease of use and usefulness as core factors affecting user satisfaction, which parallels the high ratings for effectiveness and ease of use in Malay language processes. Li and Zhang (2023) highlighted that subjective and objective factors contribute to user behavior and satisfaction, supporting the observed moderate to high satisfaction scores. Rodríguez et al. (2023) delved into the influence of user experience, hedonic motivation, and habit on user satisfaction, reflected in the positive ratings for general satisfaction and functionality of ChatGPT in Malay. Additionally, De Angelis et al. (2023) emphasized the

importance of a user-centered approach and fine-tuning the model to follow user instructions, enhancing satisfaction and safety, which aligns with the positive user feedback on response quality and satisfaction in this study.

Perceived Net Benefits of Using ChatGPT

Users have positively received the perceived net benefits of using ChatGPT in Malay. As shown in Table 8, users believe that ChatGPT helps overcome limitations in the Malay language, with a mean score of 3.30 (SD = 0.766). Users also think ChatGPT could improve their Malay language skills, with a mean score of 3.27 (SD = 0.784). The enhancement of overall efficiency in communication and tasks due to using ChatGPT in Malay scored a mean of 3.35 (SD = 0.786). Additionally, ChatGPT facilitated easy access to necessary information in Malay and received the highest mean score of 3.43 (SD = 0.711). The overall mean score for perceived net benefits is 3.337 (SD = 0.761), indicating a generally positive perception of ChatGPT's benefits in Malay.

Table 8. Perceived net Benefits of Using ChatGPT

Perceived net Benefits	N	Min	Max	Mean	SD
ChatGPT will help me overcome the limitations of my Malay Language	155	1	5	3.30	.766
Using ChatGPT will cause improvement in my Malay Language	155	1	5	3.27	.784
Using ChatGPT in Malay has enhanced my overall efficiency in communication and tasks.	155	1	5	3.35	.786
ChatGPT facilitates easy access to information I need for my Malay Language	155	1	5	3.43	.711
Valid N (listwise)	155			**3.337**	**0.761**

The findings align with previous studies on the perceived benefits of ChatGPT in language learning and usage. Nugroho et al. (2023) and Nguyen et al. (2024) highlighted the pedagogical benefits of ChatGPT, such as acting as a conversation partner and assisting in the writing process, which corresponds to the high ratings for overcoming limitations and improving language skills observed in this study. Zawiah et al. (2023) and Abouammoh et al. (2023) emphasized ChatGPT's potential in clinical environments for non-English speakers, reflecting the reported enhancement in communication efficiency. Similarly, Boulaid (2024) underscored ChatGPT's role in supporting language learners, improving writing skills, and promoting equitable access to language learning opportunities, which resonates with the high scores for information accessibility and overall efficiency. The positive perceptions observed in this study are consistent with findings by Alm and Ohashi (2024), who explored the impact of ChatGPT on language learning autonomy and students' intentions to use the tool in educational settings. These results also suggest that this model's benefits extend across domains such as academic contexts for enhancing self-learning experiences, professional communication for improving efficiency, and daily interactions for supporting inclusivity and better access to language resources.

Awareness of Matters Involving Ethics and Plagiarism

The study assesses user awareness and perceptions regarding the ethical use and plagiarism concerns associated with ChatGPT in Malay. As shown in Table 9, users rated the alignment of ChatGPT's use with their ethical standards and values with a mean score of 3.14 and a standard deviation of 0.725. Confidence in using ChatGPT without violating ethical standards or plagiarism policies received a mean score of 3.03 (SD = 0.871). Transparency of ChatGPT's responses regarding the source of information was rated at a mean of 3.10 (SD = 0.728). Overall, users believed that ChatGPT's use in Malay language interactions is ethically responsible, with a mean score of 3.19 (SD = 0.672). The overall mean score for awareness on matters involving ethics and plagiarism is 3.115 (SD = 0.749), indicating a moderate level of user confidence in the ethical use of ChatGPT in Malay. These findings reflect the current landscape and the complex relationship between AI and academic integrity in higher education. The moderate scores indicate that while users recognize the boons and benefits of ChatGPT, they are also aware of its ethical implications, echoing the ongoing discussions and struggle in academia regarding the challenges arising from AI-generated content. As this content can evade conventional plagiarism checkers, traditional detection methods are becoming more futile. In addressing these challenges, academic institutions are adopting various approaches operationalized such as via policy updates revisiting what is considered t acceptable practices or not, investment on AI detection tools to identify AI generated content, and rethinking methods of assessments.

Table 9. Awareness of Matters Involving Ethics and Plagiarism

Awareness of Matters Involving Ethics and Plagiarism	N	Min	Max	Mean	SD
The use of ChatGPT in Malay aligns with my ethical standards and values.	155	1	5	3.14	.725
I feel confident using ChatGPT in Malay without violating ethical standards or plagiarism policies.	155	1	5	3.03	.871
ChatGPT's responses in Malay are transparent about the source of information when applicable.	155	1	5	3.10	.728
Overall, I believe that the use of ChatGPT in Malay language interactions is ethically responsible.	155	1	5	3.19	.672
Valid N (listwise)	155			3.115	0.749

The findings are consistent with prior research on the ethical implications and plagiarism concerns associated with AI tools like ChatGPT. Sallam (2023) emphasized the importance of ethical use, copyright, and transparency in academic writing and healthcare education. This aligns with this study's moderate scores for ethical alignment and source transparency. Nafea et al. (2024) highlighted the significance of proper attribution and citation to maintain academic integrity, reflecting the users' moderate confidence in avoiding plagiarism. Basir et al. (2023) and Habiba and Partho (2024) stressed the importance of ethical practices in educational environments to

deter plagiarism, resonating with the overall positive perception of ChatGPT's ethical responsibility. Khalil and Er (2023) and Raman et al. (2024) raised concerns about potential plagiarism and the need to foster original thought, supported by the findings on user confidence and ethical standards.

Discussion

This study evaluated students' perceptions of using ChatGPT as an AI-integrated tool in the Malay language by adopting the Technology Acceptance Model (TAM). Specifically, it assessed system quality, information quality, service quality, use of ChatGPT, user satisfaction, perceived net benefits, and awareness of matters involving ethics and plagiarism. Results revealed that the system quality is also essential for ChatGPT acceptance in learning situations. The reliability dimension is reliable, implying that students find the system robust and depend on it. The users perceived ChatGPT as a quality system that can facilitate their learning through an unobtrusive and user-friendly interface (Ngo, 2023; Turmuzi, 2024). Such a high system quality contributes to AI tools functioning reliably and helps create better student learning conditions. A medium level of reliability characterizes information quality. In terms of Information Quality, This dimension of the information provided by ChatGPT is accurate and relevant to questions with extensive explanations.

According to Shaikh et al. (2023) and Pavlenko and Syzenko (2024), it is significant as it delivers useful and relevant information for educational purposes. While the lowest of those three dimensions in reliability, this is still a positive score, indicating that better quality information may help improve user trust and satisfaction. Service quality is also high, highlighting the excellent reliability of support services and overall experiences ChatGPT provides. This was supported by the work of Alneyadi and Wardat (2023) and Sila et al. (2023), capturing significant evidence regarding Unacademic use cases where most academic centers adopt flipped classrooms. ChatGPT provides a trustworthy service quality, is critical for the continued use and implementation of AI solutions in education. ChatGPT suggests a good level of reliability in measuring how often and well students employ this tool (Zong, 2024). It also offers persona-based learning and feedback.

The moderate reliability score indicates that with the use of ChatGPT among students, optimization for user engagement remains to be done in learning many tasks using the versatile tool. User satisfaction has the highest score among all factors. This corresponds to the general happiness of users using ChatGPT. According to Dung (2024) and Zhang et al. (2024), students are delighted with the personalized feedback and interactive practice of overviews provided in ChatGPT. The high satisfaction levels indicate that ChatGPT effectively meets students' needs, contributing positively to their language learning activities. Perceived net benefits indicate strong reliability in measuring the advantages students perceive from using ChatGPT. As Abdaljaleel et al. (2023) mentions, ChatGPT has excellent advantages, like better communication skills, increased engagement, and interaction. These perceived benefits are significant enough to push students towards adopting and maintaining AI tools over their long-term learning activities. Good reliability is also evident in addressing issues like ethics and plagiarism. An et al. (2023) has highlighted ethical issues as an essential factor for students' effective use of ChatGPT is awareness of ethics and academic integrity.

Based on the result of the study above, the reliability analysis and relevant literature have shown that ChatGPT is a suitable tool in the education sector. ChatGPT has high readability and reliability scores because it works appropriately on several criteria. Based on the result of the study, the student's awareness of perceptions, satisfaction, and ethical aspects allows an institution to use AI more appropriately. Ultimately, continued movement in these directions (along with efforts to strengthen data quality and decrease service reliability issues) could lead to expanded use of ChatGPT in higher education.

CONCLUSION

The study results indicate that ChatGPT has decent system quality for end-user usage in Malay language-based interactions. It was rated highly in several areas, such as ease of use, customization, and satisfaction. Users have noted that ChatGPT is very well designed as it interacts more humanistically, which helps improve the user experience and generate productivity among users. Yet the low accuracy and reliability scores for that system highlight areas that require improvement in providing accurate information.

These results have significant implications for using and developing ChatGPT in multilingual educational settings. Good impressions from the users on the system's quality suggest that ChatGPT could be helpful in various natural language-related tasks, which is a prerequisite for the model to be well-received and applicable. Yet it also underscores the importance of ongoing system accuracy and trustworthiness refinement while continuing to abide by ethical principles through transparency with AI-produced material. In conclusion, the study contributes significant findings on ChatGPT system quality in Malay. It provides evidence that it has the potential to be useful to anyone across various linguistic and professional boundaries.

RECOMMENDATION

The study calls for immediate future research that addresses shortcomings and models weak points to maximize user satisfaction and happiness and ensure better AI technology integration across fields.

Author Contributions

The authors have sufficiently contributed to the study. All authors have read and agreed to the published version of the manuscript.

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Conflict of interests

The authors declare no conflict of interest.

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