A STUDY ON USER TRUST AND PERCEPTION TOWARDS AI-POWERED VIRTUAL ASSISTANTS

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Abstract

AI-powered virtual assistants that offer consumers real-time help and information, like Siri, Alexa, and Google Assistant, have grown more and more ingrained in daily life. Even with broad adoption, user trust continues to be a crucial determinant of usage. This study examines how user trust relates to important variables, including perceived reliability, perceived Intelligence , and privacy concerns. 50 respondents participated in a quantitative study design, and information was gathered via a structured questionnaire. Percentage analysis and correlation coefficients were used for analysis. The results show that while privacy issues significantly reduce user trust, perceived intellect and dependability have a high and positive correlation with user trust.

Key Words: User trust, perceived reliability, perceived intelligence, privacy concerns, user perception.

Introduction

Virtual assistants with AI powered features, like Siri, Alexa, and Google Assistant, have quickly become ingrained in people's daily lives and aid with everything from reminders to sophisticated question answers. By using language processing algorithms and artificial intelligence to provide individualized, real-time help, these assistants increase accessibility to technology.

Even with their widespread use, consumer trust is still a key determinant of AI virtual assistant adoption and usage. Because virtual assistants frequently access and handle sensitive personal data, trust is a key factor in determining whether users feel comfortable depending on these systems. This first is greatly influenced by the user's view of the assistant's dependability, usability, intelligence, and privacy protection.

This study investigates the relationship between user trust in virtual assistants based on AI and these perceived characteristics. It seeks to determine which characteristics have the most effects on trust by using quantitative analysis, and it offers suggestions for improving artificial intelligence design and customer satisfaction. Developers and organizations looking to increase the efficacy and adoption of AI-driven solutions must comprehend these dynamics.

Review of Literature

Trust is essential for the acceptance of AI-powered virtual assistants like Alexa and Siri, which have revolutionized user-technology interaction.

Trust in automation, which is essential for AI assistants, is defined by Lee and See (2004) as the readiness to depend on a system in the face of ambiguity. According to Hoff and Bashir (2015) and Lankton et al. (2015), perceived competence, dependability, and honesty are important factors that influence trust.

User trust is significantly influenced by perceived dependability, or the accuracy and consistency of the system (Merritt et al., 2013; Jian et al., 2000). According to Davis's (1989)

Technology Acceptance Model, ease of use also influences adoption and trust; Xu et al. (2019) have confirmed the significance of ease of use in virtual assistants.

User confidence is raised by perceived intelligence, or the assistant's capacity to comprehend and react appropriately (Luger & Sellen, 2016; Castelo et al., 2019). Nonetheless, privacy issues continue to be a significant obstacle to trust; Jensen and Potts (2004) draw attention to anxieties about data exploitation, while Beldad et al. (2011) suggest that transparency can help allay these concerns.In conclusion, trust in AI virtual assistants is greatly influenced by intelligence, privacy concerns, ease of use, and dependability. This study aims to investigate how they interact to affect user perception and trust.

Statement of Problem

Virtual assistants powered by AI are becoming more and more popular, just consumer perception and trust are still uneven. Although earlier research has looked at individual traits involving perceived intelligence, privacy concerns, cleanliness of use, and reliability, nothing has looked at how these factors work together to affect user confidence. A thorough knowledge of the factors influencing consumer acceptance and sustained usage is hampered by this gap. Thus, the purpose of this study is to examine how these important variables work together to affect user perception and confidence in AI-powered virtual assistants.

Scope of the Study

This study examines how users view and trust virtual assistants powered by AI like Google Assistant, Alexa, and Siri. It looks at the impact of important factors such perceived intellect, simplicity of use, perceived dependability, and privacy issues. Data will be gathered via a structured questionnaire, and the study is restricted to those who have previously used AI virtual assistants. Through correlation and descriptive analysis, the study seeks to provide light on the relationship between these variables and total user trust. It is expected that the results would aid academics, developers, and marketers in better understanding consumer expectations and enhancing the functionality and design of AI assistants.

Objectives of the study

- To investigate the relationship between perceived reliability, ease of use, perceived intelligence, and privacy concerns with user trust in AI-powered virtual assistants.
- To evaluate the overall level of trust and perception users hold toward AI-powered virtual assistants.

Research Methodology
Research Design

This study adopts a quantitative research design to examine the relationship between perceived reliability, ease of use, perceived intelligence, privacy concerns, and user trust toward AI-powered virtual assistants. The design is correlational in nature, aiming to explore how these factors influence user trust and perception.

Population and Sampling

The target population includes individuals who have prior experience using AI-powered virtual assistants such as Siri, Alexa, or Google Assistant. A convenience sampling technique will

be employed to select a sample of 50 respondents, all of whom must be regular users of virtual assistants to ensure relevance and reliability of data.

Data Collection
Data sources for the study include primary and secondary sources.

Primary Data
Primary data collected using a structured questionnaire. The questionnaire is designed to evaluate the Perceived reliability, Ease of use, Perceived intelligence, Privacy concerns, User trust. Additionally, demographic information (such as age range, occupation, and frequency of virtual assistant usage) will also be collected.

Secondary Data
Pre-existing information that has been collected for a purpose other than the current research endeavor is referred to as secondary data. Secondary data for this study came from a variety of sources, including websites, publications, journals, and research.

Limitations of the Study
- Due to limitations on time, the study was restricted in scope, and a thorough investigation was not possible. The sample size is small (only 50 respondents), so results may not represent all users.
- Convenience sampling could create bias and hinder the results' applicability to other groups.
- Customer preferences are subjective and may change over time, affecting the reliability of long-term conclusions

Tools used in this Study
- Percentage Analysis
- Correlation Coefficient

Percentage Analysis

Particulars	Classification	Frequency	Percentage
Gender	Male	31	62%
	Female	19	38%
	Total	**50**	**100%**
Age	Under 18	3	6%
	18-24	19	38%
	25-34	15	30%
	35-44	7	14%
	45-54	5	10%
	55 Above	1	2%
	Total	**50**	**100%**
Education	Less than high school	1	2%
	High school diploma	4	8%
	UG	30	60%
	PG	15	30%
	Total	**50**	**100%**
Occupation	Student	12	24%
	Self Employed	6	12%
	Private Job	27	54%

Particulars	Classification	Frequency	Percentage
	Govt Job	3	6%
	Unemployed	2	4%
	Total	**50**	**100%**
purpose for using AI-powered virtual assistants:	Information search	25	50%
	Setting reminders/alarms	2	4%
	Entertainment (music, podcasts)	3	6%
	Communication (messages, calls)	5	10%
	Shopping/purchases	9	18%
	Other	6	12%
	Total	**50**	**100%**

Statistical Analysis

Correlation Analysis

H1: There is a positive correlation between perceived reliability and user trust.

H2: There is a positive correlation between user trust and ease of use.

H3: There is a positive correlation between user trust and Perceived intelligence.

H4: There is a positive correlation between user trust and privacy concerns.

Level of Significance: 0.05

Variable	Correlation Coefficient	Interpretation
Perceived Reliability- user trust	0.92252	Positive Correlation
Ease of use - user trust	0.93821	Positive Correlation
Privacy Concerns- user trust	-0.83139	Negative Correlation
Perceived Intelligence - user trust	0.922614	Positive Correlation

Source: Primary Data

Findings

- The majority of users (50%) primarily utilize AI-powered virtual assistants for information retrieval, which stands as the most prevalent use case.
- A strong positive correlation (0.92252) exists between perceived reliability and user trust, suggesting that as users view the AI assistant as more dependable, their trust in it markedly increases.
- Ease of use and user trust have a very strong positive connection (0.93821), indicating that people are more likely to trust AI assistants when they think the system is easy to use
- User trust and privacy issues have a substantial negative correlation (-0.83139), indicating that users are less likely to trust AI-powered virtual assistants when privacy worries are higher.

Suggestions

- Since customers between the ages of 18 and 34 make up the bulk of AI assistant users, create marketing campaigns and features exclusively for them.
- To promote adoption among older persons user interfaces should be made simpler and digital literacy tools should be made available
- Create AI features that are suited to the requirements of private sector workers, who account for more than half of the user base.

- Increase trust by implementing security and transparency measures, paying particular attention to privacy issues, which have a detrimental effect on user trust.
- Since user trust is closely linked to both branding and communication, highlight the AI assistant's intelligence and dependability.
- To boost participation in these underrepresented groups, think about creating unique features or assistance for independent contractors and government employees.

Conclusion

This research concludes that user trust and perception toward AI-powered virtual assistants are significantly influenced by age, education, occupation, and psychological factors such as perceived reliability, intelligence, and privacy concerns. This suggests that acceptance of AI is significantly influenced by educational background and technological familiarity. Additionally, the main user groups are students and employees in the private sector, which reflects the academic and practical advantages these tools provide.

Users are more willing to interact with AI systems they believe to be capable, according to a strong positive association found between trust and perceived intelligence and reliability. High privacy concerns, on the other hand, undermine confidence and highlight the necessity of strong data protection. Developers must place a high priority on user-friendly design, transparency, and inclusive access for all demographics in order to encourage wider adoption and more confidence.

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