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What Factors Affect Consumers' Trust in AI?

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Abstract. With the widespread application of artificial intelligence (AI) in fields like online shopping, digital education, communication, and entertainment, it has greatly facilitated users' decision-making. However, it also brings social and ethical challenges, among which consumer trust in AI is a prominent issue—consumers are concerned about privacy protection, algorithm normal operation, and the fairness and transparency of AI outputs. This study adopts a combination of theoretical and empirical methods to explore the factors influencing consumers' trust in AI. An anonymous survey was conducted with 80 predominantly young, educated, and AI-familiar respondents. The results show that consumers' trust in AI is multi-factorial, with privacy, personalization, and reliability being the core influencing factors. Additionally, consumer spending habits (e.g., higher trust among frequent digital service users than offline-dependent groups) and AI technical attributes (e.g., authoritative professionalism and recommendation authenticity) also impact trust. Younger and more technology-educated users tend to have higher trust in AI, while the lack of privacy, personalization, or reliability will lead to low consumer trust, restricting AI's acceptance and market success. This study aims to contribute to discussions on the ethical application of AI, provide references for enterprises to develop trusted AI products, and support the formulation of user rights protection policies.

Keywords: Artificial Intelligence (AI), Consumer Trust, Privacy Protection, Personalization, Reliability

1. Introduction

The appearance of AI has completely changed the digital world, as now online shopping, e-learning, chat programs, and streaming are elements of our daily routine. With the current availability of AI to a large number of people, it goes without saying that this digital update, in general, has simplified decision-making to a great extent. However, this major change has also led to new evidence, particularly social and ethical issues that influence the consumer's choice. Trust is one of the significant issues when it comes to using AI: buyers keep asking if AI saves their privacy or if the algorithm is working, and they would like to know if the result or decision AI made is fair and transparent. Many cases and studies regarding trust in the AI marketplace have been published. One

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of the strongest cases is that one lawsuit settlement that accused Siri of eavesdropping on people and recording their conversations [1]. This case garnered a broad range of media attention in early 2025, and it raised consumers' attention regarding Siri's use of voice recordings worldwide. This case and discussions around the role of technology today have been noticed in China and elsewhere. Consumers have given their attention to their rights regarding privacy and risks from technology. To this extent, it should be said that the problem of trust in AI is not simply a technical problem regarding AI services. If there were no trust, it would limit the advantages that the technology offers its users and businesses because people would not use certain AI in the future if they had problems with the past one. Previous research surrounding the subject has pointed out the importance of both customer behavior and data privacy in terms of artificial intelligence towards building trust. Users of online shopping or mobile banking software have more trust in AI than other users from departments and cashing systems. Talking about artificial intelligence, it has been mentioned that privacy protection, personalization, and reliability seem to be the most crucial features of AI [2,3]. In this project, a theory-based approach will be used regarding both theoretical and empirical sides, which will help identify in which way privacy, personalization, and reliability affect consumer trust in AI. Based on the results of the anonymous survey held, the following three criteria have been established regarding trust in AI. This project would contribute to the debate surrounding the ethical use of artificial intelligence technology and become particularly beneficial for companies that want to develop a trusted product from AI. In addition, this paper has the aim of contributing to high-level policy strategies that support and protect the rights of users. The correlation between the news cases about public privacy and our survey results shows that there are no links to trust issues in AI that are not related to privacy, personalization, or reliability. This will limit the adoption and success of AI in the marketplace.

2. Literature review

Consumer trust in Artificial Intelligence (AI) is influenced by multiple dimensions, which can be analyzed from the consumer dimension and the AI technology dimension. From the consumer dimension, first, there is the impact of consumer spending habits. The group that has long relied on offline manual services (such as the middle - aged and elderly) has a 37% lower trust in e - commerce AI recommendations than young people and finds it difficult to accept the "non - interpersonal interaction" mode [4,5]. Consumers who frequently use digital services such as mobile payment have a 28% higher AI trust than low - frequency users. This feature is more prominent in Generation Z, and the "digital consumer habits index" is positively correlated with AI trust [6]. Secondly, there is the role of personalized recommendation accuracy. The matching degree between AI recommendations and consumer needs directly determines the level of trust. A high matching degree significantly improves trust, while a low matching degree makes consumers have the cognition that "AI is useless", leading to a sharp drop in trust. The Amazon case shows that a decline in recommendation relevance will cause user churn, and trust can be restored after optimizing accuracy [6]. However, if excessive personalized recommendations touch the implicit preferences that consumers have not explicitly expressed, it will arouse concerns about privacy violations and reduce trust instead. Therefore, a balance needs to be sought between recommendation accuracy and boundary control [6].

From the AI technology dimension, on the one hand, there is the impact of authoritative technology professionalism. The authority of AI can build trust by reducing information asymmetry, which is reflected in two aspects: First, the suggestions provided by AI need to be supported by authoritative literature or empirical data. For example, medical AI refers to professional guidelines

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and recommends products with real reviews, which can enhance consumer trust [6]. Second, the qualifications of AI development entities are crucial. AI developed by universities or authoritative enterprises is more likely to gain trust than AI developed by unknown entities, especially in important scenarios such as finance and medical care [6]. However, generative AI has the problem of "hallucination", which can forge literature and data and cause consumers to misjudge its professionalism, posing new challenges to the verification of AI authority [6]. On the other hand, there is the role of product recommendation authenticity. Authenticity is the key to maintaining AI trust. The damage to trust caused by false advertisements is difficult to repair. For example, AI recommendations of false products will greatly reduce user trust, and even if improved later, trust recovery is very slow [6]. Transparency is the core means to ensure authenticity. For example, AI actively explains the interest relationships in recommendations or traces information sources through technical means, which can enhance consumer trust [6]. However, the current AI data forgery has formed an industrial chain, bringing dual challenges at the technical and regulatory levels to the guarantee of authenticity [6].

2.1. Research design

This study investigates AI products, and the questionnaire design is guided by the research objectives, covering dimensions such as the impact of consumer habits on AI trust, the impact of personal information security on AI trust, and the impact of the matching degree between AI recommendations and needs on trust [6]. The questionnaire constructs two core modules: "Basic Situation" and "Usage Habits", which fully cover consumers' personal characteristics and attitudes towards the use and trust of AI products [6]. Among them, the "Basic Information" module contains 5 questions, involving gender, age, educational background, cultural background, and adaptability to new technologies [6]; The "Usage Habits" module includes 9 questions about the frequency of using AI products/services and 8 attitude - related questions around the influencing factors of AI trust [6].

In the questionnaire distribution and recovery process, a total of 80 questionnaires were distributed in this study, and all of them were recovered, providing basic data support for the subsequent analysis of the influencing factors of consumers' trust in AI products [6].

3. Survey analysis report on AI trust and usage

This report presents the analysis of a survey (N=80) focusing on AI adoption, usage habits, and trust factors. The objective is to extract meaningful insights regarding user demographics, technology adaptation, frequency, and scenarios of AI use, as well as perceptions and determinants of trust in AI systems.

3.1. Demographics

- Gender: 69% female, 31% male.
- Education: 61% have a bachelor's degree or higher.
- Background: 91% from urban backgrounds, 19% with rural roots, 10% with overseas study/work experience.

3.2. Technology adaptation and usage

- Adaptation: 55% adapt very quickly to new technologies, and 41% adapt moderately fast. Only 3 participants reported slow or difficult adaptation.

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- Frequency: 34% use AI multiple times a day, 21% use AI once or twice daily, while 10% reported almost never using AI.
- Usage Scenarios (multi-select): Education (71%), Work/Office (66%), Shopping/Consumption (44%), Entertainment (36%).

3.3. Charts on usage and adaptation

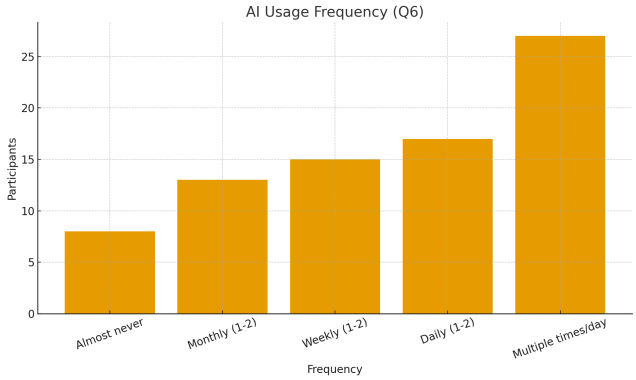


Figure 1. AI usage frequency (Q6)



Figure 2. AI usage scenarios (Q7)

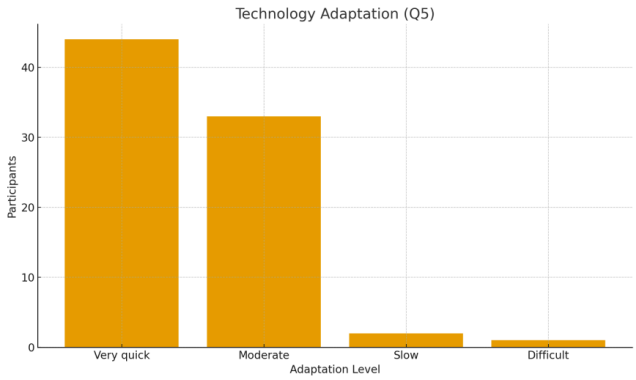


Figure 3. Technology adaptation (Q5)

Trust Factors in AI (Q8–Q14)
Participants rated statements on a 1–5 Likert scale. Key findings include:

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- Comprehensive technical capability drives trust the most (mean ≈ 4.0, 72.5% agreement).
- Accurate recommendation matching encourages trust (mean ≈ 3.86, 78.8% agreement).
- Non-deviation from user needs builds confidence (mean ≈ 3.83, 73.8% agreement).
- Data privacy protection enhances trust (mean ≈ 3.82, 70.0% agreement).
- Overall factors combined also increase trust (mean ≈ 3.92, 73.8% agreement).
- AI authenticity compared to human service is less convincing (mean ≈ 3.53, 52.5% agreement).

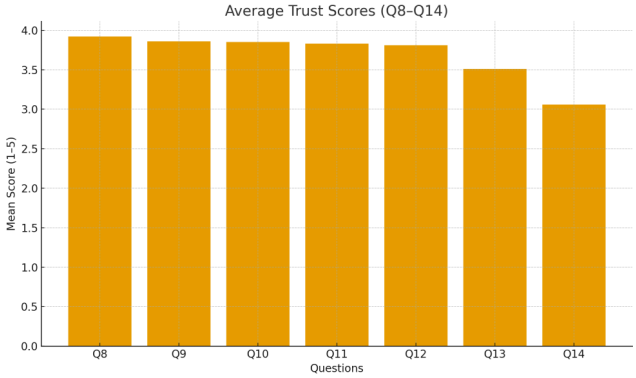


Figure 4. Average trust scores across Q8–Q14

4. Key insights and recommendations

(1) Heavy daily users (55%) highlight the need to optimize experiences for frequent learners and office workers.

(2) Personalization and demand consistency are crucial to building stronger trust.

(3) Comprehensive AI capability should be clearly communicated and demonstrated via feature packages and case studies.

(4) Privacy remains a baseline trust factor; transparent and controllable privacy measures are recommended.

(5) Compared to human customer service, AI still lacks strong perceived authenticity; improvements in traceability, source citation, and consistent behavior may help close this gap.

5. Conclusion

The inconsistency in AI's behavior will most likely cause loss of trust from its users. This research has shown that customers' trust in AI is multifactorial and points out the importance of three parts in dealing with AI: privacy, personalization, and reliability. The abovementioned three characteristics of AI determine how people expect AI technology in a variety of aspects and how they wish to use AI instruments. Our anonymous survey demonstrated that 67.5% of all survey answers trust AI technology efficiently because they think that the information they give is safe with AI, while 78.75% of survey responders completely agree that AI technology will only be trusted if it results in personal-related results that are useful for someone. In addition, 73.75% of all survey responses completely agree that people will only trust AI if the results shown are accurate and efficient; otherwise, people would lose their trust in AI technology and never use it again. However, surprisingly, people who use voice AI and make purchases online most likely tend to use this technology and trust it, even though it does not show respect for people's privacy and cannot satisfy users' needs and preferences. This means that there is no question about whether AI gets the job done, and people trust their purchases in the future whenever they need to buy things again. In this

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research, it has been shown that people tend to expect AI technology to do things differently. If AI technology does not meet expectations, people will lose confidence in their data being used. It can be argued that all failures in the background of AI that involve inappropriate results, wrong information, and fictional use of customer data are the major aspects that cause AI rejection. It has been proven that trusting someone is hard to gain but easy to lose, and AI is the latter unless it does anything rationally and correctly. In addition, technology education also matters, and people who are young and educated have more trust in technology.

This means that trust in AI technology relies on the amount and type of experience individuals have had when using it. Therefore, it is obvious that respectfully creating reliable and trusted products with AI cannot be broken by any company that works in this area. They need to pay certain amounts of resources to collect data for AI to reach customers worldwide without losing trust. Overall, it does not matter the age or education a person has; they expect the AI technology to use certain data with respect and generate the results that have an intimate connection to the user who has given it. Users lose trust in AI if it does not have privacy, personalization, and reliability. In contrast to this idea, users today should expect that the instruments they use will help them to benefit from the information they have and save time.

It can be noted that survey results show positive consumer attitudes towards using AI technologies, indicating frequent daily interaction, high levels of trust, and primary influences of personalization and privacy, along with technical sophistication and alignment with user preferences. Therefore, it is important to enhance authenticity compared to human services, as this remains a key area for improvement and complements the overall positive perception of AI.

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