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An analysis of the Impact of Text-based AI Chatbot on Consumer Purchase Intentions in Online Shopping Platforms

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Abstract

Background and Aim: The rapid development of digital technology and the widespread use of the internet were emphasized, leading to a profound transformation in traditional consumer markets. Online shopping, as an emerging consumption method, has become a crucial component of modern society. E-commerce platforms, serving as key connection points between consumers and products, directly influence consumer shopping behavior, especially in terms of purchase intention. With the increasing number of online platform users and diverse service demands, traditional manual customer service faces numerous challenges, such as long response times, high costs, and inconsistent service quality. Therefore, text-based intelligent customer service systems, as an emerging solution, have gained growing attention. Based on the Technology Acceptance Model, Social Presence Theory, and Stimulus Organism Response, there is much research on the impact of intelligent customer service systems on user experience and satisfaction. Limited research exists on an in-depth exploration of how the systems specifically influence the consumer's purchasing decision-making process. This study investigates how text-based intelligent customer service systems influence consumer purchase intentions on e-commerce platforms.

Materials and Methods: This research is a quantitative design using a questionnaire to collect data from the users of e-commerce platforms, aged 18 and above, who have had online shopping experiences in the past six months. The survey questionnaires were distributed offline to the target population. The study was conducted through the collection of raw data, utilizing a quantitative research approach. Descriptive statistics, such as percentages, frequencies, mean scores, and standard deviations of responses to Likert scale items, were employed to summarize and interpret the data. Furthermore, Structural Equation Modelling (SEM) was utilized to examine the relationships among variables, test the hypotheses, and analyze mediation effects. This methodological approach ensured a rigorous and comprehensive analysis of the data, providing robust insights into the research questions.

Results: Perceived ease of use, perceived usefulness, social presence and positive emotional connection significantly and positively impact the purchase intention. Perceived trust and information quality have already played a mediating role in increasing purchase intention.

Conclusion: By incorporating this perceived usefulness, perceived ease of use, social presence, positive emotional connection, perceived trust, and information quality-intelligent customer service designs can significantly improve consumer purchase intentions. This study offers valuable insights for the intelligent customer service design industry. This study has created a new theoretical framework and provided new marketing methods for e-commerce platforms, which can effectively promote the purchase intention.

Keywords: Perceived ease of use; Perceived usefulness; Social presence; Positive emotional connection; Perceived trust; Information quality; Purchase intention

Introduction

By analyzing consumer shopping habits and preferences, intelligent customer service can provide a more personalized shopping experience, increasing consumer satisfaction and loyalty (Bjerregaard, Zhao, 2024). The development of Artificial Intelligence (AI) is transforming consumer shopping experiences, especially in online shopping platforms. Cloud computing technology has made the deployment and maintenance of these systems easier and more cost-effective (Stolpe, Hallström, 2024). When exploring the specific impact and mechanism of intelligent customer service systems, several key studies provide valuable insights. For instance, the research delves into the influence of anthropomorphized humanoid images in intelligent customer service on consumers' intentions, especially following service failures (Yao et al., 2023). The initial response to intelligent customer service affects consumers' continued interaction intentions (Cheng et al., 2024).

Although previous research has explored the impact of intelligent customer service systems on

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user purchase intention, While prior studies have examined the effects of intelligent customer service on other aspects of consumer behavior, there is still a need for an in-depth exploration of how these systems specifically influence the consumer's purchase intention within the context of e-commerce.

Objectives

The study seeks to examine the impact of text-based AI chatbots on purchase Intentions in online shopping platforms. Specifically, guided by the research model, the study will examine the influence of the four factors, such as perceived ease of use, perceived usefulness, social presence, and positive emotional connection, to purchase intention, with perceived trust and information quality serving as potential mediators.

Literature review

In terms of theory

The Stimulus-Organism-Response (SOR) theory delves into the psychological mechanisms of behavior through the interaction of stimuli (S), organisms (O), and responses (R) (Mehrabian, A., & Russell, J. A. 1974). The research studies the influencing factors of the continuous purchase intention of fashion products in social e-commerce based on the SOR theory (Tian, et al. 2022). They found that social media interactivity has a significant impact on perceived value (Gan & Lin, 2018), immersive experience (Song et al., 2019), and continuous purchase intention (Tian et al., 2022). Their research underscores the importance of creating sensory-rich retail environments to influence consumer behavior effectively (Zhang, Wang,2023). Similarly, it investigated the impact of online reviews as stimuli on consumer emotions and subsequent purchase decisions. Their findings reveal that positive online reviews elicit favorable emotional responses, thereby increasing purchase intentions (Li et al.,2023). Another study explored the role of augmented reality (AR) in e-commerce, using the SOR framework to demonstrate that AR features serve as effective stimuli, enhancing consumer engagement and emotional connection with the product, which in turn boosts purchase intentions (Chen et al., 2023). Moreover, the work highlighted the influence of social media content as a stimulus on consumers' cognitive and emotional states, leading to higher engagement and purchasing behavior (Kim et al. 2022). These studies collectively illustrate the versatility of the SOR theory in various contexts and emphasize the critical role of both sensory and informational stimuli in shaping consumer responses.

The Technology Acceptance Model (TAM), introduced by Davis (1989), is a foundational framework for understanding users' adoption of technology. TAM posits that perceived usefulness (PU) and perceived ease of use (PEU) are primary determinants of technology acceptance. Recent studies have further refined and expanded TAM to accommodate the evolving technological landscape. For instance, it extended TAM by integrating trust and user experience as critical variables influencing technology acceptance in e-commerce platforms (Venkatesh, Bala 2022). The findings indicate that trust significantly enhances PU and PEU, thereby increasing overall user acceptance. Similarly, it applied TAM to analyze the adoption of mobile health applications (Smith et al., 2023). They found that while PU and PEOU remained critical, the perceived adaptability of AI systems also played a significant role in influencing teachers' and students' willingness to adopt these technologies (Chen, 2023). This suggests a need for flexible AI solutions that can cater to diverse user needs and preferences. Their research underscored the importance of organizational support and perceived security in shaping PU and PEU, thereby affecting overall technology adoption rates. They recommended that organizations invest in robust security measures and provide adequate training to enhance technology acceptance (Zhao et al., 2022). Overall, these recent studies illustrate the continued relevance and adaptability of TAM in various contexts, emphasizing the model's utility in understanding and predicting technology adoption behaviors.

In terms of factors influencing purchase intention in online shopping

The study discovered that trust propensity not only indirectly affects purchase intention through perceived ease of use and usefulness but also directly and positively influences purchase intention (Pavlou, 2003). The study provides a theoretical foundation for understanding how users perceive the ease of interaction with customer service robots. Through these measurement items, it is possible to effectively assess users' perceptions of the ease of operating customer service robots, thereby gaining a deeper understanding of their impact on users' willingness to continue using them (Chen& Xiong, 2023). The study provided a deeper understanding of consumers' perception of the usefulness of customer service robots can be gained, subsequently analyzing its impact on users' willingness to continue usage (Oghuma et al., 2016; Chen& Xiong, 2023). Social presence refers to the extent to which an individual perceives the presence of others in the interaction process. In the context of online customer service,

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this is often manifested as consumers feeling that they are interacting with a real, responsive entity. The study assesses the effectiveness of intelligent customer service systems in simulating human interaction and how these traits influence user satisfaction and loyalty (Gefen & Straub, 2003). Positive emotional connection involves the positive emotional bond established between consumers and a brand or service. It explores whether consumers feel a connection with the brand as if it were an old friend or emotional connection and whether they perceive the brand as fun, exciting, and enjoyable (Delgado-Ballester et al. 2012; Batra et al., 2012).

In terms of perceived trust and information quality

In the context of online shopping, perceived trust becomes a crucial factor influencing consumer purchase intention. A model shows that consumers' trust propensity significantly and positively influences their purchase intention (Du et al., 2016). The research discovers that perceived cognitive trust and affective trust in suppliers have a significantly positive impact on purchase intention for technological services (Li et al., 2019). The study further emphasizes that consumers' perceived trust in e-commerce platforms significantly influences their purchase intention, and this influence is achieved through perceptions of product quality and platform heuristic cues (Bao et al., 2019). The study reveals the positive impact of information quality on consumer perceptions of usability and satisfaction, which can translate into purchase intention (Delone & Mclean, 1992). Results on mobile banking systems indicate a significant impact of information quality on user satisfaction, which can promote users' continued use of the service (Zhang et al, 2009). Studies also point out that information depth and completeness positively affect consumer satisfaction (Yan et al., 2012). These studies collectively highlight information quality as an important factor influencing consumer purchase intention.

In terms of purchase intention

Purchase intention, a critical construct in consumer behavior research, has been extensively studied to understand the factors influencing consumers' decision-making processes. Additionally, research highlights the role of trust and perceived risk in shaping online purchase intentions (Pavlou and Fygenson,2006). Studies also emphasize the impact of emotional and cognitive responses, noting that positive emotions and perceived ease of use significantly enhance purchase intentions in e-commerce contexts (Kim and Lennon,2013). Moreover, consumer characteristics, such as technological apprehension and social influences, further modulate purchase intention (Gefen, Karahanna, & Straub, 2003). Recent studies have advanced the understanding of purchase intention in the digital age. It has been found that social media engagement significantly influences purchase intention through enhanced brand trust and perceived value (Yang et al., 2022). Similarly, the study has highlighted the role of augmented reality in e-commerce, demonstrating that immersive experiences boost consumer purchase intentions by increasing perceived enjoyment and product knowledge (Wang and Tsai,2023). While prior research has examined various factors influencing purchase intention, there is limited understanding of how the specific combination of factors related to intelligent customer service (e.g., ease of use, social presence, trust) collectively impact purchase intention in the context of AI chatbots on e-commerce platforms.

Conceptual Framework

Definitions of variables

Perceived Ease of Use (PEU): It is a crucial variable in the Technology Acceptance Model (TAM). As discussed by Davis in his exploration of TAM, PEU refers to the extent to which individuals believe that using a certain technology would enhance their productivity（Davis，1989）. When a system or service is perceived to be simpler and more enjoyable to use, users develop a more positive attitude towards it, considering it useful, and believing that employing this technology will enhance their experience.

Perceived Usefulness (PU): Perceived usefulness can be defined as the degree to which an individual believes using a specific system will enhance their performance or achieve their goals. It is a user's subjective perception of the ease or difficulty of operation in using a particular product, system, or service. (Davis, 1989)

Social Presence (SP): Social presence is the salience of others' existence and the degree of interpersonal interaction within a medium (Short et al., 1976).

Positive Emotional Connection (PEC): Positive emotional connection refers to a positive, healthy, and supportive emotional relationship established between individuals.

Perceived Trust (PT): Perceived trust typically refers to the level of trust users have in an

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information system, online service, or provider. This trust is based on users' perceptions of the reliability, integrity, capability, and benevolence of the system or service provider (McKnight, Choudhury, and Kacmar, 2004).

Information Quality (IQ): Information quality refers to the suitability, accuracy, completeness, timeliness, and reliability of information. High-quality information should be correct, complete, timely, relevant, and provided in a manner that is easy to understand and use (Van der Pijl,1994).

Purchase Intention (PI): Purchase Intention is a widely used concept in the fields of marketing and consumer behavior. The research defines purchase intention as a psychological inclination and desire of customers to maintain long-term relationships with the business and a tendency to engage in transactions (Chen,2003). It is defined as the consumer's likelihood or willingness to purchase a product or service after interacting with the AI chatbot.

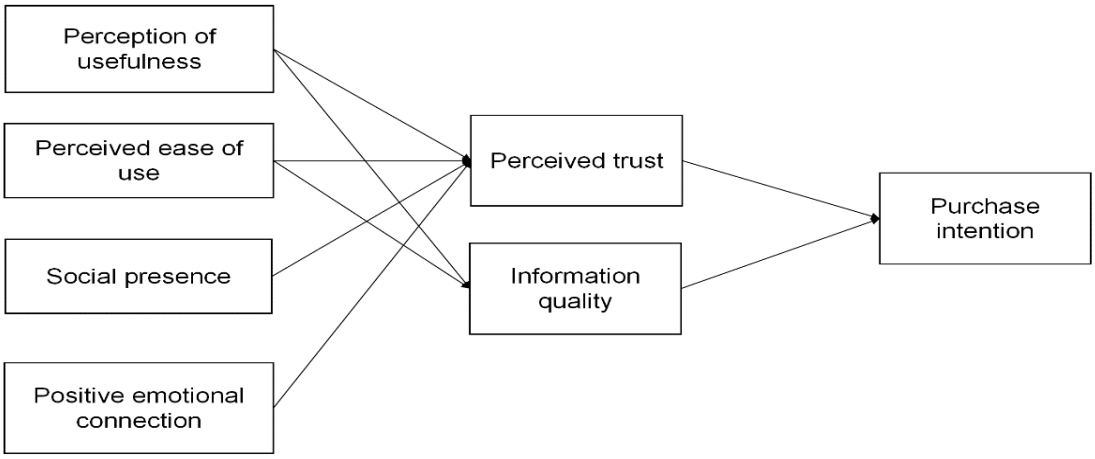
Research Conception Framework

Based on Stimulus-Organism-Response (SOR), the study picks perceived ease of use, perceived usefulness, social presence, and positive emotional connection as the independent variable for Stimulus. The study picks perceived trust and information quality as the mediating variables for Organisms. The study picks purchase intention as the dependent variable for Stimulus.

Based on the Technology Acceptance Model (TAM), the study creates a research route from perceived usefulness, perceived ease of use, social presence, and positive emotional connection to perceived trust in purchase intention.

The relationship between them is in Figure 1.

Table 1 Research Conception Framework



Theoretical hypothesis

According to the research of the literature review, based on the relationship between independent variables, mediator variables, and dependent variables, the study hypothesizes as follows:

H1a: The perceived usefulness of AI chatbots significantly influences customers' perceived trust.

H1b: The perceived usefulness of AI chatbots significantly influences customers' information quality.

H2a: Perceived ease of use of AI chatbots significantly influences customers' perceived trust.

H2b: Perceived ease of use of AI chatbots significantly influences customers' information quality.

H3: The social presence of AI chatbots significantly influences customers' perceived trust.

H4: The positive emotional connection of AI chatbots significantly influences customers' perceived trust.

H5: Perceived trust significantly influences customers' purchase intentions.

H6: Information quality significantly influences customers' purchase intentions.

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H7: Perceived usefulness and perceived ease of use significantly influence purchase intention through their impact on perceived trust and information quality.

H8: Social presence and Positive emotional connection significantly influence purchase intention through its impact on perceived trust.

Methodology

Collect samples

Since the size of the target population of this study is difficult to define in actual size, thus the formula of Cochran is chosen for calculating the sample size used in the quantitative analysis. With a 95% guarantee level and a 5% margin of error allowed, the actual sample size was expected to be 385. Considering issues such as questionnaire screening, this research plans to collect about 400 questionnaires.

To avoid potential misunderstandings stemming from individuals' varying perceptions of the study design, this research employs non-probability sampling, specifically non-repetitive convenience sampling. Convenience sampling is a form of non-probability sampling where sample selection is based on convenience and accessibility. To ensure data quality, strict screening criteria have been set: deleting incomplete questionnaires, highly repetitive answers such as the vast majority of answers are the same number, questionnaires completed in less than 5 minutes, questionnaires with too many neutral options such as the majority of answers are 4 or 5.

The research collected sample data both online and offline. Based on the main focus of the research, items were adapted from existing scales, and designed around 8 hypotheses related to 7 variables, resulting in the final formation of the survey questionnaire. In this study, a questionnaire was designed to assess users' experiences and attitudes towards chatbots. The questionnaire encompasses several important dimensions, including perceived usefulness, perceived ease of use, social presence, positive emotional connection, perceived trust, information quality, and purchase intention. Maturity scales are selected for all variables. The questionnaire consists of 33 items, following the 7-point Likert scale (Likert, 1932). The primary research method employed was a questionnaire survey passed STIU-HREC062/2024 certified. A total of 451 questionnaires were distributed in this survey. After excluding 26 invalid samples, 425 valid questionnaires were obtained, resulting in an effective response rate of 94%.

Common Method Bias

Common method biases (CMB) refer to the artificial covariance between prediction variables and criterion variables caused by the same data source, the same measurement environment, project context, and project characteristics. In this study, the anonymity and confidentiality of questionnaires are emphasized, and the data are limited to research, to control the sources of common method biases as much as possible. However, because all the topics are measured by the scale and collected in the same place, it is necessary to test the common method biases.

Harman's single-factor test is the most commonly used one in the common method biases test. Harman's single-factor test (Harman, 1960) uses exploratory factor analysis, in which all variables are loaded into one factor and constrained, so there is no rotation (Podsakoff et al., 2003). This new factor is usually not in the researcher's model; It is only used for this analysis and then discarded. If the newly introduced common potential factor explains more than 50% of the variance, there may be common method biases (Harman, 1960). The result is shown in Table 2.

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Table 2 Variance Explained Rate

NO.	Eigenvalue	Eigenvalue		Variance explained rate before rotation			Variance explanation rate after rotation		
		Variance Explained Rate Before Rotation (%)	Cumulative (%)	Eigenvalue	Variance Explained Rate Before Rotation (%)		Cumulative (%)		Eigenvalue
PU	10.997	33.324	33.324	10.997	33.324	33.324	3.049	9.240	9.240
PEU	3.442	10.431	43.755	3.442	10.431	43.755	6.016	18.230	27.470
SP	2.321	7.034	50.789	2.321	7.034	50.789	3.619	10.968	38.438
PEC	2.155	6.530	57.319	2.155	6.530	57.319	3.034	9.195	47.633
PT	1.935	5.863	63.182	1.935	5.863	63.182	2.984	9.043	56.677
IQ	1.752	5.310	68.492	1.752	5.310	68.492	3.017	9.144	65.820
PI	1.463	4.433	72.925	1.463	4.433	72.925	2.345	7.105	72.925

Using Harman's single factor test method to examine whether a single factor explains the vast majority of variance. Exploratory Factor Analysis (EFA) was conducted on the sample data of this study using SPSS26 software, and principal component analysis was used to obtain seven factors with eigenvalues greater than 1. From the table, it can be seen that the first factor explains 34.856% of the total variance, which is less than the critical value of 50%, indicating that there is no single factor explaining the vast majority of variance in this study.

Reliability Analysis

Cronbach's alpha is a measure used to test the reliability of a questionnaire and is widely applied in the analysis of empirical data. Generally, If α is above 0.8, it indicates high reliability; if α is between 0.7 and 0.8, it suggests good reliability; if α is between 0.6 and 0.7, it indicates acceptable reliability; if α is below 0.6, it suggests poor reliability.

In addition, this study uses Corrected Item-Total Correlation (CITC) to measure the reliability of individual items in the questionnaire. Items with CITC values below 0.3 and whose removal increases Cronbach's alpha will be considered for deletion. In the study, an item should be deleted if it meets the following two conditions: (1) the overall correlation coefficient CITC of an item is less than 0.4; (2) after deleting the item, the Cronbach's alpha coefficient of the scale is greater than the value of the Cronbach's alpha coefficient of the corresponding dimension. The results of the reliability analysis are shown in Table 3.

Table 3 Reliability analysis

Question		Corrected item to total correlation (CITC)	Cronbach's Alpha after removing terms	Cronbach Alpha
Purchase Intention	PI1	0.761	0.824	0.876
	PI2	0.771	0.816	
	PI3	0.750	0.834	
perceived usefulness	PU1	0.807	0.850	0.895
	PU2	0.778	0.861	
	PU3	0.725	0.881	

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Question		Corrected item to total correlation (CITC)	Cronbach's Alpha after removing terms	Cronbach Alpha
	PU4	0.761	0.867	
perceived	PEU1	0.746	0.868	0.892
ease of use	PEU2	0.791	0.851	
	PEU3	0.718	0.877	
	PEU4	0.796	0.849	
social	SP1	0.791	0.866	0.898
presence	SP2	0.717	0.882	
	SP3	0.728	0.880	
	SP4	0.723	0.881	
	SP5	0.777	0.869	
positive	PEC1	0.705	0.928	0.933
emotional	PEC2	0.761	0.925	
connectio	PEC3	0.727	0.927	
n	PEC4	0.700	0.928	
	PEC5	0.747	0.926	
	PEC6	0.766	0.924	
	PEC7	0.833	0.920	
	PEC8	0.810	0.922	
	PEC9	0.704	0.928	
perceived	PT1	0.777	0.859	0.894
trust	PT2	0.742	0.872	
	PT3	0.751	0.869	
	PT4	0.792	0.854	
informati	IQ1	0.761	0.851	0.887
on quality	IQ2	0.780	0.844	
	IQ3	0.708	0.871	
	IQ4	0.758	0.852	

The results indicate that the α of purchase intention is 0.876, α of perceived usefulness is 0.895, α of perceived ease of use is 0.892, α of social presence is 0.898, α of positive affective association is 0.933, α of perceived trust is 0.894, α of information quality is 0.887. All Cronbach's alpha coefficient values for the variables are greater than 0.7, which indicates a high or good reliability. Additionally, The CITC values for each item meet the research requirements, This suggests that the stability of each variable in the questionnaire is high, and reliability is essentially confirmed through the tests. All items are retained.

Convergent Validity Analysis

Confirmatory Factor Analysis (CFA) is a statistical method used to validate the proposed factor structure and test the theoretical assumptions of a measurement model. It aims to confirm the relationship between observed variables and their underlying latent factors, thus providing evidence for the construct validity of the measurement instrument (Everitt & Dunn, 2001). CFA helps researchers assess whether the observed variables adequately measure the underlying latent constructs or factors. It provides evidence for the convergent and discriminant validity of the measurement model. CFA evaluates the fit between the hypothesized factor structure and the observed data. It allows researchers to determine whether the proposed model adequately represents the data and provides a good fit (Fornell & Larcker, 1981).

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In structural equation modeling (CFA), both CR and AVE are important indicators for evaluating model fit and reliability. AVE value and CR value are key indicators for evaluating the fit and reliability of measurement models. The CR value, also known as composite reliability, measures internal consistency based on the correlation of various indicators within the measurement tool. A CR value greater than 0.7 usually indicates good internal consistency. AVE value, also known as mean-variance extraction, reflects the explanatory power of various indicators in measurement tools for overall variation. AVE values greater than 0.5 are usually considered indicators of good reliability. High CR and AVE values indicate high internal consistency and reliability of the model, as well as strong explanatory power.

This study can find the Composite Reliability (CR) and Average Variance Extracted (AVE) value of each latent variable, and the results are shown in Table 4.

Table 4 Convergent validity results

		Path	Unstandardized factor loadings	S.E.	C.R.	Standardized factor loadings	AVE	CR
PI1	<--	PI	1.000			0.841		
PI2	<--	PI	0.996	0.051	19.396	0.844	0.702	0.876
PI3	<--	PI	0.985	0.052	19.054	0.829		
PU1	<--	PU	1.000			0.876		
PU2	<--	PU	0.980	0.045	21.550	0.837		
PU3	<--	PU	0.894	0.047	19.217	0.778	0.683	0.896
PU4	<--	PU	0.903	0.044	20.553	0.812		
PEU1	<--	PEU	1.000			0.793		
PEU2	<--	PEU	1.192	0.062	19.376	0.862		
PEU3	<--	PEU	1.012	0.060	16.817	0.767	0.677	0.893
PEU4	<--	PEU	1.143	0.059	19.446	0.865		
SP1	<--	SP	1.000			0.846		
SP2	<--	SP	0.977	0.054	18.221	0.768		
SP3	<--	SP	0.984	0.053	18.469	0.775	0.640	0.899
SP4	<--	SP	0.964	0.052	18.467	0.775		

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		Path	Unstandardized factor loadings	S.E.	C.R.	Standardized factor loadings	AVE	CR
SP5	<---	SP	1.001	0.049	20.425	0.831		
PEC1	<---	PEC	1.000			0.732		
PEC2	<---	PEC	1.106	0.067	16.563	0.799		
PEC3	<---	PEC	1.046	0.067	15.591	0.756		
PEC4	<---	PEC	0.970	0.065	15.022	0.730		
PEC5	<---	PEC	1.080	0.067	16.195	0.783	0.611	0.934
PEC6	<---	PEC	1.083	0.066	16.381	0.791		
PEC7	<---	PEC	1.200	0.067	17.969	0.863		
PEC8	<---	PEC	1.124	0.064	17.432	0.838		
PEC9	<---	PEC	0.900	0.060	15.015	0.729		
PT1	<---	PT	1.000			0.836		
PT2	<---	PT	0.966	0.051	18.957	0.801	0.680	0.895
PT3	<---	PT	0.981	0.051	19.101	0.805		
PT4	<---	PT	1.030	0.050	20.729	0.855		
IQ1	<---	IQ	1.000			0.823		
IQ2	<---	IQ	0.995	0.051	19.472	0.840	0.664	0.888
IQ3	<---	IQ	0.929	0.053	17.367	0.768		
IQ4	<---	IQ	0.973	0.051	19.078	0.826		

From Table 4, it can be observed that in the factor analysis model validated in this study, the standardized factor loadings of the measured values range from 0.730 to 0.876, all of which are greater than 0.50. Additionally, the corresponding p-values are all less than 0.05, indicating significant effects between the latent variables and observed variables. Moreover, the Average Variance Extracted (AVE) values range from 0.611 to 0.702, all of which are greater than 0.5, and the Composite Reliability (CR)

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values range from 0.876 to 0.934, all of which are greater than 0.7. This suggests that the convergent validity of the variables in this study is good.

Discriminant Validity Analysis

One common method for assessing discriminant validity is to compare the square root of AVE for each construct to the correlations between constructs. If the square root of AVE is greater than the correlations, it suggests good discriminant validity. The test standard is whether the square root of the Average Variance Extracted from the facet is greater than the correlation coefficient between the facet and other facets. If all of them are true, the Discriminant Validity is good (Fornell & Larker, 1981). The Discriminant Validity of the structural equation model of the whole study is shown in the following Table 5.

Table 5 Discriminant Validity Assessment: Pearson Correlations and Square Root of AVE Values

	perceived usefulness	**perceived ease of use**	**social presence**	**positive emotional connection**	**perceived trust**	**information quality**	**purchase intention**
perceived usefulness	**0.838**						
perceived ease of use	0.443	**0.826**					
social presence	0.304	0.342	**0.823**				
positive emotional connection	0.357	0.441	0.381	**0.800**			
perceived trust	0.378	0.369	0.334	0.395	**0.782**		
information quality	0.451	0.411	0.497	0.407	0.374	**0.825**	
purchase intention	0.390	0.398	0.378	0.414	0.392	0.417	**0.815**

It can be seen from above Table 5 that the square root of the Average Variance Extracted from all facets is greater than the correlation coefficient between this facet and other facets, so this study thinks that the structural equation model in this study has Discriminant Validity.

After the above test, this study finds that the Convergent Validity and Discriminant Validity of the structural equation model of this study have passed the test, so this study thinks that this study has good construct validity.

Structural Validity Analysis

The model fit of the confirmatory factor analysis (CFA) scale was tested. The chi-square degree of freedom ratio (x2/df), also known as the normalized chi-square, is mainly used to reduce the impact of sample size on the chi-square value. The smaller the chi-square degree of freedom ratio, the higher the model fit, preferably less than 3 but not less than 1. A value less than 1 indicates overfitting, indicating that the researcher has overcorrected the model. The goodness of fit index (GFI) is 1- (preset model chi-square value/independent model chi-square value), with GFI ranging from 0 to 1, but sometimes meaningless negative values may also be generated. The larger the sample size, the larger the GFI. The closer the GFI value is to 1, the higher the fit of the model; On the contrary, it indicates a lower fit of the model.

The data collected from the questionnaire were imported into AMOS26 software, and the model fit parameters obtained using the maximum likelihood method are shown in Table 6.

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Table 6 Model fitting results of confirmatory factor analysis

Model fitting	χ2	df	χ2/df	GFI	CFI	RMSEA
Fitting results	804.284	481	1.672	0.884	0.964	0.040
Judgment value			<3	>0.9	>0.9	<0.05

The value of χ^2/df is 1.672, meeting the judging standard of less than 3, indicating a good fit of the model to the observed data.

The value of GFI is 0.884, meeting the judging standard of greater than 0.9, indicating a good fit of the model to the observed data.

The value of RMSEA is 0.040, meeting the judging standard of less than 0.05, indicating a good fit of the model to the observed data.

The value of CFI is 0.964, meeting the judging standard of greater than 0.9, indicating a good fit of the model to the observed data.

Considering these indicators comprehensively, we can conclude that the model has a good fit degree, which is more consistent with the observed data.

Hypothesis Testing

Based on the results of the path analysis, after confirming the effectiveness of the structural equation model through fit indices analysis, an analysis of the model paths was conducted. This study employed AMOS 26.0 software to test the hypothesized relationships in the research model. The specific results of the hypothesis testing are presented in Table 7.

Table 7 Structural Equation Model Results: Path Coefficients and Hypothesis Testing

H	Path			Unstandardized path coefficient	S.E.	C.R.	P	Standardized path coefficient	Conclusion
H1a	PT	<-	PU	0.201	0.056	3.626	***	0.198	Accepted
H1b	IQ	<-	PU	0.296	0.05	5.956	***	0.324	Accepted
H2a	PT	<-	PEU	0.332	0.053	6.29	***	0.336	Accepted
H2b	IQ	<-	PEU	0.252	0.048	5.298	***	0.284	Accepted
H3	PT	<-	SP	0.151	0.06	2.502	0.012	0.139	Accepted
H4	PT	<-	PEC	0.174	0.065	2.665	0.008	0.138	Accepted
H5	PI	<-	PT	0.364	0.053	6.826	***	0.368	Accepted
H6	PI	<-	IQ	0.281	0.058	4.821	***	0.255	Accepted

Note: CR refers to the Critical Ratio.

* refers to p<0.05, ** refers to p<0.01, *** refers to p<0.001.

Regarding the hypothesis of perceived usefulness affecting perceived trust, it is found that H1a is supported. Perceived usefulness significantly influences perceived trust (β= 0.198， p=0.000, <0.05).

Regarding the hypothesis of perceived usefulness affecting information quality, it is found that H1b is supported. Perceived usefulness significantly influences information quality (β=0.324， p=0.000, <0.05).

Regarding the hypothesis of perceived ease of use influencing perceived trust, it is observed that H2a is supported. Perceived ease of use significantly influences perceived trust (β= 0.336,p=0.000, <0.05).

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Regarding the hypothesis of perceived ease of use influencing information quality, it is observed that H2b is supported. Perceived ease of use significantly influences information quality, β=0.284 (p=0.000, <0.05).

Regarding the hypothesis of social presence affecting perceived trust, it is found that H3 is supported. Social presence significantly influences perceived trust (β=f 0.139,p=0.012, <0.05).

Regarding the hypothesis of positive affective association influencing perceived trust, it is observed that H4 is supported. Positive affective association significantly influences perceived trust (β=0.138,p=0.008, <0.05).

Regarding the hypothesis of perceived trust on purchase intention, it is observed that H5 is supported. Perceived trust significantly influences purchase intention (β= 0.368,p=0.000, <0.05).

Regarding the hypothesis of information quality on purchase intention, it is observed that H6 is supported. Information quality significantly influences purchase intention, β= 0.255 (p=0.000, <0.05).

Mediating Effect testing

This study followed the Bootstrap mediation effect testing method by Amos software. Referring to the parallel multiple mediation testing process (Fang et al.2014) and utilizing the bias-corrected Bootstrap method, 5000 Bootstrap samples are randomly drawn. Based on a 95% confidence level with the bias-corrected and accelerated (BCa) intervals, confidence intervals are estimated using the 97.5th and 2.5th percentiles. The results of the mediation effect analysis are shown in Table 8.

Table 8 Mediation Effect Analysis: Bootstrap Estimates and Confidence Intervals

No	Mediation Path	Parameter	Estimate	SE	Bias-correted95%CI			H
					Lower	**Upper**	**P**	
1	PU→PT→PI	ind	0.106	0.023	0.066	0.158	0.000	
		direct	0.283	0.023	0.231	0.319	0.000	
		total	0.389	0.046	0.297	0.477	0.000	
		Ratio	0.272	0.500	0.222	0.331	-	
2	PEU→PT→PI	ind	0.163	0.018	0.107	0.232	0.000	
		direct	0.115	0.023	0.072	0.144	0.000	
		total	0.278	0.041	0.179	0.376	0.000	
		Ratio	0.586	0.439	0.598	0.617	-	H7 is Accepted
3	PU→IQ→PI	ind	0.102	0.021	0.062	0.153	0.000	
		direct	-0.019	0.025	-0.014	-0.025	0.000	
		total	0.083	0.046	0.048	0.128	0.000	
		Ratio	0.389	0.058	0.297	0.477	-	
4	PEU→IQ→PI	ind	0.104	0.024	0.064	0.158	0.000	
		direct	0.174	0.027	0.115	0.218	0.000	
		total	0.278	0.051	0.179	0.376	0.000	
		Ratio	0.375	0.106	0.215	0.624	-	

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No	Mediation Path	Parameter	Estimate	SE	Bias-correted95%CI			H
					Lower	Upper	P	
5	SP→PT→PI	ind	0.132	0.028	0.084	0.196	0.000	H8 is Accepted.
		direct	0.221	0.028	0.159	0.267	0.000	
		total	0.353	0.056	0.243	0.463	0.000	
		Ratio	0.375	0.094	0.226	0.602	-	
6	PEC→PT→PI	ind	0.122	0.026	0.078	0.182	0.000	
		direct	0.264	0.025	0.207	0.301	0.000	
		total	0.386	0.051	0.285	0.483	0.000	
		Ratio	0.316	0.077	0.194	0.497	-	

Ratio=Indirect Effect/Total Effect

Based on Table 8, the conclusions can be drawn as follows:

In the first path, the indirect effect is significant (ind = 0.106), indicating that perceived usefulness has a positive indirect impact on purchase intention by enhancing perceived trust. The total effect is also significant (total = 0.389), with a 95% confidence interval that does not include 0, suggesting that perceived usefulness has both a direct positive impact on purchase intention and an indirect impact through enhancing perceived trust.

In the second path, the indirect effect is highly significant (ind = 0.163), indicating that perceived ease of use significantly influences purchase intention positively through enhancing perceived trust. The total effect is also significant (total = 0.278), with a 95% confidence interval that does not include 0, suggesting that the effect of perceived ease of use on purchase intention mainly comes from its positive influence on perceived trust.

In the third path, the indirect effect is significant (ind = 0.102), and the total effect is significant (total = 0.083), with a 95% confidence interval do not include 0, suggesting that perceived usefulness indirectly influences purchase intention through improving information quality.

In the fourth path, the indirect effect is significant (ind = 0.104), but the total effect is significant (total = 0.278), with a 95% confidence interval not including 0, indicating that perceived ease of use indirectly influences purchase intention through improving information quality.

In the fifth path, the indirect effect is significant (ind = 0.132), indicating that social presence indirectly affects purchase intention positively through enhancing perceived trust. The total effect is significant (total = 0.353), with a 95% confidence interval that does not include 0, suggesting that social presence has a significant indirect impact on purchase intention.

In the sixth path, the indirect effect is significant (ind = 0.122), indicating that positive affective connection indirectly influences purchase intention positively through enhancing perceived trust. The total effect is significant (total = 0.386), with a 95% confidence interval that does not include 0, suggesting that positive affective connection has both direct and indirect significant effects on purchase intention.

In summary, perceived usefulness, perceived ease of use, social presence, and positive affective connection all have significant indirect effects on purchase intention through enhancing perceived trust and information quality. This verifies that the mediation effect is significant. H7 and H8 are both accepted.

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Discussion

The research innovates a theoretical research framework. Based on Stimulus-Organism-Response (SOR), the study picks perceived ease of use, perceived usefulness, social presence, and positive emotional connection as the factors of stimulus. It picks perceived trust and information quality as the factors of the organism. It study picks purchase intention as the factor of response. Based on the Technology Acceptance Model (TAM), the study creates a research route from perceived usefulness, perceived ease of use, social presence, and positive emotional connection to perceived trust in purchase intention. The study develops an innovative framework, which helps us to fully understand the impact of AI chatbots on purchase intention.

All of the hypotheses are verified to be accepted. Perceived usefulness significantly influences perceived trust. Perceived usefulness significantly influences information quality. Perceived ease of use significantly influences perceived trust. Perceived ease of use significantly influences information quality. Social presence significantly influences perceived trust. Positive emotional connection significantly influences perceived trust. Perceived trust significantly influences purchase intentions. Information quality significantly influences purchase intentions.

The boundary conditions are identified in the new research framework. Perceived usefulness, perceived ease of use, social presence, and positive emotional connection are pivotal factors in influencing consumer purchase intention within the realm of intelligent customer service design. These variables exert considerable indirect effects on purchase intention by bolstering perceived trust and information quality. these dimensions—perceived usefulness, perceived ease of use, social presence, and positive emotional connection—serve as vital catalysts in shaping consumer purchase intention within the context of intelligent customer service design. By nurturing these dimensions, businesses can cultivate a customer-centric approach that not only enhances perceived trust and information quality but also drives positive outcomes in terms of consumer behavior and purchase intentions.

A new impact mechanism was confirmed. Perceived usefulness, perceived ease of use, social presence, and positive emotional connection can improve the occurrence of purchase intention by increasing consumers' perceived trust. Perceived usefulness and perceived ease of use can improve the occurrence of purchase intention by increasing information quality.

Conclusion

Enhancing purchase intention through increased perceived trust. Perceived usefulness, perceived ease of use, social presence, and positive emotional connection significantly influence the occurrence of purchase intention by enhancing consumers' perceived trust. Perceived usefulness refers to the degree to which a consumer believes that a product or service will fulfill their needs effectively, thereby increasing their trust in the product's value. Perceived ease of use pertains to the consumer's perception of how effortless it is to utilize the product or service, which reduces uncertainty and builds trust in its accessibility. Social presence, which involves the sense of human-like interaction and connection in digital environments, fosters a feeling of reliability and trustworthiness. Additionally, a positive emotional connection, arising from engaging and satisfying interactions with the product or service, strengthens the emotional bond and trust between the consumer and the brand. Collectively, these factors create a robust framework that enhances perceived trust, ultimately driving higher purchase intentions among consumers.

Enhancing purchase intention through improved information quality. Perceived usefulness and perceived ease of use are pivotal in increasing the occurrence of purchase intention by enhancing information quality. Perceived usefulness refers to the degree to which consumers believe that a product or service will effectively meet their needs and improve their performance, thereby ensuring that the information provided is relevant and valuable. Perceived ease of use, on the other hand, pertains to the simplicity and user-friendliness of accessing and understanding the product or service information. When consumers find the information easy to comprehend and apply, their perception of the overall quality of information improves. High-quality information is accurate, reliable, and clear, which reduces uncertainty and assists consumers in making informed purchasing decisions. As a result, when information quality is elevated through perceived usefulness and perceived ease of use, consumers are

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more likely to develop positive attitudes towards the product or service, leading to increased purchase intentions. This underscores the importance for businesses to focus on providing high-quality, user-friendly information to effectively drive consumer behavior.

This study still has limitations. The first is the data collection method. The research employed non-probability sampling methodology. Non-probability sampling is cost-effective and quicker to implement. It's particularly useful in exploratory research, where the focus is on gaining insights rather than making generalizable inferences. However , non-probability sampling can introduce significant selection bias, leading to limited external validity and generalizability. The lack of randomness in sample selection reduces the ability to infer results to a larger population, making the findings less reliable for predictive analysis. The absence of criteria can result in inconsistent data quality. **The second** is the moderator variable. Purchase intentions are intricately shaped by an array of personal factors, including technological apprehension and social isolation. However, it is noteworthy that this study did not incorporate the effects of these moderating variables, representing a limitation. Technological apprehension can significantly impact willingness to engage in online transactions or interact with intelligent customer service systems. This phenomenon is particularly relevant in the digital age. Similarly, social isolation can exert a profound influence on consumer decision-making processes. **The third** is the survey data. The limitations of survey data collection are evident, particularly in the temporal dimension. In this study, gathering data within a three-month timeframe poses constraints as consumer behaviors evolve, necessitating regular updates to maintain accuracy and relevance. Moreover, longitudinal data analysis offers a more comprehensive understanding of the dynamic nature of factors influencing purchase intentions. Employing probability sampling techniques, for instance, could enhance the representativeness of the sample. This approach allows researchers to capture a broader and more nuanced understanding of consumer behavior across various demographic segments. By leveraging methods such as systematic sampling or quota sampling, studies can ensure a more inclusive data set that reflects the actual dynamics and preferences of the entire population.

Recommendation

More influencing factors are suggested. Future research should consider incorporating individual characteristic moderators, such as technological apprehension and social isolation, etc. Including these variables can enrich the research findings and provide a more comprehensive understanding of the mechanisms influencing purchase intention. This approach allows for the identification of subgroups within the consumer base that may respond differently to marketing strategies, thereby facilitating the development of more tailored and effective interventions. Moreover, understanding the role of individual differences can help in designing marketing campaigns that resonate more deeply with consumers' intrinsic motivations and personal beliefs. As a result, such research would not only contribute to the theoretical advancement in the field but also offer practical implications for marketers aiming to foster sustainable consumption patterns. By leveraging these insights, businesses can devise strategies that more effectively promote purchase intention.

More research methods are suggested. Integrating mixed-method approaches that combine qualitative and quantitative data could provide deeper insights into the psychological mechanisms driving purchase intention, such as interviews, focus groups, etc. These comprehensive strategies will enable researchers to develop more effective and targeted interventions. Consequently, a more holistic and scientifically sound understanding of promoting purchase intention can be achieved. Future

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research can benefit significantly from incorporating diverse sampling methodologies. Employing non-probability sampling techniques, for instance, could enhance the representativeness of the sample. This approach allows researchers to capture a broader and more nuanced understanding of consumer behavior across various demographic segments. By leveraging methods such as convenience sampling or quota sampling, studies can ensure a more inclusive data set that reflects the actual dynamics and preferences of the entire population.

More research areas are suggested. The prospect of conducting targeted research across multiple regions holds significant promise for enriching the findings and practical applications of this study. While the current research findings apply to the specific geographic area from which the data were sourced, it is essential to acknowledge the diversity of conditions and contexts across different regions such as personality traits, prior online shopping experiences, or cultural values. Variations in demographic, socio-economic, and cultural factors can influence consumer behaviors and perceptions, thereby impacting the validity and generalizability of research outcomes. By expanding the scope of research to encompass diverse geographical regions, and even conducting research on regions with developed and underdeveloped electronic transactions, researchers can gain a more nuanced understanding of the underlying mechanisms driving purchase intentions. Tailoring research methodologies and interventions to specific regional contexts enables the identification of region-specific trends, challenges, and opportunities, thus enhancing the relevance and applicability of research findings in real-world settings. Ultimately, conducting targeted research across multiple regions not only enriches the breadth and depth of research outcomes but also provides actionable insights for businesses and policymakers seeking to optimize purchase intention strategies across diverse market landscapes.

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