A Study on the Mechanism of Virtual Anchors' Interactivity and Attractiveness Influencing Consumer Trust, Emotional Attitudes, and Purchase Intentions

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Abstract

This study presents a dual-mediation model examining how the interactivity and appeal of virtual streamers affect consumers' purchase intentions. The model is anchored in the "Stimulus-Organism-Response" (S-O-R) framework, seeking to clarify and compare the efficacy of two distinct psychological pathways: cognitive, mediated by perceived trust, and affective, mediated by emotional attitude. A survey of 515 Chinese consumers with prior exposure to virtual streamer e-commerce livestreams was conducted, with the model tested using Partial Least Squares Structural Equation Modelling (PLS-SEM). The findings demonstrate that both interactivity and appeal significantly increase perceived trust and cultivate positive emotional attitudes. Notably, the direct effect of perceived trust on purchase intention is more potent than that of emotional attitude. Intermediary analysis further confirms that both paths are important intermediaries, and the trust intermediary path consistently exerts stronger influence. These results show that in the context of AI-driven virtual anchors, the cognitive-based trust path is more influential than the emotional-based path. By comparing these two paths, this study has improved our theoretical understanding of virtual persuasion and provided a new contribution. In fact, this study puts forward a strategy of "trust first, emotional strengthening" for marketers who use virtual anchors. Future research should investigate the cross-cultural applicability of these findings and the moderating effect of product categories.

Keywords: Consumer Behaviour, Virtual Anchor Interactivity, Virtual Anchor Attractiveness, Perceived Trust, Emotional Attitude, Purchase Intention

1. Introduction

With the progress of artificial intelligence and virtual reality, virtual anchor has become a revolutionary force in the field of e-commerce live broadcast. They are capable of dynamic interaction, possess high aesthetic and functional value, and exhibit a remarkable degree of realism, which greatly enhances the brand promotion effect and the overall experience of consumers. In emerging economies like China, live e-commerce driven by virtual anchors is becoming more and more popular, which has become a pivotal factor influencing consumer purchasing decisions [1].

Although the benefits of virtual anchors in enhancing interaction, establishing emotional connection and enhancing brand loyalty are clear, the underlying mechanisms through which they influence purchasing decisions require further scholarly inquiry. It is found that the interactive ability of virtual anchors can enhance social presence (i.e., the sense of being with another person) and emotional dependence (i.e., a psychological reliance on the virtual anchor for emotional satisfaction) and their charm can improve the audience's viewing pleasure and intimacy; These factors may indirectly affect the purchase intention by enhancing the credibility and goodwill. However, the current academic research usually only analyzes a single path, and does not comprehensively compare and synthesize the dual intermediary role of cognition (trust) and emotion (attitude) [2]. In order to fill this research gap, we put forward a comprehensive framework based on the Stimulus-Organism-Response (S-O-R) model. This framework links the interactivity and attractiveness of virtual anchors with perceived trust, emotional attitude and purchase intention. One

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of the key innovations of our work is that we have studied the intermediary roles of perceived trust and emotional attitude at the same time, and compared which of them is more important in this causal chain. This approach facilitates the identification of the common influence of cognitive and emotional processes on consumer behavior. Therefore, this study not only enriches the theoretical knowledge about virtual anchor persuasion strategy, but also provides more accurate experimental data for related research fields [3].

2. Literature Review

In the live e-commerce, how the virtual anchor affects our idea of shopping has become a hot topic in academic research. The current research is mainly discussed from two angles: one is the characteristics of the anchor, and the other is the psychological process of our consumers. The interactivity and attractiveness of anchors are important factors. There are two main types of interaction: task-oriented (like showing off products) and relationship-oriented (like emotional communication). Both can make us feel like the anchor is a real person, which can make us trust them more and make the experience more immersive [4].Attractiveness, meanwhile, is multi-dimensional, encompassing physical appearance, social Attractiveness, and professional expertise, and it primarily operates by eliciting positive affect and parasocial interactions [5]. However, a significant limitation in the literature is that interactivity is often treated as a monolithic construct and examined in isolation from attractiveness, leaving the synergistic effects of these two factors on consumer behaviour poorly understood.

Perceived trust and emotional attitude serve as pivotal mediators throughout this process. Perceived trust, which constitutes consumer assessments of a streamer's competence and integrity, forms the foundation for recommendation adoption and is positively impacted by various streamer attributes, including their level of professionalism and interactivity [6]. Similarly, emotional attitude—encompassing emotions like pleasure and identification experienced during viewing—is significantly shaped by streamer characteristics [7]. Although it is established that both can partially mediate the effect of streamer traits on purchase intention, the current body of research predominantly treats them as separate or final explanatory variables. This approach lacks a systematic comparison and integration of the relative explanatory power and intrinsic relationship between the "cognitive trust pathway" and the "emotional attitude pathway".

The purchase intention is determined by various factors mentioned above, and how it works depends on the situation [8]. Although many influencing factors have been found, the research results are still scattered, especially the lack of a unified framework to explain how cognitive paths and emotional paths work at the same time, and it is impossible to compare which of them is more effective. Generally speaking, there are two main shortcomings in the existing research: 1)interactivity has not been fully disassembled into smaller parts, and there is a lack of research combining it with attractiveness; 2)perceived trust and emotional attitude are studied separately, without systematically seeing who is more important, and without studying how they influence each other in causality. In order to solve these problems, we put forward a comprehensive model in this study, which includes two antecedents (interactivity, attraction) and two intermediaries (perceived trust, emotional attitude). The goal is to find out how virtual anchors affect consumers' decision-making through two parallel channels, and also to find out which is more important, cognitive path or emotional path. This research wants to break the fragmented situation of theories in this field and give a more comprehensive and detailed explanation framework.

3. Research Methodology

This study puts forward the following conjectures. In live broadcast with goods, the virtual anchor establishes rational trust and emotional trust through functional and emotional communication, which indirectly affects the purchase behavior. In addition, interaction can enhance trust in brands and products by providing more understandable information and eliminating consumers' doubts [9]. The credibility of virtual anchors and the degree to which we think they are reliable will be greatly improved because they are physically attractive, likable and have ideas similar to ours. It is found that the attraction of the host can not only make consumers trust them more directly, but also make us accept their suggestions more easily by making us feel more cordial as if we have friendship with them [10].

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In terms of feelings, the attraction of virtual anchors also has a strong good influence. Research shows that the appearance, charm and interaction of the host can effectively make consumers feel happy, connected and emotionally close, thus cultivating a positive emotional state [11]. Therefore, we put forward the following assumptions:

H1: The interactivity of virtual anchors positively influences consumers' perceived trust.

H2: The interactivity of virtual anchors positively influences consumers' emotional attitudes

H3: The attractiveness of virtual anchors positively influences consumers' perceived trust

H4: The attractiveness of virtual anchors positively influences consumers' emotional attitudes

The confidence consumers have in virtual anchors or online influencers considerably enhances their purchasing intentions. Robust empirical evidence indicates that trust is a potent predictor of positive consumer behaviors, critically driving both initial purchase decisions and fostering repeat purchase patterns, thereby enhancing customer loyalty [12]. During live shopping, if buyers establish a strong emotional connection with the virtual anchor, they are more inclined to make impulsive purchases and develop a lasting affinity for the brand[13].Interaction makes us feel more involved and accompanied, which together makes it easier to build trust [14] .

Virtual anchors' attractiveness—encompassing physical Attractiveness and charismatic personality—has been empirically shown to enhance purchase intention, primarily through the mediating mechanism of fostering consumer trust. This attractiveness not only exerts a direct positive effect on the willingness to purchase but also functions indirectly by cultivating perceptions of source credibility and reliability [15].

Studies on China's live e-commerce landscape reveal that interactivity doesn't just directly trigger impulse purchases; it also shapes consumer perceptions of brands in a way that indirectly sways purchasing decisions down the line [16]. Moreover, the Attractiveness of digital personalities, encompassing their visual presentation and charismatic traits, fosters a deep emotional connection and positive sentiment in viewers, which in turn boosts their inclination to purchase products promoted by these virtual anchors [17]. Therefore, we put forward the following assumptions:

H5: Perceived trust positively influences consumer purchase intention

H6: Positive Emotional Attitudes Influence consumer purchase intentions

H7a: Perceived trust mediates the relationship between virtual anchor interactivity and consumer purchase intention

H7b: Perceived trust mediates the relationship between virtual anchor attractiveness and consumer purchase intention

H8a: Emotional attitudes mediate the relationship between virtual anchor interactivity and consumer purchase intention

H8b: Emotional attitude mediates the relationship between virtual anchor attractiveness and consumer purchase intention

This study develops a model grounded in the S-O-R theory, which posits that the interactivity and attractiveness of anchors (S) exert a dual-mediated effect on purchase intention (R) through both perceived trust (the cognitive pathway) and attitude (the affective pathway) (O). The research framework is depicted in figure 1.

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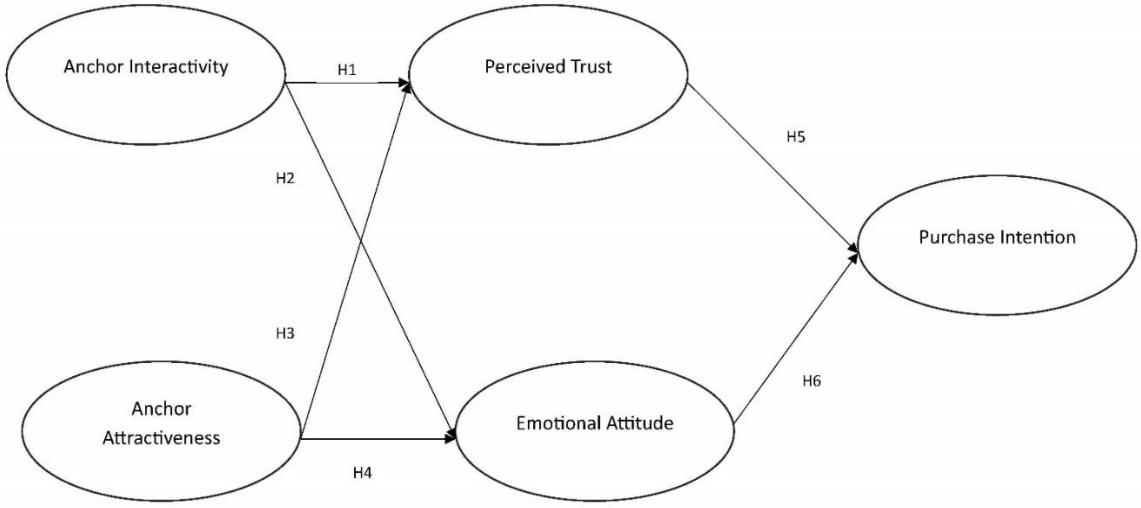

Figure 1. Research Framework

This study employed a 7-point Likert scale for measurement, with responses ranging from 1 to 7 (1 = Strongly Disagree, 7 = Strongly Agree). The original English-language instrument was translated by two bilingual researchers through a standard translation and back-translation protocol to establish conceptual and semantic parity. Subsequently, the translated questionnaire underwent pre-testing with a small cohort of target respondents to evaluate the clarity, comprehensibility, and cultural suitability of its items. Data were finally gathered utilising the finalised version of the questionnaire.

This study utilised a questionnaire survey based on convenience sampling, targeting consumers who had watched e-commerce livestreams featuring virtual anchors for at least 10 minutes within the past three months in Beijing, Shanghai, and Hangzhou. The questionnaire, developed from established scales, was reviewed and revised by ten experts following a pre-test, and subsequently distributed via the "Wenjuanxing" platform in July 2025. In total, 580 responses were received, with 515 deemed valid following the removal of incomplete or erroneous data. To ensure the robustness of the study's conclusions, the data were analysed using SmartPLS 4.0 to conduct a structural equation model analysis [18].

4. Results and Discussion

4.1. Sample Characteristics

A descriptive statistical analysis of the respondents reveals that the sample group is predominantly characterised by a middle-aged and young demographic, a high level of education, corporate employment, and low-to-middle-income status. The ratio of boys to girls is almost the same, almost 1:1. People aged 18 to 35 account for a large proportion, accounting for 76.5%, and they are the main group. Everyone has a high academic background, and more than 60% (62.6%) have a bachelor's degree or higher. At work, company employees (35.9%) and full-time students (17.3%) are the two main groups. The income level is well matched with age and work structure. Most people (60.8%) earn 6,000 yuan or less per month, which belongs to low-middle income. Generally speaking, the characteristics of this group of people are in line with our goal-this e-commerce live consumer survey.

4.2. Measurement Model Evaluation

In the PLS-SEM analysis, the measurement model was first evaluated. To assess the internal consistency and convergent validity of the measurement model, composite reliability, indicator reliability, and the Average Variance Extracted (AVE) were employed. For assessing discriminant validity, the Fornell-Larcker criterion and the cross-loadings were applied [19].

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Table 1. Results of construct reliability, validity, and multicollinearity tests

Construct	Items	VIF	Loading factors	Cronbach's alpha	Composite reliability	AVE	Adapted from
Virtual anchor interactivity	1 I believe virtual anchors possess the capability to interact with consumers in real time	2.932	0.896	0.922	0.922	0.81	[20][21]
	2 I believe virtual anchors enable products to engage with consumers	3.331	0.909				
	3 I believe the virtual anchor's responses are relevant to my questions	3.119	0.9				
	4 I believe the virtual anchor will be able to liven up the atmosphere during the live stream	2.887	0.896				
Virtual anchor Attractiveness	5 I believe virtual anchor avatars possess Attractiveness	3.201	0.907	0.923	0.923	0.812	[20][21]
	6 I believe virtual anchormovements exhibit human-like qualities	3.105	0.898				
	7 I believe virtual anchor speech is engaging	3.088	0.9				
	8 I believe virtual anchor possess a unique personal charm.	3.048	0.898				
Perceived Trust	9 I believe virtual anchors' product introductions are trustworthy	1.712	0.808	0.811	0.815	0.638	[22][23]
	10 I consider the information presented by virtual anchors to be credible	1.601	0.774				
	11 I consider the application of virtual anchor technology to be trustworthy.	1.641	0.789				
	12 I consider virtual anchor Q&A sessions to be reliable	1.731	0.824				
Emotional Attitude	13 Watching virtual anchors' live shopping broadcasts is a wise choice	1.949	0.836	0.831	0.848	0.745	[24]
	14 Watching virtual anchors host live shopping broadcasts is an enjoyable experience	2.12	0.893				
	15 The experience of watching virtual anchors conduct live-streamed product promotions is highly enjoyable	1.757	0.86				
Purchase Intention	16 Whilst watching e-commerce virtual anchors' live broadcasts, I develop the inclination or take action to bookmark the streamer or products	4.305	0.944	0.944	0.944	0.899	[2]
	17 Whilst watching live streams by e-commerce virtual anchors, I develop a desire or engage in the act of sharing information about the host or products	4.552	0.949				
	18 Whilst watching live streams by e-commerce virtual anchors, I develop the inclination or take action to purchase products recommended by the host.	4.721	0.951				

As presented in table 1, the Cronbach's alpha coefficients for all constructs exceed 0.8, while the Composite Reliability (CR) for all variables is greater than 0.80, indicating high internal consistency among the measurement items. Standardised factor loadings for each item are predominantly above 0.7, which confirms strong convergent validity. Furthermore, the model's Average Variance Extracted (AVE) values are, on average, above 0.5, demonstrating that the study possesses high aggregate validity [25], [26]. Figure 2 presents the path coefficients (β values) and significance levels of the structural model. As shown, all hypothesized paths are positive and statistically significant, confirming the proposed relationships.

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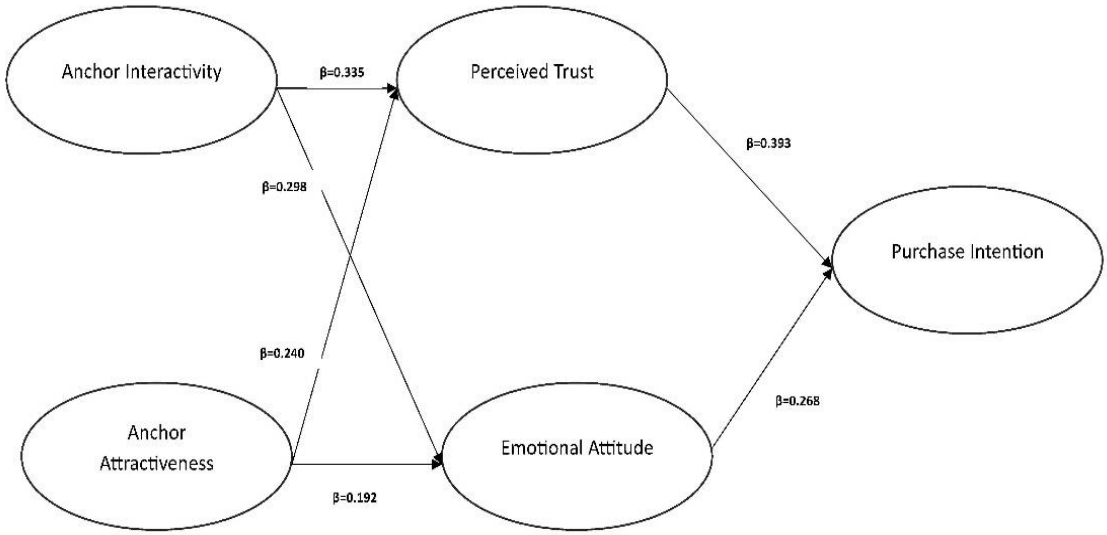

Figure 2. Structural Model Results

4.3. Discriminant Validity Analysis

To assess discriminant validity, we investigated the relationship between each construct and the square root of its Average Variance Extracted (AVE). A measurement model is deemed valid when the square root of a construct's AVE exceeds the correlation coefficients shared with other constructs [19]. As presented in table 2, our measurement model demonstrates satisfactory discriminant validity, evidenced by the fact that the AVE square roots (on the diagonal) are all greater than the corresponding inter-construct correlation coefficients.

Table 2. Distinctive Validity Analysis

	Virtual Anchor Interactivity	Virtual Anchor Attractiveness	Perceived Trust	Emotional Attitude	Purchase Intention
Virtual Anchor Interactivity	0.9				
Virtual Anchor Attractiveness	0.791	0.901			
Perceived Trust	0.525	0.505	0.799		
Emotional Attitude	0.45	0.428	0.536	0.863	
Purchase Intention	0.57	0.539	0.537	0.479	0.948
AVE	0.81	0.812	0.638	0.745	0.899

4.4. Collinearity Assessment

Prior to conducting the analysis, it is imperative to examine the collinearity issues within the structural model. Should significant collinearity exist among the predictor variables' constructs, potentially leading to biased path coefficients (e.g., when the variance inflation factor VIF value ≥5), consideration should be given to excluding the relevant indicators [26]. As shown in Table 1, the VIF values for all constructs are below 5, indicating no collinearity issues.

The results of structural model path analysis confirm all our research hypotheses (table 3). The direct effect shows that the interactivity of virtual anchor can significantly improve perceived trust and emotional attitude (h1: β = 0.335, P <

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0.001; H2: β =0.298, p<0.001); Attractiveness also has a positive effect on these two variables (H3: β =0.240, p<0.001; H4: β =0.192, p=0.005). Perceived trust and emotional attitude can significantly predict purchase intent, among which perceived trust has the strongest path coefficient, indicating its most important role (H5: β =0.393, p<0.001; H6: β =0.268, p<0.001).

Mediating analysis confirmed that perceived trust played a significant mediating role between interactivity and purchase intent, and between attractiveness and purchase intent (H7b: β =0.132, p<0.001; H8b: β =0.094, p<0.001). In addition, emotional attitude is also a significant intermediate variable in the same path (H7a: β =0.080, p=0.001; H8a: β =0.051, p=0.015).

Table 3. Path Analysis Results

Hypothesis	Path	β	T-stat	P-values	Remarks
H1	B1 → C	0.335	6.276	0.000	Established
H2	B1 → D	0.298	4.390	0.000	Established
H3	B2 → C	0.240	4.660	0.000	Established
H4	B2 → D	0.192	2.813	0.005	Established
H5	C → E	0.393	8.302	0.000	Established
H6	D → E	0.268	5.481	0.000	Established
H7a	B1 → D → E	0.080	3.228	0.001	Established
H7b	B1 → C → E	0.132	4.688	0.000	Established
H8a	B2 → D → E	0.051	2.444	0.015	Established
H8b	B2 → C → E	0.094	3.854	0.000	Established

4.5. Effect size f2

Subsequently, we assess the effect size of f^2.The f^2 analysis in table 4 indicates that the interactivity (B1) and attractiveness (B2) of virtual hosts exert a mild to moderate influence on perceived trust (C) and affective attitude (D), with the interaction being comparatively more significant. Perceived trust (f^2=0.167), as a key driving factor, has a moderate influence on the path of influencing purchase intention (E), which is obviously much more important than the weak influence of emotional attitude (f^2 = 0.078).

Table 4. f^2 values

	B1	B2	C	D	E
B1			0.060	0.042	
B2			0.031	0.017	
C					0.167
D					0.078
E					

5. Conclusions and Recommendations

5.1. Discussion

The analysis of the Structural Equation Model (SEM) yields several key findings.First of all, the data shows that the interactivity and attractiveness of virtual anchors are important factors to cultivate consumers' trust and positive emotions. This outcome robustly endorses the application of the S-O-R framework in the marketing of virtual anchors, elucidating how meticulously crafted virtual components intentionally alter individuals' internal thoughts and emotions [11].

Second, the driving effects brought by these two influence paths are different. Data analysis shows that trust perception has a stronger influence on purchase intention (β =0.393) than emotional attitude (β =0.268). This shows that in the whole decision-making process, the cognitive path (based on trust) that relies on rational judgment is the main one, while the emotional path is only the auxiliary one. This path advantage based on trust can also be explained by the theory of reducing uncertainty. For consumers, interacting with AI virtual anchors is a fresh and vague scene. In this case, people mainly rely on cognitive methods to reduce uncertainty. The formation of trust-that is, the rational evaluation of the credibility of the anchor-has become the main mechanism to reduce uncertainty; This process will certainly consume cognitive resources, and it happens before emotional processing [7].

Thirdly, the analysis proves that there is parallel double mediation effect. Both perceived trust and emotional attitude play an independent and significant intermediary role between anchor attributes (such as interactivity/attraction) and purchase intention. It is particularly noteworthy that the indirect effect mediated by trust is always stronger, which further proves the dominant position of cognitive path in this decision-making framework. This discovery challenges the oversimplified view of a single mediating pathway in prior research, and gives us a more complicated understanding of virtual persuasion.

Finally, we give a suggestion to practitioners, and use the Elaboration Likelihood Model (ELM) to convince others, with the emphasis on building trust and strengthening emotions. In this framework, building trust is the core of persuasion, which requires thinking and judging whether the argument is good or not. Cultivating emotional connection is a powerful auxiliary means. This method of making rational verification strengthen emotional appeal is likely to have the best effect when consumers are involved [10].

5.2. Research Recommendations and Limitations

5.2.1. Research Recommendations

Based on these research results, future research should explore the multi-faceted mechanism of virtual anchor characteristics. This includes a more careful study of how some specific characteristics, such as interactivity, attractiveness, professionalism and anthropomorphism, affect consumers' purchasing intention and behavioral response through trust, affective attitudes and mimetic desire [27].

Moreover, in the future research, the configuration method such as Fuzzy-Set Qualitative Comparative Analysis (FSQCA) can supplement the idea of focusing on variables in SEM. FsQCA is particularly good at finding complex and nonlinear interactions. For example, it can determine whether different combinations of anchor characteristics-such as high interactivity with moderate appeal, or low interactity with high expertise---can all lead to high purchase intentions. This is a very important discovery, and SEM may not find it because it only pays attention to the net effect. Therefore, this analysis can help us to understand the' recipe for success' of virtual streamer marketing [5].

5.2.2. Research Limitations

One of the main problems in our research is that the applicability of the sample is limited, because the participants are all from big cities in China-mainly Beijing, Shanghai and Hangzhou-and most of them are young and highly educated people. Therefore, our sample may not well represent a wider range of e-commerce live consumers, because consumers also include people from different regions, different ages and cultural backgrounds. Therefore, whether our model can be extended to more people needs to be further verified by more comprehensive and representative sampling methods.

In addition, our method of measuring variables has its own limitations, and it can't take into account the influence of external environment, such as popular social trends and market competition, which will affect consumers' decision-making. For example, in a particularly competitive market, consumers may unconsciously attach more importance to "trust" as a major difference, which may make the relationship between "anchor characteristics" and "trust" look stronger. Thus, when interpreting the magnitude of effects reported in this study, it is imperative to acknowledge their potential susceptibility to the influence of these unmeasured contextual variables. Subsequent research should therefore adopt multi-methodological approaches (e.g., experimental design, interviews, multimodal physiological assessments) and integrate a broader array of situational variables to yield more holistic and nuanced insights [28].

6. Declarations

6.1. Author Contributions

Conceptualization: L.G.Y., S.S., W.C.H., W.Z., C.W.W., and U.S.; Methodology: S.S.; Software: L.G.Y.; Validation: L.G.Y., S.S., and C.W.W.; Formal Analysis: L.G.Y., S.S., and C.W.W.; Investigation: L.G.Y.; Resources: S.S.; Data Curation: S.S.; Writing Original Draft Preparation: L.G.Y., S.S., and C.W.W.; Writing Review and Editing: S.S., L.G.Y., and C.W.W.; Visualization: L.G.Y.; All authors have read and agreed to the published version of the manuscript.

6.2. Data Availability Statement

The data presented in this study are available on request from the corresponding author.

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The authors received no financial support for the research, authorship, and/or publication of this article.

6.4. Institutional Review Board Statement

Not applicable.

6.5. Informed Consent Statement

Not applicable.

6.6. Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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