“UTAUT predictors of online life insurance purchase intention in China: Optimism as a moderator”

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UTAUT PREDICTORS OF ONLINE LIFE INSURANCE PURCHASE INTENTION IN CHINA: OPTIMISM AS A MODERATOR

Abstract

Digital distribution is reshaping insurance markets, yet people remain cautious about purchasing complex, high-involvement life insurance products through online channels. Prior technology-adoption studies commonly apply UTAUT, but evidence on the relative importance of its core predictors in online life insurance and on whether optimism meaningfully conditions these effects in an emerging-market setting remains limited. This study addresses this gap by testing a UTAUT-based model of online life insurance purchase intention in Guangxi Province, China, and by assessing optimism as a potential moderator. Survey data from 707 responses were analyzed using partial least squares structural equation modeling (PLS-SEM). The measurement model demonstrated satisfactory model fit (SRMR = 0.026; NFI = 0.934). In the structural model, performance expectancy ($\beta = 0.142$, $p = 0.001$), effort expectancy ($\beta = 0.205$, $p < 0.001$), social influence ($\beta = 0.030$, $p < 0.001$), and facilitating conditions ($\beta = 0.172$, $p < 0.001$) each showed significant positive effects on behavioral intention, with social influence exerting the strongest impact. The model explained a substantial share of variance in intention ($R^2 = 0.90$). The results showed that performance expectancy, effort expectancy, social influence, and facilitating condition had significant positive effects on consumers' behavioral intention to purchase online life insurance. However, none of the four proposed moderation hypotheses involving optimism were supported, indicating that optimism did not significantly moderate these relationships. Overall, the findings suggested that life insurance companies should focus on improving UTAUT predictors to strengthen customers' purchase intention rather than enhancing customer optimism.

Keywords internet insurance, life insurance market, UTAUT, insurance industry, consumer behavior

JEL Classification D12, G22, M31, O32

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INTRODUCTION

Insurance distribution is rapidly digitalizing, yet consumer uptake of online channels remains uneven across product types. In China, online insurance has expanded quickly, but life insurance still relies heavily on traditional, agent-mediated sales, signaling persistent hesitation toward purchasing complex protection products through digital interfaces. This gap highlights a scientific problem: explaining behavioral intention to purchase life insurance online when the decision is high-involvement, long-term, and characterized by information asymmetry and heightened concerns about trust, privacy, product transparency, and service reliability.

Technology acceptance drivers from Unified Theory of Acceptance and Use of Technology (UTAUT) predictors, such as performance expectancy, effort expectancy, social influence, and facilitating conditions, are often used to explain digital adoption, but their relevance and relative importance for online life insurance in an emerging-market setting remain insufficiently established. In addition, technology-

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related optimism may shape how consumers interpret these drivers, yet whether it meaningfully conditions intention formation in online insurance remains unclear. Clarifying these mechanisms is necessary to strengthen theory on digital adoption in high-stakes financial services and to inform the design of more usable, credible, and supportive online life insurance journeys.

1. LITERATURE REVIEW AND HYPOTHESES

The Unified Theory of Acceptance and Use of Technology (UTAUT) provides a theoretical foundation for our model. Venkatesh (2000) synthesized prior adoption theories and identified four key antecedents of technology use from UTAUT: performance expectancy (PE), effort expectancy (EE), social influence (SI), and facilitating conditions (FC). These factors have been widely applied to online commerce and insurance contexts. For example, Jiang et al. (2019) incorporated UTAUT to explain Chinese customers' online life insurance intentions and found PE, EE, and SI to significantly predict purchase intention. We therefore review each construct in turn, then discuss optimism as a potential moderator of their effects.

Performance expectancy (PE) is "the degree to which using a technology will provide benefits" to users (Firmannudin et al., 2024). In other words, it captures perceived usefulness: if consumers believe buying life insurance online will save them time, cost, or effort, PE is high (Taylor & Todd, 1995; Thompson & Higgins, 1991; Compeau & Higgins, 1995; Agarwal & Prasad,1998). In insurance and related services, PE often emerges as a dominant driver of adoption. Empirical studies report that higher PE leads to stronger intentions to use online insurance platforms (Oktay et al., 2023). Jiang et al. (2019) found that Chinese customers' intention to purchase life insurance online was significantly impacted by performance expectancy. Similarly, analyses of digital insurance platforms show PE as the most relevant predictor of behavioral intention. These findings imply that when consumers see clear advantages (e.g., convenience or better service) in online life insurance, they are more inclined to buy via the Internet.

Effort expectancy (EE) refers to the "degree of ease associated with consumers' use of technology" (Thompson & Higgins, 1991; Agarwal & Prasad,1998). In practice, it mirrors perceived ease of use: systems that are user-friendly, intuitive, or require little effort are more likely to be adopted. In the online insurance context, EE concerns how easily customers can navigate websites or apps to compare and purchase policies. The easier the process, the more likely users will intend to transact online. This idea is supported by both UTAUT and TAM literature. Venkatesh (2000) likewise reported that effort expectancy had a significant positive effect on online life insurance purchase intentions. Indeed, one study noted that among UTAUT factors, ease of use sometimes exceeds other drivers in influence on intention (Tandon et al., 2016). Together, these results suggest that consumers who find online insurance processes straightforward and effortless are more willing to buy, whereas perceived complexity or difficulty can deter adoption.

Social influence (SI) is "the extent to which consumers perceive those important others (e.g., family and friends) believe they should use a particular technology" (Dick & Basu, 1994; Sheth & Parvatiyar, 1995; Ajzen, 1985). It represents subjective norms or peer effects in technology adoption. In the insurance domain, recommendations from trusted peers or social networks can sway individuals' purchase choices, especially for complex products like life insurance. If friends or family endorse online purchasing, customers may feel more confident and pressured to follow suit. Consistent with this, Kim (2025) found a positive impact of social influence on Chinese consumers' online life insurance intentions. Other technology adoption studies similarly document that social norms can encourage use of new services (Hung et al., 2003). In sum, when key referents approve of online insurance or actively encourage its use, consumers' intentions rise; absent social support, individuals may hesitate despite other benefits.

Facilitating conditions (FC) are defined as the user's belief in having the "organizational and technical infrastructure" necessary to use a system (Williams, 2021). In UTAUT, FC encompasses ac-

cess to resources (e.g., Internet connectivity, devices) and support (e.g., customer service) that ease the use of technology. Practically, FC in online insurance might include reliable internet, functional websites, 24/7 helplines, or tutorials. Wu et al. (2011) note that FC encapsulates the perceived control over system use. In the original UTAUT, FC influenced actual usage more than intention, but many studies still measure it as an enabler of adoption. Some research finds that if consumers feel supported by adequate infrastructure and guidance, they are more likely to trust and use online channels (Pan et al., 2024). However, FC effects on intention are sometimes weaker or non-significant when ease of use is already high (Shi et al., 2018). We therefore include FC to capture any enabling factors: for instance, if customers know they can get help with online transactions or that their insurer provides strong technical support, their intention may increase accordingly.

Optimism (OP), a core dimension of Parasuraman's Technology Readiness Index, is defined as "a positive view of technology and a belief that it offers people increased control, flexibility, and efficiency" (Scheier & Carver, 1985; Locke, 1987). Highly optimistic individuals generally expect new technologies to improve their lives. In adoption contexts, optimism has been linked to stronger behavioral intentions: for example, Seligman (2000) found that optimism toward self-service technology predicts higher usage intention. In mobile banking, Mandina and Matsika (2024) similarly observed that optimistic users had greater intentions to use the system. These findings suggest that optimism could amplify perceived benefits of online services. By contrast, some studies report no direct effect of optimism on intention (Hermanto et al., 2022), indicating the relationship may depend on context or interact with other beliefs. In our model, optimism may shape how strongly UTAUT factors translate into intention. For instance, optimistic consumers may perceive higher utility (PE) or find systems easier (EE) than pessimistic ones, thus strengthening those effects. In sum, we consider optimism as a moderator that could enhance (or buffer) the influence of PE, EE, SI, and FC on online purchase intention.

Building on the theoretical framework outlined above, the present study aims to empirically investigate the extent to which UTAUT predictors – performance expectancy, effort expectancy, social influence, and facilitating conditions – drive online life insurance purchase intention among consumers in Guangxi Province, China, and to determine whether technology optimism moderates these relationships. By integrating UTAUT with optimism as a boundary condition, this study seeks to extend existing knowledge on digital adoption in high-involvement financial services and to offer actionable insights for insurers operating in emerging-market digital environments.

Based on this literature synthesis on online purchase intention in the Chinese life insurance market, which highlights an urgent need to examine the four independent variables of UTAUT Predictors: performance expectancy, effort expectancy, social influence, facilitation condition, we propose the following hypotheses for online life insurance purchase intention (see Figure 1):

H1: Performance expectation has a significant positive impact on purchase intention.

H2: Effort expectation has a significant positive impact on purchase intention.

H3: Social influence has a significant positive impact on purchase intention.

H4: Facilitating factors have a significant positive impact on purchase intention.

H5: Optimism significantly enhances the positive impact of performance expectation on purchase intention.

H6: Optimism significantly enhances the positive impact of effort expectation on purchase intention.

H7: Optimism significantly enhances the positive impact of social influence on purchase intention.

H8: Optimism significantly enhances the positive impact of the facilitation condition on purchase intention.

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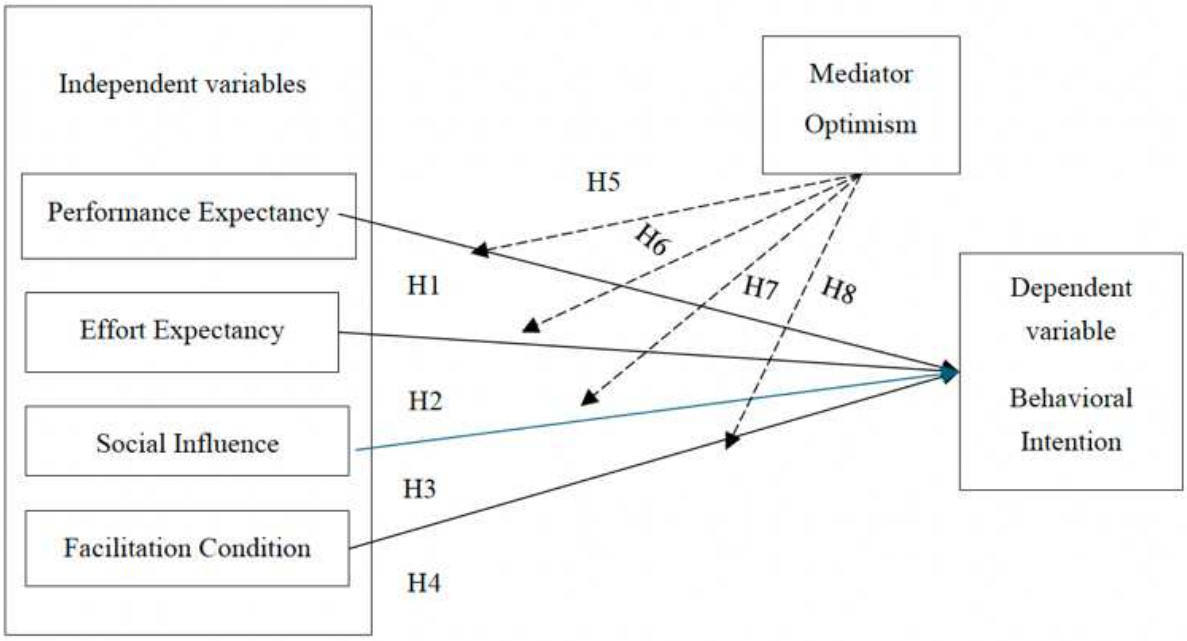

Figure 1. Research model and hypotheses

2. METHOD

In this study, data were collected via a questionnaire and approved by UCSI University (IEC-2025-FOSSLA-0090). The study covered multiple aspects related to internet insurance purchase behavior, including four independent variables. To ensure the comprehensiveness and universality of the survey results, we randomly distributed 710 questionnaires to a wide range of internet insurance users in Guangxi Province, successfully collected 710 questionnaires, and deleted three invalid questionnaires. A total of 707 valid questionnaires were used for statistical data analysis.

The variables involved in this study include performance expectation, effort expectation, social influence, facilitating factors, purchase intention, optimism, and innovation spirit. These variables were measured using a 5-point Likert scale. Performance expectation was measured using four indicators from the study of Venkatesh and Davis (2000), effort expectation was measured using four indicators from the study of Venkatesh and Davis (2000), social influence was measured using four indicators from the study of Hung et al.(2003), facilitating factors were measured using four indicators from the study of Williams (2021), purchase intention was measured using four indicators from the study of Tandon et al. (2016), and optimism were measured using four indicators each from the studies of Seligman (2000).

The sample was predominantly male (81.9%) and concentrated in the 35-44 (35.9%) and 45-54 (29.6%) age groups. Most respondents were married (84.2%) and held a college or undergraduate degree (38.0%), with smaller proportions reporting postgraduate (17.4%) or lower educational attainment. Annual income clustered between 50,000-100,000-yuan (42.4%) and 100,000-150,000-yuan (24.3%), with fewer participants at the lowest (< 50,000, 8.3%) and highest (> 200,000, 8.2%) brackets. Table 1 provides detailed distributions.

3. RESULTS

The evaluation of the measurement model made use of four key criteria: indicator reliability, internal consistency reliability, and convergent validity (Hair et al., 2017). The indicator reliability was measured by examining the standardized factor loadings of all the items. The acceptable loading was above 0.40 according to Hair et al. (2017). Table 2 shows all the constructs above the recommended level of 0.70, indicating adequate reli-

Table 1. Descriptive statistics of the full sample

Source: Author's survey data.

Category	Frequency	Percentage (%)	Valid percentage (%)	Cumulative percentage (%)
Gender				
Male	579	81.9	81.9	81.9
Female	128	18.1	18.1	100.0
Age				
Under 25	48	6.8	6.8	6.8
25-34	147	20.8	20.8	27.6
35-44	254	35.9	35.9	63.5
45-54	209	29.6	29.6	93.1
55 and above	49	6.9	6.9	100.0
Marital status				
Married	595	84.2	84.2	84.2
Unmarried	112	15.8	15.8	100.0
Education level				
Junior High or Below	128	18.1	18.1	18.1
High School or Vocational	187	26.4	26.4	44.6
College or University	269	38.0	38.0	82.6
Master's or above	123	17.4	17.4	100.0
Annual income				
Below 50,000	59	8.3	8.3	8.3
50,000-100,000	300	42.4	42.4	50.8
100,000-150,000	172	24.3	24.3	75.1
150,000-200,000	118	16.7	16.7	91.8
Above 200,000	58	8.2	8.2	100.0

ability of the measurement structure. Convergent validity was measured by means of the Average Variance Extracted (AVE), which has to be greater than 0.50. From Table 2, it is obvious that all the AVE values are above that level, the minimum AVE being 0.504. This implies that every construct explained at least 50% of the variance in its relevant indicators.

The model demonstrated satisfactory fit indices (SRMR = 0.026; NFI = 0.934), both exceeding commonly accepted thresholds (Hu & Bentler, 1999). The SRMR value indicates minimal residuals, while the NFI value confirms strong comparative fit. Together, these results suggest that the proposed model adequately represents the observed data (see Table 3).

Table 3. Model fit results

Source: Authors' survey data.

Fit index	Saturated model	Estimated model
SRMR	0.026	0.026
d_ULS	0.200	0.198
d_G	0.356	0.355
Chi-square	1330.059	1319.823
NFI	0.933	0.934

The structural model (i.e., the path model) was evaluated using the criteria as put forward by Hair et al. (2017). This evaluation included the explana-

Table 2. Reliability and validity results

Source: Authors' survey data.

Constructs	Cronbach's Alpha	Composite reliability	AVE
Behavioral Intention (BI)	0.923	0.923	0.812
Effort Expectancy (EE)	0.923	0.923	0.812
Facilitation Condition (FC)	0.919	0.920	0.805
Optimism (OP)	0.924	0.924	0.813
Performance Expectancy (PE)	0.912	0.912	0.792
Social Influence (SI)	0.912	0.912	0.791

Note: Average Variance Extracted (AVE).

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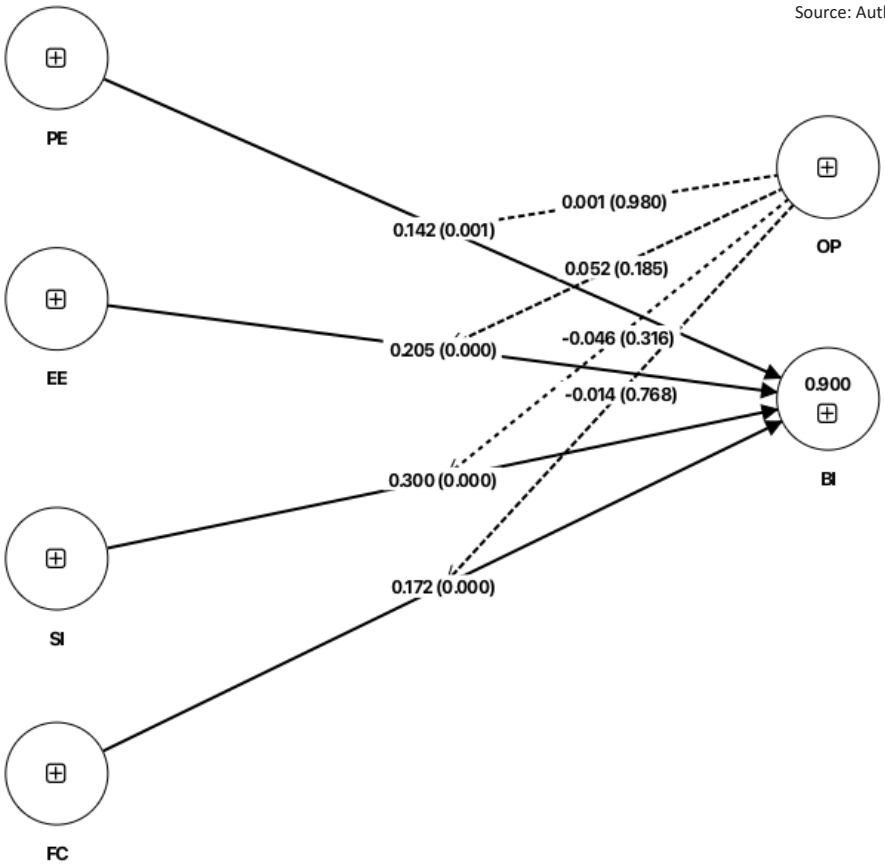
tory power of the model (R^2) and the significance and relevance of the structural relationships. To see whether the model is robust, a bootstrapping evaluation was made where the direct as well as indirect effects were evaluated.

The first results shown in Figure 2 indicate the R^2 value of endogenous variables. These values determine the proportion of variance explained by exogenous variables. According to Hair et al. (2017), R^2 values between 0.50 and 0.75 showed high explanatory power. In this study, Behavioral Intention (R^2 = 0.90) ranged in this area, indicating a sufficient level of model fit.

For the hypotheses and structural relationships approved Standardized Path Coefficient analysis was carried out (Table 3). The results showed that Social Influence had the biggest positive influence of the four on Behavioral Intention ($\beta = 0.300$, $p < 0.05$), secondly, Effort Expectancy ($\beta = 0.205$, $p < 0.05$), Facilitation Condition ($\beta = 0.172$, $p < 0.05$), and Performance Expectancy ($\beta = 0.142$, $p < 0.05$). All four variables were found to influence musical creativity significantly. Accordingly, Hypotheses *H1*, *H2*, *H3* and *H4* were supported. The next thing was to examine the moderating influence of social Optimism.

The results showed that Optimism had not significantly moderated the relationship Performance Expectancy and Behavioral Intention ($\beta = 0.001$, $p > 0.05$); Optimism had not significantly moderated the relationship Effort Expectancy; and Behavioral Intention ($\beta = 0.052$, $p > 0.05$); Optimism had not significantly moderated the relationship Social Influence and Behavioral Intention ($\beta = -0.046$, $p > 0.05$). Optimism did not significantly moderate the relationship between Facilitation Condition and Behavioral Intention ($\beta = -0.014$, $p > 0.05$). Thus, hypotheses *H5*, *H6*, *H7*, and *H8* were not supported (Table 4). Figure 2 presents the result of the structural model.

Source: Authors' survey data.



Note: PE = Performance Expectancy; EE = Effort Expectancy; SI = Social Influence; FC = Facilitation Condition; OP = Optimism; BI = Behavioral Intention.

Figure 2. Structural model result

Table 4. Hypotheses testing

Source: Authors' survey data.

Ha	Path	β	[95%]CI	p	Results
H1	PE → BI	0.142	[0.075, 0.231]	0.001	Supported
H2	EE → BI	0.205	[0.018, 0.080]	0.000	Supported
H3	SI → BI	0.030	[0.008, 0.060]	0.000	Supported
H4	FC → BI	0.172	[0.025, 0.119]	0.000	Supported
H5	OP*PE → BI	0.001	[0.156, 0.417]	0.980	Not supported
H6	OP*EE → BI	0.052	[0.109, 0.348]	0.185	Not supported
H7	OP*SI → BI	−0.046	[−0.151, 0.035]	0.316	Not supported
H8	OP*FC → BI	−0.014	[0.013, 0.056]	0.768	Not supported

Note: PE = Performance Expectancy; EE = Effort Expectancy; SI = Social Influence; FC = Facilitation Condition; OP = Optimism; BI = Behavioral Intention.

4. DISCUSSION

Consistent with UTAUT theory, performance expectancy (PE) emerged as a significant positive predictor of online purchase intention in Chinese insurance sample ($\beta = 0.142$, $p < 0.05$). In other words, customers who believe that buying life insurance online will save them time, money, or improve their purchasing efficiency are substantially more likely to intend to buy. This result aligns with prior findings: for example, Jiang et al. (2019) also reported that perceived usefulness strongly drives online life insurance intentions. Similarly, studies in related contexts (e.g., Insurtech in Indonesia) find that higher PE is associated with greater adoption interest. Managerial implication: Insurers should emphasize the tangible benefits of online channels. Marketing messages and platform designs should highlight how online purchase is more efficient or cost-effective (e.g., through time-saving features, discounts, or convenience). A clear demonstration of online tools' usefulness can boost customers' PE and thus their intention to buy.

Effort expectancy (EE), the perceived ease of using the online system, also had a significant positive effect ($\beta = 0.205$, $p < 0.05$). This indicates that when customers view the online purchase process as simple and low effort, their intention to purchase rises. Our finding echoes Jiang et al. (2019) and others who report that perceived ease of use boosts insurance adoption intentions. For instance, Jiang et al. (2019) found that respondents were more likely to buy online if they felt the process "is not difficult and requires little effort". Likewise, convenience of use has been cited as a facilitator of online insurance purchases in other markets. Managerial implication: Insurers should streamline the online experience. This means improving website/mobile UI, simplifying forms, and providing guided support (e.g., tutorials or chatbots) to reduce effort. Training customer service to assist with the online process and minimizing technical hurdles will make purchasing easier and strengthen EE, thereby enhancing adoption.

Social influence (SI) was also a significant driver ($\beta = 0.030$, $p < 0.05$). That is, customers who see friends, family, or colleagues endorsing online life insurance were more inclined to intend to purchase. This result corroborates previous research: social norms and recommendations have been shown to sway insurance decisions. For example, Jiang et al. (2019) found SI to be a key determinant of online insurance intent. More broadly, Argo et al. (2005) showed that endorsements from trusted others significantly boost insurance renewal rates. Thus, in high-involvement decisions like life insurance, social proof and word-of-mouth exert considerable influence. Managerial implication: Insurers should leverage social channels and advocacy. This could involve creating referral or loyalty programs, encouraging satisfied customers to share experiences, showcasing customer testimonials, and using advisor networks to spread positive word-of-mouth. Building community (e.g., user forums or events) and integrating social sharing features can amplify peer influence, thereby increasing purchase intention.

Facilitating conditions (FC) also positively affected intention ($\beta = 0.172$, $p < 0.05$). FC reflects consumers' perceptions of having the necessary resources and support to use the online service (e.g., internet access, customer support). Our

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findings suggest that when customers feel the infrastructure and assistance are in place, they are more willing to buy online. This is consistent with UTAUT's original assertion that access to support encourages use (Venkatesh, 2000) and with recent evidence in financial services. For instance, Wu and Gong (2023) found that FC significantly influenced purchase intentions in a Chinese pension scheme model. Managerial implication: Insurers should ensure robust technical and informational support. This includes reliable, user-friendly website/mobile platforms, clear FAQs, and responsive help channels (live chat, helplines). Providing tutorials or walkthroughs and guaranteeing seamless payment and policy delivery (e.g., quick digital receipts) can strengthen customers' sense that conditions are favorable. By improving technical infrastructure and customer support, insurers remove barriers and make online purchases more feasible, which in turn boosts intention.

Contrary to our hypothesis, optimism (OP) did not significantly moderate any paths (all $p > 0.05$). In other words, having a generally positive attitude toward technology (optimism) did not change the strength of the above relationships in our model. This suggests that even optimistic consumers relied primarily on the direct factors (PE, EE, SI, FC) rather than their optimism trait when forming purchase intentions. This diverges from studies in other domains: for example, Chao and Yu (2019) found that technology optimism strengthened links between attitudes/PBC and intention in an educational tech context. Our null finding implies that in the Chinese life insurance market, trait optimism does not amplify UTAUT effects, and managers should focus on the direct service features instead of assuming optimistic dispositions will carry the day. Managerial implication: Given the lack of moderation, insurers should concentrate on tangibles such as platform quality and social proof rather than cultivating a general optimistic outlook. Efforts to build trust and reduce risk perceptions (e.g., through guarantees or clear policies) may be more effective than relying on customers' technology-mindedness.

In sum, our PLS-SEM model ($R^2 = 0.90$) shows that performance expectancy and social influence are the strongest drivers of online life insurance intention, with effort expectancy and facilitating conditions also making meaningful contributions. These findings largely converge with prior research in fintech and insurance contexts. For example, the importance of PE mirrors studies of internet banking and Insurtech (e.g., Jiang et al., 2019; Ku Fan & Lee, 2023), and the significance of SI is in line with work on social norms in insurance decisions. At the same time, the absence of any optimism effect highlights a divergence from some technology adoption studies. From a practical standpoint, insurers in Guangxi should therefore focus on enhancing the online experience and leveraging social endorsement. By marketing the concrete benefits of online purchase, simplifying the process, ensuring solid technical support, and encouraging customer referrals, insurers can translate these findings into higher adoption. Overall, the strong explanatory power of our model reinforces the value of UTAUT constructs for predicting online insurance behavior in China and provides a quantitative guide (e.g., β and R^2 estimates) for managers to prioritize their strategies.

CONCLUSIONS

Drawing on the research model of UTAUT, this study assessed the effects of performance expectancy, effort expectancy, social influence, and facilitating conditions on purchase intention and examined whether dispositional optimism conditioned these relationships. The results showed that all four UTAUT predictors had exerted significant positive effects on behavioral intention, indicating that performance expectancy, effort expectancy, social influence, and facilitating condition had jointly underpinned people's intention to buy life insurance online. By contrast, none of the proposed interaction effects were significant, suggesting that optimism did not strengthen or weaken the effects of the UTAUT predictors. Theoretically, these findings had reinforced UTAUT's explanatory value for online life insurance Purchase Intention ($R^2 = 90\%$) and delineated a limited role for trait-like optimism as a bound-

ary condition in this setting. Practically, insurers were advised to prioritize interventions that measurably improved the four proximal determinants, including enhancing functional value and usability, strengthening credible social endorsement signals, and ensuring robust service and technical support, rather than relying on optimism-centered messaging. Overall, focus on all four UTAUT predictors, and give up optimism. A minor limitation is reliance on cross-sectional self-reports, and future research should replicate the model using longitudinal or behavioral indicators.

AUTHOR CONTRIBUTIONS

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Formal analysis: Shaohua Ben.
Funding acquisition: Shaohua Ben.
Investigation: Shaohua Ben.
Methodology: Shaohua Ben.
Project administration: Shaohua Ben.
Resources: Shaohua Ben.
Software: Shaohua Ben.
Supervision: Shaohua Ben.
Validation: Shaohua Ben.
Visualization: Shaohua Ben.
Writing – original draft: Shaohua Ben.
Writing – review & editing: Shaohua Ben.

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