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# Examining Drivers of Digital Insurance Adoption in the Face of Industry Disruption: Evidence from Thai Insurance Customers

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**Abstract.** This empirical research delves into customer perceptions influencing Thai insurance agencies' adoption of digital technologies. Survey data from 440 policyholders revealed that service quality, value perception, and organizational image positively shape intentions to use digital platforms, explaining a substantial 88% of variance. However, value perception's role proved minimal. Findings theoretically enrich and provide practical guidance surrounding channel migrations to online policy sales and service. The study's findings highlight the importance of DIT innovation in customer insurance sales. Manifest variables analysis indicates specific strengths within SQ, OI, VP, and DIT dimensions. The study concludes that DIT has ushered in transformative changes, creating new customer requirements and altering information search and purchasing patterns in the insurance sector. In conclusion, this research contributes actionable intelligence for policymakers and industry stakeholders in navigating the digital transition of Thailand's insurance sector. Elevating service quality and communicating innovative organizational images emerge as promising strategies. However, recognizing theoretical and methodological limitations, further mixed-methods research is recommended to validate these findings across diverse perspectives in the industry.

**Keywords:** consumer insurance, insurance agencies, InsurTech, personal insurance, Thailand

# 1. Introduction

The insurance landscape in Thailand has become increasingly pivotal within the country's economic and social fabric (Limna & Kraiwanit, 2022). As a crucial institution, the sector significantly contributes to the Kingdom's financial stability by adeptly managing risks for individuals and businesses, fostering a stable and robust economy (Chen & Yuan, 2021). Moreover, it plays a key role in generating long-term savings and capital for developmental projects, underpinning economic progress (Dwivedi et al., 2021; Terdpaopong & Richards, 2021).

In parallel, the financial and insurance services sectors stand on the cusp of a transformative era, driven by the entry of a new generation of consumers. This aligns with Nejad's observation that the financial sector is successfully creating innovative services, processes, and business models (Nejad, 2022). Insurance functions as a fundamental shield against economic uncertainties across diverse business and personal sectors (Maman & Rosenhek, 2020; Weedige et al., 2019). Non-life insurance, in particular, plays a crucial role in mitigating financial ruin from climate hazards, demonstrating rapid response capabilities and enduring influence (Poontirakul et al., 2022). By mitigating risks, insurance companies contribute to reducing the volatility experienced by enterprises, facilitating smoother economic activities and thereby supporting the continuous and rapid expansion of the insurance industry (Nikomborirak, 2001).

Within Thailand's extensive $11 billion general insurance sector, encompassing categories such as fire, automobile, marine and transportation, and personal insurance, various facets thrive (Global Data Insurance Intelligence Center, 2023). Oversight of this multifaceted industry falls under the jurisdiction of Thailand's Office of the Insurance Commission (OIC) (Terdpaopong and Richards, 2021). The OIC not only fosters the growth of insurance operations but also vigilantly safeguards sectoral order while representing government interests (Sangnuan, 2023; "Thai Insurance Regulator suing two companies," 2022).

Thailand's universal healthcare coverage (UHC) system, ranked 25th globally, with 99.61% population coverage, further contributes to the robustness of the nation's health security (National Health Security Office, 2021; “Share of people,” 2021).

However, the Thai insurance sector has faced substantial challenges and losses in recent years due to the COVID-19 pandemic. The lump-sum insurance segment incurred significant losses of $1.1 billion, constituting 19% of the sector's surplus and capital as of September 2021 (Sangnuan, 2023). Regulatory actions, including the revocation of licenses and the transfer of customer policies, were initiated under the Non-Life Insurance Act, resulting in the consolidation of insurers. As of February 2023, 52 insurance companies remained in Thailand, with 47 in the non-life category (Sangnuan, 2023; “Thai Insurance regulator suing two Companies,” 2022).

To fortify the remaining insurance agencies, Thailand's OIC actively encourages sectoral mergers to enhance financial health and competitiveness (Sangnuan, 2023). Initiatives include the recruitment of foreign investors, facilitated by new Ministry of Finance (MOF) directives permitting foreigners up to 100% ownership of voting shares (Baker McKenzie, 2023).

Simultaneously, the ever-evolving technological and digital landscape has made insurance distribution channels more accessible. Various studies underscore the critical nature of technology use and management alongside Big Data (Thailand’s National Health Security Office, 2021). These technological transformations significantly impact how insurance services are delivered and accessed (Archapitakvong, 2020; Nejad, 2022). However, as Thailand prepares for liberalization to bolster the stability and competitiveness of its insurance industry, a profound understanding of capital management becomes essential (Gallati, 2022). To achieve adequate capital reserves and foster customer loyalty, insurance companies in Thailand need to focus on service quality (SQ) and service fulfillment. Attributes such as reliability, convenience, and swift customer service significantly influence customer perceptions and decision-making (Li et al., 2021). Effective communication, attentiveness to customer

needs, and other critical elements further shape Thailand's insurance industry landscape.

The perception and image of insurance companies in Thailand play a pivotal role in shaping customer intentions to use their services. A positive image is often synonymous with a good reputation due to an organization's participation in corporate social responsibility (CSR) activities (Lee et al., 2017; Ullah et al., 2019). CSR within the insurance sector positively affects customer-brand identification and customer satisfaction (Agyei et al., 2021).

Value perception, encompassing benefits, product value, and reasonable pricing, significantly influences customer decisions, as insurance companies can offer flexible and cost-effective solutions (Weedige et al., 2019). Meeting customer expectations regarding coverage is a crucial driver of customer willingness to engage with insurance services.

Insurance technology, or InsurTech, is a pioneering innovation in the insurance industry, poised to transform and enhance operations (Bughin et al., 2017). InsurTech addresses critical challenges, improving efficiency and aligning services more closely with customer needs. It promises to be a driving force in the future of Thailand's insurance business, incorporating concepts such as blockchain, artificial intelligence, digitalization, and information sharing (Lin and Chen, 2020; OECD, 2017). By ensuring rapid communication with customers, especially concerning potential security issues, InsurTech maintains a consistent standard of excellence, offering a competitive edge over traditional methods (OECD, 2017).

While digital disruption benefits customers, it poses challenges for companies with significant market shares, necessitating a fundamental reconsideration of corporate strategies (McKinsey, 2017). Organizations that adapt may avoid competitors leveraging InsurTech to reduce costs and enhance returns on investment.

The booming insurance industry in Thailand prompts scrutiny of customer service intentions. Understanding the structural equation of variables impacting customer service intentions is crucial. By identifying variables that exert direct and indirect influences, innovative strategies can be formulated to strengthen the industry further. The study addresses the evolving landscape of the insurance business in Thailand, providing insights into enhancing customer service intentions and driving continuous improvement in the sector.

# 2. Literature Review

## 2.1. Service Quality (SQ)

Limna and Kraiwanit (2022) highlight the competitiveness of Thailand's insurance sector, emphasizing the pivotal role of SQ in unlocking an organization's competitiveness, fostering CS, and building brand loyalty. Agyei et al. (2021) also reported that customer engagement (CE) within the insurance industry is conditional on customer satisfaction (CS) and service quality (SQ).

Meeboonsalang and Chaveesuk (2019) evaluated Thai customer loyalty within the auto insurance sector and determined that there was a positive and strong effect of SQ on CS. This is consistent with Nzyoka and Orwa (2016) who reported on the insurance industry's competitiveness and stressed the essential nature of SQ in achieving sustainable competitive advantages.

Additionally, Chimedtseren and Safari (2016) discussed the human resource challenges associated with delivering SQ and, by extension, ensuring CS. The authors also noted that it is imperative that organizational members need problem-solving skills to enhance service design and delivery. Based on the theories and existing literature on SQ, the authors suggest these three hypotheses:

(H1): *Service Quality* (SQ) influences *organizational image* (OI) directly and positively.

(H2): *Service Quality* (SQ) influences customer *value perception* (VP) directly and positively.

(H3): *Service Quality* (SQ) influences agency *digital insurance technology* (DIT) directly and positively.

## 2.2. Organizational Image (OI)

In Taiwan, Lee et al. (2019) reported that CSR positively effects customer loyalty and OI within the insurance industry. Similarly, in Pakistan, Zhang and Ahmad (2022) emphasized CSR as an essential factor in purchase intention, underlining its role in enhancing a corporation's competitive advantage and financial performance. Consequently, OI plays a key role in determining an insurance customer's purchase intention.

A positive corporate image conveys trustworthiness, reliability, and financial stability (Yasin & Bozbay, 2011), which are paramount for customers when selecting an insurance provider. An agency with a robust and reputable image is more likely to attract and retain customers, as it instills confidence in the insurer's ability to fulfill claims and provide outstanding customer service. Conversely, a negative or tarnished corporate image can dissuade potential customers who may view the company as untrustworthy or financially unstable. Therefore, companies need to invest in building and sustaining a positive image to not only attract new customers but also retain their existing client base, fostering enduring relationships founded on trust and reliability (Albetris, 2021).

Drawing from the theories and existing literature on OI, the authors formulated the following two hypotheses:

(H4): *Organizational Image* (OI) influences customer *value perception* (VP) directly and positively.

(H5): *Organizational Image* (OI) influences agency *digital insurance technology* (DIT) directly and positively.

## 2.3. Value Perception (VP)

Customer value perception (VP) has garnered significant attention over the past decade (Dhasan and Aryupong, 2019). It is now widely recognized that VP plays a critical part in the decision-making process of insurance customers and holds significant importance within the insurance sector (Uzir et al., 2021). Meeboonsalang and Chaveesuk (2019) also point out that VP can lead to CS within Thailand's auto insurance sector. VP is concerned with how individuals evaluate the benefits they anticipate from an insurance policy about the price they are willing to pay.

However, from the consumer's side, insurance distributes intangible products whose VP is very low, and the customer's willingness to pay is nearly non-existent (de Ferrieres, 2021). The satisfaction or dissatisfaction experienced by a customer can also change the VP and trigger another series of actions such as asking for a refund, changing to another product type, or negatively talking about the product that was purchased.

Fortunately, in a 2023 survey conducted in Thailand, the Kingdom emerged as a leader among five Asia-Pacific markets in its willingness to share social media information. Despite Thailand's reputation as a 'digital innovation incubator,' factors like value for money (52%), trust in the brand (37%), and affordable premiums (38%) remain key drivers in selling insurance policies (Capco, 2023). It could be argued that VP is the linchpin influencing insurance customers' decisions. It's not solely about finding the lowest-priced policy but about identifying a policy that offers the best combination of coverage. Consequently, this assessment is subjective and value-driven (El-Adly, 2019; Weedige et al., 2019). Moreover, it significantly impacts a potential policyholder's choice of one insurance provider over another.

Insurance customers naturally aim to maximize the benefits they receive while minimizing the costs they incur. VP empowers them to strike the right balance, ensuring they obtain adequate coverage for their needs without overpaying (Ulbinaite et al., 2013). Furthermore, customers often encounter numerous insurance options, each with distinct features and pricing structures. Value perception enables them to make informed decisions by comparing the relative advantages of various policies in light of their unique requirements. Based on the theory and literature surrounding VP, the study's authors have formulated the following final hypothesis:

(H6): Customer *value perception* (VP) influences agency *digital insurance technology* (DIT)

directly and positively.

### 2.4. Digital Insurance Technology (DIT)

In recent years, the insurance industry in East Asia has experienced a significant transformation due to the advent of *InsurTech*. InsurTech is a term used to describe innovative use of digital technology to enhance and streamline insurance operations (Bughin et al., 2017; de Ferrieres, 2021; McKinsey, 2017; OECD, 2017). Technological innovation is a key driver of change in the financial sector which is leading to immeasurable efficiency gains, even though these changes can initially be viewed with uncertainty and doubt (OECD, 2017). As Thailand's broader vision is to become a regional financial hub, the importance of InsurTech cannot be understated.

The region is witnessing the fusion of traditional insurance practices with cutting-edge technology, resulting in more accessible, cost-effective, and customer-centric insurance solutions. As technology advances, Thailand's insurance industry is poised for further evolution and growth (Archapitakvong, 2020).

Some have called this ongoing digital revolution 'disruptive,' where only the strong will survive (de Ferrieres, 2021; McKinsey, 2017). The recent massive insurance losses from COVID-19 claims have added to the disruption, which Thailand's insurance regulator believes is a call for mergers, acquisitions, and knowledge transfers, which according to many can be accelerated through the application and use of InsurTech (Sangnuan, 2023; "Thai Insurance regulator suing two companies," 2022). F*inally, Table 1 details the study's constructs, manifest variables, and supporting literature.*

Table 1. Study constructs, survey items, and supporting literature

| Study Constructs | Survey Questionnaire Manifest Variables (25) | Supporting Literature |
|---|---|---|
| **Service Quality (SQ)** | Promptness (SQ1)<br>Trustworthiness (SQ2)<br>Data security (SQ3)<br>Service provisioning (SQ4)<br>Customer communications (SQ5) | (Abdur Rehman et al., 2021; Chimedtseren & Safari, 2016; Li et al., 2021; Limna & Kraiwanit, 2022; Marcos & Coelho, 2022; Meeboonsalang & Chaveesuk, 2019; Nzyoka and Orwa, 2016; Uzir et al., 2021). |
| **Organizational Image (OI)** | Organizational advertising (OI1)<br>Organizational social responsibility (OI2)<br>Organizational ethics (OI3)<br>Customer Relationship Management (OI4)<br>Distinctiveness (OI5) | (Abdur Rehman et al., 2021; Albetris, 2021; Chen et al., 2021; Lee et al., 2017; Yasin & Bozbay, 2011; Zhang & Ahmad, 2022). |
| **Value Perception (VP)** | Service pricing (VP1)<br>Customer expectations (VP2)<br>Product benefits (VP3)<br>Overall value (VP4)<br>Value perception (VP5) | (Abdelfattah et al., 2015; Capco, 2023; Dhasan and Aryupong, 2019; El-Adly, 2019; Meeboonsalang & Chaveesuk, 2019; Ulbinaite et al., 2013; Uzir et al., 2021; Weedige et al., 2019). |
| **Digital Insurance Technology (DIT)** | Technological Innovation (DIT1)<br>Newness (DIT2)<br>Perceptions of trust (DIT3)<br>Security (DIT4)<br>Digital platform performance (DIT5) | (Archapitakvong, 2020; Bughin et al., 2017; Chang & Lee, 2020; de Ferrieres, 2021; Khatoon et al., 2020; Lin & Chen, 2020; McKinsey, 2017; OECD, 2017; Sangnuan, 2023; Shree & Nagabushanam, 2018). |

## 3. Methods

### 3.1. Research Objectives

1. To examine which factors influence a Thai insurance agency policyholder's desire to purchase additional policies due to the agency's ability to provide products through the use of digital

insurance technologies (DITs). Focus is given to variables such as service quality, organizational image, and value perception (Figure 1).
2. To evaluate the structural equation model (SEM) fit and quantitatively explore the relationships and interactions among these variables to understand how they collectively influence DIT.
3. To examine the results and make recommendations.

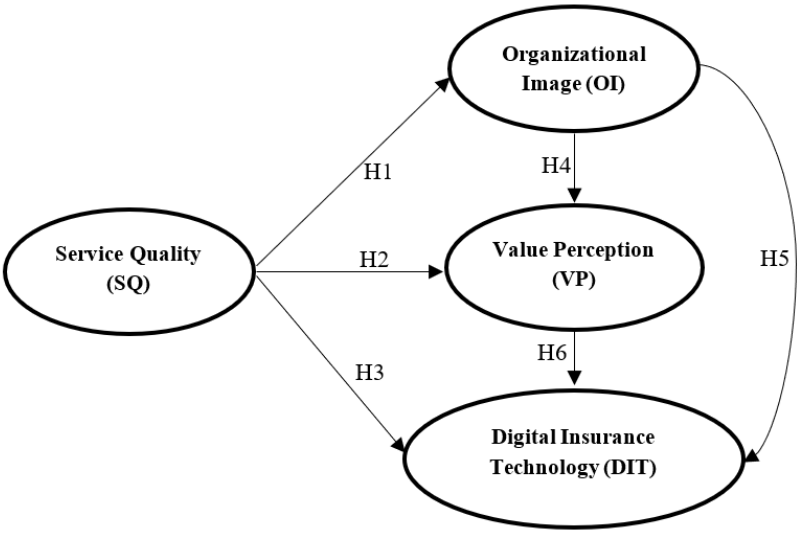


Fig. 1: SEM conceptual model.

## 3.2. Research Design

This study aimed to explore the perspectives of Thai insurance policyholders regarding the factors influencing their adoption of digital insurance technologies. The participants in this investigation were individuals aged 21 or older, constituting the population of Thai insurance agency customers in 2022. At the study's initiation, Thailand's Office of the Insurance Commission reported the existence of 52 insurance agencies.

The determination of study sample sizes involves various methodologies, and for this research, the authors chose the widely employed variable multiple determination method. Following the guidance of Markus (2012) and drawing on the recommendations of Schumacker and Lomax (2016), who suggest a range of 10-20 questionnaires per manifest variable, the authors targeted a sample size of 500. Ultimately, 88% of this target was achieved, resulting in 440 completed questionnaires (refer to Table 2). This sample size aligns with the higher end of the recommended range for studies utilizing Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM) methods, as indicated by Kyriazos (2018). The data collection process employed an online survey conducted through Google Forms in early 2022, with participant recruitment facilitated through social media channels. Ethical considerations were adhered to, and participants were presented with informed consent notifications before engaging in the survey.

Table 2: Sample collection process overview

| Thai Insurance Companies | Target | Collected | % |
|---|---|---|---|
| Bangkok Insurance Public Company Limited | 50 | 43 | 86 |
| Chao Phaya Insurance Public Company Limited | 50 | 42 | 84 |
| Dhipaya Insurance Public Company Limited | 50 | 43 | 86 |
| Deves Insurance Public Company Limited | 50 | 47 | 94 |
| Thanachart Insurance Company Limited | 50 | 45 | 90 |
| Safety Insurance Public Company Limited | 50 | 44 | 88 |
| Muang Thai Insurance Public Company Limited | 50 | 45 | 90 |
| Viriyah Insurance Company Limited | 50 | 43 | 86 |

| | | | |
|---|---|---|---|
| Allianz Ayudhya Assurance Public Company Limited | 50 | 45 | 90 |
| Southeast Insurance Public Company Limited | 50 | 43 | 86 |
| | **500** | **440** | **88** |

### 3.3. Survey Instrument

The questionnaire's contained items covering each customer's personal characteristics (Table 3). Questionnaire Parts 2-6 used a seven-level scale to assess each insurance agency customer's opinions concerning four main topics, including Part 2's service quality (SQ), Part 3's organizational image (OI), Part 4's value perception (VP), and Part 5's digital insurance technology (DIT) (Table 4). These four sections constituted the core of the survey and employed a 7-level scale to gauge participants' opinions. The scale was anchored with '1' representing 'strongly disagree' (ranging from 1.00-1.85) and '7' signifying 'strongly agree' (6.11-7.00). The remaining five scale values were represented by '2' as ' *mostly agree* ' (5.26-6.10), '3' as 'somewhat agree' (4.41-5.25), '4' as 'moderate agreement' (3.56-4.40), '5' as 'somewhat disagree' (2.71-3.55), and '6' as 'disagree' (1.86-2.70). Expert input was used to make adjustments to questionnaire items, with item reliability ensured from a pilot test with 35 participants.

### 3.4. Questionnaire Expert Validation and Pilot-Test

Expert input was used to make adjustments to questionnaire items, with item reliability ensured from a pilot test with 35 participants. The research team formulated 47 questions and subjected them to a Content Validity Check with five experts. This process aimed to determine the Index of Item – Objective Congruence (IOC), a measure of content alignment with the research objectives. The IOC values ranged from 0.60 to 1.00 for 43 questions. Additionally, the experts suggested revising some questions to make them more concise and easily understandable.

After incorporating these suggestions, the refined questionnaire was then pilot-tested (Try Out) with a group of 50 insurance company customers in Thailand, who were not part of the actual sample. This trial aimed to assess the reliability (α) of the questionnaire, as indicated in Table 4.

## 4. Results

### 4.1. Customer Characteristics

Table 3 details the customer responses concerning their characteristics, indicating that 58.41% were men. The age groups of 31-40 and 41-50 were nearly equal, representing 30.91% and 29.77%, respectively. Education levels were also high, with 52.95% indicating they had obtained an undergraduate degree with another 23.86% indicating they had completed a post-graduate degree. Surprisingly, 42.50% were single, with only 16.59% still married. Concerning employment, 31.14% indicated they were working in private firms. Finally, 39.77% of those surveyed had monthly incomes over $1,241 (45,000 Thai baht).

Table 3. Customer personal characteristics

| General information | Policy Holders | % |
|---|---|---|
| **Gender** | | |
| Man | 257 | 58.41 |
| Woman | 183 | 41.59 |
| **Age** | | |
| 21-30 years of age | 93 | 21.14 |
| 31-40 years of age | 136 | 30.91 |

| | | |
|---|---|---|
| 41-50 years of age | 131 | 29.77 |
| 51-60 years of age | 73 | 16.59 |
| More than 60 years of age | 7 | 1.59 |
| **Education Level** | | |
| Lower than Vocational Certificate or Associate Degree | 14 | 3.18 |
| Vocational Certificate or Associate Degree | 75 | 17.05 |
| BA/BS degree | 233 | 52.95 |
| Graduate degree | 105 | 23.86 |
| Not specified | 13 | 2.95 |
| **Relationship Status** | | |
| Single | 187 | 42.50 |
| Married | 73 | 16.59 |
| Divorced/Widowed | 74 | 16.82 |
| Not specified | 106 | 24.09 |
| **Employer** | | |
| State enterprise or government employee | 106 | 24.09 |
| Private company | 137 | 31.14 |
| Personal business | 75 | 17.05 |
| General employee | 74 | 16.82 |
| Other. | 48 | 10.91 |
| **Monthly Income** | | |
| $415 or less (USD values converted from Thai baht) | 12 | 2.73 |
| 415-$690 | 81 | 18.41 |
| $690-966 | 69 | 15.68 |
| $966-$1,241 | 103 | 23.41 |
| $1,241 and up. | 175 | 39.77 |

## 4.2. Confirmatory Factor Analysis (CFA) for Exogenous and Endogenous Latent Variables

Prior to conducting Structural Equation Modeling (SEM) testing, Jöreskog et al. (2016) recommend performing a Confirmatory Factor Analysis (CFA) to assess construct reliability (CR). CR gauges the consistency of customer responses, while Composite Variance (CV) measures the means. Acceptable values for Average Variance Extracted (AVE) should be ≥ 0.5, and CR should be ≥ 0.6. The results presented in Table 4 demonstrate robust AVEs ranging from 0.74 to 0.79 and CR values ranging from 0.93 to 0.96, indicating strong CV.

Moreover, the literature suggests that standardized loadings should be ≥ 0.50 to be considered acceptable, with values ≥ 0.707 deemed very good (Pimdee, 2021). Lastly, $R^2$ values ≥ 0.75 are considered substantial, ≥ 0.50 are moderate, and ≥ 0.25 are weak (Mamun et al., 2021). These findings affirm the presence of strong CV and CR, thereby validating the model's appropriateness for subsequent SEM analysis (Westen & Rosenthal, 2003).

Table 4. Cronbach's alphas, AVEs, construct CRs, factor loadings, and $R^2$s

| Latent variables | α | AVE | CR | Manifest Variables | Loadings | $R^2$ |
|---|---|---|---|---|---|---|
| **Service Quality (SQ)** | 0.95 | 0.79 | 0.95 | SQ1 | 0.86 | 0.75 |
| | | | | SQ2 | 0.90 | 0.81 |
| | | | | SQ3 | 0.89 | 0.79 |
| | | | | SQ4 | 0.87 | 0.76 |
| | | | | SQ5 | 0.93 | 0.86 |
| **Organizational Image (OI)** | 0.94 | 0.77 | 0.94 | OI1 | 0.90 | 0.81 |
| | | | | OI2 | 0.89 | 0.79 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | OI3 | 0.85 | 0.73 |
| | | | | OI4 | 0.92 | 0.85 |
| | | | | OI5 | 0.83 | 0.69 |
| **Value Perception (VP)** | 0.93 | 0.77 | 0.94 | VP1 | 0.93 | 0.86 |
| | | | | VP2 | 0.90 | 0.80 |
| | | | | VP3 | 0.90 | 0.82 |
| | | | | VP4 | 0.82 | 0.67 |
| | | | | VP5 | 0.84 | 0.71 |
| **Digital Insurance Technology (DIT)** | 0.94 | 0.74 | 0.93 | DIT1 | 0.83 | 0.68 |
| | | | | DIT2 | 0.86 | 0.73 |
| | | | | DIT3 | 0.90 | 0.80 |
| | | | | DIT4 | 0.89 | 0.79 |
| | | | | DIT5 | 0.81 | 0.66 |

## 4.3. CFA Goodness-of-Fit (GoF) Testing Results

Table 5 details the GoF's criteria, supporting theory, and final CFA GoF assessment values. The results all indicated that the model's values were in harmony with established criteria and theory.

Table 5. Customer DIT model goodness-of-fit (GoF) analysis

| Criteria Index | Supporting theory | Criteria | Study Values | Results |
|---|---|---|---|---|
| Chi-square: $\chi 2$ | (Byrne, 2013) | $p \geq 0.05$ | 0.22 | accepted |
| $\chi 2$/df | (Byrne, 2013) | $\leq 2.00$ | 1.10 | accepted |
| RMSEA | (Hu and Bentler, 1999) | $\leq 0.05$ | 0.01 | accepted |
| GFI | (Jöreskog et al., 2016) | $\geq 0.90$ | 0.97 | accepted |
| AGFI | (Schumacker and Lomax, 2016) | $\geq 0.90$ | 0.95 | accepted |
| RMR | (Doğan, 2022) | $\leq 0.05$ | 0.01 | accepted |
| SRMR | (Doğan, 2022) | $\leq 0.05$ | 0.01 | accepted |
| NFI | (Rao et al., 2011) | $\geq 0.90$ | 1.00 | accepted |
| CFI | (Rao et al., 2011) | $\geq 0.90$ | 1.00 | accepted |
| Cronbach's Alpha | (Hair et al., 2021) | $\geq 0.70$ | 0.93-0.95 | accepted |

## 4.4. Data Analysis Results

The correlation decomposition results shown in Table 6 (Pimdee, 2020) indicate that insurance agency service quality (SQ) plays a very significant role in an insurance agency' organizational image (OI). When evaluating skewness and kurtosis values, it has been suggested that acceptable criteria values for skewness should be $\leq |2|$ *and kurtosis* $\leq |7|$ *(*Curran et al., 1996), with Kim (2015) adding that skewness and kurtosis *p*-values assess data normality. Therefore, the latent variables' skewness values (-0.78 to -.99) ($\leq |2|$) and kurtosis values (.65 to 1.43) ($\leq |7|$) met established criteria, with all relationships determined to be significant at the $p \leq .01$ level. Furthermore, internal consistency was achieved as all the variables were significantly higher than $\geq 0.70$ (Hair et al., 2021).

Table 6. The mean, standard deviations (SD), skewness, kurtosis, and correlation coefficients between latent variables

| Latent variables | Mean | SD | Skew | Kurt | SQ | OI | VP | DIT |
|---|---|---|---|---|---|---|---|---|
| **Service Quality (SQ)** | 5.77 | .81 | -.99 | 1.43 | 1 | .92** | .89** | .86** |
| **Organizational Image (OI)** | 5.71 | .81 | -.78 | .66 | | 1 | .90** | .86** |
| **Value Perception (VP)** | 5.73 | .85 | -.88 | 1.03 | | | 1 | .90** |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Digital Insurance Technology (DIT)** | 5.71 | .86 | -.87 | .65 | | 1 |

*Note. **Sig. ≤ .01*

Table 7 shows the direct effect (DE), indirect effect (IE), and total effects (TE) between the latent variables. The results revealed that SQ (0.94), VP (0.73), and OI (0.31) were all influential factors affecting DIT, collectively explaining 88% of the variance ($R^2$). It should also be noted the exceptional relationship strength from OI to SQ (0.96).

Table 7. Standardized SEM coefficients of influence of variables influencing DIT

| **Dependent variables** | **$R^2$** | **Effect** | **Independent variables** | | |
|---|---|---|---|---|---|
| | | | **SQ** | **OI** | **VP** |
| Organizational Image (OI) | .92 | DE | 0.96** | | |
| | | IE | - | | |
| | | TE | 0.96** | | |
| Value Perception (VP) | .88 | DE | 0.54** | 0.41** | |
| | | IE | 0.40** | - | |
| | | TE | 0.94** | 0.41** | |
| Digital Insurance Technology (DIT) | .88 | DE | 0.24* | 0.01 | 0.73** |
| | | IE | 0.70** | 0.30** | - |
| | | TE | 0.94** | 0.31** | 0.73** |

*Note. *Sig. ≤ .05, **Sig. ≤ .01*

Table 8 and Figure 2 show the SEM analysis results, with five of the six hypotheses determined to be consistent and supported.

Table 8. Results of research hypothesis testing

| **Hypotheses Statements** | **Coef.** | **t-test** | **Results** |
|---|---|---|---|
| (H1) Service quality (SQ) influences organizational image (OI) directly and positively. | 0.96 | 22.13* | consistent |
| (H2) Service quality (SQ) influences customer value perception (VP) directly and positively. | 0.54 | 5.24** | consistent |
| (H3) Service quality (SQ) influences agency digital insurance technology (DIT) directly and positively. | 0.24 | 2.16* | consistent |
| (H4) Organizational image (OI) influences customer value perception (VP) directly and positively. | 0.41 | 3.98** | consistent |
| (H5) Organizational image (OI) influences agency digital insurance technology (DIT) directly and positively. | 0.73 | 8.03** | consistent |
| (H6) Customer value perception (VP) influences agency digital insurance technology (DIT) directly and positively. | 0.01 | 0.01 | inconsistent |

*Note. *Sig. ≤ .05, **Sig. ≤ .01, coef. = coefficient of determination*

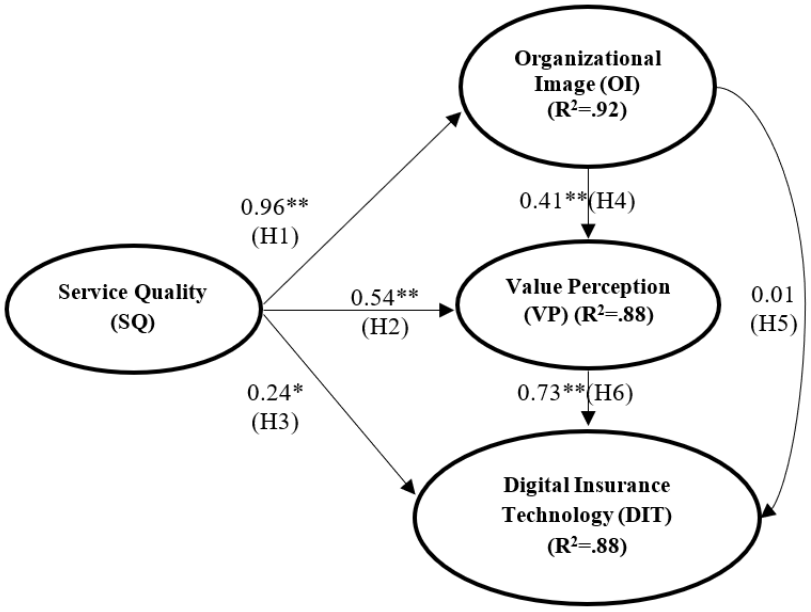


Fig. 2: Final SEM of variables influencing DIT.

# 5. Discussion

This empirical study explored the influential factors shaping Thai insurance policyholders' perceptions of digital insurance technology (DIT) and its significance in the evolving landscape. Using a Structural Equation Model (SEM), the research investigated the roles of service quality (SQ), value perception (VP), and organizational image (OI) in DIT adoption. A sample of 440 customers from ten Thai insurance agencies in early 2022 was analyzed through stratified random sampling and quantitative methods, with data collected via a Google Form link distributed through social media.

The SEM path analysis revealed that all the causal variables positively affect DIT, collectively explaining 88% of the variance ($R^2$). The order of latent variable importance places service quality (SQ) as the most critical factor (TE=0.94), followed by value perception (VP) and organizational image (OI) with TE values of 0.73 and 0.31, respectively. Descriptive statistics analysis of latent variables indicates significant agreement from customer respondents, particularly for SQ.

The testing results for SQ, OI, VP, and DIT unveil key interrelationships and strengths. SQ strongly influences OI and moderately affects VP, while its impact on DIT is positive but weaker. OI shows strong influences on both VP and DIT, emphasizing its pivotal role. However, the relationship between VP and DIT appears inconsistent and unsupported.

The study's robust findings highlight the importance of DIT innovation in customer insurance sales, aligning with previous research in Taiwan (Chang & Lee, 2020) and Qatar (Khatoon et al., 2020). Manifest variables analysis indicates specific strengths within SQ, OI, VP, and DIT dimensions. The study concludes that DIT has ushered in transformative changes, creating new customer requirements and altering information search and purchasing patterns in the insurance sector.

In conclusion, this research contributes actionable intelligence for policymakers and industry stakeholders in navigating the digital transition of Thailand's insurance sector. Elevating service quality and communicating innovative organizational images emerge as promising strategies. However, recognizing theoretical and methodological limitations, further mixed-methods research is recommended to validate these findings across diverse perspectives in the industry.

## 5.1. Service Quality (SQ)Testing Results

SQ hypotheses testing found that the three conceptualized hypotheses were supported, with H1's interrelationship from SQ to OI showing the greatest support from the six hypotheses tested ($r$ = 0.96,

t-test = 22.13, $p \leq 0.05$). H2's interrelationship from SQ to VP was also moderately strong ($r = 0.54$, t-test = 5.24, $p \leq 0.01$). However, H3's interrelationship from SQ to DIT was weak but positive ($r = 0.24$, t-test = 2.16, $p \leq 0.05$). Similarly, another Malaysian study observed that positive perceptions of organizational image SQ are achieved through reliability, tangibility, and personalization (Abdur Rehman et al., 2021). Marcos and Coelho (2022) have also added that SQ has direct relationships with VP and CS.

Moreover, from the analysis of the five manifest variables (Table 9), it was shown that the questionnaire items for SQ4 were judged the strongest (*service provisioning*), followed by SQ3's *data security.* Overall, all five aspects of SQ's items were 'agree mostly' to by the customer respondents.

Table 9. Latent and manifest variables descriptive statistics

| Latent and manifest variables | Mean | Standard Deviation | Skewness | Kurtosis |
|---|---|---|---|---|
| **Service Quality (SQ)** | **5.77** | **.81** | **-.99** | **1.43** |
| Promptness (SQ1) | 5.74 | .87 | -.78 | .21 |
| Trustworthiness (SQ2) | 5.74 | .91 | -.71 | .60 |
| Data security (SQ3) | 5.81 | .89 | -.94 | 1.76 |
| Service provisioning (SQ4) | 5.83 | .90 | -.80 | .99 |
| Customer communications (SQ5) | 5.75 | .86 | -.97 | 1.39 |
| **Organizational Image (OI)** | **5.71** | **.81** | **-.78** | **.66** |
| Organizational advertising (OI1) | 5.72 | .87 | -.98 | 1.52 |
| Organizational social responsibility (OI2) | 5.76 | .84 | -.77 | .34 |
| Organizational ethics (OI3) | 5.68 | .97 | -.70 | .20 |
| Customer Relationship Management (OI4) | 5.70 | .86 | -.51 | -.06 |
| Distinctiveness (OI5) | 5.69 | .95 | -.57 | .25 |
| **Value perception (VP)** | **5.73** | **.85** | **-.88** | **1.03** |
| Service pricing (VP1) | 5.70 | .89 | -.69 | .81 |
| Customer expectations (VP2) | 5.76 | .93 | -.67 | .70 |
| Product benefits (VP3) | 5.69 | .96 | -.81 | .79 |
| Overall value (VP4) | 5.72 | .97 | -.78 | .60 |
| Value perception (VP5) | 5.78 | .91 | -.61 | .48 |
| **Digital Insurance Technology (DIT)** | **5.71** | **.86** | **-.87** | **.65** |
| Technological Innovation (DIT1) | 5.76 | .88 | -.66 | .35 |
| Newness (DIT2) | 5.68 | .89 | -.74 | .76 |
| Perceptions of trust (DIT3) | 5.61 | 1.02 | -.89 | .92 |
| Security (DIT4) | 5.75 | 1.03 | -.87 | .62 |
| Digital platform performance (DIT5) | 5.74 | 1.00 | -.91 | 1.02 |

*Note. All respondent answers were 'mostly agree' = 5.26-6.10*

## 5.2. Organizational Image (OI) Testing Results

OI hypotheses testing found that both hypotheses were supported, with H4's interrelationship between investigation of the role of CSR and OI during times of crisis (e.g., Covid-19) and found that OI was impacted by ethical, legal, and economic CSR.

Moreover, from the analysis of the five manifest variables (Table 9), it was shown that OI2's questionnaire item *organization social responsibility* was viewed as the strongest influence. This was followed by OI1's *organizational advertising*. Overall, all five aspects of OI's items were 'agree mostly' to by the customer respondents.

## 5.3. Value Perception (VP) Testing Results

VP hypotheses testing found that H6's relationship between VP and DIT was inconsistent and thus unsupported. Similarly, within Thailand's automotive industry, Dhasan and Aryupong (2019) have observed that VP operates as a multidimensional construct consisting of the product's quality (cognitive VP), service quality (affective VP), and price fairness (cognitive VP). These factors then predict customer engagement and loyalty. Abdelfattah et al. (2015) in Malaysia wrote that healthcare insurance customers are influenced by SQ, followed by VP in insurance service provider loyalty.

Weedige et al. (2019) also pointed out that various studies state that VP is subjective and is based on qualitative measures such as social, cultural, and emotional factors. Thus, VP is the willingness of a consumer to pay for services or goods based on the product's ability to fulfill a need and provider satisfaction. These results are consistent with a 2023 survey in Thailand in which Capco (2023) reported that premium affordability, VP, and brand trust are the most essential factors for Thai consumers in purchasing insurance.

Additionally, from the five manifest variables analysis (Table 9), it was shown that the questionnaire item VP5's *value perception* was judged the strongest. This was followed by VP2's *customer expectations*. Overall, all five aspects of VP's items were 'agree mostly' to by the customer respondents.

### 5.4. Digital Insurance Technology (DIT) Testing Results

The study's strength in determining that digital insurance technology (DIT) innovation is an essential factor in customer insurance sales is supported by research in Taiwan by Chang and Lee (2020). The authors established that service innovation within the life insurance sector positively and significantly influenced word-of-mouth and behavioral intention. In Qatar, it was observed that the quality of e-banking services was critical to long-term customer satisfaction (Khatoon et al., 2020). Bughin et al. (2017) also noted the disruptive nature of InsurTech and its importance in sustaining or getting a competitive advantage. These observations are further strengthened by Archapitakvong's (2020) health insurance study in Thailand, in which the thesis author stated that insurance customers tend to purchase insurance directly through online channels and have the power to make their own decisions, searching for health insurance policies priced between $139 to $276.

Moreover, from the analysis of the five manifest variables (Table 9), it was shown that the questionnaire items for DIT1 were judged the strongest (*technological innovation*). This was followed by DIT4's *security* and DIT5's *digital platform performance*. Overall, all five aspects of DIT's items were 'agree mostly' to by the customer respondents.

The use of digital tools within the insurance sector has changed how consumers search for information and purchase policies (Shree & Nagabushanam, 2018). Finally, from a recent Thai study, it was reported that 93% of the policyholders surveyed indicated their willingness to share their data with insurers in exchange for a range of benefits, including more personalized services, with VP, affordable premiums, and brand trust remaining the most critical decision drivers when purchasing policies.

## 6. Conclusion

As Thailand's insurance sector confronts the pressing digital transition alongside pandemic recovery, this investigation spotlights customer views driving technology acceptance. By quantifying key drivers like service excellence and corporate branding that retain market share during digital transformations, regulators and managers alike gain actionable intelligence to formulate supportive policies and strategies. Focused efforts to elevate service quality and communicate images of innovation appear most promising. Nonetheless, theoretical and methodological limitations should compel additional mixed-methods research to corroborate these conclusions across actor perspectives.

# 7. Contribution

The study's contribution lies in its comprehensive analysis of the Thai insurance industry, providing valuable insights for both regulators and insurance agencies. The following key lessons and recommendations emerge from our findings:

## 7.1. Regulatory Strategies

Lesson: Regulators should proactively address challenges posed by external factors, such as the COVID-19 pandemic, by implementing dynamic regulatory frameworks.

Recommendation: Regulatory bodies, like Thailand's Office of the Insurance Commission (OIC), should consider continuous monitoring and adaptive policy adjustments to mitigate unforeseen risks.

## 7.2. Industry Consolidation

Lesson: The regulatory encouragement of sectoral mergers has potential benefits for the financial health and competitiveness of remaining insurance agencies.

Recommendation: Insurance agencies should explore strategic collaborations and mergers, guided by regulatory support, to enhance their financial resilience and market position.

## 7.3. Technological Integration

Lesson: The impact of technological transformations on service delivery and accessibility is profound and necessitates strategic attention.

Recommendation: Insurance companies must invest in technology infrastructure, focusing on user-friendly distribution channels and effective management of Big Data.

## 7.4. Capital Management

Lesson: Adequate capital reserves are fundamental for cushioning against various risks and fostering customer loyalty.

Recommendation: Insurance companies should prioritize capital management strategies, emphasizing reliability, convenience, and swift customer service.

## 7.5. CSR and Image Building

Lesson: Corporate social responsibility (CSR) positively influences customer-brand identification and satisfaction.

Recommendation: Insurance companies should actively engage in CSR activities, fostering a positive image and strengthening customer relationships.

## 7.6. Value Perception and Customer Expectations

Lesson: Meeting customer expectations regarding coverage is a crucial driver of customer willingness to engage with insurance services.

Recommendation: Insurance companies should focus on value perception, offering flexible and cost-effective solutions to align with customer needs.

## 7.7. InsurTech Adoption

Lesson: InsurTech is a transformative force, requiring companies to adapt and reconsider corporate strategies.

Recommendation: Insurance agencies need to embrace InsurTech innovations, incorporating blockchain, artificial intelligence, and digitalization to enhance efficiency and customer-centricity.

By extracting these key lessons and offering practical recommendations, our study aims to provide actionable insights that can inform decision-making for both regulatory bodies and insurance agencies. We believe these findings contribute to the ongoing discourse on strengthening the Thai insurance industry amidst evolving economic, technological, and regulatory landscapes.

## 8. Implications and Suggestions

The findings offer invaluable insights that can substantially impact both government regulatory agencies and insurance providers, especially in the context of the considerable challenges faced by the Thai insurance industry in the aftermath of COVID-19. The pandemic disrupted everyday life and left a profound mark on the financial and insurance sectors. Several insurance agencies in Thailand have experienced significant losses due to the surge in claims arising from the pandemic. In some unfortunate cases, the financial burden has been so overwhelming that it led to the closure of these agencies. Against this backdrop, the study's revelations become even more pertinent.

Understanding these factors in a post-pandemic world is paramount. Insurance agencies should recognize that customers, who are now more conscious of their health and financial security, have different priorities and expectations. It is highly recommended that insurers provide further focus on online channels while finding innovative and creative ways that allow customers to customize their policies. Therefore, insurance agencies must adapt strategies to align with these customer-driven dynamics.

For regulatory bodies, the study suggests the importance of keeping a pulse on these changing dynamics within the insurance industry. It calls for a proactive approach to monitoring and adapting regulations to ensure they remain relevant and effective in protecting customers while facilitating the sustainability and growth of insurance agencies. This entails staying updated with industry trends, customer feedback, and emerging technologies in the sector.

## 9. Limitations

Some limitations of this study arise from its geographic scope as the data was obtained from only Thailand. Consequently, the findings' use within an international context may be limited. It is essential to recognize that customer behaviors, preferences, and insurance markets can vary significantly across countries and regions. Future research should replicate and extend these findings to a broader and more diverse set of nations to enhance the validity of the results.

Moreover, the data collection relied on social media platforms to distribute the online questionnaire link, which led to a self-selected group of respondents. This approach can introduce selection bias, as those who voluntarily participate may have unique characteristics that differ from the broader population. Inherent biases and preferences of social media users may affect the study's results. Future research should consider more diverse data collection methods to reduce potential biases.

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