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Importance-Performance Analysis of Online Insurance: Communication and Networking †

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Abstract: Over the past few decades, drastic advances in technology have forced insurers to seek transformation in order to survive in a changing environment. Along with the outbreak of COVID-19, online insurance has become a much-needed distribution channel for insurers, not only as a cost-effective option, but also in line with pandemic prevention measures. However, in contrast to insurers' vast investment in AI, chatbots, etc., online insurance only accounted for less than 2% of the total premium in Taiwan in 2022. This article uses importance-performance analysis (IPA) to identify disparities between client perceptions of crucial elements of online insurance services and their actual performance. The results show that among constructs such as perceived usefulness, ease of use, security, and service quality, customer experience can be greatly enhanced if insurers prioritize improving website security and service quality.

Keywords: InsurTech; importance-performance analysis; communication and networking

1. Introduction

With the swift advancement in technology, the Internet has changed people's lifestyles with its convenience and immediacy. More than five billion people had used the Internet as of January 2023, making up 64.4% of the world's population. Asia continued to be the region with the largest number of online users in 2022 [1]. Advances in electronic service technology have presented both enormous opportunities and challenges in a variety of business and service sectors at the same time, especially with the advancements in mobile devices and wireless infrastructure. Organizations have implemented innovative customer communication strategies in an effort to cut costs and retain profitability [2]. The digital transformation of financial services and the related growth of Fintech are made possible by information and communication technology (ICT).

It is particularly challenging for sector incumbents to enhance current value propositions due to the rapid pace of technology development and the restrictions imposed by legislation. Examples include the use of chatbots in banking services, quick response (QR) codes on credit cards, and insurances that hope to gain from blockchain [3]. However, companies that can effectively navigate these challenges may be able to gain a competitive advantage by offering innovative products and services that meet customer needs and expectations.

InsurTech is the design and delivery of insurance products and services through technology. The insurance sector is striving to use technology in response to the threats posed by disruptive new financial services. Among them, communication and networking technologies that allow customers and insurers to interact in the digital world are crucial for the development of online insurance. Although specific communication and networking technologies for insurers are outside the purview of this study, it is important to explore whether insurers can meet consumers' changing needs with them.

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Taiwan's insurance industry comprises a huge portion of financial institutions. The asset ratio of the insurance industry to financial institutions was 36.07% in 2021 [4]. However, compared to the thriving of mobile banking [3,5,6], Taiwan's insurers still struggle to move forward with their online distribution channels. Moreover, 84.3% of Taiwan's population had home Internet access in 2022 [7]. Despite the prevalence of the Internet, people are hesitant to provide important personal information on websites due to the lack of confidence in e-commerce security [8]. This is a big challenge for insurers, since extensive private financial and health information must be submitted when purchasing an insurance policy. As a result, less than 2% (1.96%) of the premium insurance received from newly issued insurance policies in 2021 came from online channels [4].

Based on the above, this study aims to identify the causes of the sluggishness of online insurance in Taiwan. The following are this study's major contributions. First, it investigates the relative importance of attributes to assist insurers in reinforcing and refining the evaluation of value-added web services and functions. Second, as a reference for customer relationship management (CRM) and marketing management strategies in the insurance sector, this study explores the perceived performance of consumers' online insurance experiences. Third, this study fills a gap in the insurance literature by applying importance-performance analysis (IPA), which is rarely addressed in the insurance sector. Based on research results, the authors provide suggestions concerning communication and networking technologies that can be applied to improve consumers' online insurance experiences.

2. Literature Review

2.1. Perceived Usefulness and Perceived Ease of Use

In order to provide a vigorous explanation for behavior prediction in the area of information technology adaptation, Davis (1989) proposed the technology acceptance model (TAM) [9]. The TAM's main contention is that a person's behavioral intention to use a system or piece of technology is influenced by its perceived usefulness and perceived ease of use [9,10]. The degree to which a person thinks using an information system would increase their productivity is known as perceived usefulness. The extent to which a person believes that using a certain system would be devoid of effort is the definition of perceived ease of use [9].

Applying TAM to insurance mobile application usage, Tang and Yeh (2018) identified perceived usefulness (PU) and perceived ease of use (PE) as significant factors [11]. Due to the complexity of human behavior and the limitations of models, there is no one framework that dominates most of the components concerning users' behavior toward technology usage. In an effort to reduce theories' level of constraint, Venkatesh et al. (2003) combined eight prior established theories of technology acceptance and developed a unified theory of acceptance and usage of technology (UTAUT) [12]. Customer satisfaction was positively impacted by consumers' perceptions of the usefulness and ease of use, according to an empirical study from the life insurance sector [10].

2.2. Website Security and Service Quality

Measures of safeguarding and discouraging hackers from violating customer's private information can be defined as website security. Studies have suggested that Internet users have serious concerns regarding their private information, therefore website security becomes a deciding factor in the development of e-commerce. Online customers will increase their tendency to participate in online transactions if they believe that websites offer solid security measures in protecting transactions and data safety [13].

The quality of services provided and perceived can be affected by customer expectations and service comprehension. Customer satisfaction is elevated if the service quality perceived exceeds the expected level. There is a lot of evidence showing a direct connection between customer satisfaction and service quality [14,15]. For e-commerce to be successful and to attract clients, the service quality of the system will be crucial. Website

security and service quality, which have been discovered in other studies, are characteristics we have considered when analyzing the factors influencing consumers' use of online insurance [16,17].

2.3. Importance-Performance Analysis

Martilla and James proposed importance-performance analysis (IPA) in 1977 [18]. In a conventional IPA, customers evaluate and determine the average value of importance and performance of various service qualities using the defined system, where the horizontal axis denotes performance and the vertical axis denotes importance. The average values of the importance and performance of various services and product elements are graphically displayed in a two-dimensional coordinate system, primarily in the region divided into four quadrants (Figure 1).

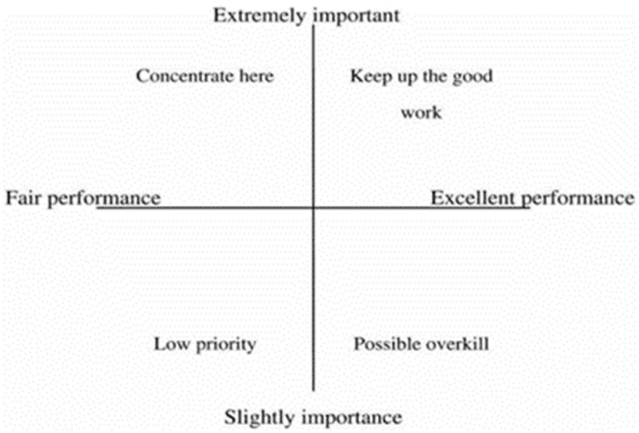

Figure 1. Importance-Performance Grid, Source: Martilla and James, 1977 [18].

In today's environment of rapid technological innovation and worldwide competition, managers must regularly evaluate how satisfied customers are with the services and goods they are supplied. IPA is a helpful and practical tool that can assist decision-makers in identifying service/product components, and hence, allocating resources to where they may boost customer satisfaction. For example, attributes in quadrant II indicate high importance to customers, yet the perceived performance is low. Therefore, these attributes should receive immediate attention and effort, so that customers are not drawn away.

For IPA, choosing the appropriate collection of attributes is essential because the subsequent managerial decisions are based on the scores assigned to these attributes. It is advised that performance and importance be evaluated using the same set of criteria [19]. Based on the previous literature, this article uses perceived usefulness, ease of use, security, and service quality to identify disparities between client perceptions of crucial elements of online insurance services and their actual performance.

3. Methodology

The statistical population in the present research consisted of online insurance customers in Taiwan. This research utilized random sampling to collect data using a questionnaire survey. Please see Appendix A for sample questionnaire items. A five-point Likert scale questionnaire assessed each attribute's importance and the performance of each attribute was distributed to gather data to determine the relationship between the study variables. In all, 300 people were randomly selected. After removing the unusable and incomplete ones, 263 questionnaires were ready for analysis. The effective rate of the questionnaire was 87.67%.

In Table 1, a sample demographic summary is presented. The sample was 62.74% female and 37.26% male, respectively. Since 92.4% of the respondents were under the age of 50, the sample was mostly made up of young and middle-aged people. Given that

the sample was only comprised of people with experience in online insurance, the age distribution was fair. The majority of responders had a college or university degree or higher (95.06%).

Table 1. Description of the sample.

Item	Category	Number of Sample	(%)
Gender	Male	98	37.26
	Female	165	62.74
Age	20–29	105	39.92
	30–39	82	31.18
	40–49	56	21.29
	Over50	20	7.60
Education	Senior high and under	13	4.94
	College/university	207	78.71
	Graduate school	43	16.35

Scale reliability in this study was measured using Cronbach's alpha method. Cronbach's alpha is a standard measure of reliability, with values above 0.7 indicating acceptable reliability [20]. There were two sections to the survey questionnaire. The respondents' demographic data, such as gender, age, and educational attainment, were tallied in the first section. Each respondent was asked to rate how much they agreed or disagreed with each statement in the second section. A five-point Likert scale was used to gather the data to facilitate the measurement of the constructs. Twenty attributes measuring the four constructs were included in the questionnaire. The sources and definitions of the constructs are compiled in Table 2.

Table 2. Definition of key variables.

Construct	Definition	Sources
Perceived usefulness (PU)	The degree to which a person believes that using an online insurance channel would enhance or improve his or her condition.	Davis [21] Elseidi [22]
Perceived ease of use (PE)	The degree to which a person believes that using an online insurance channel would be free of effort.	Davis [21] Elseidi [22]
Website security (WS)	The degree to which respondents perceived regarding the security of the insurers' online insurance channel.	Mecovac [13] Li et al. [16]
Service quality (SQ)	A person's subjective evaluation of the service quality of the insurers' online insurance channel.	Haussen et al. [14] Li et al. [16]

4. Results

4.1. Reliability Analyses

Statistical software SPSS 18 was used for the questionnaire analysis. The calculation of the questionnaire's reliability was based on Cronbach's alpha coefficient. The questionnaire proved satisfying in terms of content validity, criterion-related validity, and construct validity (Table 3).

Table 3. Reliability Statistics.

Construct	Cronbach's Alpha
Perceived usefulness	0.884
Perceived ease of use	0.865
Website security	0.905
Service quality	0.924

4.2. Importance-Performance Scores

To establish criteria for the importance-performance analysis, this study combined the diagonal approach with the data-centered quadrants approach (IPA). We used the differences between the performance score and the importance score to plot and arrange the attributes within each quadrant after applying the grand mean of importance and performance scores to divide the attributes into four quadrants.

The average relevance and performance ratings given by survey respondents are shown in Table 4 for each of the 20 online insurance channel attributes. Of the 20 attributes, the top level of performance, on average, was easy access, time saving, and a secure infrastructure platform. However, the scale averages of performance were lower than the scale averages of importance for all attributes, indicating that customers' evaluation of importance was higher than performance.

Table 4. Rank, Means of Importance, and Performance.

			Importance		Performance		Gap	
Items	**Mean**	**Rank**	**Std. Dev.**	**Mean**	**Rank**	**Std. Dev.**	**P-I**	**Rank**
PU1	4.457	11	0.621	4.295	6	0.678	−0.162	10
PU2	4.324	17	0.815	4.171	12	0.727	−0.152	9
PU3	4.438	13	0.692	4.343	4	0.691	−0.095	4
PU4	4.514	8	0.667	4.390	2	0.714	−0.124	7
PU5	4.505	9	0.695	4.162	13	0.845	−0.343	15
PE1	4.543	5	0.621	4.467	1	0.651	−0.076	3
PE2	3.733	20	0.902	3.876	20	0.958	0.143	1
PE3	4.133	19	0.844	4.029	19	0.882	−0.105	6
PE4	4.343	16	0.691	4.238	9	0.766	−0.105	5
PE5	4.381	15	0.726	4.333	5	0.716	−0.048	2
WS1	4.629	3	0.593	4.352	3	0.720	−0.276	11
WS2	4.648	2	0.554	4.248	8	0.757	−0.400	19
WS3	4.667	1	0.566	4.238	9	0.803	−0.429	20
WS4	4.629	3	0.542	4.286	7	0.743	−0.343	16
WS5	4.533	7	0.637	4.133	16	0.760	−0.400	17
SQ1	4.286	18	0.781	4.152	14	0.794	−0.133	8
SQ2	4.419	14	0.732	4.114	18	0.812	−0.305	13
SQ3	4.448	12	0.707	4.133	16	0.785	−0.314	14
SQ4	4.486	10	0.681	4.200	11	0.813	−0.286	12
SQ5	4.543	5	0.636	4.143	15	0.786	−0.400	17

Note: Performance and importance scores are based on a 1–5 Likert scale.

The IPA results for online insurance attributes are graphically shown in Figure 2. The average values of the importance and performance of various attributes are graphically displayed in a two-dimensional coordinate system, primarily in the region divided into four quadrants. As mentioned above, attributes fall within the second quadrant, indicating a high expectation yet low perception.

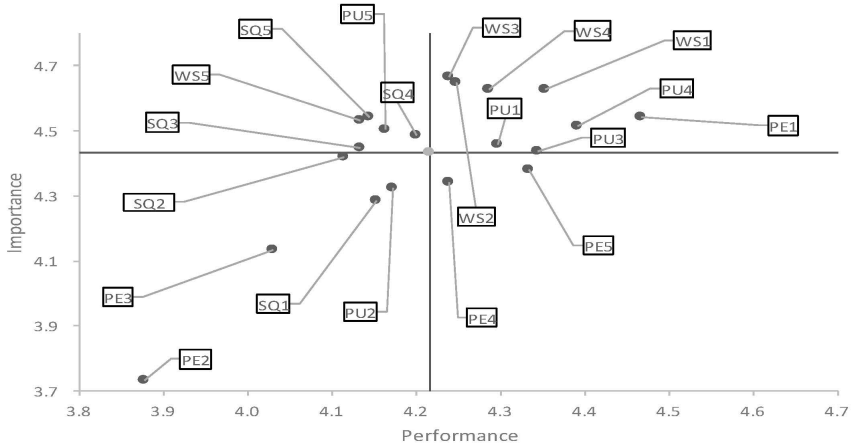

Figure 2. IPA Chart for Online Insurance Attributes.

Based on the results of the above IPA chart, we organized the attributes in quadrant II, as shown in Table 5. The attributes in quadrant II indicate that consumers value these services, but are not satisfied with the performance of the services provided and they need to be improved as a matter of priority. Three out of five are attributes concerning service quality, and the remaining two attributes pertain to perceived usefulness and website security, respectively.

Table 5. Attributes in Quadrant II.

Attributes	Measures
PU5	I can save money by using online insurance websites.
WS5	Online insurance website security is increased by the use of digital signatures.
SQ3	Online insurance channel technology boosts competitiveness while enhancing customer service.
SQ4	Online insurance channels are accessible, user-friendly, and simple to use.
SQ5	Technical support is excellent, and the quality of the services is adequate.

5. Discussion and Conclusions

The purpose of this study was to understand consumers' online insurance behavior, and analyze customers' perceptions of the importance and performance of online insurance services, in order to find ways to improve customer satisfaction and customer loyalty, and to provide suggestions for business improvement in the insurance industry. We used importance-performance analysis (IPA) to identify disparities between client perceptions of crucial elements of online insurance services and their actual performance.

It demonstrated that customers consider service quality to be crucial while using online insurance websites. Customers' evaluations of performance, however, fell short of what they had hoped for. As a result, this study makes the case for insurance companies to use communication and networking technologies, such as artificial intelligence, to support customer care so that customers can receive prompt assistance when they run into issues with online insurance. Additionally, to address security issues, insurance companies can implement blockchain technology and conduct a routine security scan at least once every three months or once a year so that customers will feel more at ease providing information online.

Nevertheless, for our study and future research areas, some limitations may be worth attention. First, the interpretation of attributes near the thresholds of discrimination is a problem in IPA. It is challenging to interpret these characteristics with an acceptable confidence level [23,24]. Because the mean, which is often applied to indicate the significance

and effectiveness of a characteristic, does not reveal information regarding a distribution's variability, the results must be evaluated with great care. Second, while the ease of use and understanding of IPA may explain its widespread acceptance and application, this does not necessarily ensure its validity [19].

Furthermore, given the emerging and changing nature of the insurance technology field, it may not be appropriate to directly apply the constructs and attributes validated in the past literature. Researchers should exercise discretion in the process of attribute selection. We suggest that the major components of online insurance attributes could be identified using Exploratory Factor Analysis (EFA), and the findings of the two analyses should be compared in future studies to determine the convergent validity of IPA.

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Appendix A

Table A1. Sample questionnaire items.

Attributes	Measures
	Perceived Usefulness (PU)
PU1	I can find products and make purchases more quickly by using online insurance websites.
PU2	Online insurance websites make it easier to look for and buy insurance.
PU3	Online insurance websites improve my performance when looking for and buying products.
PU4	I can save time by using online insurance websites.
PU5	I can save money by using online insurance websites.
	Perceived Ease of Use (PE)
PE1	It is ease to access online insurance websites.
PE2	My interaction with the online insurance websites is simple and straightforward.
PE3	I find the online insurance websites are easy to use.
PE4	The layouts of online websites are ease to use.
PE5	The online insurance websites are flexible to interact with.
	Website Security (WS)
WS1	There are secure infrastructure platforms in online insurance websites.
WS2	Stability in the way services are provided in online insurance websites creates security.
WS3	The use of electronic and online insurance services is safe.
WS4	Confidentiality of information is protected in online insurance websites.
WS5	Online insurance website security is increased by the use of digital signatures.

Table A1. *Cont.*

Attributes	Measures
	Service Quality (SQ)
SQ1	The speed of service delivery in online insurance channel is satisfactory.
SQ2	Online insurance channel technology reduces the cost of purchasing insurance.
SQ3	Online insurance channel technology boosts competitiveness while enhancing customer service.
SQ4	Online insurance channels are accessible, user-friendly, and simple to use.
SQ5	Technical support is excellent, and the quality of the services is adequate.

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