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A Study on the Development of the Communality Model of Service Quality for the Non-face-to-face and Face-to-face Automobile Insurance Market in China

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ABSTRACT

Purpose: This study aims to develop a communality model to measure the service quality that the customers encounter on face-to-face and non-face-to-face automobile insurance before and after insurance purchase.
Methods: For these purposes, we conduct a five-step program to develop a comprehensive communality model to measure service quality except insurance purchase channels.
Results: As a result, we find five communality factors: value-added service for automobile maintenance, value-added service for drivers, quickness, dispatch service, and convenience of the service process. And the relative importance of service quality factors was in the order of value-added service for drivers, the convenience of the service process, quickness, and dispatch service, respectively.
Conclusion: This study developed the opportunities to enhance service quality to attract customers. And it contributes to the academic literature by reporting the industry-specific service quality model, which maintains a theoretical gap in the online and offline automobile insurance industry.

Key Words: Automobile Insurance, Face-to-face, Non-face-to-face, Service Quality

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1. Introduction

The automobile insurance selling channel between customers and dealers is largely divided into two types(Cho et al., 2015). The first is a face-to-face automobile insurance channel that offers insurance-related services and products on a face-to-face basis between insurance agents and customers, wherein a series of services such as insurance brand search, service contents provision, subscription, maintenance, car accident handling, and termination of service are handled through face-to-face human contact(Dumm and Hoyt, 2003). The second is the non-face-to-face automobile insurance industry wherein the insurer provides services directly to customers online without human interference (such as from insurance agents). Non-face-to-face channels include online sales and telemarketing sales.

China's automobile insurance is popular and attracts industry practitioners and academics owing to its market size, purchasing channel, and growth rate. China's automobile insurance industry including face-to-face and non-face-to-face sales was a large market worth $103 billion in 2016(China Insurance Regulatory Commission, 2017). It was a high-growth market with a $83 billion market size in 2014 and a growth rate of 13 and 9.8% in in 2015 and 2016, respectively. Furthermore, the number of car owners in 2017 in China is 194 million. Total insurance industry assets, as of the end of 2018, stood at RMB 18.33 trillion (USD 2.71 trillion), a 9.45% increase from the beginning of the year. And the share of the auto insurance business in China has showed 57.68%, that is USD 1.54 trillion.

In addition to market growth, research on service quality in the automobile insurance industry in China has been actively conducted in Korea and China. The features of the previous studies on the automobile insurance industry are as follows. First, the service quality model of face-to-face automobile insurance in the Chinese insurance market conducted by Chinese researchers is based on the five service quality factors by Parasuraman, Zeithaml, and Berry (PZB)(Parasuraman et al., 1988; Jun and Qingxin, 2010). The PZB model is emphasized on the same service quality factors across various industries. Basically, their model claims that they have common quality of service factors despite being in different industries. Second, since PZB (1988), Chinese researchers had developed an industry-specific service model by claiming that the service quality model is different according to the industry as subject. However, they have not developed an industry-specialized model for the automobile insurance industry in China. Third, Korean researchers conducted industry-specific service quality for the face-to-face insurance market in China(Cho et al., 2015). Fourth, according to the previous research results, the service quality of auto insurance is composed of channel service factor, accident handling service factor (dispatch and service provisions), and value-added insurance service factor other than accident. Fifth, few studies have been conducted on the service quality model specialized in non-face-to-face automobile insurance industry in China. Therefore, research on the service quality measurement model for online insurance purchase and execution by non-face-to-face contact has not been conducted yet in China.

Although the applications of the service quality model for the Chinese automobile insurance market are well documented in the academic field in face-to-face channel, the report of the communality model for

service quality for face-to-face and non-face-to-face channels simultaneously to Chinese automobile insurance in practice has been relatively rare. In the existing service quality studies of Chinese automobile insurance industry, there is a face-to-face sales situation study, but no non-face-to-face sales situation study (Table 1). The reason for this is that the existing studies of service quality were mainly focused on face-to-face situations. From the perspective of consumers, the services of companies are evaluated by consumer regardless of face-to-face or non-face-to-face, so an industry-specific integrated service quality study is required. The researchers attempt to fulfill this gap by developing a communality model for the Chinese automobile market for the first time. This study focuses on the communality of service quality with both accident handling and value-added insurance service factors other than accident specialized in the automobile insurance industry in China including face-to-face and non-face-to-face channels. Various scholars have classified automobile insurance services in various ways. The service quality of the insurance company can be divided into the pre-purchase phase and the post-purchase phase(Kim et al., 2006), or the insurance purchase phase and service execution phase(Kong and Bang, 2019). Furthermore, the measurement factors of face-to-face and non-face-to-face service quality are different at the insurance pre-purchase stage or purchase stage. However, there is a characteristic that the service quality measurement of the automobile insurance service quality of the face-to-face or non-face-to-face contact is the same after purchase. In other words, although the purchasing channel of the automobile insurance industry is different, the contents of services other than the subscription service are the same.

Table 1. Positioning and Opportunities of This Paper on the Automobile Insurance Market in China

	Face-to-face only situation	Non-face-to-face only situation	Face-to-face and Non-face-to-face shared situation
Service quality model base on PZB focusing on common factor across industries	Jun Q. and Qingxin (2010)	None	None
Industry-specific service quality model	Cho et al. (2015)	None	The Positioning of This Paper

Table 2. Situation and Layout of Factors of Industry-specific Automobile Insurance Service

	Insurance purchase phase	Service execution phase
Face-to-face	Service quality factors at the point of contact with the offline insurance planner and the customer	Dispatch and insurance service contents factors
Non-face-to-face	Online contact service quality factors	Dispatch and insurance service contents factors

This study focuses on the quality at the dispatch service contact point and insurance service execution situation after separating insurance purchase situation. In other words, regardless of face-to-face or non-face-to-face purchases, we seek to measure the quality of service that focuses on the common services provided by real insurance companies after they are purchased insurance on both channels.

The purpose of this study is to develop a service quality model on industry-specific service points that are common between online with non-face-to-face and offline with face-to-face automobile insurance industry. In this way, the industry-specific service quality model, which remains academically empty, will be provided to the automobile insurance industry in China. In practice, we want to develop and present the service quality standards that customers perceive at the insurance service implementation stage, regardless of face-to-face or non-face-to-face sales situations.

Specifically, this study contributes to finding service factors in China's automobile insurance industry including face-to-face and non-face-to-face. And we develop a communality model for managing service quality comprehensively by reflecting those service factors. It contributes to finding key service factors for automobile insurance company by testing the developed communality model in terms of marketing performance. This will provide companies, which have access to the automobile insurance industry in China, with diagnostic tools to improve their services by identifying the relative importance of the strengths and weaknesses for insurance execution services and their factors.

2. Literature review

2.1 Chinese automobile insurance industry

In recent years, the Chinese automobile insurance industry has been characterized by an intensifying competition, price liberalization, and service quality enhancement(Abellana, 2020). The reason for this competition is due to the car sales volume of about 20 million per year. In China alone, 23.2 million cars were sold in 2016. 25.7 million automobiles were sold in 2019.

In this market, not only IT companies but also parcel service companies are entering the auto insurance market. China's largest search site Baidu, China's largest e-commerce company Alibaba, China's largest SNS service provider Tencent, Jingdong, and Xiaomi have jumped into the insurance market by creating insurance companies or acquiring stakes in existing insurance companies, creating an internet insurance boom. In addition, home delivery companies such as Wen Tung and Shingtong entered the insurance market. As a result, competition in the Chinese automobile insurance industry has reached a competitive level beyond the oligopoly(Wang et al., 2020). Furthermore, many insurance companies in various countries other than China are also paying attention to this market.

Meanwhile, the Chinese automobile insurance industry has been freeing its rates since July 2016. Before the liberalization, non-face-to-face sales insurance products called the direct sales market, including online sales and Telemarketing, were 15% cheaper than face-to-face sales. However, after liberalization, on-

line (non-face-to-face) and offline (face-to-face) sales prices became equal. Prior to price liberalization, offline agents sold illegal online products. The reason for the decrease in online non-face-to-face sales in 2015 as compared to 2016 is that many people entered online non-face-to-face sales after offline sales before price liberalization. As a result, there has been a distortion of the market, which was smaller than the direct market in 2016, as compared to 2015. However, in reality, non-face-to-face online insurance market is steadily increasing.

Thus, the number of companies entering the Chinese automobile insurance industry is increasing and competition among companies is increasing. Price competition through price liberalization is also encouraged, and companies are seeking different approaches to survive in intense competition(China Insurance Regulatory Commission, 2017). One of these approaches could improve service quality.

2.2 China Service Quality Model Research Achievement

China has been actively conducting research on service quality across various industries as shown at Table 3. China entered the Western world in the 2000s with WTO and began researching customer satisfaction with the services offered through the service quality model. The full-scale study of service quality in the West can be said to have begun to be used in earnest from joint research by PZB(Parasuraman et al., 1985). They stated the ten most important service quality factors as reliability, responsiveness, competence, access, courtesy, communication, credibility, security, understanding or knowing the customer, and tangibility(Parasuraman et al., 1985). In 1988, they concluded that the SERVQUAL model has been reduced to five types: tangibility, reliability, responsiveness, assurance, and empathy(Parasuraman et al., 1988). This model is a service quality model that can be commonly used in and across various industries. PZB's service quality model was presented in 1985, and several service quality studies in Korea were mainly conducted in 1990, so that China's service quality research is relatively late because the service quality model development in China has begun 2000s.

There are two main categories of service quality research in the service industry in China. One of the five service quality factors that can be used in the PZB industry in common is the measured service quality as shown at Table 3. The other is mainly the studies extracting industry specific service quality factors. In Table 3, we observe that most researches in service quality in China have been conducted based on the PZB model with five common factors. Therefore, many opportunities for developing industry-specific service quality model are existing in China.

Table 3. The Papers Related on Service Quality in Individual Industry in China

Researcher	Content	Research field	Remarks
Tang L. (2011) Fan et al. (2017)	Medical service quality evaluation model	Medical service	Five SERVQUAL measurements of PZB (1988)
Ma Z. (2012) Zeng and Wu (2020)	Quality assessment methods of personal cyber bank service	Bank service	Industry-specific measurement
Zhang et al. (2014)	Impact of personal automobile rental service quality on customer satisfaction	Automobile rental service	PZB (1988) measurement, Industry-common measurement
Guo et al. (2008) Jin and Liu (2020)	China cyber bank customer impression service quality improvement	Bank service	PZB (1988) measurement, Industry-common measurement
Lu and Liu (2000) Liu et al. (2020) Chou and Kohsuwan (2019)	Evaluation of medical services quality caused by patient experience	Medical service	PZB (1988) measurement, Industry-common measurement

2.3 Chinese automobile insurance industry service quality model

Few studies have conducted the service quality of the Chinese automobile insurance industry. Some researchers conducted a study on the difference in influence of service quality of Chinese private automobile insurance on customer satisfaction(Zhang et al., 2014). They developed service quality factors for the Chinese automobile insurance industry, based on the SERVQUAL developed by PZB. They analyzed the relationship between quality factors of automobile insurance service and customer satisfaction. Reliability, responsiveness, empathy, and assurance were found to affect customer satisfaction through the study of quality assurance of automobile insurance service of Chinese life and property insurance companies. Tangibility was found to have no effect on customer satisfaction. In this study, service quality was measured in face-to-face sales. Service quality was measured mainly by service quality from the insurer's recommendation to the actual purchase of the individual and the events occurring in the dispatch service.

Korean researchers Cho et al.(2015) conducted a study on the impact of automobile insurance in China on customer satisfaction and repurchase intention. They developed an industry-specific model that can measure the service quality of face-to-face insurance. They then classified the seller's attitude, the image of the insurance company, the accident handling service quality, the compensation service, and the supplementary service as the five determinants of service quality in face-to-face situations. The characteristics of this study are that it did not use the industry common service quality measurement variables developed

by PZB in the sales and execution services of the automobile insurance products. Essentially, they developed a unique service quality model for automobile service in China, covering 1) insurer solicitation and insurance price and 2) dispatch services and compensation and treatment services for incidents after insurance purchase. As a result, in the service quality study of the existing Chinese automobile insurance industry, no service quality model specialized in the non-face-to-face online automobile insurance industry.

2.4 Korea's automobile insurance service quality model

A study of the service quality model for automobile insurance in Korea presents the automobile insurance industry-specific service model beyond the PZB model based on the common service industry elements. In addition, the service quality model of automobile insurance is divided into face-to-face sales and non-face-to-face sales.

2.4.1 Automobile insurance service quality on the face-to-face sales

Kang and Cho(2008) classified the quality factors of auto insurance service into insurance product, insurance salesperson service, general service of insurance company, supplementary service of insurance company, and payment service of insurance company. Both these models have service quality factors are more appropriate for face-to-face sales situations.

Lee (2008) measured service quality in a study of the factors affecting customer satisfaction in the Korean automobile insurance industry. In this study, five service quality factors of PZB (1985) are used. Therefore, we find that research in automobile insurance service quality in the face-to-face sales of Korea is characterized by a mixture of industrial common factor research trend and industry specific factor extraction research.

They proposed a model for measuring the service quality of the situation when the insurance planner sells auto insurance to the customers. And they classified sales channel factor, product purchase, insurance payment service, customer management, and incidental service.

2.4.2 Automobile insurance service quality on the non-face-to-face sales

In Korea, research on service quality of non-face-to-face sales channels is limited. In particular, the study by Park et al. (2014) are the only one conducted on the service quality of automobile insurance. Major studies on the quality dimension of non-face-to-face sales channels include travel business, online shopping malls, home shopping, cyber lecture, airline, and so on(Seck and Philippe, 2013; Lim and Lee, 2020; Yin et al., 2020). Compared with that of face-to-face studies, non-face-to-face studies have been conducted relatively recently. This is probably due to the rapid expansion of the online automobile market in Korea.

Table 4. Positioning of the papers in Korean Automobile Insurance Market

	Face-to-face	Non-face-to-face	Face-to-face / Non-face-to-face
Same Service Quality Factor Model Based on PZB(1988)	Lee (2008)	Park et al. (2014)	None
Industry-Specific Service Quality model	Kang and Cho (2008)	None	Kong and Bang (2019)

Park et al. (2014) focused on the usability of the non-face-to-face service channels of automobile insurers in studying service quality and customer satisfaction of the equivalent automobile insurance sales channels. The non-face-to-face sales channel is a system that combines a human and IT base. According to PZB the industry service quality, the researchers used five factors (empathy, responsiveness, tangibility, reliability, and assurance).

Kong and Bang(2019) modified and developed the factors of the service quality model that can simultaneously consider both the face-to-face sales and the non-face-to-face sales situations based on the models of Kang and Cho(2008). Moreover, they measured four subscription channels, which included insurance planners (or employees), cyber transactions (internet insurance, online insurance), TV home shopping, and mail-order sales (e.g., mail, telephone, fax). The service quality factors of the automobile insurance companies extracted are insurance price, compensation, insurance planners, and service management factors.

As a result, in Korea, PZB proposed a service quality model for the non-face-to-face online automobile insurance products in the automobile insurance industry. However, there is no specific service quality model for the non-face-to-face online automobile insurance industry alone.

2.5 Summary of literature review

The literature review shows that research on the service quality of the non-face-to-face Chinese automobile insurance industry remains empty academically. Meanwhile, in Korea, an industry-specific research that can be used in the face-to-face automobile insurance industry is already suggested by Kong and Bang(2019). The results of the service quality research of non-face-to-face insurance in Korea can be a guideline for measuring the special quality of service unique to the non-face-to-face Chinese automobile insurance industry. Furthermore, if we develop the communality model for service quality model integrated the face-to-face to the non-face-to-face automobile insurance industry in China simultaneously, it will yield empirical results to service quality studies. Moreover, it would provide comprehensive information to practitioners to enhance the service quality in insurance market in China.

3. Research methodology

3.1 Research questions

This study aims to develop an industry-specific service quality model that is common in both the online non-face-to-face and the offline face-to-face Chinese automobile insurance industries. For this purpose, we investigate service factors in both online and offline channels. Moreover, we develop a service quality model by concentrating on the service execution contact point and value-added contents, which lead to dispatch, accident treatment, and premium payment service that the customer will encounter when an actual automobile accident occurs and insurance maintenance status after the purchase of insurance regardless of insurance purchase channel. Lastly, this service quality model's subfactors were tested in terms of customer satisfaction.

This study would enable companies to provide better service quality that they can use in common in both face-to-face and non-face-to-face insurance markets, while simultaneously providing industry-specific quality of service factors of the non-face-to-face Chinese automobile insurance industry. Thus, we formulate the following two research questions to achieve the objective of study:

Research question 1: What are the communality factors in insurance service quality for face-to-face and non-face-to-face sales except contract channels in China?

Research question 2: What is the relative importance among the communality service quality factors for face-to-face and non-face-to-face automobile insurance to customer satisfaction except contract channels in China?

3.2 Research process

To achieve the objectives of research question 1, the following five steps were implemented. The first step was to extract service quality factors in the event from a subscription to an accident. Since no research on the quality of online service quality in China has been conducted, we extracted the factors of online and offline service quality constructively by reviewing literature related to the automobile insurance industry and research in Korea.

In the second step, the conceptual validity of the service quality factors extracted in the first step and its applicability to the Chinese market was confirmed. Three practitioners confirmed the factors from the subscription to accident handling service: an expert from a top 1 company ranked Chinese automobile insurance industry, one from Korea insurance company with the highest market share in China, and the last one from the Korean consulting firm in China with over 10 years in China and Korea.

In the third step, measurement variables were developed for each service quality factor. This process was also conducted by three practitioners in China. The measurement variables were developed in Chinese. The service satisfaction item was also developed by the practitioners.

In the fourth step, the questionnaire prepared by the measured variables developed in Step 3 was purified by a pilot test. The questionnaire for the pilot test was conducted on 195 people in Shanghai in Sep. 2019 before COVID outbreak by online survey. The collected data were subjected to exploratory factor analysis to purify the factors and measurement variables. The variables not tied to the factor were removed.

In the fifth step, the main questionnaire survey was conducted using only the questionnaire items composed of the measured variables for each factor purified in Step 4; 246 questionnaires were collected from six cities by online survey in China in Oct. 2019. Data were analyzed by exploratory factor analysis to identify the service quality factors. Reliability was then measured by calculating Cronbach's alpha for the variables grouped by factors. Through this process, the purpose of research question 1 was achieved.

Research question 2 measured the relative importance among factors in service quality to customer satisfaction. For this, the satisfaction level of the insurance treatment service was used as a dependent variable in the case of a subscription to an accident. Moreover, a regression analysis was performed using the average value of the measurement variables for each factor identified in the fifth step as independent variables. We confirmed the relative importance of each factor affecting customer satisfaction through the standardized regression coefficient values.

4. Empirical analysis

4.1 Step 1: Developing service quality factors

Since China does not have a service quality model for an online non-face-to-face automobile insurance service, the researchers should find the constructs for developing the service quality model for the Chinese insurance market. Based on the literature review in Korea, we found common factors in the four papers that present the factors of the face-to-face automobile insurance service model between Korea and China as shown in Table 5. Among these, we include the sales channel element, which is the face-to-face sales situation factor and the service quality of the insurance purchase situation are removed, as our study approaches factors from an insurance maintenance to accidents excluding insurance purchase situation. In the event of an insurance maintenance for an accident, we identify six factors corresponding to service quality as factors for the pilot test based on the literature review in Table 5.

The six factors or constructs are product, price, compensation, general and extra services, accident handling service, and company images.

4.2 Step 2: Confirming validity

We identify six factors from step 1. As mentioned earlier, three practitioners confirm the factors in Chinese and Korean's perspectives, as we found six factors from China and Korea. One Chinese and two

Korean automobile insurance companies were part of the Chinese insurance industry.

4.3 Step 3: Developing measurement variables

We extract the measurement variables that comprise these six factors based on the questionnaire items common to the four papers as shown in Table 5. For the extracted basic questionnaire items, the practitioners of the three automobile insurance companies who entered China have revised and supplemented the measurement variables for each factor.

Table 5. Comparison of China's Face-to-face and Non-face-to-face Automobile Insurance Service Quality Models

Factors	Kang and Cho (2008)	Cho et al. (2015)	Kong and Bang (2019)
Sales channel	Salesperson services	Salesperson attitude	Insurance planer
Product	Insurance product		
Price			Premium
Compensation	Payment service	Compensation	Compensation
General services	General services		Service management
Extra service	Extra service	Extra service	
Accident handling service		Incident handling service	
Company image		Company image	
Remarks	Face-to-face (Korea)	Face-to-face (China)	Face-to-face / Non-face-to-face (Korea)

4.4 Step 4: Pilot test and exploratory factor analysis

To examine the selection of service quality factors and measurement variables developed in Step 3, we conduct a pilot test on the measured variables. The subjects included 195 participants (133 male and 62 female) aged between 25 and 50 years living in Shanghai, China. Each questionnaire item was measured on a 5-point scale (5 = very important, 4 = important, 3 = moderate, 2 = insignificant, 1 = very insignificant). We analyze the data using factor analysis, principal component analysis, and varimax rotation method.

Table 6 shows the results of the factor analysis collected in the pilot test. We use thirteen variables in the analysis, of which we had six factors. Of these, factor 5 comprised only one item and was thus removed in this study. As a result of the pilot test, 12 items of 5 factors were able to measure the quality of services after insurance purchase in this study.

Table 6. Result of Factor Analysis for Pilot Survey Data

	Variables	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
1	Quick reception of accident	.021	.086	.036	.073	.011	**.814**
2	Ease of contact	-.060	-.111	-.331	**-.635**	-.402	.115
3	Compensation process guide	-.017	-.092	-.168	.869	-.097	.108
4	Compensation situation guide	-.200	.286	-.192	.090	-.415	**-.451**
5	Convenience of insurance claim	-.050	.084	-.102	.048	**.878**	.031
6	Quickness of receiving insurance benefits	.132	.327	**.627**	-.245	.084	.095
7	Regional coverage of dispatch service	.205	-.231	**.591**	.211	.072	-.353
8	Service items of dispatch service	.233	-.009	**-.647**	-.021	.258	-.303
9	Medical messaging service	**.835**	.146	-.089	.067	.008	.104
10	Special contract of plastic surgery	**.862**	.118	.079	-.046	-.023	-.095
11	Free exchange of consumable	**.510**	.476	.291	-.022	.103	.166
12	Seasonal automobile management service	.222	**.805**	.119	-.070	.102	.025
13	Special contract of warranty expansion	.081	**.811**	-.063	.025	-.052	-.002

4.5 Main survey

Based on the items identified in the pilot test, we conducted a main survey. The main survey was taken from 246 participants, of which 170 and 76 were male and female, respectively. They were aged between 25 and 55 years and resided in six cities, namely Shanghai, Suzhou, Beijing, Shenzhen, Qingdao, and Tianjin in Table 7.

As a result of exploratory factor analysis with main survey data, five factors were classified as value-added service for automobile maintenance, value-added service for drivers, quickness, dispatch service, and convenience of service process as shown in Table 8.

The value-added services for automobile maintenance, factor 1, consisted of three items: free exchange of consumable, seasonal automobile management service, and special contract of warranty expansion. The value-added service for drivers, factor 2, comprised two items: medical messaging service and special contract of plastic surgery. Quickness as factor 3 consisted two items: quick reception of accident and quickness of receiving insurance benefits. Dispatch service, factor 4, included two items: compensation process guide and regional coverage of dispatch service. Finally, the convenience of service process as

factor 5 consisted two items: ease of contact and compensation situation guide.

Table 7. Demographic Characteristics of the Sample in Main Survey

	Variables	No. of obs.
Gender	female	76
	male	170
City	Beijing	107
	Shanghai	77
	Shenzen	23
	Suzhou	23
	Qingdao	4
	Tianjin	12
Age	20-29	59
	30-39	161
	40-49	22
	50-59	4
Total		246

Table 8. Result of Factor Analysis for Main Survey Data

	Variables	SM	SD	QK	DS	CP
1	Quick reception of accident	.133	-.056	**.640**	-.163	.276
2	Ease of contact	-.010	-.125	-.010	-.141	**.792**
3	Compensation process guide	.070	-.057	-.190	.727	-.024
4	Compensation situation guide	.012	.175	.061	.309	**.567**
5	Quickness of receiving insurance benefits	.035	.087	**.840**	.076	-.144
6	Regional coverage of dispatch service	.041	.130	.160	**.685**	.060
7	Service items of dispatch service	.029	.087	.034	-.003	.074
8	Medical messaging service	.076	**.844**	.026	.105	-.037
9	Special contract of plastic surgery	.088	**.850**	.019	-.026	.018
10	Free exchange of consumable	**.674**	.383	.011	-.088	.218
11	Seasonal automobile management service	**.807**	.087	.178	.175	-.011
12	Special contract of warranty expansion	**.787**	-.059	-.013	.010	-.094

SM: value-added service for automobile maintenance, SD: value-added service for drivers
QK: quickness, DS: dispatch service, CP: convenience of service process

4.6 Reliability Test

We conduct a reliability analysis to verify the reliability of 12 measurements for five factors classified as service quality factors of the actual service status of auto insurance. Reliability analysis was conducted using Cronbach's alpha, which measures internal consistency for "value-added service for automobile maintenance" comprising three measurement variables. Since the remaining four factors have only two measurements, the Cronbach's alpha is equal to the correlation coefficient, which makes does not correspond with the reliability analysis. The Cronbach's alpha for the "value-added service for automobile maintenance" factor is 0.667. This means that the factor is statistically reliable.

4.7 Effect of service quality on customer satisfaction

Research question 2 identifies the relative importance among communality service quality factors to customer satisfaction in the event of automobile insurance maintenance and accidents regardless of either face-to-face or non-face-to-face insurance service. For this, we perform a regression analysis with the average value of measurement variables for each service quality factor identified in this study as independent variables and average service satisfaction value as a dependent variable (see equation 1).

$$CS = \alpha + \beta_1 SM + \beta_2 SD + \beta_3 QK + \beta_4 DS + \beta_5 CP \quad (1)$$

Where, CS: customer satisfaction
SM: value added service for automobile maintenance
SD: value added service for drivers
QK: quickness
DS: dispatch service
CP: convenience of service process
α, β: parameters

The service satisfaction measurements with six items used as dependent variables: rapid arrival satisfaction, clothing and image satisfaction, relief service satisfaction, service attitude satisfaction, accident investigation satisfaction, and accident insurance amount estimation. Here, each item was measured on a 5-point scale (5 = very satisfied, 1 = not very satisfied). The results of the analysis are shown in Table 8.

The regression analysis shows that the F value was 21.004 ($p<0.001$) and the regression model was significant at the 99% confidence level. The R2 of the model was 0.304. As a result, the regression coefficient of all factors except value-added service for automobile maintenance were positive; thus, the higher the importance of service factors, the higher is the customer satisfaction.

The relative importance of service quality factors was in the order of value-added service for drivers (ß=0.402, $p<0.001$), convenience of service process (ß=0.238, $p<0.001$), quickness (ß=0.194, $p<0.001$), and

dispatch service (ß=0.149, p<0.01).

Table 9. Effect of Service Quality Factors on Customer Satisfaction

Variables	B	Standard error	ß	t-value	p-value
Constant	.816	.408		2.000*	.047
Value-added service for automobile maintenance	-.068	.051	-.075	-1.321	.188
Value-added service for drivers	.236	.033	.402	7.171**	.000
Quickness	.227	.064	.194	3.529**	.001
Dispatch service	.206	.076	.149	2.727**	.007
Convenience of service process	.346	.079	.238	4.388**	.000

*p<.05, **p<.01

5. Conclusion

5.1 Discussion

China's automobile insurance industry is a high growth, huge market with a market size of $83 billion in 2014 to $103 billion in 2016. In China, the number of car owners as of 2017 was 194 million, 25.7 million in 2019, and 26.3 million automobiles were sold in 2021.

The study on the service quality of the Chinese automobile insurance industry does not have a specialized service quality model, so the development of an industry specialized service model for China is required both academically and practically. This study aimed to develop a model to measure the communality model for service quality for the face-to-face or non-face-to-face sales in the Chinese automobile insurance industry. The service quality model of the existing Chinese automobile insurance industry exists only for the purchase of face-to-face insurance. Basically, there was no non-face-to-face automobile insurance service quality model. Therefore, this study intends to develop a service quality model that can be used in the situation of insurance processing service of both the face-to-face and non-face-to-face automobile insurance service quality. This study measured the service quality focused on common services offered by real insurance companies after purchasing from both channels: regardless of insurance purchasing situation and service execution situation and regardless of face-to-face purchase or non-face-to-face purchase.

In this study, the service quality factors of face-to-face and non-face-to-face common service were identified based on the prior studies of automobile insurance service quality in Korea and China. The pilot survey and the main survey of six cities in China showed that the five factors of value-added service were

automobile maintenance, value-added service for drivers, quickness, dispatch service, convenience of service process.

The relative importance of service quality factors was shown in the order of value-added service for drivers, convenience of service process, quickness. In the event of an accident, the insurer knew that having a direct service for the customer was vital. These results suggest that insurance companies should provide more value-added service for drivers and take immediate action for customers when an accident occurs. In contrast, the impact of value-added service for automobile maintenance factor on customer satisfaction is not significant as these factors (free exchange of consumable, seasonal automobile management service, and special contract of warranty expansion) are not items that need immediate action in case of an accident.

The academic contribution of this study is to present the industry-specific service quality model that was considered a research gap in the Chinese online auto insurance market through the development of the quality model on the industry-specific service in the Chinese online and offline auto insurance market. We identify the service factors that occur face-to-face and non-face-to-face, respectively. We develop and present a service quality standard that customers feel at the insurance service implementation stage regardless of face-to-face and non-face-to-face sales situation. Lastly, we test the developed service quality model in terms of marketing performance.

5.2 Implication

Specifically, the study finds that drivers place the highest priority on convenience of value-added services and service processes. Based on these results, the insurer's firms have a practical implication that they should promote the convenience of value-added services and service processes for managers as the output of the fourth industry, including IT(Wang, 2020; Choi et al., 2020). Particularly, the results of the study will revise and design the interface between customers and insurance companies such as communication and blogging, which leads higher customer satisfaction with service quality improvement(Ngwenya et al., 2018).

Since China's automobile insurance industry is still in the stage of growth, companies planning to enter China's automobile insurance industry should provide high-quality value-added service for drivers, quick handling of accidents, friendly and accurate dispatch service, enhanced customer convenience. New market entrants should use these services as a competitive factor for expanding the market share. In this way, companies entering the Chinese automobile insurance industry will have diagnostic tools to improve the service by checking the relative importance of insurance service strengths, weaknesses, and factors (Abellana, 2020).

In addition, this study will be able to be extended to service quality studies in various fields such as digital service (Ahn, 2022), communication service (Koo, 2021), and education service (Kim, 2020).

The limitations of this study are as follows. First, we developed an industry-specific service quality model common in the face-to-face sales situations based on the previous research. In the future, the de-

velopment of quality service specialized for auto insurance in non-face-to-face sales situations is required more in of the practice field in China. Second, the area of study or questionnaire on the development of the Chinese auto insurance service model is not the entire country, but six cities. Therefore, the result of this study is applicable to only six cities. Thus, our result has a generality problem. Third, the perspective on the importance of quality factors in service may vary by region. In this study, the limitation is that the differences between regions are not considered by measuring them as a whole rather than separately. However, if more samples were obtained, we would find an opportunity to explore the perception of differences in service quality according to region. Fourth, the data used in this study are collected COVID19 outbreak in 2019. From 2020 to 2022, it is expected that China will have many changes in its car sales business model and service quality due to the COVID19. The corona virus quarantine situation continues in 2022. This study does not reflect the corona-related situation. Therefore, the results of this paper reflect only the pre-COVID19 situation.

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저자소개

곽영식 성균관대학교 경영학 학사, 석사, 박사를 졸업하였다. Texas Tech University에서 Clothing, Textile, Merchandising 석사를 받았다. 현재 경상국립대학교 경영학부 교수로 재직하고 있다. 주요 관심분야는 가격, 글로벌마케팅, 온라인마케팅 등이다.

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남윤정 남윤정은 경영학 학사와 석사, 관광학 박사 학위를 받았다. 문화 콘텐츠 및 관광 분야에서 마케팅 전문가로 17년 이상의 전문 경력이 있고, 현재 마케팅 컨설팅 회사를 운영하고 있다. 주요 관심분야는 스타트업 비즈니스, 호스피탈리티 마케팅 등이다.

박지영 대학원에서 경영학을 전공했으며, 주요 관심분야는 가격, 글로벌마케팅 등이다.