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Scale to determine the impact of transaction costs, service quality and relationship quality on business results of enterprises using environmental protection services in Ho Chi Minh City

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Abstract

Vietnam's economy is growing rapidly, especially in the industrial sector thanks to policies to attract foreign investment. However, the process of industrialization and economic development has caused serious environmental pollution problems in Vietnam, especially in industrial parks in dynamic cities like Ho Chi Minh City. In that context, the government has introduced regulations and promoted businesses to carry out environmental protection work to reduce pollution and increase brand recognition. During their business operations, businesses need to consider environmental protection as a responsibility and obligation, because environmental protection not only brings short-term benefits but also creates long-term benefits for businesses. Therefore, the urgent issue is to conduct research and propose policies to improve business performance of businesses using environmental services in Ho Chi Minh City. The goal of the article is to propose a research model and research scales based on inheriting the research results of related studies. From the initial proposed model and scales, the author implemented a quantitative method using survey techniques and interviews with 12 experts in the field of environmental services and economics in Vietnam to clarify the research model and adjust the measurement scales, forming a preliminary scale. The preliminary scale through quantitative analysis of Cronbach's Alpha coefficient and exploratory factor analysis (EFA) will become the official scale for the research. The research model and measurement scale of this article can become the basis for further quantitative research to help businesses using environmental services determine strategies to improve business performance.

Keywords: Transaction costs, service quality, relationship quality, business performance, environmental services, Cronbach's Alpha, exploratory factor analysis

1. Introduction

For any economy, the environment is an important and indispensable factor in the process of sustainable development. Effective environmental management is becoming an increasing challenge for businesses, especially in the industrial sector. From 2022, Vietnam will have a high industrial growth rate, which will make an important contribution to the country's economic development. However, the rapid development of industry and modernization along with commercial and service activities has simultaneously caused environmental pollution problems in Industrial Parks and densely populated areas such as Ho Chi Minh City. In that context, production and business enterprises often limit investment in waste management projects because they consider it an ineffective source of costs. The current practice creates conditions for the environmental protection service industry to emerge and become the focus for developing the national economy.

On the other hand, currently in the world there are many studies on relationship quality (Vieira *et al.*, 2008; Athanasopoulou, 2009) ^[15, 4]. Relationship quality is a topic that comes from the field of marketing, concerned with the wants and needs of businesses to develop mutually beneficial relationships and success with business associates and partners (Athanasopoulou, 2009) ^[4]. Grasping and in-depth understanding of the relationship between environmental management, businesses and industrial customers is the first step in determining how to optimize both of these important goals: environmental protection and sustainable business development.

Correspondence Pham Minh Tung Ph.D., Student, Tra Vinh University, Vietnam However, research on Relationship Quality in Vietnam still has many limitations (Hoang Le Chi, 2013; Nguyen Thi Thanh Van, 2018) [1, 3].

In summary, to further research the nature, influencing factors and results received by partners of relationship quality in the environmental services industry in Vietnam. This research was conducted with the goal of basing on transaction cost theory and service quality theory through a literature review of related studies as well as expert interviews; Finally, propose a research model and scales to study factors affecting the quality of relationships between businesses providing environmental services and business performance of enterprises using environmental services in Ho Chi Minh City.

2. Theoretical basis and literature review

2.1. Theoretical basis

The theoretical basis of the research is Transaction Cost Economics (TCE) and Service Quality (SQ) theory. TCE theory is an economic theory that focuses on studying the costs that organizations incur when carrying out economic transactions (Coase, 1937; Williamson, 1985) [7, 17]. TCE focuses on analyzing the organizational structure and production decisions of market parties. From the perspective of TCE, an economic transaction includes activities, decisions and asset exchanges between parties, such as a purchase transaction or labor contract. TCE emphasizes that each transaction is associated with transaction costs, including costs of information discovery, negotiation, contract formation, control and dispute resolution. TCE has created the theoretical foundation for understanding organizational structures, purchasing or production decisions in a market society, and has played an important role in the fields of strategic management and resource management. Applying theory to research the impact of transaction costs, service quality and relationship quality on business performance of businesses using environmental protection services in Ho Chi Minh City, the author concludes that if the parties do not want to have long-term commitments, they will stop the relationship and look for new partners, which will increase transaction costs; In other words, opportunistic behavior will hinder good relationships between parties, so businesses need to carefully consider their behavior.

Besides, SO Theory focuses on measuring and improving the quality of services that organizations provide to customers. SO helps understand customer perceptions and evaluations of services and its impact on satisfaction, loyalty and consumer behavior (Brady & Cronin, 2001; Pollack, 2009) [5]. Some of the main and most used SO models are accepted in many areas of SQ measurement such as: (1) Parasuraman et al.'s (1985) [11] Service Quality Model (PZB) is a famous theory of SQ, including 5 dimensions: reliability, responsibility, flexibility, knowledge and empathy; (2) Gronroos (1984) [8] compared to the PZB model has two more dimensions: interaction and process, focusing on interactive activities and the service delivery process; (3) The Gaps model of Parasuraman et al. (1988) [12] identifies 5 main gaps that can occur in service delivery, creating discrepancies between customers' expectations and actual experiences. This study accepts the authors' viewpoints with two aspects: technical and functional being seen as the main dimensions to study the impact of service quality on relationship quality are People and Facilities.

2.2. Literature review

The results of the review of related research documents are presented in Table 1 as follows.

Table 1: Results of review of related research documents

No.	Study	Sample size/ Sample characteristics	RQ/Field type	RQ Agent	RQ structure	RQ results
1	Maria Abdul Rahman and Yusniza Kamarulzaman, 2015	249 / Hotel manager	B2B/Hotel	Images Emotional value Value for money Service benefits S. Social value	 Satisfaction Trust Commitment 	Loyalty
2	Ahmed Hussein and Mohamed Hassan, 2015	143 / Retailer	B2B/ Logistics	Personnel quality Timeliness	 Satisfaction Trust 	 Commitment Purchase intention
3	Paul Williams, Nicholas J. Ashill, Naumann, Eric Jackson, 2015	588 / Senior Management	B2B/ Building services	Planning efficiency Project implementation business performance 3. Project delivery business performance	 Enterprise quality Business guarantee Business performance 	Satisfaction
4	Mohammad Hossein Askariazad, Nazila Babakhani, 2015	90 / Construction contractor	B2B/Construction	 Enterprise image Complaint handling Feel the quality Perceived value 5. Expectations 	 Satisfaction Trust 	Loyalty
5	Eman Mohamed Abd-El-Salam, 2015	499 / Chemical manufacturer	B2B/ Chemicals	 Enterprise image Complaint handling Feel the quality Perceived value 5. Expectations 	 Satisfaction Trust Commitment 	Loyalty
6	Lujun Su, Scott R. Swanson, Xiaohong Chen, 2016	451 / Tourist	B2C/Hotel	Service quality	 Satisfaction Trust 	1. Return intention 2. Happiness
7	Ernest Emeka Izogo, 2016	332 / Customer	B2C/Banking	 Customer orientation Expertise 3. Share information 	 Satisfaction Trust 	Loyalty
8	Zhizhong Jiang and Eric Shiu, Stephan Henneberg, Peter Naude, 2016	201 / Construction contractor	B2B/Construction	Long-term orientation Social satisfaction Economic satisfaction Contact	 Trust Commitment 	
9	Mostafa Babaeian Jelodar, Tak Wing Yiu, Suzanne Wilkinson, 2016	21 / Construction expert	B2B/Construction	Personal and attitude modifications Shopping strategy Clarity and building common goals Joint evaluation, problem solving and continuous improvement Shared culture and win-win approach Synchronize education, training and culture	 Trust Commitment Teamwork 	

				7. Encouragement and power		
10	Florin Alexandru Luca, Claudia Ioana Ciobanu, 2016	10 / Real estate expert	B2C/ Real Estate	 Feeling Service quality 	Satisfaction Trust Commitment	Loyalty
11	Khairol Anuar Ishak, 2016	128 / Franchise enterprise	B2B / Marketing	 Spirit of solidarity Flexibility Information exchange 	Satisfaction Trust Commitment	Loyalty
12	S. Mostafa Razavi, Mehdi Abdi, Shobeir Amirnequiee, Rohollah Ghasemi, 2016	187 / Industry expert	B2B/Industry	 Sustainability of the relationship Relationship frequency Relationship diversity 	 Communication Trust Adaptation Commitment Depends Cooperation Atmosphere in recycling industries profession. 	Strategic purchasing
13	Dyah Sugandini, Benny Wendry, Muafi, 2017	265 / Vegetable and fruit supplier	B2B / Retail	 Trust Product catalog Commitment 	Satisfaction Quality	Loyalty
14	Ernest Emeka Izogo, Abdi Reza, Ike-Elechi Ogba, Chukwunonso Oraedu, 2017	398 / Customer	B2C/Banking	 Customer orientation Expertise Share information 	Satisfaction Trust	Loyalty
15	R.Vizea, J.Coughlanb, A.Kennedya and F.E.Chadwickc, 2017	133 / Retailer	B2B/Retail industry	 Potential quality Output quality Hard process quality Soft process quality 	Satisfaction Trust Quality of communication	Loyalty
16	Liew Chee Yoong, Song Bee Lian and Muthaloo Subramaniam, 2017	350 / Consumer	B2C/ Telecommunications industry	 Economic value Service value Relational value Social value 	Satisfaction Trust Commitment	Loyalty
17	Ilias Santouridis and Androniki Veraki, 2017	187 / Consumers	B2C/ Mobile Phone Industry	 Customer care Contact 	Trust	Satisfaction
18	Liu L.W, Yang W.G, Liu W.H, 2017	81 / Wholesale customers	B2B/E-commerce	 Share information Customer orientation 	 Satisfaction Trust 	 Commitment Loyalty
19	A. Ledikwe, M. R. Lombard and H. B. Klopper, 2018	260 / Retailer	B2B/ Garment industry	 Satisfaction Trust Commitment 	Genuine loyalty	Behavioral loyalty
20	A. Samudro, U. Sumarwan, E. Z. Yusuf, M. Simanjuntak, 2018	89 / Documents	B2B/ Chemicals	 Reliability Guarantee Empathy Responsiveness 	 Satisfaction Trust Commitment 	Loyalty
21	Muhammed Alnsour, 2018	260 / Bank management	B2B/ Internet banking	 Easy to use Useful Security 	 Contact Understanding Cooperation Transparency 	 Satisfaction Trust Commitment
22	Meng Shang, Hui Li, Chul Woo Lee, Yong Ho Shin, 2018	174 / Business management	B2B/logistics	 Chất lượng kinh tế Chất lượng kỹ thuật 	1. Trust 2. Commitment to	Long-term trading orientation

				Chất lượng chế biến Chất lượng thông cảm Chất lượng tiện lợi	standards 3. Commit to calculation	2. Relationship strength
23	Hui-Chen Chang, Lin-Ju Cheng, Yi-Ching Tsai, 2018	174 / Customers	B2C/Dental	Invest in relationships Invest in financial relationships Invest in social relationships	Satisfaction Trust	Loyalty
24	Elizabeth Levin, Thu Nguyen Quach, Park Thaichon, 2018 [3]	189 / Advertising business management	B2B/ Advertising	Creative capacity Project management process Project results Perceived value Interpersonal relationships	 Satisfaction Trust Commitment 	Agent business performance
25	David Finch, Norm O'Reilly & Gashaw Abeza, 2018	15 / Contractor	B2B/Construction	Interdependence Relational behaviorintentions Policy-intention Intention to cooperate	 Satisfaction Trust Commitment 	Loyalty
26	Ashish Malik, Liem Viet Ngo, Russell PJ, 2018	4/ Information technology software outsourcing company	B2B/ Information Technology	Expert power Distributed power Nationality Specificity of assets Quality management ability	1. Satisfaction 2. Trust 3. Commitment	Business performance
27	Nguyen Thi Thanh Van, 2018 [3]	301 / Logistics Enterprise Management	B2B/ Logistics	Asset specificity Opportunistic behavior Long-term oriented culture Legal and administrative environment The importance of partners Understanding partners	1. Satisfaction 2. Trust 3. Commitment	Operational efficiency of Logistics enterprises
28	Riza Casidya, Munyaradzi Nyadzayob, 2019	324 / Business Management	B2B/Service	Interaction Kindness	Relationship Qualities Value Relationship Time Period Relationship	Loyalty Special price willing to pay
29	Yi Li, Ying Zhang, Jinpeng Xu, 2019	214 / Business management	B2B/ Manufacturing		 Trust Specific transactions Commitment 	 Customer attention Business performance
30	Hamzeh Q. Almomani, 2019	408 / Doctor	B2B/ Public health care sector (pharmaceutical)		 Satisfaction Trust Commitment 	Fundamental loyalty Loyalty in behavior
31	Omar S. Itania,	397 / Customer	B2C/ Restaurant industry	Customer perceived value Customer's conscious value	e 1. Satisfaction 2. Trust 3. Commitment	Customer engagement
32	Abdul N. Kassarb, Sandra M.C.	379 / Business	B2B/ Service trade	1. Quality of communication	1. Satisfaction	 Phúc lợi xã hội

	Loureiroc, 2019	Management		 Frequency of interaction Conflict resolution Benefit relationship 	2. Trust 3. Commitment	2. Lợi ích chức năng
33	James M. Barry, 2019	172 / Business management	B2B/ Key account management service	 Perception of ability Perception of benevolence Perception of integrity Information exchange Solidarity 	 Satisfaction Trust Relationship atmosphere 	Efficient key account management
34	Nada Saleh Badawi, Moustafa Battor, 2019	98 / Business management	B2B/Industry	Opportunism	 Satisfaction Trust Commitment Share information 	Business performance
35	Amy Chu May YEO, Marcus Ee Ken LAI, 2020 [16]	280 / Business management (purchasing)	B2B/Pharmaceutical industry	Honesty	 Satisfaction Trust Emotional commitment Emotional conflict 	Loyalty
36	Feten Ben Naouil and Imed Zaiem, 2020	22 / Company management	B2B/Digital transformation business model	 Strategy Technology Organization Environment 5. Opportunistic behavior 	 Trust Commitment Cuong degree of cooperation Share benefits and costs 	Satisfaction
37	Roberto Grandinetti, Maria Vincenza Ciasullo, Marco Paiola, Francesco Schiavone, 2020	351 / Customer	B2C/E-commerce	 Information system quality Perceived value 	Satisfaction Trust	Intention to continue
38	Ni Wayan Masri, Jun-Jer, Shih- Chih Chen, Athapol Rua, Chia-I Pan, 2020	100 / RQ Documentation	B2B/Supply Chain	 Relationship properties Incentive characteristics Environment 	The power of relationships Customer information	Business performance Relational benefits Satisfaction of both parties
39	Chen Qian, Stefan Seuring, Ralf Wagner, 2020	651 / Customer	B2C/Online Banking	Relationship life cycle	Satisfaction Trust Commitment	Loyalty
40	Akram Garepasha, Samad Aali, Soleyman Iranzadeh, Alireza Bafandeh Zendeh, 2020	987 / Customer	B2C/ Manufacturing	 Consistency Rough coverage Unique coverage Scope of solution Consistent solutions 	Perceived customer orientation Product improvement	Loyalty
41	Bodo Steiner, Moritz Brandhoff, 2020	588 / Customer	B2C/Hotel	 Service quality Perceived fairness Commercial friendship 	Satisfaction Trust Commitment	Intention to return and recommend
42	Christina Geng-Qing Chi, Biyan Wen & Zhe Ouyang, 2020	100 / RQ Documentation	B2B/Supply Chain		1. Trust 2. Cooperation 3. Interaction 4. Commitment 5. Satisfaction 6. Knowledge management	

					7. Adaptation	
					8. Nature	
43	Hashem Aghazadeh, Hossein Maleki, 2020	217 / Salesperson	B2C/Supply Chain	Islamic association value Adaptive selling Ability to cooperate	Relationship quality	
44	Jasanta Peranginangin, 2020	Exporter	B2B/Rice supply chain	Commitment	 Satisfaction Trust 	Relationship quality
45	Tran Thi Trang, Tran Anh Tung, Pham Thi Ngan, 2020	202/ Buyer	B2B/E-commerce	Impact of technology	 Satisfaction Trust Commitment 	Relationship duration Sales volume Share customer wallets Customer willingness to refer
45	Papakonstantinidis S., Kwiatek P., Baltezarevic R, 2021	337 / Contractor	B2B/Construction	 Quick payment Business integrity Respect and fairness Commitment to cooperation Negotiate risks and prices Management business performance 	Perception of general communication effectiveness Commitment to collaboration Integrity, respect and fairness Effective contract management Labor relations management	Satisfaction
46	Loosemore Martina, Lim Bensonb, 2021	453 / Grocery retail customers	B2B/Retail	Customer orientation	Satisfaction Trust Commitment	Loyalty Loyal behavior
47	Jaroslav Dad'o, Janka Taborecka - Petrovicova, Tamara Rajic, 2021	200 / Business customers	B2B/Banking	1. Trust 2. Respect 3. Reciprocity	Quality of social banking relationships	Financial efficiency Quality of life
48	Umme Hani, Shahriar Akter, Ananda Wickramasinghe, Uraiporn Kattiyapornpong, 2021	220 / Consumer	B2C/Retail	 Invest in perceived relationships Personality characteristics Vulnerable relationships Diverse search Related to product categories 	 Satisfaction Trust Commitment 	Loyalty Loyal behavior
49	Choukri Menidjel, Anil Bilgihan and Abderrezzak Benhabib, 2021	389 / CEOs and directors	B2B / Marketing	Organizational gap Corporate culture and management style Customer identification	1. Trust 2. Commitment	Word of mouth Willingness to pay
50	Mayoor Mohan, Munyaradzi W. Nyadzayo, Riza Casid, 2021	395 / Exhibition House	B2B / Exhibition	Willingness to participate	Satisfaction Trust Commitment	Business performance of the exhibition

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51	Ivan Ka Wai Lai, Jose Weng Chou Wong. 2021	365 /	B2C / Intangible Cultural Heritage	Cooperative attitude Ability to cooperate	 Contact Trust Fairness 	Collaboration effect
52	Hongmei Xia, Yanling Li, Fang Chen, Bo Xu, 2022	Resident	B2B / Logistics	Sustainable quality of Logistics services Trust	 Contact Trust Drug dependence 	
53	Ahmed Hussein Ali, Tim Gruchmann, Ani Melkonyan, 2022	421 /	B2b/ Small and medium enterprises	Employee orientation CSR actions towards society CSR actions towards employees CSR actions towards customers CSR actions towards customers Scartions towards suppliers	 Trust Commitment 	Happiness Marketable skills

(Source: Compiled by the author, 2023)

3. Research Gaps and Models

3.1 Research gap

The results of the literature review in Table 1 show that previous studies only considered and tested some of the factors and criteria considered most important in the industry that the researcher recommended. Although previous research authors have pointed out most of the concepts involved in the research model, there are still shortcomings that need to be explored such as:

- 1. Research on relationship quality in the case of the environmental services industry in Vietnam.
- 2. When the survey object is a business using the service, the result of relationship quality research is mostly

"customer loyalty"; When the survey object is a service provider, the results of relationship quality research are mostly "business performance of service providers". In this study, the author surveyed customers who are businesses using the service and the result of the relationship quality research is "business performance of businesses using the service".

3.2 Research models

A general model to study the impact of transaction costs, service quality and relationship quality on business performance of enterprises using environmental protection services in Ho Chi Minh City is presented at Figure 1.

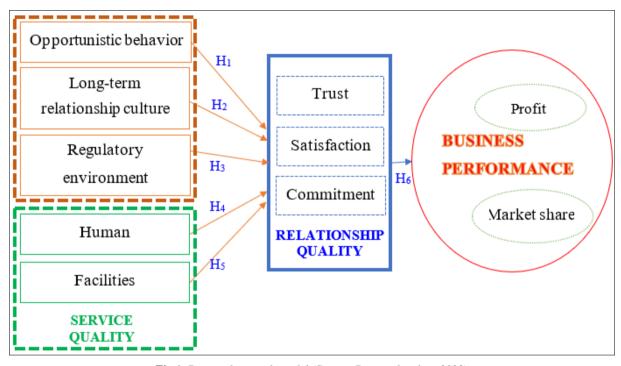


Fig 1: Proposed research model (Source: Proposed author, 2023)

4. Research Methods

First, the author clearly states the urgency of research in today's context along with the process of reviewing documents on the relationship model between factors, implementation methods and practical results. Next, the article mentions the process and methods to conduct research, including the analytical framework and research

contents. Research hypotheses serve as a premise for proposing a model to study the impact of transaction costs, service quality and relationship quality to business performance of businesses using environmental protection services in Ho Chi Minh City. The research process is presented in Figure 2.

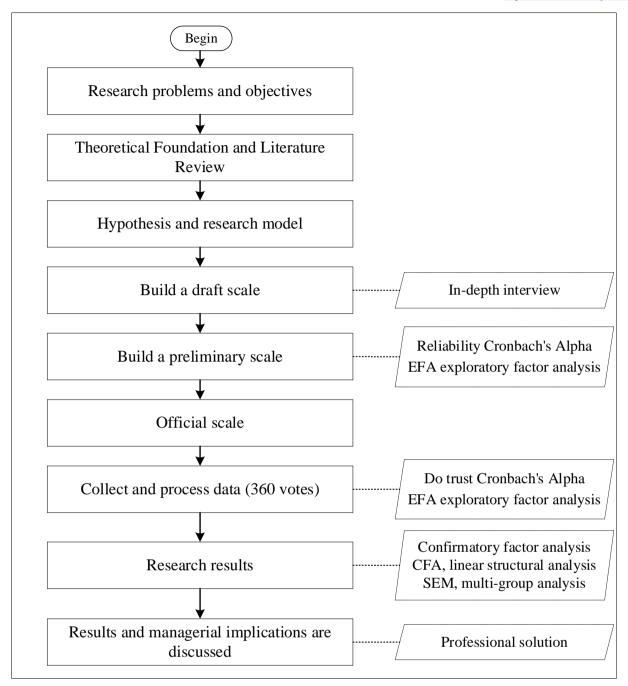


Fig 2: Research process (Source: Suggested author, 2023)

In the qualitative stage, by reviewing documents, the research has inheritance as well as proposed corresponding contents; From there, a draft scale is formed. This scale is the subject of in-depth discussion with highly specialized experts in the field of economic environmental services. The purpose of this process is to edit wording, structure the questionnaire or add questions suitable for the thesis. The proposed research model is sent to experts to interview, discuss opinions and adjust the model with relationships based on individuals' perspectives and research practices.

Interview experts included 12 experts in the field of environmental services and economics in Vietnam. From there, the official model will be determined to distinguish it from previously proposed models. Simultaneously with the above process, the author also conducted direct discussions with experts on the contents mentioned in the draft scale. The result is the formation of a preliminary scale to distinguish it from the draft scale proposed previously. Figure 3 presents the analytical framework of the study.

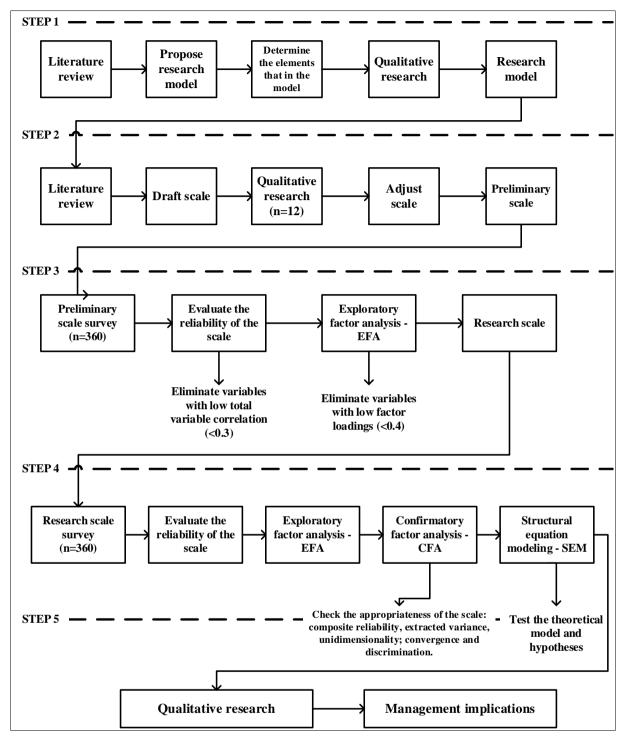


Fig 3: Research analysis framework (Source: Author's compilation, 2023)

5. Scale Analysis

5.1 Scale to measure factors affecting relationship quality

The scale used in this study was determined and adjusted to fit the Vietnamese context, based on testing and international expert opinions. The author uses a 5-level Likert scale, with level 1 being "completely disagree" and level 5 being "completely agree". The research focuses on science and technology/enterprises using environmental services and uses questions taken from the research of other

authors such as Wilson and Nelson (2000) [18], Hoang Le Chi (2012) [1], Nguyen Thi Thanh Van (2018) [3]. The goal of the question is to collect views from both sides, that is, the views of businesses using environmental services and the views of businesses providing environmental services on the same issue. The author defines "environmental company" as a company providing environmental services and "our company" as a company using environmental services. The conceptual scales in the research model are presented in Table 2.

Table 2: Summary of scales to study factors affecting relationship quality

	Scale to measure factors affecting relationship quality		
	Opportunistic behavior scale		
Encode	Contents	Source	
OB1	Our company often keeps its promises to environmental companies	Knemeyer and Murphy (2004) [19];	
OB2	Environmental companies often keep their promises to our company	Nguyen Thi Thanh Van (2018) [3]	
OB3	Our company often provides an honest overview of ongoing activities for the Environmental Company	Nguyen Thi Mai Trang and <i>et al</i> . (2004); Nguyen Thi Thanh Van (2018)	
OB4	Environmental companies often provide an honest overview of ongoing activities for our company	[3]	
	Long-term relationship culture scale		
Encode	Contents	Source Ganesan (1994) [20]; Tai and Chan	
LRC1	Our company tends to continue to choose its partners because they believe that the price offered by the Environmental Company is always the most reasonable.	(2001) [14]; Nguyen Thi Thanh Van (2018)	
LRC2	Our company is often more interested in the quality aspect than the price aspect when choosing an environmental company	Ryu and Cook (2005) [13]; Nguyen Thi Thanh Van (2018) [3]	
LRC3	Our company usually does not want to change to another environmental company even though the environmental company has sometimes performed its duties poorly.	Ganesan (1994) ^[20] ; Nguyen Thi Thanh Van (2018) ^[3]	
	Regulatory environment scale		
Encode	Contents	Source Vo and Baumgarte (2000) ^[21] ; Nguyen	
RE1	Policy mechanisms in Vietnam often change	Thi Thanh Van (2018) [3]	
RE2	During our company's operations, we often encounter the problem of 'action is key'	Agboli and Ukaegbu (2006) [22]; Nguyen Thi Thanh Van (2018) [3]	
RE3	Administrative procedures in Vietnam are often complicated	Agboli and Ukaegbu (2006) ^[22] ; Vo and Baumgarte (2000) ^[21] ; Nguyen Thi Thanh Van (2018) ^[3]	
	Human Scale		
Encode	Contents	Source	
HU1	The environmental company's personnel are always dedicated, understanding, sympathetic, always ready to serve and capable of solving all service problems that arise for our company.		
	The environmental company's personnel always communicate and explain business		
HU2	processes clearly, simply, logically, and reliably; and provide and share timely information for our company	Gronroos (2007) [8]; Hoang Le Chi (2013) [1]	
HU3	The environmental company's personnel have professional communication and are able to handle problems quickly and accurately		
HU4	The environmental company's personnel are experienced, skilled, and regularly updated with scientific and technological knowledge		
	Facilities scale		
Encode	Contents	Source	
FA1	Cơ sở giao dịch của công ty môi trường khang trang, sạch sẽ, được chăm sóc tỉ mĩ; nhấn mạnh quảng bá thương hiệu		
FA2	Cơ sở của công ty môi trường có chỉ dẫn và quy trình dịch vụ đơn giản, rõ ràng, thuận tiện	Lin & Ding (2005);	
FA3 FA4	Công ty môi trường có công nghệ hiện đại, luôn tiếp cận với công nghệ tiên tiến Trang thiết bị của công ty môi trường cung cấp đều hiện đại, hiệu quả cao và được bảo trì, bảo dưỡng kịp thời, đáng tin cậy	Hoang Le Chi (2013) [1]	
	Relationship quality scale		
	Trust scale		
Encode	Contents	Source	
TR1	We think the environmental company wants to be sincere with our company		
TR2	We feel that the environmental company wants to make decisions that benefit our company under any circumstances.	Swar <i>et al.</i> (2012); Nguyen Thi Thanh Van (2018) ^[3]	
TR3	Our company is willing to help environmental companies without expecting anything in return	1.gayen 1m 1mam van (2016)	
	Satisfaction scale		
Encode	Contents	Source	
SA1	Our company is satisfied with the transaction method of the environmental company	Chy and Wans (2012) [16] M. C.	
SA2	Our company is satisfied with the quality of services provided by the environmental company	Chu and Wang (2012) [16]; Nguyen Thi Thanh Van (2018) [3]	
SA3	Our company is satisfied with the price offered by the environmental company		
TC	Commitment scale	G	
Encode CO1	Contents Our company and environmental company tend to commit to become long-term alliance	Source Nguyen Thi Mai Trang et al. (2004);	
		Morgan and	

		Hunt (1994) [10]; Nguyen Thi Thanh Van (2018) [3]
CO2	Our company does not view the environmental company as just a partner but rather as an important part of our company.	Chu and Wang (2012) [16]; Nguyen Thi
CO3	Our company feels that environmental companies also want to see us as an important part of their company	Thanh Van (2018) [3]
	Outcome scale of relationship quality	
	Business performance measurement scale	
Encode	Contents	Source
PER1	Our company's profits have increased in recent times thanks to close cooperation with environmental companies	Chu and Wang (2012) ^[16] ; Han <i>et al</i> . (2009)
PER2	Environmental companies tell us that because of their relationship with our company, their profits have improved	
PER3	Our company's market share has increased since having a good relationship with the environmental company	Han <i>et al.</i> (2009); Nguyen Thi Thanh Van (2018) [3]
PER4	The environmental company said its market share has increased since connecting with our company	

(Source: Author references and suggestions, 2023)

5.2 Collect data and draft scales

The study surveyed customers (n = 360) who are businesses in industrial parks and export processing zones in Ho Chi Minh City to generalize all the characteristics of industrial customers in the field of environmental services. The study

will survey 14/14 industrial parks and export processing zones with geographical characteristics spread throughout Ho Chi Minh City, Vietnam; With a total number of valid survey questionnaires collected of 360, statistics are summarized in Table 3.

 Table 3: Survey sample structure

No.	Survey area	Enterprise number/total enterprise	Structure %/total enterprise	Structure %/total number of samples	Structure % /Total number of samples
1	An Ha Industrial Park	15/15	100%	4,2%	Binh Chanh district
2	Le Minh Xuan Industrial Park	64/124	52%	34,4%	Binh Chanh district
3	Vinh Loc Industrial Park	48/88	55%	24,4%	Binh Chanh districtBinh Tan district
4	Tan Binh Industrial Park	52/120	43%	33,3%	- Tan Binh district - Tan Phu district
5	Tan Tao Industrial Park	29/161	18%	44,7%	Binh Tan District
6	Hiep Phuoc Industrial Park	21/65	32%	18,1%	Nha Be District
7	Cat Lai Industrial Park	13/31	42%	8,6%	Thu Duc City
8	Tan Phu Trung Industrial Park	11/24	46%	6,7%	Cu Chi district
9	Tan Thuan Export Processing Park	22/95	23%	26,4%	District 7
10	Linh Trung Export Processing Park	26/67	39%	18,6%	Thu Duc City
11	Binh Chieu Industrial Park	10/21	48%	5,8%	Thu Duc City
12	Tan Thoi Hiep Industrial Park	21/23	91%	6,4%	District 12
13	Dong Nam Industrial Park	7/14	50%	3,9%	Cu Chi district
14	Northwest Cu Chi Industrial Park	21/29	72%	8,1%	Cu Chi district
	TOTAL	360/877	41%	100%	

(Source: Author's compilation, 2023)

5.3 Results of preliminary scale reliability analysis

The results of preliminary scale reliability analysis are presented in Table 4. The alpha coefficients are all greater

than 0.6 (Nunnally and Burnstein, 1994), so the scales are retained for subsequent exploratory factor analysis.

Table 4: Results of preliminary scale reliability analysis

Observed variables	Average if variable removed	Variance if variable removed	Variable-total correlation coefficient	Alpha if variable removed
variables	Temoveu	Opportunistic behavior (Temoveu
OB1	10,39	4,534	0,658	0,779
OB2	10,46	3,926	0,699	0,756
OB2	10,41	4,219	0,629	0,789
OB4	10,46	4,227	0,624	0,791
ОБЧ		ong-term relationship cultur		0,771
LRC1	6,71	2,327	0,682	0,766
LRC2	6,76	2,458	0,693	0,754
LRC3	6,57	2,524	0,682	0,766
LKC3	0,37	Regulatory environment		0,700
RE1	6,89	2,184	0,712	0,781
RE2	6,91	2,237	0,698	0,794
RE3	6,93	2,185	0,719	0,773
KES	0,93	Human (HU): 0.8		0,773
HU1	10,44	4,058	0,714	0,803
HU2	10,46	3,920	0,718	0,801
HU3	10,43	3,984	0,718	0,797
HU4	10,43	4,704	0,620	0,842
1104	10,40	Facilities (FA): 0.		0,042
FA1	10,42	4,484	0,723	0,825
FA2	10,38	4,498	0,720	0,826
FA3	10,34	4,442	0,720	0,832
FA4	10,45	4,442	0,713	0,829
TA4	10,43	Trust (TR): 0.89		0,829
TR1	6,51	2,067	0,704	0,809
TR2	6,85	2,098	0,696	0,816
TR3	6,54	2,093	0,766	0,752
IKJ	0,34	Satisfaction (SA):		0,732
SA1	6,85	2,341	0,725	0,773
SA2	6,83	2,364	0,723	0,796
SA3	6,85	2,367	0,711	0,786
JAJ	0,03	Commitment (CO):		0,780
CO1	7,01	2,412	0,746	0,815
CO2	7,01	2,300	0,738	0,822
CO3	7,09	2,292	0,757	0,803
	1,07	Business performance (P		0,003
PER1	10,49	5,420	0,700	0,836
PER2	10,46	5,040	0,734	0,823
PER3	10,50	5,203	0,725	0,826
PER4	10,44	5,333	0,723	0,833

(Nguồn: Tác giả tổng hợp từ phần mềm, 2023)

5.4 Results of exploratory factor analysis – first time

The author performed exploratory factor analysis (EFA) using the Principals axis factoring method combined with the Promax rotation method on SPSS20, the results are as shown in Table 5 below. We have: 0.5 < KMO coefficient =

0.911 < 1, so the EFA analysis results are accepted with the collected research data set. The significance level of the Bartlett test reached 0.000 < 0.05, showing that the factor analysis results are consistent with 95% confidence.

Table 5: Results of KMO system and Bartlett's test (1st time)

Kaiser-	0,911	
	Approx. Chi-Square	6130,655
Bartlett's Test	df	465
	Sig.	0,000

(Source: Compiled from research results, 2023)

Table 6 shows that the EFA analysis extracted 9 factors with Eigenvalues of 1.029 greater than 1 and the total variance extracted was 74.478%, meeting the condition compared to

theory > 50%. This shows that 9 factors explain 74.478% of the variation in the data.

 Table 6: Total variance explained (1st time)

E4		Initial Eigenvalues criteria			of squares of ex	tracted factor loadings	The same of the same and leads
Factor	Total	% of variance	Cumulative percentage			Cumulative percentage	The sum of the squared loads
1	10,117	32,636	32,636	10,117	32,636	32,636	5,362
2	2,755	8,888	41,524	2,755	8,888	41,524	4,862
3	1,982	6,394	47,918	1,982	6,394	47,918	5,656
4	1,834	5,917	53,834	1,834	5,917	53,834	6,120
5	1,600	5,160	58,994	1,600	5,160	58,994	5,705
6	1,391	4,486	63,480	1,391	4,486	63,480	4,971
7	1,233	3,978	67,458	1,233	3,978	67,458	5,331
8	1,147	3,700	71,158	1,147	3,700	71,158	5,608
9	1,029	3,320	74,478	1,029	3,320	74,478	5,270
10	0,605	1,950	76,428				
11	0,519	1,675	78,103				
12	0,480	1,550	79,652				
13	0,470	1,515	81,167				
14	0,455	1,469	82,636				
15	0,432	1,393	84,029				
16	0,425	1,372	85,401				
17	0,413	1,332	86,733				
18	0,391	1,262	87,996				
19	0,388	1,253	89,249				
20	0,346	1,117	90,366				
21	0,343	1,108	91,474				
22	0,335	1,081	92,555				
23	0,301	0,971	93,525				
24	0,287	0,927	94,452				
25	0,274	0,885	95,337				
26	0,268	0,866	96,203				
27	0,251	0,810	97,013				
28	0,247	0,796	97,808				
29	0,236	0,762	98,570				
30	0,235	0,757	99,327				
31	0,209	0,673	100,000				

(Source: Compiled from research results, 2023)

Table 7 shows that the EFA analysis extracted 9 factors with an Eigenvalue of 1.029 greater than 1 and a total variance extracted of 74.478%, meeting the condition compared to

theory > 50%. This shows that 9 factors explain 74.478% of the variation in the data.

Table 7: Rotated component matrix (1st time)

Factor	Observed variables	Element									
Factor		1	2	3	4	5	6	7	8	9	
	FA4	0,873									
Facilities	FA3	0,848									
racinues	FA1	0,846									
	FA2	0,831									
	PER2		0,900								
Business performance	PER1		0,853								
Busiliess performance	PER4		0,822								
	PER3		0,785								
	HU2			0,888							
Human	HU3			0,884							
nulliali	HU1			0,871							
	HU4			0,489							
	RE3				0,920						
Regulatory environment	RE1				0,916						
	RE2				0,867						
	OB2					0,910					
Opportunistic behavior	OB4					0,846					
Opportunistic behavior	OB3					0,843					
	OB1					0,454					

	TR3	0,917			
Trust	TR1	0,875			
	TR2	0,808			
	LRC2		0,943		
Long-term relationship culture	LRC1		0,827		
	LRC3		0,821		
	CO1			0,905	
Commitment	CO2			0,848	
	CO3			0,846	
	SA3				0,915
Satisfaction	SA2				0,827
	SA1				0,818

(Source: Compiled from research results, 2023)

The results of EFA analysis suggest eliminating variables HU4 (0.489) and OB1 (0.454) because they have factor loadings less than 0.5. Consider eliminating variable HU4 because the content of this variable, if removed, will have little effect on the meaning, because variables HU1, HU2, HU3 can cover variable HU4, and at the same time the content of this question is also very difficult to evaluate by survey subjects. And eliminating variable OB1 because the

content of this variable, if removed, has little impact because the content of variables OB3 can cover the meaning of variable OB1.

5.5 Results of exploratory factor analysis – second time After eliminating variables HU4 and OB1 because this variable has a loading factor of less than 0.5. The results of the second EFA analysis are presented in Table 8.

Table 8: KMO and Bartlett testing (2nd time)

Kaise	0,898	
	Approx. Chi-Square	5448,405
Bartlett's Test	df	406
	Sig.	0.000

(Source: Author's calculations from SPSS, 2023)

We have 0.5 < KMO coefficient = 0.898 < 1, so the EFA analysis results are accepted with the collected research data set. The significance level of the Bartlett test reached 0.000

< 0.05, showing that the factor analysis results are consistent with 95% confidence.

Table 9: Total variance explained (2nd time)

Es store	Initial Eigenvalues criteria			Sum of	squares of e	xtracted factor loadings	The sum of the squared loads		
ractor	Total	% of variance	Cumulative percentage	Total	Total	% of variance	Cumulative percentage		
1	9,147	31,542	31,542	9,147	31,542	31,542	4,654		
2	2,672	9,212	40,754	2,672	9,212	40,754	4,712		
3	1,891	6,521	47,275	1,891	6,521	47,275	4,635		
4	1,810	6,243	53,518	1,810	6,243	53,518	4,616		
5	1,524	5,255	58,774	1,524	5,255	58,774	4,810		
6	1,379	4,753	63,527	1,379	4,753	63,527	5,339		
7	1,228	4,235	67,762	1,228	4,235	67,762	5,119		
8	1,136	3,917	71,679	1,136	3,917	71,679	4,652		
9	1,013	3,492	75,171	1,013	3,492	75,171	4,521		
10	0,592	2,042	77,212						
11	0,483	1,667	78,879						
12	0,473	1,632	80,511						
13	0,442	1,525	82,036						
14	0,431	1,488	83,524						
15	0,427	1,472	84,996						
16	0,420	1,448	86,444						
17	0,410	1,415	87,860						
18	0,387	1,336	89,195						
19	0,354	1,221	90,417						
20	0,345	1,189	91,606						
21	0,329	1,135	92,740						
22	0,306	1,057	93,797	_					
23	0,290	0,999	94,796						
24	0,287	0,988	95,784						
25	0,260	0,896	96,680						

26	0,254	0,875	97,555		
27	0,250	0,861	98,416		
28	0,236	0,813	99,229		
29	0,224	0,771	100,000		

(Source: Author's data analysis results, 2023)

Table 10 shows that the EFA analysis extracted 9 factors with an Eigenvalue of 1.013 greater than 1 and a total variance extracted of 75.171%, meeting the condition

compared to theory > 50%. This shows that 9 factors explain 75.171% of the variation in the data.

Table 10: Rotated component matrix (second time)

Factor	Observed variables	Element									
ractor		1	2	3	4	5	6	7	8	9	
	PER2	0,899									
Business performance	PER1	0,851									
	PER4	0,819									
	PER3	0,782									
	FA4		0,861								
Facilities	FA3		0,836								
racinues	FA1		0,829								
	FA2		0,812								
	TR3			0,914							
Trust	TR1			0,871							
	TR2			0,801							
	HU2				0,866						
Human	HU3				0,851						
	HU1				0,850						
	RE3					0,884					
Regulatory environment	RE1					0,868					
	RE2					0,821					
	CO1						0,910				
Commitment	CO2						0,857				
	CO3						0,853				
	SA3							0,924			
Satisfaction	SA2							0,829			
	SA1							0,827			
Long-term relationship culture	LRC2								0,921		
	LRC1								0,816		
_	LRC3		_		_				0,804		
	OB2									0,849	
Opportunistic behavior	OB3									0,820	
	OB4		_		_					0,815	

(Source: Author's data analysis results, 2023)

According to Table 10, the loading coefficients of the observed variables are all greater than 0.5. Thus, these observed variables all contribute meaningfully to the model (Hair & al., 2009) [9]. In summary, the factor analysis model has practical significance, from the initial 31 observed variables, through the first evaluation of the scale, there

were 2 observed variables that did not meet the requirements, so the study left a total of 29 important variables. Observations are grouped into 9 meaningful factors: (1) OB, (2) LRC, (3) RE, (4) HU, (5) FA, (6) TR, (7) CO, (8) SA, (9) PER. The official scale, after analysis, is shown in Table 11 as follows.

Table 11: Research scale

	Scale to measure factors affecting relationship quality							
	Opportunistic behavior scale							
Encode	Contents	Source						
OB2	Environmental companies often keep their promises to our company	Knemeyer and Murphy (2004) ^[19] ; Nguyen Thi Thanh Van (2018) ^[3]						
OB3	Our company often provides an honest overview of ongoing activities for the Environmental Company	Nguyen Thi Mai Trang and et al.						
OB4	Environmental companies often provide an honest overview of ongoing activities for our company	(2004); Nguyen Thi Thanh Van (2018) [3]						
Long-term relationship culture scale								
Encode	Contents	Source						
LRC1	Our company tends to continue to choose its partners because they believe that the price offered	Ganesan (1994) [20]; Tai and Chan						

		nttps://www.ammancejournar.com
	by the Environmental Company is always the most reasonable.	(2001) ^[14] ; Nguyen Thi Thanh Van (2018) ^[3]
LRC2	Our company is often more interested in the quality aspect than the price aspect when choosing an environmental company	Ryu and Cook (2005) [13]; Nguyen Thi Thanh Van (2018) [3]
LRC3	Our company usually does not want to change to another environmental company even though the environmental company has sometimes performed its duties poorly.	Ganesan (1994) [20]; Nguyen Thi Thanh Van (2018) [3]
Encode	Regulatory environment scale Contents	Source
		Vo and Baumgarte (2000) [21];
RE1	Policy mechanisms in Vietnam often change	Nguyen Thi Thanh Van (2018) [3] Agboli and Ukaegbu (2006) [22];
RE2	During our company's operations, we often encounter the problem of 'action is key'	Nguyen Thi Thanh Van (2018) [3] Agboli and Ukaegbu (2006) [22];
RE3	Administrative procedures in Vietnam are often complicated	Vo and Baumgarte (2000) ^[21] ; Nguyen Thi Thanh Van (2018) ^[3]
	Human Scale	
Encode		Source
HU1	The environmental company's personnel are always dedicated, understanding, sympathetic,	ļ.
1101	always ready to serve and capable of solving all service problems that arise for our company.	
HU2	The environmental company's personnel always communicate and explain business processes clearly, simply, logically, and reliably; and provide and share timely information for our company	Gronroos (2007) ^[8] ; Hoang Le Chi (2013) ^[1]
HU3	The environmental company's personnel have professional communication and are able to handle problems quickly and accurately	
	Facilities scale	
Encode		Source
FA1	The company's transaction facilities are spacious, clean, and meticulously cared for; Emphasis on brand promotion.	
FA2	The environmental company's facilities have simple, clear, and convenient instructions and service procedures.	Lin & Ding (2005);
FA3	The environmental company has modern technology and always has access to advanced technology.	Hoang Le Chi (2013) [1]
FA4	The equipment provided by the environmental company is modern, highly efficient, and is maintained promptly and reliably.	
	Relationship quality scale	
	Trust scale	
Encode		Source
TR1 TR2	We think the environmental company wants to be sincere with our company We feel that the environmental company wants to make decisions that benefit our company under any circumstances.	Swar <i>et al.</i> (2012);
TR3	<u> </u>	Nguyen Thi Thanh Van (2018) [3]
183	Our company is willing to help environmental companies without expecting anything in return	
Encode	Satisfaction scale Contents	Source
SA1	Our company is satisfied with the transaction method of the environmental company	Source
SA2	Our company is satisfied with the quality of services provided by the environmental company	Chu and Wang (2012) [16]; Nguyen Thi Thanh Van (2018) [3]
SA3	Our company is satisfied with the price offered by the environmental company	
Engal.	Commitment scale Contents	Saaa
Encode	Contents	Source Nguyen Thi Mai Trang et al.
CO1	Our company and environmental company tend to commit to become long-term alliance	(2004); Morgan and Hunt (1994) [10]; Nguyen Thi Thanh Van (2018) [3]
CO2	Our company does not view the environmental company as just a partner but rather as an important part of our company.	Chu and Wang (2012) [16];
CO3	Our company feels that environmental companies also want to see us as an important part of their	Nguyen Thi Thanh Van (2018) [3]
	company Outcome scale of relationship quality	I
-	Business performance measurement scale	
Encode	Contents	Source
PER1	Our company's profits have increased in recent times thanks to close cooperation with environmental companies	Chu and Wang (2012) [16]; Han et al. (2009)
PER2	Environmental companies tell us that because of their relationship with our company, their profits have improved	(-997)
PER3	Our company's market share has increased since having a good relationship with the environmental company	Han et al. (2009); Nguyen Thi Thanh Van (2018)
DED 4	The environmental company said its market share has increased since connecting with our	G. J
PER4	company	

(Source: Compiled from research results, 2023)

6. Conclusion

In this article, the author proposed a research model based on inheriting research results from related studies. By implementing quantitative methods and using survey and interview techniques with experts, the author has clarified and adjusted the original research model. The survey subjects included 360 industrial customers who are businesses using environmental services in industrial parks and export processing park in Ho Chi Minh City. The model proposed in the article has the potential to become the basis for further quantitative research, helping businesses determine strategies to sustainably improve business performance.

The quantitative analysis tools proposed by the author, including Cronbach's Alpha coefficient and exploratory factor analysis (EFA), are designed to provide detailed and reliable information about the research model. This combination of synergy between the proposed model and quantitative analysis tools opens up potential research avenues in this field and contribute to the development of effective business strategies for businesses and enterprises using environmental services in Ho Chi Minh City.

However, the research also has some limitations as follows. First, this study focuses on two main theories, Transaction Cost Economics (TCE) and Service Quality Theory (SQ) to identify factors affecting RQ; Further research needs to be conducted to comprehensively determine the factors affecting RQ based on other basic theories. Second, the research model is only applied in the field of environmental industry, so it is necessary to check and confirm the generality of the results in other businesses in Vietnam.

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