2023
BECIC
Business, Economics and Communications
International Conference

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NATIONAL COLLOQUIUM 2023

The 9th Business, Economics and Communications
International Conference(BECIC 2023)
and
The 10th National Colloquium (NC 2023)

**31
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Conference
Proceedings

Faculty of Business, Economics and Communications
Naresuan University, Thailand

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The 9th Business, Economics and Communications International Conference

(The 9th BECIC2023)

"Moving Forward to the New Era of Innovation in Business, Economics, and Communications for the Dynamic Society"

March 31st, 2023

Topland Plaza Hotel, Phitsanulok, Thailand

Faculty of Business, Economics and Communications (BEC)

Naresuan University, Phitsanulok, Thailand

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About Naresuan University

Naresuan University (NU) emphasizes the improvement of educational opportunity and equity for all as one of the top government universities in Thailand. A strong focus is placed upon research, innovation, partnership, and internationalization. Naresuan University aspires to be the University of Innovation. It is strategically located at the heart of the Thai Kingdom in Phitsanulok province. Formerly a campus of Srinakharinwirot University, NU was established as a public university in 1990, which was the 400th anniversary of the start of the reign of Phitsanulok-born King Naresuan the Great, after whom the university is named. The university has about 20,000 full-time students.

This comprehensive university lives up to the public expectations in providing diverse, cutting edge programs through 21 faculties, college, institute, schools and demonstration schools. Although not many years have passed since its inception, NU has already earned the reputation of being one of the most progressive universities in Thailand. It aims to be a comprehensive university dedicated to the development of world-class graduates and new knowledge for the purpose of creating excellent resources for regional and national development.

About Faculty of Business, Economics and Communications (BEC)

Faculty of Business, Economics and Communications (BEC) is located in Phitsanulok province in the lower northern, Thailand. It was first established in 1994 as a part of Faculty of Humanities and Social Sciences (HSS), but on October 1st, 2003, it was separated off from HSS to Faculty of Management and Information Sciences (MIS), and then on July 22th, Naresuan University council approved to rename from Faculty of Management and Information Sciences (MIS) to Faculty of Business, Economics and Communications (BEC).

Vision Statement

To be well recognized at national and international levels as a faculty distinctive in its academic, research, and innovative excellence.

Mission

To create entrepreneurs, managers, and leaders through globally-recognized academic work, research, innovation, and knowledge integration, with an emphasis on driving regional and national community development in Thailand.

A Message from the Chairman of Naresuan University Council

I would like to extend a warm welcome to all of you to Naresuan University and the BECIC 2023 conference in Phitsanulok, Thailand. The Faculty of Business, Economics, and Communications is in charge of organizing this conference. The faculty combines major social sciences such as business management, economics, finance, accounting, tourism, and communications. In my opinion, they are as the most important fields in any modern social science, especially because in the presence of revolutionary technology, these sciences offer each of us fresh perspectives and a new way of understanding. Thus, the priority of any country is to educate the next generation of leaders in these fields.

This conference, which provides a forum for networking with other professors, researchers, government officials, and industrial partners to discuss the challenges and opportunities of creativity and innovation in the age of transformation, is an essential step in moving forward with business creativity and innovation and to share research experience among scholars around the world.

As the Chairman of Naresuan University Council, I would like to take this opportunity to thank the faculty for their hard work and dedication to this conference, as well as the guest speakers and presenters who honor Naresuan University with their academic contributions. I truly think that this academic companionship is here to stay.

Emeritus Prof. Dr. Prasit Watanapa, M.D., Ph.D.
Chairman of Naresuan University Council

A Message from the President of Naresuan University

It gives me great pleasure to welcome all of the conference participants today, the theme of which is "Moving Forward to the New Era of Innovation in Business, Economics, and Communications for the Dynamic Society". It is the 9ᵗʰ Business, Economics and Communications International Conference 2023 (BECIC 2023). As it was considered to be a BEC biannual event, this conference is designed for academic experts, practitioners and postgraduate student community. This forum is the source of modern business administration and research that has been recognized as providing as the foundation for entrepreneurial innovation and creativity in the age of transformation. The driving force behind business, economics, and communications is the focusing outcome.

As we expect that business, economic, and communications development will continue to advance, we must encourage our mutual cooperation, particularly in the fields of research and academic exchange as well as business, economic, and communications development. The most crucial idea is to produce and conduct research to address the requirements of the community and the country. However, this international conference is only one step in the process of achieving the goals of academic communities. The lecturers or administrators who are involved will encourage your students or your teams to learn about the international research on society, business, economics, and culture in each nation.

I would like to take this opportunity to express my sincere gratitude to the BECIC 2023. I wish you objective success and I sincerely hope that the presenters and presentations result in new knowledge can be applied to the advancement and improvement of the COVID-19 new normal conditions across the countries of the world.

On behalf of the Naresuan University community, I delighted to invite you on March 31ˢᵗ, 2023 at Topland Plaza Hotel, Phitsanulok, Thailand. This conference will take the business creativity and innovation process into a fully operational cycle.

Associate Prof.Dr.Sarintip Tantanee
Acting President of Naresuan University

A Message from the Dean of Faculty of Business, Economics and Communications

Our international conference, which concerns with new technologies that have enabled economic innovations in the ways that we generate knowledge, access information, and ultimately transform our future, is in its 9th year and is being held in a variety of disciplines. The conference includes international academic seminars, and oral presentations under the theme of "Moving Forward to the New Era of Innovation in Business, Economics, and Communications for the Dynamic Society". Many authors and participants come together at the Business, Economics and Communications (BECIC 2023) inaugural sessions to discuss their perspectives on the colloquium's theme. This is followed by technical sessions where experts from various fields present their research findings and share their experiences.

As we organize the conference, we had the pleasure of welcoming world-class speakers to our previous conference in 2018 under the theme of "Digital Knowledge and Business Innovation: Driving to the Future". Those speakers included: **Dr.Supachai Panitchpakdi,** former director general of WTO and former secretary-general of UNCTAD; **Professor James E. (Jim) Owers, Sr.,** director of the Economics Program in the Harvard University; **Dr.Robert Van der Meer,** professor and reader in Management Science, Strathclyde Business School, University of Strathclyde, UK; **Professor Amir Mahmood,** dean of School of Business at Western Sydney University, Australia; and **Dr.Meeta Vouk,** director of the Singapore Research center, IBM. Although we had to struggle with COVID-19 pandemic in 2021, we continued to manage the conference by online under the theme of "Business Creativity and Innovation in the Age of Transformation". We also invited the following speakers: **Professor Terry Williams** from University of Hull, UK and **Venkateswaran Govindarajan,** IBM Global Markets-Cloud Sales based in Singapore.

In the years past, the COVID-19 pandemic transforms into a worldwide health emergency with a significant impact on economic productivity. However, we use this opportunity to gather experts and researchers from around the world to exchange and discuss their work in the hopes of coming up with some effective approaches to deal with the pandemic's negative impacts. We are continuing to add leaders to the list this year, as well as other outstanding speakers and presenters. It is an honor for us to have two eminent keynote speakers with us today. Our first keynote speaker is **Professor Terry Williams,** Professor of Management Science from Hull University Business School, University of Hull, UK. He is well known in operations research and project management with countless publications in top-tier journals. He is now a member of the UK government's "REF" panel which reviews UK research. The second keynote speaker, **Mr. Banthoon Lamsam,** the chairman emeritus of Kasikorn Bank. He is the most successful leader throughout his tenure, who has been driven the organization through the crisis and focus on running a business with stability.

We cordially invite you to join in and support this fantastic opportunity that completes the innovation process on behalf of the conference organizing team. We look forward to seeing you on March 31st, 2023 at Topland Plaza Hotel, Phitsanulok, Thailand.

Associate Professor Dr.Vichayanan Rattanawiboonsom

Dean of Faculty of Business, Economics and Communications

Naresuan University, Phitsanulok, Thailand

A Message from the Conference Program Chair

Welcome to the 9th Business, Economics, and Communications International Conference or BECIC 2023 that will be held in Phitsanulok, Thailand. In the transitional period where the COVID-19 pandemic becomes the global health crisis with an impact on economic activities, a significant number of research papers will be presented at this conference that focuses on the theme of "Moving Forward to the New Era of Innovation in Business, Economics, and Communications for the Dynamic Society". I would like to express my appreciation to all authors who submitted papers and participants. I believe that a great conference is built on top-notch submissions.

These papers were double-blinded peer reviewed. Each paper received two written reviews. Our Program Committee (PC) were restricted to being co-authors on at most two submissions. The physical-presence PC meeting and the relatively small PC, contributed to a collegial process and open discussions, pooling the expertise of the entire committee. I sincerely appreciate in the committee's excellent work and cooperative spirit. It was a great honor to work with a team that was so dedicated and focused.

The conference is supplemented by various engagement beyond the technical program in these proceedings. These include of excellent keynote speakers. This year, we have the chance again to meet with **Professor Terry Williams,** a professor in management science at University of Hull, United Kingdom. He is well known in the operations research and project management with countless publications in top- tier journals. Also, with **Mr. Banthoon Lamsam,** the chairman emeritus of Kasikorn Bank. He is the first Thai financial institution executive to obtain this coveted honor, and he did so as the most effective leader throughout his time at the organization.

I would like to express my grateful thankfulness to the conference support teams including, head of conference secretary and team. Along with being in charge of the website development and public relation team, registration team, article considerations and formatting team, ceremony team, hostess and transportation team, location and audiovisual team, and assessment team for their supporting and cooperation to assure the achievement of the goal.

On behalf of the conference program chair, we are really pleased and honored to organize this challenges conference. We hope that everyone who joins this conference would find it to be an interesting, educational, enjoyable, and satisfying event.

Passawan K.

Assistant Professor Dr.Passawan Korakotchamas

Conference Program Chair

Keynote Speaker Biographies

Professor Terry Williams

MA MSc PhD FIMA FORS CMath PMP

Professor of Management Science

Hull University Business School

University of Hull

HU6 7RX, UK

Terry Williams has 40 years' experience in Operational Research (OR), modelling the behavior of complex systems particularly projects. He was until February 2016 Dean of a major Business School at the University of Hull, UK. Prior to that he was Director of Southampton University's Management School, and previously at Strathclyde University. The last 3 years he has set up and directed the successful Risk Institute at the University of Hull, undertaking consulting and applied research in areas involving risk, particularly in complex systems involving human aspects.

He has experience of working with public organizations such the Cabinet Office Infrastructure & Projects Authority (IPA) (where he is one of the leaders in project delivery research); UK Ministry of Defense (as advisor and also as a technical auditor for Dstl), Home Office (as a researcher in cross-working across all departments), Department for Business Innovation & Skills (on entrepreneurship skills for small business performance) and the OECD (where he got to know the Directorates and their management of projects). While in industry, he spent 9 years building up a successful practice (and a small team) in non-military OR in engineering consultancy YARD; this first worked in logistics but then specialized in Project-Risk Management (PRM) of major projects, including acting as Risk Manager for some major defense projects. From here he went to Strathclyde where, as well as working in PRM, a team developed to support major post-project litigation claims, which supported claims, particularly Delay and Disruption, totaling over $1.5billion in Europe and North America. He continues to act as a consultant on major Delay & Disruption claims and advise on project behavior. He is known for managing business schools, and has acted as a Business School reviewer.

He is well known in the OR and Project Management worlds. He co- edited the prestigious Journal of the OR Society for 10 years. He has written 90 peer-reviewed journal papers and a number of books, and has an "h-index" of 50. His research covers modelling uncertain systems involving humans, from real- world modelling of complexity and modelling UK operations within the remit of the Home Office, to modelling battles and to production systems. A feature of much of this research has been the multi-disciplinary team 11 approach. He has been involved

in multiple EPSRC/ESRC contracts as well as multiple Project Management Institute (PMI) research contracts. He is a member of the UK government's "REF" panel which reviews UK research (2014 and 2021 panels).

He has particularly concentrated on modelling complex projects, and has become a leader in the worldwide Project Management research community and a widely used speaker. He is currently a theme leader on the IPAs "Project X", looking at how to manage the Government Major Projects Portfolio. He sits on the Academic Members Advisory Group of the PMI. He is a member and leader of multiple research groups and writes and speaks on projects, including around a number of books on modelling projects, learning, governance and front-end analysis.

He stepped down to concentrate on research and consulting, and in particular to set up a Risk Institute. A major part of this researches operational risk arising from human factors; he is a theme leader on the University's "Aura" project, supporting offshore wind farms, and holds a major contract to research human-factors-related risk to wind-farm operations & maintenance; he also works with utility companies on human factor risk within their workforce

He has an MA in from Oxford University, an MSc and PhD in from the University of Birmingham. He is a qualified project manager (PMP), is a Fellow of the Institute of Mathematics and its Applications (and Chartered Mathematician); a Fellow of the Operational Research Society; and a Fellow of the Higher Education Academy.

Keynote Speaker Biographies

Mr. Banthoon Lamsam

The Chairman Emeritus, KASIKORNBANK PCL

Age : 70 Years

Education :

• Master of Business Administration, Harvard University

• Bachelor of Science in Engineering, Princeton University

Other Affiliations :

• Member of the Council, The Thai Red Cross Society

• Member of the Committee, Sai Jai Thai Foundation

• Chairman and Manager, Mahamakuta Rajavidyalaya Foundation Under Royal Patronage

• Treasurer, Wat Bowonniwet Vihara and Wat Yanasangvararam

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Conference Schedule

The 9th Business, Economics and Communications International Conference

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"Moving Forward to the New Era of Innovation in Business, Economics, and Communications
for the Dynamic Society"

March 31st, 2023 at Topland Hotel & Convention Centre, Phitsanulok

Time	Activities
08.00 – 08.30 a.m.	Registration
08.30 – 08.40 a.m.	**General Remarks** By Associate Professor Dr. Vichayanan Ratanavibulsom Dean, Faculty of Business, Economics and Communications
08.40 – 08.50 a.m.	**Welcoming Remarks** By Professor Dr.Prasit Watanapa, M.D. Chairman of Naresuan University Council
08.50 – 09.00 a.m.	**Welcoming Remarks** 1. Khunying Jada Wattanasiritham (Advisor of Faculty of Business, Economics and Communications) 2. Assistant Professor Dr.Panu Putthawong (Vice President for Administration, representative of the NU president)
09.00 – 09.10 a.m.	**Opening Ceremony and Group Photo Session**
09.10 – 10.00 a.m.	**Keynote Speakers 1** **"The "Third Leg" of a University's Mission"** By Professor.Dr.Terry Williams (Professor of Management Science, Hull University Business School, University of Hull, UK)
10.00 – 11.00 a.m.	**Keynote Speakers 2** **"Nan: A Study Case in Environmentalism, Public Health Service and Livelihood at the Outer Edge of the Society"** By Mr. Banthoon Lamsam (The Chairman of the Board and Chief Executive Officer of Kasikron Bank)
11.00 – 12.00 a.m.	**Oral Presentations** **Venue:** 1) Lopburi room 2) ChaiNat room 3) UthaiThani room 4) NakhonSawan room
12.00 a.m. – 1.00 p.m.	Lunch
1.00 – 5.00 p.m.	**Oral Presentations (Continue)**
6.00 – 9.00 p.m.	**Closing Ceremony and Certificate Ceremony for "Best Paper Award"**

Note: The schedule is subject to change upon matters

Conference Schedule of Sessions

"Technology and Innovation in Business, Economics and Communications & Social Impact and Dynamic Society in the New Era"

Session: Technology and Innovation in Business, Economics and Communications & Social Impact and Dynamic Society in the New Era Venue: Lopburi room	
Session Chair: Associate Professor Dr. Panida JongSuksomsakul	
Committee Session: 1. Assistant Professor Dr.Warawude Rurkwararuk 2. Assistant Professor Dr.Sutana Boonlua 3. Dr.Chatree Preedaanunthasuk	
	Papers:
11.00 - 11.20 a.m.	1. The Impact of Media Innovation on the Public Relations Industry in the Era of Disruptive Technology by **Watsayut Kongchan and Parichart Sthapitanonda**
11.20 - 11.40 a.m.	2. A Causal Relationship Model of Entrepreneurial Orientation Market Orientation and Learning Orientation Influence of Business Performance of Transportation in the Eastern Region of Thailand by **Thanaporn Thongnarong, Dechaphan Ratsasanasart and Chongrug Pariwatnanont**
11.40 - 12.00 p.m.	3. The Structure Relationship of Entrepreneurial Orientation Marketing Capability and Innovation Management Influence of Firm Performance of Small and Medium Enterprise in the Lower Central Region of Thailand by **Sasita Nakpuntawong, Chantana Sangwornyotin and Chongrug Pariwatnanont**
Lunch	
1.00 - 1.20 p.m.	4. Analysis of Factors Affecting Third-Party Funds above 2 Billion Rupiah in Indonesia by **Ignatius Kuncoro Krisnugroho, Farah Wulandari Pangestuty and Herman Saheruddin**
1.20 - 1.40 p.m.	5. Factors Affecting Customer Purchase Intensions of Electric Cars in Bangkok, Thailand by **Dechaphan Ratsasanasart, Chantana Sangvornyotin and Chongrug Pariwatnanont**

Session: Technology and Innovation in Business, Economics and Communications & Social Impact and Dynamic Society in the New Era Venue: Lopburi room	
1.40 - 2.00 p.m.	6. The Study of Service Quality Factors on Student Satisfaction and Student Loyalty in Language Institute at Tak Special Economic Zone by **Win Soe Aung and Anirut Asawasakulsorn**
2.00 - 2.20 p.m.	7. Factors Affecting Success of Second-Hand Car Business by **Sanhaphat Tuntithanasap**
2.20 - 2.40 p.m.	8. A Design and Development of Recycling Business Application for A Digital Entrepreneurial Society by **Sariya Kruayim, Suttida Chaisri, Wasin Liampreecha and Bhagaporn Wattanadumrong**
2.40 - 3.00 p.m.	9. Teaching and Learning for the Future: Some Reflections on a University Happiness and Wellbeing Course by **Gareth Davey**

Note: The schedule is subject to change upon matters

The Impact of Media Innovation on the Public Relations Industry in the Era of Disruptive Technology

Watsayut Kongchan[1] and Parichart Sthapitanonda[2]
[1,2]Faculty of Communication Arts, Chulalongkorn University, Thailand

Abstract

The ongoing media landscape change has quite an impact on people's lives from knowledge to behavioral level. It is crucial for the public relations (PR) industry to adapt itself to be more competitive in the age of disruptive technology. The research methodology consists of PR professionals' interviews and document analysis. The findings suggested that the benefits of media innovation development paced the ways of reaching more niche stakeholders, acquiring more power of owned media, and depending less on PR intermediaries. However, the fast-paced media innovation development had diversified stakeholders into more fragmented and isolated groups, adding more complications to public communication. Also, the problems of quantitative dominated assessment and sale-oriented evaluation were also major points of concern among PR consultants. Accordingly, the PR industry should consider adjusting itself by integrating PR conventional tasks with multidisciplinary knowledge, creativity, and aesthetics while maintaining the balance between continuity and changes in organizations.

Keywords: 1) Media Innovation 2) Public Relations 3) Media Technology 4) Digital Media

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Introduction

The media landscape has changed recently as a result of rapid advancement in information and communication technology. Technology disruption is the root of this phenomenon, which has had a substantial impact on all facets of modern society, including politics, economy, and culture (Chithra, 2020). The integration of digital media and information into people's daily routines has presented challenges for strategic communication planning, necessitating the use of new media and data management technologies to establish mutually beneficial relationships with stakeholders, as observed by Soriano et al. (2018). The public relations industry is also experiencing significant changes due to media innovation and technological advancements, with over 80% of global public relations practitioners acknowledging in the 2019 Global Communication Report by the USC Annenberg Center for Public Relations that these changes will have a substantial impact on the industry.

Artificial Intelligence (AI) technology is a significant media advancement gaining attention in the public relations industry. While only 18% of professional public relations practitioners in a recent poll believe AI technology will have a significant impact on the industry in the near future, students of public relations hold a different perspective, with 53% recognizing its potential. However, a major challenge to adopting AI technology in the sector is the lack of expertise and comprehension among public relations professionals. According to the USC Annenberg Center for Public Relations report (2019), only 14% of respondents stated having a medium to high level of knowledge about AI technology, while 40% of respondents claimed no knowledge or understanding of AI at all.

According to a survey conducted by Boonchutima (2017), there are five significant issues in Thailand that align with the findings of the USC Annenberg Center for Public Relations (2019). These issues include a lack of adequate technology training for personnel, a shortage of personnel with education in technology, and a lack of immediate technological readiness among personnel. Professionals from both the academic and media sectors, both public and commercial, have also acknowledged these concerns, underscoring the need for immediate government attention.

Public relations researchers are keen on investigating the impact of media innovation on the public relations field. The study will consider the perspectives of public relations professionals, business owners, independent practitioners, and public relations students, while providing a comprehensive overview of Thailand's current and future environment. Additionally, the study will provide recommendations for establishing various factors that contribute to the growth of the public relations industry, as well as examining the rapidly changing media innovations that are transforming the industry.

Literature Review

Due to the rapid development of communication and information technology, it is

essential to define and specify the scope of innovation in media innovation research. Boonchutima (2017) defines "media" as a communication medium that transmits meanings to achieve various objectives. Similarly, Suyaprom & Nantavarapas (2020) define media as a vehicle or medium that conveys information between the source and the receiver, enabling the receiver to decode the message. Generally, media users aspire to bring about personal changes, and media organizations can respond to changes in their products, services, and processes that lead to changes in value from the receiver's standpoint.

According to Boonchutima (2017), innovation refers to using knowledge to create new products and services for economic and societal benefits within a specified timeframe. This definition is similar to the definition of "Innovation" by Chithra (2020) that innovation is the creation of novel technology, goods, and services that replace existing ones and produce new knowledge. Boonchutima's definition of media innovation involves creatively using new methods in media content to influence knowledge, attitudes, and behavior of individuals and society as a whole. Garcia-Aviles et al. (2018) suggest that media innovation involves adapting to societal and technological changes, as well as integrating interdisciplinary knowledge and interaction across various production processes.

Media innovations have been defined in various ways by different scholars. Boonchutima (2017) categorized media innovations into two types: media technology innovation and media content innovation. Chithra (2020), on the other hand, classified innovations resulting from media changes into five primary groups, which include innovations in print media, broadcasting media, television, cinema, and new media. Kaltenbrunner et al. (2017) provided examples of media innovations in each genre that were relevant to the information and communication sector as illustrated in Table 1 below (Kaltenbrunner et al., 2017). These innovations were grouped into five categories: production, organization, distribution, interaction, and commercialization. This categorization was aimed at illustrating the benefits that can be gained by media organizations across the five categories. However, the negative impacts of media innovation on the communication industry have not been fully differentiated and explained in comparison to the benefits of such innovations. This lack of clarity in the discussion leads to a lack of comprehensive information, particularly in the public relations industry.

Table 1 Examples of media innovations and process classification in creating and utilizing benefits from media innovations

Production	Systematization	Distribution	Interaction	Commerce
360-degree interview technology	Integrating expertise from departments of news production	Creating news application for tracking real-time results	Real-time user behavior tracking tool	Development of ad formats that align with news presentation

Production	Systematization	Distribution	Interaction	Commerce
Immersive Narrative Technology	Tools for story planning and monitoring activities of target groups	Creating an open database as a central hub for sharing information	Establishing channels for public opinion listening on social media	Utilization for creating branded content and content strategy development
technology for information distribution, and automatic responses	Long-distance work and decentralization of newsrooms	Journalists participating in information distribution via social networks	Tools to assist users in sending beneficial news content	Supporting news programs through advertising and sponsorships

Reference: adapted from Kaltenbrunner et al. (2017)

Apart from the five categories and process classifications of media innovations, Zolkepli and Kamarulzaman (2015) provided an explanation of five characteristics of media innovation in consumer behavior with regard to media consumption, drawing on the Diffusion of Innovation Theory. These characteristics include relative advantage, compatibility, observability, trialability, and complexity, all of which are conceptually distinct but empirically interconnected. According to the authors, the first four characteristics are positively linked to adoption, while complexity has a negative correlation. Their research has shown that innovation in the domain of social media has a positive impact on consumers' motivation to actively adopt the change in the media landscape.

The adoption of innovative media in organizations has been a popular research topic in communication and public relations, with the Technology, Organization, and Environment framework (TOE) being a famously used approach (Oliveira & Martins, 2010; Tajudeen et al., 2018). This framework is based on the Diffusion of Innovation Theory (Ahmad et al., 2019) and encompasses three points: technology, organization, and environment. First, the technological context includes current and emerging information technologies that are relevant to the firm. The organizational context pertains to the company's size and scope of work. The environmental context refers to the industry, competition, and interactions with the stakeholders. The TOE framework provides an analytical framework for investigating the adoption and integration of various media innovations in business tasks and organizational communication, aligning with the diffusion of innovation theory, but it also introduces a novel component - the environmental context (Tajudeen et al., 2018).

Some studies, e.g. Ahmad et al. (2019), used the TOE framework with several attributes developed from the Diffusion of Innovation to examine the challenge of social media adoption on SMEs' performance. The study has illustrated that the use of media innovation, such as the interactive features on social media, has become an essential business management practice for organizations, including small and medium-sized enterprises (SMEs) (Mourtada and Alkhatib, 2014). A number of research have also investigated social media use in business and have highlighted

many advantages, which include enhancing brand engagement, providing an alternative platform for product distribution, facilitating interactions between businesses and customers, and improving brand recognition through customer feedback (Siamagka et al., 2015; Gazal et al., 2016).

Numerous studies based on this framework have provided empirical evidence of the advantages that organizations can gain from using innovative media, such as social media. Ahmad et al. (2019) conducted a review of research on media innovation adoption and its impact on organizations, revealing that online media has a positive effect on firms' performance. The authors employed a TOE framework that combined technological, organizational, and environmental factors to look at the challenge of social media on SMEs through quantitative research. They recommended that SMEs keep up with media innovation research and leverage social commerce to their advantage as it becomes more prevalent. Previous studies have also emphasized the importance of top management involvement in the adoption of technology in SMEs. In this regard, media innovation adoption in SMEs is often administered by top executives, requiring firms' personnel to utilize it in marketing and communication tasks (Ahmad et al., 2015).

However, upon studying media innovation and communication business in the context of Thailand, it was discovered that no research has been conducted to address the specific issues, impacts, and adaptation strategies within the public relations industry. Nonetheless, some studies have been carried out in related contexts, including The White Paper for Media Innovation Thailand 2017 (Boonchutima, 2017). This report examines the challenges, issues, and approaches to developing media innovation in line with the definition and types of media innovation within the broader context of business and marketing communication.

Given the definition of media innovation, its components, types, and framework for studying media innovation in marketing and organizational communication management, it is an important foundation for researchers to seize the opportunity to develop research on media innovation and its impact on the public relations industry in the specific context of Thailand during the disruptive technology era. This research study aims to establish an approach for investigating the challenges brought about by media innovation to the public relations industry, considering the TOE framework based on the definition of media and the classification and features of media innovation from an academic viewpoint in the age of disruptive technology. The research will explore the elements of the definition, characteristics, process classification, and situational factors, along with viewpoints and suggestions for the public relations industry in the present and future. By doing so, this study seeks to provide valuable insights into how the public relations industry can adapt to media innovation and remain competitive in the ever-changing media landscape.

Methods

This study employs a qualitative research methodology, by utilizing in-depth interviews with public relations and communication experts and recent graduates of communication stud-

ies. Additionally, recent academic and research papers on media innovation for communication, published within the last 7 years in Google Scholar, are also examined. The objective of the study is to investigate the definition and importance of media innovation in communication, analyze the challenges it presents for the communication industry in Thailand, and examine the opinions of communication experts and academics on these challenges.

Results

Kamonkan Kuldichaphong, the founder of Play Communications Co., Ltd., a public relations firm in Thailand, has analyzed the classification of media innovation based on Boonchutima's (2017) framework. According to her, media innovation encompasses not only changes in information and communication technology but also changes in media content and channels of dissemination. With the development of technology in data management, the format of media content has also transformed. For example, data journalism and data visualization are two obvious examples of how data is collected, stored, analyzed, and presented. These new forms of media content require new sets of skills and expertise to manage and communicate data effectively.

Phonphot Sriphrachan, a public relations specialist, argued that although there are changes in content format, organizations will continue to communicate based on their original objectives that align with the roles of each organization. Nevertheless, media innovation has a more significant impact on channels or media technologies that can transform the delivery of original content and diversify communication channels to recipients in new and increasing ways, according to the changing technology of each era.

According to a 2019 survey by USC Annenberg Center for Public Relations, the impact of media innovation on the public is significant. The survey revealed that 72% of public relations professionals believe that the development of media innovation leads to increased public participation in the communication process. With proper understanding and skills in new media technologies, public relations professionals can leverage these innovations to create and maintain relationships between stakeholders, organizations, and brands. However, despite the benefits of media innovation, most public relations professionals still prioritize human resources over technology and consider them more critical for organizations.

In addition to the favorable consequences of media innovations, there are also inevitable negative outcomes when the public heavily depends on online media. This leads to increased division (74%) and exposure to misinformation (61%). Thus, communication professionals and scholars see it as a collective obligation for all communication sectors to acquire proficiency in utilizing communication innovations and tools to promote social responsibility and counteract the abuse of communication innovations (USC Annenberg Center for Public Relations, 2019).

Palika Sakuntalak, a public relations specialist from Banlue Group, a multi-faceted media company in Thailand, highlighted that the fast-paced evolution of media innovations in platforms

and software has created a situation where the skills and knowledge of organizational personnel and relevant stakeholders are unable to keep up with technological advancements. This has led to technical challenges in implementing innovations. Additionally, evaluating the impact of these innovations, which are controlled by platform algorithms, can produce unexpected outcomes that can make communication industry operations more difficult than before. For instance, Kamonkan Kuldichaphong observed that media technology innovations have significantly transformed the media landscape, particularly in terms of fragmenting audiences into clusters based on their specific interests, leading to communication difficulties. She also emphasized the need to develop strategic planning, tactics, and budget allocation to reach each target group distributed across various specific channels.

The perspectives of the experts align with the research findings of Weeks et al. (2015), who found that the use of media can lead to the formation of small user clusters that limit engagement in important social and political issues beyond their primary interests. This is caused by digital media algorithms that disrupt the natural flow of information distribution. The experts' opinions are also consistent with the Technology, Organization, and Environment (TOE) framework (Oliveira & Martins, 2010; Tajudeen et al., 2018), which highlights the importance of a harmonious approach to information technology in creating media content and disseminating messages through various channels in online participation environments, which is dependent on the environmental norms.

Kamonkan Kuldichaphong has made a significant contribution to the discourse on the impact of media innovation on the public relations industry by highlighting the positive implications of technology for both message distribution and recipient access. Specifically, Kuldichaphong has pointed out that owned media can offer organizations a range of benefits, including reduced communication costs, easier access to recipients, and greater control over messaging. By utilizing owned media, organizations can minimize their reliance on mass media and marketers, and instead distribute messages based on specific interests, allowing for niche market identification and analysis. Effective communication requires public relations professionals to have a thorough understanding of communication channels, media innovation, and consumer media consumption.

However, it is important to recognize that the effect of media innovation on the public relations industry has not been entirely positive. This is particularly evident in the public relations consulting sector, where organizations have increasingly turned to specialized knowledge, tools, and proprietary media channels, resulting in reduced reliance on public relations consulting services. As a result, public relations professionals must adapt to these changes by aligning their values with those of their organizations and providing services that meet customer needs. These services can complement innovative media by addressing gaps that cannot be entirely resolved through technological advancements.

Krumsvik (2018) suggests that the communication industry is experiencing significant changes due to the impact of media innovation, affecting both macro-level processes and individual rou-

tines. These changes can arise from internal transformations within media organizations or from external social forces affecting these organizations. Consequently, media organizations must keep developing new products and services to adapt to the evolving landscape, and communication industry personnel across all sectors must continually learn and adjust to these changes.

In terms of the working process within public relations organizations, Phonphot Sriphra-chan, a public relations specialist, asserts that as media organizations evolve, public relations industries that rely on communication through intermediaries or individuals will need to transition to data-driven digital communication platforms or innovations that will dominate in the future. However, this structural shift will result in various innovative platforms becoming the norm in society's overall communication. Digital media will no longer be just a novel medium that only benefits select organizations or groups, but it will evolve into an entirely new form of traditional media that every organization and individual can access with greater ease and equality, similar to accessing newspapers currently. Ultimately, success will depend on the ability to learn and continuously adapt, both for the organization and its personnel. As new innovations arise and alter the standard platform, the organization, and its personnel will need to adjust to align with the platform, continually following the cycle of embracing innovation.

The public relations industry has undergone changes in response to media innovation, which can be classified into three stages: passive change, active change, and disruptive change, according to the transformation process of the communication industry in other countries that have been affected by this trend (García-Avilés, 2018). The final stage represents a complete replacement of the traditional media landscape with new media, resulting in short-term survival challenges for organizations and individuals who rely on traditional media formats. In response to these challenges, organizations can either adapt to innovation or adjust their strategies to cater to specific social groups, such as niche markets. Failing to adapt to innovation will not be a viable option for these organizations or individuals.

Looking at the future of the public relations industry, Nichapat Limkulwattanaporn, a graduate student in public relations major at the Faculty of Communication Arts, Chulalongkorn University, shares her thoughts. As technology continues to develop incrementally, the industry is focusing on cultivating innovative thinking and creativity to distinguish itself in utilizing technology for its benefit, even if they have access to the same innovation. While the competition for space in the industry remains high, technology is not the sole means of competition as access to similar innovations becomes more widespread. The ability to excel lies in the integration of creative ideas to effectively and efficiently utilize the same innovation.

Similar to the research conducted by Karim and Ghareb (2017) regarding the influence of technological complexity on the field of public relations, it has been observed that the public relations industry has the ability to adapt through various means. This can be attributed to the advent of creative media innovation, which depends on inventive ideas and innovation to pro-

duce works that are disseminated through technology and other developments, including unique events, and some types of public relations activities and tools that have a relatively low impact, such as community outreach, media relations, government relations, or work that depends on the skills of building personal relationships and trust.

Drawing on the impact of media innovation and the evolving landscape of the public relations industry resulting from innovation development, Nichapat Limkulwattanaporn identifies the primary challenge for future public relations practitioners as the ability to harness information technology. This includes the adept use of Big Data and data sourced from Artificial Intelligence (AI) technology to advance public relations. The difficulty arises from the intricate and nuanced nature of these tools, requiring specialized expertise. This aligns with the view of Kamonkan Kuldichaphong, who observes that public relations organizations are progressively downsizing, despite the limited adoption of AI technology. Furthermore, innovation may become increasingly specialized, with proficiency in tools and innovation restricted to individuals or groups, impeding the capacity of public relations professionals to assimilate profound and comprehensive innovation or tools. Consequently, organizations are likely to hire short-term specialists with expertise in specific tools, instead of recruiting general public relations professionals.

Therefore, a comprehensive understanding of tools or innovations and expert proficiency in their usage may not be an imperative requirement for future public relations professionals. Instead, they should possess a profound awareness and comprehension of the essence of these tools and innovations, accompanied by analytical and creative thinking skills to enable them to derive optimal benefits from unique innovations and tools and communicate effectively and efficiently. Additionally, Palika Sakuntalak postulates that prior to grasping and utilizing information technology, it is vital to comprehend the organization's identity and the gains and losses experienced by distinct groups. This is because the outcomes of innovation and technology are usually presented quantitatively, with limited depth of information. Therefore, assessing outcomes through both quantitative and qualitative data is necessary to reflect the organization's real objectives and primary goals. As such, understanding the objectives and communication goals of the organization represents a significant challenge for future public relations practitioners, surpassing technology knowledge and skills.

With regard to institutional challenges, Krumsvik (2018) contends that the primary hurdle for organizations in light of the impact of media innovation is maintaining a balance between change and continuity in operations, particularly for personnel. The rapid pace of technological advancements and innovations often surpasses the organization's and personnel's ability to adapt, potentially jeopardizing operational continuity, efficiency, and effectiveness. The endeavor to instigate organizational change, within the constraints of personnel, budget, and knowledge transfer, may not align optimally with dynamic technological changes. Consequently, achieving balance in all dimensions is essential, representing a significant challenge during periods of adjustment.

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Additionally, Karim & Ghareb (2017) have identified four primary challenges confronting the public relations industry due to technological advancements. These include credibility issues, resulting from digital channels being viewed as less reliable and official than traditional media, as well as the ease of manipulating and distorting news and information transmission. These challenges present a significant obstacle to public relations principles, which prioritize communication through intermediaries or third-party individuals. Due to the diversity of channels available for reaching people with distinct interests and benefits, it may be challenging for communicators to tailor their media and messages to accommodate the unique features of each channel. However, it is still possible to maintain communication standards by utilizing the recommended techniques.

Consistent with Palika Saluntalak's perspective, it is frequently observed that digital media evaluations tend to be expressed quantitatively, potentially emphasizing outcomes over outputs. With respect to the application of public relations tools, the communication of public relations issues through digital media is not always suitable for every tool. For example, purchasing support through Facebook has limitations since the platform tends to reject textual formats, while communicators typically prefer to use images and multimedia. Additionally, evaluation results are presented differently across various channels, making it challenging to interpret them.

Finally, the utilization of digital tools for communication and engagement with stakeholders, including the implementation of artificial intelligence technology, has enabled the advancement of the two-way communication model in public relations. Nevertheless, significant limitations persist in the ability of digital tools to process emotions and the human experience. As a result, this can have an impact on the perception of the relationship between organizations and stakeholders, which poses a significant challenge to public relations. This challenge is particularly pertinent given that the building and maintenance of positive relationships is a core principle of the discipline.

Conclusion and Discussion

The impact of "media innovation" - the advancement of media content and technology using new methods - is undeniable in terms of changing knowledge and behavior at both individual and societal levels. This rapid and extensive change has a significant effect on the media system landscape. Consequently, the communication industry, including the public relations sector, which plays a crucial role in any media, cannot disregard the influence of media innovation development.

With the growing number of people using online platforms as their primary source of information and communication, there is a need for the public relations industry to adapt to this new form of traditional media. To effectively target the diverse audiences present on these platforms, the industry will need to adjust its business strategies by adopting data management technology, such as tools for social media analysis, listening, and news dissemination. Such tools will be essential for obtaining detailed information on social issues and public opinion among various

groups with different interests. As highlighted by Soriano et al (2018), the use of these tools will be necessary to keep pace with the changing media landscape and effectively engage with target audiences.

The public relations industry has experienced both positive and negative effects as a result of media innovation. With the advancement of technology, the distribution of information has undergone a transformation that has created smaller, segmented audience groups based on interests, thereby making it difficult to communicate with broader audiences. Consequently, in order to effectively communicate with these smaller audience groups, public relations professionals must possess a thorough understanding of the distinct characteristics of each medium and channel, as well as the behavior of each audience group. Although analyzing and identifying niche markets can be challenging, particularly when using complex tools, even small groups of segmented audiences can have a positive impact in terms of better tools for measurable results, as well as easier evaluation of smaller populations.

From a corporate customer's perspective, the advancements in media innovation have facilitated greater access and engagement with owned media for organizations, enabling them to more efficiently reach and control their target audience while reducing their dependence on mass media and marketers. However, this shift has resulted in a decrease in budgetary expenditures, and businesses that heavily rely on intermediaries for communication and public relations advice may see their relevance diminish. As a result, it is crucial for public relations consultancies to adapt and develop appropriate strategies in response to the trends of media innovation development. This may require them to possess specialized knowledge and tools to remain competitive and effective in the constantly evolving media landscape.

As the public relations industry adapts to a changing landscape, it may be necessary to make adjustments to the entire process of creating and utilizing media innovations, as exemplified by media innovations from various countries. According to Kaltenbrunner et al. (2017), media innovations can be categorized into production, organization, distribution, interaction, and commercialization, with clear examples provided for each category. These perspectives cover the dimensions of change, including outcomes resulting from changes to the business's commercial aspects, as viewed by Chithra (2020). Therefore, it is crucial for public relations consultancies to adapt and develop suitable strategies to navigate these changes.

Nonetheless, significant gaps remain in adapting public relations businesses to the era of innovation development, as organizations can access innovation at a similar level, leading to differences in utilizing the benefits of media innovation. For example, organizations that may not adapt to digital technology innovations can still adjust by utilizing creative media innovations and sophisticated communication tools and activities that require personal relationship building and abilities. By developing innovative ideas or creative thinking and combining them, these organizations can effectively draw out the abilities of the same innovation. Karim and Ghareb (2017) stress

the importance of such adaptation and the utilization of creative media innovations to ensure the relevance and competitiveness of public relations consulting businesses in the changing land-scape.

In the realm of media development, communication professionals are witnessing a growing emphasis on comprehensive media innovation that includes interdisciplinary knowledge integration and interactivity throughout the design, production, and dissemination processes (Boonchutima, 2017). Furthermore, there is a need for a fresh approach to effectively communicate news and information to recipients, as demonstrated by the development of communication applications on communication and telecommunications devices. Currently, developers prioritize data-driven application development, but they lack interactive features. In the near future, developers must enhance and incorporate interactive features in their applications to facilitate interaction between tools (applications) and recipients (application users), and develop media features that link to online social networks to enhance the transmission of news and information among users (Kong-chan & Kleechaya, 2019), aligning with the critical characteristics of media innovation development.

The advancement of technology and media innovation presents challenges for the public relations industry, and practitioners must consider various dimensions to effectively navigate these challenges. Karim and Ghareb (2017) identify four key dimensions that should be taken into account. First, the reliability of using digital tools as a medium for transmitting news information is vulnerable to fragility and manipulation. Second, the diversity of channels and the nature of each medium and channel should be considered, as they differ from one another. Third, the measure-ment and evaluation of outcomes may prioritize quantitative dimensions over qualitative ones, and there may be a lack of interest in results that are less tangible than production outcomes. Fourth, the two-way communication of public relations presents a significant challenge for creating and maintaining the significance of public relations in accordance with the principles of public relations science.

In summary, the challenges that face the public relations industry and practitioners require the development of personal and organizational abilities to effectively use information technology and media innovation for public relations purposes. This involves interdisciplinary knowledge integration, cultivation of interaction, and creative thinking in the design, production, and dissem-ination processes that align with the key characteristics of media innovation. Organizations need to fully adapt to the innovation creation and utilization process, maintaining a balance between change and continuity to promote coordinated development in the dimensions of technology, innovation, business, personnel, and organizational knowledge, ensuring maximum efficiency and effectiveness in organizational operations despite unpredictable technological changes.

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A Causal Relationship Model of Entrepreneurial Orientation Market Orientation and Learning Orientation Influence of Business Performance of Transportation in the Eastern Region of Thailand

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Abstract

In this thesis, the researcher examines (1) the conditions of business performance, investigates (2) the influence of components on business performance, and constructs (3) a causal relationship model of business performance of transportation in the eastern region of Thailand. The Quantitative research approach was employed. Data were collected from members of the sample population who were business owners or persons assigned from 300 companies using the quota sampling method based on Comrey and Lee (1992). The research tool is questionnaires. Structural equation modeling (SEM) with the AMOS program was employed. Quantitative research findings showed that the conditions of performance were at a high level. The aspect of customer exhibited the highest value that helps customer satisfaction with services. All components exhibited a positive influence on business performance correlated at the statistically significant level of 0.05.

Keywords: 1) ntrepreneurial Orientation 2) Market Orientation 3) Learning Orientation 4) Business Performance

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Introduction

Transportation of goods is a necessary activity for distributing products to markets both domestically and internationally, as manufacturers and consumers are not always in the same location. Transportation plays a crucial role in trade, with service providers moving products from raw materials/initial products, intermediate products, and finished products to destinations where the products are needed (Piyanuch Sathapongpakdee, 2019). Particularly in the eastern region of Thailand, which is a strategic hub of ASEAN, the country has continuously developed its transportation system. However, there is still a lack of connectivity among different types of transportation, as well as a shortage of personnel with practical and planning knowledge, resulting in delayed deliveries of products. These internal and external challenges remain obstacles to doing business and require organizations to prioritize improving operational efficiency in their transportation systems to achieve success. To do this, businesses must focus on being entrepreneurial, which refers to a set of practices used to determine strategies and show the organization's operational processes (Lumpkin & Dess, 2005). Moreover, organizations must focus on market orientation by collecting customer and competitor information to incorporate it into the organization's strategy, enabling them to compete in the market and achieve long-term profitability (Narver & Slater, 1990). Learning orientation should also be emphasized to encourage disruptive learning that allows organizations to benefit from the acquired knowledge (Sinkula et al., 1997). The influence of these factors on an organization's performance in measuring business success will be examined in this research.

Hence, the researcher is interested in studying the causal relationship model of entrepreneurial orientation market orientation, and learning orientation influences the business performance of transportation in the eastern region of Thailand. This research study will benefit the business and public sectors by providing guidelines for conducting business and setting policies that will promote the business sector in the future.

Research Objective

1. To study the situation of business performance of transportation in the eastern region of Thailand.

2. To study the influence of entrepreneurial orientation, market orientation, and learning orientation on the business performance of transportation in the eastern region of Thailand.

3. To create a causal relationship model of entrepreneurial orientation, market orientation, and learning orientation influence the business performance of transportation in the eastern region of Thailand where the model and empirical data are consistent.

Literature Review

Entrepreneurial Orientation

The entrepreneurial orientation creates values from perceiving business opportunities

by appropriately taking risks and using communication and managerial skills to gather human resources, money, and materials necessary for achieving the businesses' goals (Subagja et al., 2017). Miller (1983) was the pioneer who studied the characteristics of entrepreneurship. Then, Covin and Slevin (1989) improved Miller's concepts, and many researchers applied Miller's principles. However, Lumpkin and Dess (1996) presented two new characteristics of entrepreneurship, including Competitive Aggressiveness and Autonomy.

Market Orientation

The marketing orientation is an organizational culture that is very efficient and effective. It consists of three components: customer orientation, competitor orientation, and Inter-functional Coordination (Narver & Slater, 1990). The first guidelines focused on the cultural orientation of Narver and Slater (1990), who presented that market orientation is an organizational culture focusing on creating values for customers. The second guideline focused on the behavioral direction of Kohli and Jaworski (1990), focused on corporate activities so that all parties can respond to the information from the markets, while all parties must perceive the needs of the current and future customers.

Learning Orientation

The learning orientation utilizes the knowledge to improve competitive advantages. It also includes receiving and sharing information about the customers' needs, the markets' changes, the competitors' operations, and the new technological developments to create new products better than the competitors (Calantone et al., 2002). Sinkula et al. (1997) and Baker and Sinkula (1999) stated that the learning orientation comprises three components: commitment to learning, shared vision, and open-mindedness, while Calantone et al. (2002) noted that the learning orientation has four elements. The additional component is Intra organizational knowledge sharing.

Business Performance

Business performance is the final result of a corporate business. It is also an index for eva-luating the success level of the project, which is an essential part of efficient resource management and goal controls (Wu & Lu, 2012). Kaplan and Norton (1992) presented the concepts for evaluating business performances as evaluation tools. The operations have four aspects: financial perspec-tive, customer perspective, internal process perspective, and learning and growth perspective.

Related Research

Lekmat et al. (2018) found that entrepreneurial orientation in risk-taking, innovativeness, and proactiveness positively correlated with customer orientation, competitor orientation, and inter-functional coordination. Amin et al. (2016) found that risk-taking, innovativeness, and pro-activeness positively correlated with customer orientation, competitor orientation, and inter-functional coordination. These show that the entrepreneurial orientation with more marketing information was the new and better indicator for surveying the marketing survival opportunities.

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Effendi et al. (2020) specified that entrepreneurial orientation could improve the learning orientation to improve the learning levels of organizations. Subagja et al. (2017) found that entrepreneurial orientation positively correlated with income growth, market shares, net profits, and customer satisfaction.

Hypothesis 1: Entrepreneurial orientation positively and significantly affects market orientation.

Hypothesis 2: Entrepreneurial orientation positively and significantly affects learning orientation.

Hypothesis 3: Entrepreneurial orientation has a positive and significant effect on the business performance of transportation in the eastern region of Thailand.

The study of Widiastuti et al. (2020) found that customer orientation, competitor orientation, and inter-functional coordination had positive influences on a commitment to learning, shared vision, and open-mindedness that were the sources of competitive advantages, while Phorncharoen (2020) found that market orientation had the positive influences on the learning orientation that had the positive influences on the business performance and Subagja et al. (2017) found that the market orientation had the positive effects on the sales growths, the profitability, and the market shares.

Hypothesis 4: Market orientation positively and significantly affects learning orientation.

Hypothesis 5: Market orientation has a positive and significant effect on the business performance of transportation in the eastern region of Thailand.

The study of Lita and Faisal (2018) specified that commitment to learning, shared vision, and open-mindedness positively influenced business performance, while Wan et al. (2017) determined that the learning orientation influenced business performance. Businesses must improve their learning to compete with the changes in business environments with limited resources. Subagja et al. (2017) found that the learning orientation influenced sales growth, profitability, and market shares.

Hypothesis 6: Learning orientation has a positive and significant effect on the business performance of transportation in the eastern region of Thailand.

Methodology

This research is a quantitative research using the technique of analyzing structural equations to analyze the influence of factors affecting the business operations of the transportation industry in the eastern region of Thailand. The population used in this research is the transportation industry businesses in the eastern region of Thailand, which includes 300 companies listed in the Department of Business Development-DBD (Department of Business Development, 2021). The unit of analysis for this research is at the organizational level. The sample size was calculated according to the Comrey and Lee (1992) concept, which is suitable for analyzing using the technique of

analyzing structural equations. The questionnaire was used as a tool to collect data from business owners or persons assigned by business owners, such as senior executives, managing directors, strategic planning managers, and managers who provided information. Data analysis was conducted using descriptive statistics such as percentages, means, standard deviations, coefficients, and variances to explain data on the characteristics of individuals and transportation service businesses. In addition, inferential statistics were used to test hypotheses using Pearson's rank correlation coefficient and the structural equation modeling (SEM) method using the AMOS (Analysis Moment of Structure) program (Thanin Silpcharu, 2017).

The researcher also examined the quality of the measurement tools by starting with a draft questionnaire and having five experts check the accuracy of the questions and make adjustments according to their suggestions. The researcher also calculated the Index of Item Objective Congruence (IOC) and found that all the items had an IOC value greater than 0.5. The pretest was conducted with a reliable questionnaire administered to a group of 40 transportation service business executives, and the reliability of the questionnaire was calculated using Cronbach's alpha coefficient (α), which was found to be between 0.841 and 0.963.

Results

The analysis of the business performance of most transportation businesses primarily focused on customer satisfaction as the most important factor. The data on the business components emphasized being an entrepreneurial orientation, market orientation, learning orientation, and business performance of transportation in the eastern region of Thailand were found to be significantly distributed close to the normal distribution at the .001 statistical significance level, as shown in Table 1.

Table 1 Mean, standard deviation, coefficient of variation, skewness, and kurtosis of the constructs.

Constructs	Mean	S.D.	%CV	SK	KU
EO	4.049	0.487	12.03	-0.423	0.782
MO	4.015	0.531	13.222	-0.198	0.324
LO	4.195	0.463	11.037	-0.438	0.635
BP	4.242	0.441	10.389	-0.749	0.884

The results from analyzing the correlation coefficients between the variables of the structural equation models of entrepreneurial orientation, market orientation, and the learning orientation influencing the business performance of transportation in the eastern region of Thailand showed the correlation coefficients between the different variables from zero that mean the statistically significant relationships at the significance level of 0.01 for all pairs of the

variables. All pairs of the variables had positive relationships that were 0.559 - 0.790. The couple with the highest correlation coefficient was the relationship between entrepreneurial orientation and market orientation. The correlation coefficient was 0.790. The pair with the lowest correlation coefficient was the relationship between market orientation and business performance. The correlation coefficient was 0.559. Therefore, it was statistically significant at the significance level of 0.01 as shown in Table 2.

Table 2 correlation coefficient matrix between variables

Constructs	EO	MO	LO	BP
EO	1.000			
MO	0.790**	1.000		
LO	0.740 **	0.745**	1.000	
BP	0.560**	0.559**	0.759 **	1.000

Kaiser-Meyer-Olkin Measure of Sampling Adequacy = 0.781, Bartlett's Test of Sphericity = 828.486, df = 6, **p < 0.01

The results from structural equation modeling (SEM) show the structural relationships affecting the business performance of transportation in the eastern region of Thailand. showed that the causal influence line from the entrepreneurial orientation (EO) affected the business performances (BP) with a value of 0.221. The causal influence line from the entrepreneurial orientation (EO) affected the market orientation (MO) with a value of 0.817. This causal influence is from the market orientation (MO) to the business performances (BP) with a value of 0.217. The causal influence line from the entrepreneurial orientation (EO) affected the market orientation (MO) with a value of 0.817. This causal influence from the market orientation (MO) to the learning orientation (LO) is a value of 0.349. The learning orientation (LO) affected the business performances (BP) with a value of 0.590, and the causal influence line from the entrepreneurial orientation (EO) affected the learning orientation (LO) with a value of 0.480. The learning orientation (LO) affected the business performance (BP) with a value of 0.590.

Furthermore, the results from analyzing the standardized path coefficients of the causal components of the structural equations showed that the causal variable, direct effect (DF), and indirect effect (IE) of the business performances (BP) and the entrepreneurial orientation (EO) had a total effect (TE) of the causal influences of 0.850 that mostly affected the business performances (BP). Entrepreneurial orientation (EO) influenced business performance (BP). Next, the learning orientation (LO) had a total effect (TE) of the causal influence of 0.590. This affected business performance (BP). And the market orientation (MO) had the total effect (TE) of the causal influences of 0.423. They affected the business performances (BP), respectively, as shown in Figure 1 and Table 3.
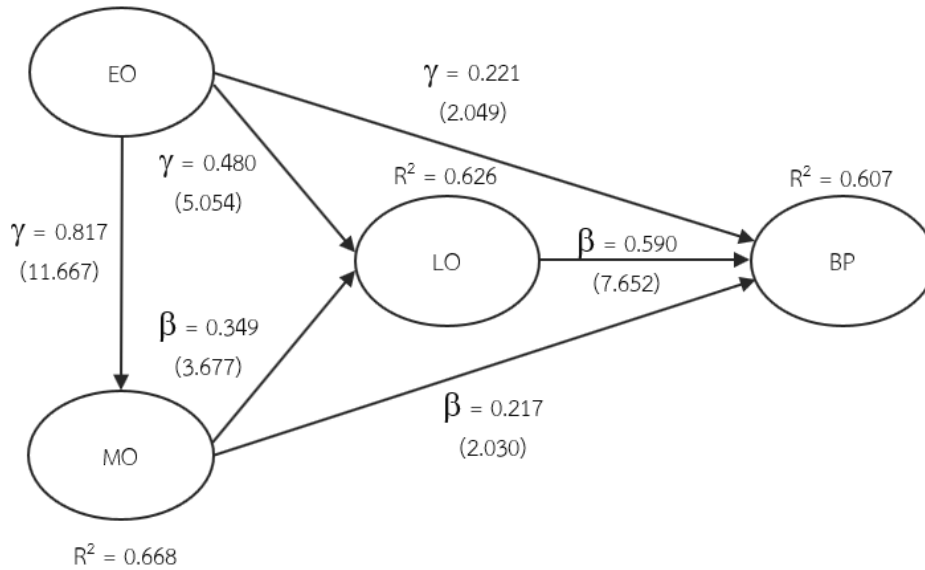
Figure 1 The structural equation model of structural relationships influences of business performance of transportation in the eastern region of Thailand.

Table 3 Estimating the direct and indirect influence of causal factors affecting the business performance of transportation in the eastern region of Thailand.

Antecedent Variables	Endogenous Variables								
	MO			LO			BP		
	DE	IE	TE	DE	IE	TE	DE	IE	TE
EO	0.817	-	0.817	0.480	0.285	0.765	0.221	0.629	0.850
MO	-	-	-	0.349	-	0.349	0.217	0.206	0.423
LO	-	-	-	-	-	-	0.590	-	0.590
R-Square	0.668	0.626	0.607						

x^2 = 50.410, x^2/df = 1.293, df = 39, p-value = 0.104, GFI = 0.975, AGFI = 0.941, CFI = 0.996, NFI = 0.983, RMSEA = 0.031, RMR = 0.007

By analyzing the path coefficients of the causal components of the structural equations, testing the hypotheses of the quantitative study concluded, as shown in Table 4.

Path Diagram	Path Coefficients	CR (t-value)	P-value	Conclusion
EO → MO	0.817	11.667	0.001	Supported
EO → LO	0.480	5.054	0.001	Supported
EO → BP	0.221	2.049	0.05	Supported
MO → LO	0.349	3.677	0.001	Supported

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Path Diagram	Path Coefficients	CR (t-value)	P-value	Conclusion
MO → BP	0.217	2.030	0.05	Supported
LO → BP	0.590	7.652	0.001	Supported

Hypothesis 1: Entrepreneurial orientation influences market orientation. The hypothesis was supported by statistical analysis, which found a path coefficient of 0.817 and a t-value of 11.667, with a significant level of 0.001. This suggests that placing emphasis on entrepreneurial orientation can have a positive impact on market orientation within an organization.

Hypothesis 2: Entrepreneurial orientation influences learning orientation. The hypothesis was supported by statistical analysis, which found a path coefficient of 0.480 and a t-value of 5.054, with a significant level of 0.001. This suggests that placing emphasis on entrepreneurial orientation can have a positive impact on learning orientation within an organization.

Hypothesis 3: Entrepreneurial orientation influences business performance in transportation in the eastern region of Thailand. The hypothesis was partially supported by statistical analysis, which found a path coefficient of 0.221 and a t-value of 2.049, with a significant level of 0.05. This suggests that placing emphasis on entrepreneurial orientation can have a positive impact on business performance, but further investigation may be necessary.

Hypothesis 4: Market orientation influences learning orientation. The hypothesis was supported by statistical analysis, which found a path coefficient of 0.349 and a t-value of 3.677, with a significant level of 0.001. This suggests that placing emphasis on market orientation can have a positive impact on learning orientation within an organization.

Hypothesis 5: Market orientation influences business performance in transportation in the eastern region of Thailand. The hypothesis was partially supported by statistical analysis, which found a path coefficient of 0.217 and a t-value of 2.030, with a significant level of 0.05. This suggests that placing emphasis on market orientation can have a positive impact on business performance, but further investigation may be necessary.

Hypothesis 6: Learning orientation influences business performance in transportation in the eastern region of Thailand. The hypothesis was supported by statistical analysis, which found a path coefficient of 0.590 and a t-value of 7.652, with a significant level of 0.001. This suggests that placing emphasis on learning orientation can have a positive impact on business performance within an organization.

Discussions

The study aims to emphasize the positive influence of being an entrepreneur on market orientation, with a path coefficient of 0.817 and a significant t-value of 11.667 at the 0.001 level of significance. This finding supports the research of Lekmat et al. (2018) and Amin et al. (2016), who

collected resources to develop products and knowledge about the market to create greater value for customers. Additionally, the study found that being an entrepreneur positively influences the focus on learning, with a path coefficient of 0.480 and a significant t-value of 5.054 at the 0.001 level of significance. This is consistent with Effendi et al. (2020) research, which demonstrated that recognizing new business opportunities to create superior products that are difficult for competitors to imitate is critical for entrepreneurship to survive. Furthermore, being an entrepreneur has a positive impact on business performance, with a path coefficient of 0.221 and a significant t-value of 2.049 at the 0.05 level of significance, which is consistent with Subagja et al. (2017) research. Being an entrepreneur helps manage business operations successfully in an uncertain environment and manage risk appropriately for opportunities. The study also found that market orientation positively influences the focus on learning, with a path coefficient of 0.349 and a significant t-value of 3.677 at the 0.001 level of significance. This is consistent with the research of Widiastuti et al. (2020) and Phorncharoen (2020), who collected data from customers and competitors to develop knowledge about the market and share customer needs data to bring benefits. Additionally, market orientation positively influences business performance, with a path coefficient of 0.217 and a significant t-value of 2.030 at the 0.05 level of significance, which is consistent with the research of Phorncharoen (2020) and Subagja et al. (2017). In an unpredictable environment, market orientation leads to behavior that creates greater value for businesses through strategies and operational policies that align with customer needs. Lastly, the study found that learning influences the performance of personnel in the organization, with a path coefficient of 0.590 and a significant t-value of 7.652 at the 0.001 level of significance. This is consistent with Subagja et al. (2017) research and Lita and Faisal (2018) research. Personnel's operations in an organization, which pass through internal learning, contribute to understanding and help the organization survive and grow.

Suggestions

1. During situations that were varied and unpredictable because of business competitions, the behaviors and changes of the customers and technological advancements could unavoidably affect business performances. Thus, the organizations must find guidelines for adapting themselves before the competitors in the markets by using dynamic abilities or resources according to the opportunity-based changes that might result in new business opportunities. The entrepreneurial orientation in risk-taking, innovativeness, and proactiveness led to understanding the resources selected and used for the opportunities. The benefits were obtained, and the performances were improved. Resource-based theories could be used to analyze the environmental changes affecting organizational operations to identify the internal processes while mixing the resources. If the organizations had competitors with many similar resources and the organizations could use the resources similarly, then the values of the resources would be lowered. To create competitive

advantages, managers should focus on mixing physical, human, and organizational resources to work successfully in environments with high competition.

2. The entrepreneurial orientation strategies of the transportation businesses gathered the existing resources, created new products in the markets, and provided new services for the customers. According to the study, it was found that the main components of the entrepreneurial orientation strategies affecting market orientation, learning orientation, and business performances were innovativeness, risk-taking, and proactiveness in descending order. The main factors of the organization's operations were focusing on and searching for opportunities to support new concepts that would lead to developing the products, services, and modern technological processes that could create competitive advantages and be the sources of organizational growth.

Acknowledgment

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The Structure Relationship of Entrepreneurial Orientation Marketing Capability and Innovation Management Influence of Firm Performance of Small and Medium Enterprise in the Lower Central Region of Thailand

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Abstract

In this research, the researcher examines 1) the influence of entrepreneurial orientation marketing capability and innovation management influence of the firm performance of small and medium enterprises in the lower central region of Thailand; confirms 2) the structural relationship of entrepreneurial orientation marketing capability and innovation management influence of the firm performance of small and medium enterprises in the lower central region of Thailand; and constructs 3) a causal relationship model of the firm performance of small and medium enterprises in the lower central region of Thailand. The sample population who were business owners or persons assigned from 300 companies. The research tool is questionnaires. In addition, structural equation modeling (SEM) with the AMOS program. Quantitative research findings showed that the conditions of performance were at a high level. Components correlated at the statistically significant level of 0.05.

Keywords: 1) Entrepreneurial Orientation 2) Marketing Capability 3) Innovation Management 4) Firm Performance

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Introduction

Small and Medium Enterprises (SMEs) play a crucial role in building the foundation for sustainable development by orientation the primary mechanisms for revitalizing economic progress and solving poverty problems. SMEs are essential to the Thai economy because they provide vocational training for various workers, an industry mainly using domestic resources. The sector generates income for the country, especially from the manufacturing industry for export, and prevents monopoly in the economy as small and medium enterprises can help create fair competition in business operations, resulting in efficiency in the overall economy (Office of Small and Medium Enterprises Promotion, 2020). Moreover, the Coronavirus 2019 epidemic has resulted in a new regular style of living, establishing a brand-new benchmark for life and business. (Office of the National Economic and Social Development Council, 2020). For an organization to earn a competitive advantage and superior efficiency, it must use entrepreneurial orientation as an approach that entrepreneurs use to seek new things and can be formulated as a strategy under a concept that includes results (Lumpkin and Dess, 2001) for applying the overall organizational marketing skills to the market and business-related needs, making it possible to add value to the products, services, competitive responses (Day, 1994), and innovation management. This is to develop the production processes and manage efficient modern administration or an effective management style that can be used in practice for entrepreneurs. This creates economic and social benefits and a competitive advantage for organizations. (Gopalakrishnan and Damanpour, 1997) The above factors influence firm performance according to the balanced success index of the study by Kaplan and Norton (1992).

In addition, the researcher was interested in studying the structural relationship of entrepreneurial orientation, marketing capability, and innovation management that influence the firm performances of small and medium enterprises in the lower central region of Thailand. This research will benefit government agencies in formulating policies to promote businesses and private sectors to support firm performance efficiently and increase sustainable competitiveness.

Research Objective

1. To study the influence of entrepreneurial orientation, marketing capability, and innovation management that influence the firm performance of small and medium enterprises in the lower central region of Thailand.

2. To assure the structural relationship of entrepreneurial orientation, marketing capability, and innovation management that influence the firm performance of small and medium enterprises in the lower central region of Thailand.

3. To invent a model for the causal relationship structure of the firm performance of small and medium enterprises in the lower central region of Thailand, where the model and empirical data are consistent.

Literature Review

Entrepreneurial orientation

Entrepreneurial orientation refers to taking action and making decisions that lead to new business ventures (Miller and Friesen, 1982). According to the study of Connor (2002), entrepreneurial orientation was a crucial factor that contributed to the success of new product development, including financial and non-financial business results and social performance (Connor, 2002). Miller (1983) was the first to pioneer the study of entrepreneurial orientation characteristics, presenting three characteristics: innovativeness, proactiveness, and risk-taking. Later, Covin and Slevin (1989) and Lumpkin and Dess (1996) investigated this concept further and presented two additional characteristics, autonomy, and competitive aggressiveness.

Small and medium enterprises that can survive under intense competition rely on the abilities of entrepreneurs who are connected to the implementation of the strategies that have been laid out. Entrepreneurial orientation is a crucial factor in leading small and medium enterprises to success and developing them into prosperous enterprises in the future.

Marketing capability

Marketing capability is an integrated process designed to utilize an organization's skills, knowledge, and resources to adapt to market conditions, take advantage of market opportunities, and face various competitive threats (Vorhies, 1998). In analyzing the relationship between market knowledge management, marketing capability, and firm performance by Kotler (1994) was used. This concept includes four elements: product development, distribution channels, pricing, and promotions. Study of Day (1994) revised the metrics into six components: marketing research, marketing management, product development, distribution channel, pricing, and promotion.

Implementing a suitable marketing capability strategy enables medium and small-sized businesses to gain a competitive edge in the market, which differs in terms of products and services. This strategy helps businesses reach consumers more effectively, resulting in development and growth that elevate small and medium enterprises to a global level.

Innovation management

Innovation management is the process of introducing new ideas or utilizing existing ones in novel ways to generate economic benefits (National innovation agency, 2016). Innovation can be classified into three categories based on its nature, scope, and application purpose: 1) classification by target, which includes product innovation and process innovation; 2) classification by the degree of change, which includes radical innovation and incremental innovation; and 3) classification by impact area, which includes technological innovation and administrative innovation (Capon et al., 1992; Ettlie and Reza, 1992; Gopalakrishnan and Damanpour, 1997).

Gopalakrishnan and Damanpour (1997) suggest that innovation management focuses on creating production processes and managing current and effective administration or management with four indicators: product innovation, process innovation, technological innovation, and admi-

nistrative innovation. Innovation management is a tool that helps small and medium enterprises manage innovation processes to create new products or develop existing ones, leading to economic benefits for the organization.

Firm performance

Firm performance refers to the outcomes or success measures, such as productivity, profitability, service quality, and worker or customer satisfaction. For family-run businesses, firm performance is measured by the return on assets, sales growth, and the success of new products (Burke and Litwin, 1992). Kaplan and Norton (1992) presented the concept of evaluating firm performance as a tool for evaluation. The operations are viewed from four perspectives: financial, customer, internal processes, and learning and growth perspectives.

From these four perspectives, the actual performance of small and medium enterprises is reflected, leading to continuous development and achieving maximum operational efficiency. This will result in higher customer satisfaction and contribute to the long-term success of small and medium enterprises.

Related Research

According to the study of Peridawaty et al. (2021), it was discovered that the entrepreneurial orientation in innovativeness, proactiveness, and risk-taking which could positively be correlated with marketing capability in the aspects of product development, distribution channels, pricing, and promotions showing that entrepreneurial orientation leads to a significant increase in marketing capability which has increased customer satisfaction during the economic downturn. Furthermore, Rofiaty (2019) found that the entrepreneurial orientation in innovativeness, proactiveness, and risk-taking positively correlated with management and technological Innovation. Additionally, Astuti et al. (2019) discovered that entrepreneurial orientation in innovativeness, proactiveness, and risk-taking also positively influenced the firm performance of the firms in terms of profitability, sales, and market shares.

Hypothesis 1 Entrepreneurial orientation positively and significantly affects the marketing capabilities of small and medium enterprises in the lower central region of Thailand.

Hypothesis 2 Entrepreneurial orientation positively and significantly affects the innovation management of small and medium enterprises in the lower central region of Thailand.

Hypothesis 3 Entrepreneurial orientation positively and significantly affects the firm performance of small and medium enterprises in the lower central region of Thailand.

Mitrega (2019) revealed that marketing capability influenced product innovation, while Hsieh and Lee (2010) stated that marketing capability in promotion, marketing research, and product development affected innovation management, influencing product innovation and process innovation. Furthermore, the study by Cake et al. (2020) also mentioned that marketing capability in pricing, product development, and distribution channels drove profitable sales growth and market shares.

Hypothesis 4: Marketing capability positively and significantly affects the innovation management of small and medium enterprises in the lower central region of Thailand.

Hypothesis 5 Marketing capability positively and significantly affects the firm performance of small and medium enterprises in the lower central region of Thailand.

A study by Izadi Z.D. et al. (2020) showed that innovation management in the aspects of product innovation and process innovation had a positive impact on firm performance. This result demonstrated that it contributed to sustainability by developing a conceptual model describing the development and role of innovation management. In the market context, outcome-related sustainability management results are crucial to small and medium enterprises. Anim et al. (2018) revealed that innovation management in the aspects of product innovation and process innovation had a positive influence on firm profitability performance, sales growth, and market shares, and Jiménez-Jiménez and Sanz-Valle (2011) found that innovation management in process innovation, technological Innovation, and administrative Innovation has a positive influence on profitability, firm performance, sales growth, and market shares.

Hypothesis 6 Innovation management positively and significantly affects the firm performance of small and medium enterprises in the lower central region of Thailand.

Methodology

This research is quantitative. The population in the study were small and medium manufacturing firms in the lower central region of Thailand. The analytical unit of the research is at the organizational level according to the list of 300 companies from the Department of Business Development (DBD) Ministry of Commerce (Department of Business Development, Ministry of Commerce, 2021). Conducted by calculating the sample size according to the concept of Comrey and Lee (1992), which was suitable to be used in the analysis by structural equation analysis techniques. The data analysis used descriptive statistics: percentage, mean, frequency, standard deviation, coefficient of variance, skewness, and kurtosis. These statistical data were to describe information about individuals and small and medium enterprises in the lower central region of Thailand. Inferential statistics were the statistical methods for hypothesis testing were also used to find the relationships between the independent and the dependent variables by using Pearson's rank correlation coefficient and the factors that directly and indirectly influenced the variables with the Structural Equation Modeling (SEM) using the AMOS program (Analysis Moment of Structure) (Thanin Silpcharu, 2017).

Results

The results from analyzing entrepreneurial orientation, marketing capability, innovation management, and the firm performance of small and medium enterprises in the lower central region of Thailand revealed that the overall result was high. The data were normally distributed with statistical significance at the 0.01 level, as shown in Table 1.

Table 1 Mean, Standard Deviation, Coefficient of Dispersion, Skewness, and Kurtosis of the Essential Elements

Constructs	$\bar{X}$	SD	%CV	SK	KU
EO	3.801	0.567	14.925	-0.031	-0.557
MC	3.946	0.545	13.823	-0.395	-0.182
IM	3.691	0.587	15.891	0.004	-0.423
FP	3.889	0.527	13.558	-0.601	0.109

In analyzing the relationships between entrepreneurial orientation, marketing capability, innovation management, and firm performance there were statistically significant correlation coefficients between all pairs of variables at the 0.01 level. The pair with the highest correlation coefficient was the relationship between marketing capability and firm performance, representing a correlation coefficient of 0.760. Conversely, the pair with the lowest correlation coefficient was the relationship between entrepreneurial orientation and firm performance, representing a correlation coefficient of 0.689. Furthermore, when considering the preliminary examination of the elemental analysis with Bartlett's Test of Sphericity and the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) to verify the suitability of the relationships between variables, it was confirmed that in the elemental analysis, all variables were correlated at the appropriate level for with statistical significance at the 0.01 level as shown in Table 2.

Table 2 Correlation Coefficient Matrix between Variables

Constructs	EO	MC	IM	FP
EO	1.000			
MC	0.718**	1.000		
IM	0.715**	0.755**	1.000	
FP	0.689**	0.760**	0.733**	1.000

Kaiser-Meyer-Olkin Measure of Sampling Adequacy=0.856, Bartlett's Test of Sphericity=1,043.439, df=6,**p<0.01

According to the results of the analysis of structural equation modeling (SEM) of the structural relationship that affects the performance of small and medium enterprises in the lower central region of Thailand, it was discovered that the causal influence of entrepreneurial orientation (EO) affected the firm performance (FP) with a value of 0.346. The causal influence of entrepreneurial orientation affected the marketing capability (MC) with a value of 0.933, and the causal influence from marketing capability (MC) affected the firm performance (FP) with a value of 0.510. The causal influence line from entrepreneurial orientation (EO) affected the marketing capability (MC) with a value of 0.933, which resulted in the causal influence of marketing capabi-

lity (MC) affecting the innovation management (IM) of 0.605. It affected the firm performance (FP), with a value of 0.473, and the causal influence line from entrepreneurial orientation (EO) affected innovation management (IM), with a value of 0.368. Innovation management influences firm performance (FP) with a value of 0.473.

Additionally, the standardized path coefficients analysis of the causal components of the structural equation model showed that the causal variables had direct and indirect influences on the firm performance. Entrepreneurial orientation (EO) had a total causal influence value of 0.963, which is primarily a firm performance (FP), followed by marketability capability (MC), with a total causal influence value of 0.796, which affected the firm performance (FP). Meanwhile, innovation management (IM) affected the firm performance (FP) and had a real causal influence equal to 0.473, respectively, as shown in Figure 1 and Table 3.
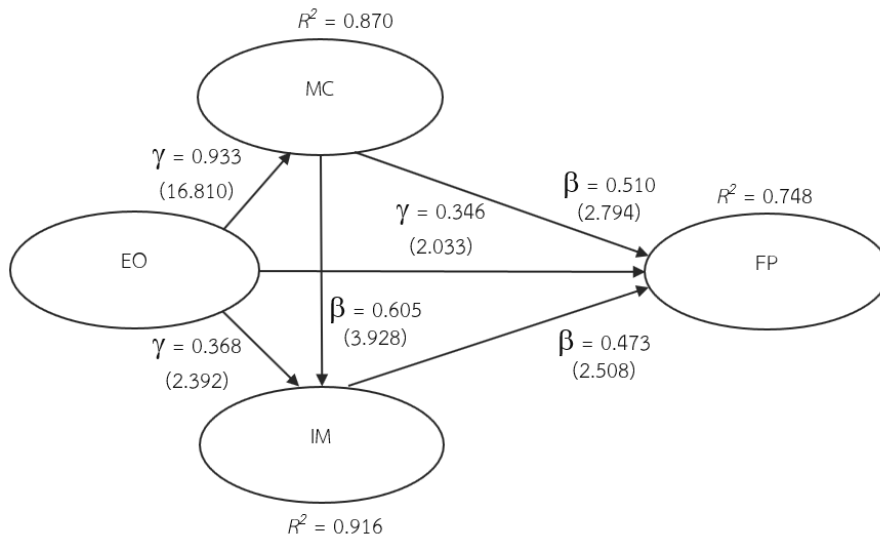
Figure 1 Structural Equation Model Affecting the Performance of Small and Medium Enterprises in the Lower Central Region of Thailand

Table 3 Estimation of direct and indirect Influences of Causal factors affecting the firm performance of Small and Medium Enterprises in the Lower Central Region of Thailand.

Antecedent Variable	Endogenous Variable								
	MC			IM			FP		
	DE	IE	TE	DE	IE	TE	DE	IE	TE
EO	0.933	-	0.933	0.368	0.564	0.932	0.346	0.617	0.963
MC	-	-	-	0.605	-	0.605	0.510	0.286	0.796
IM	-	-	-	-	-	-	0.473	-	0.473
R-Square	0.870	0.916	0.748						

χ^2 = 83.321, χ^2/df = 1.282, df = 65, p-value = 0.063, GFI = 0.969, AGFI = 0.927, CFI = 0.996, NFI = 0.983, RMSEA = 0.031, RMR = 0.010

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The analysis of the path coefficients of the causal components of the equation model structure and the hypothesis testing of the quantitative research concluded, as shown in Table 4.

Table 4 Results of research hypothesis testing

Path Diagram	Path Coefficients	CR (t-value)	P-value	Conclusion
EO → MC	0.933	16.810	0.001	Supported
EO → IM	0.368	2.392	0.05	Supported
EO → FP	0.346	2.033	0.05	Supported
MC → IM	0.605	3.928	0.01	Supported
MC → FP	0.510	2.794	0.01	Supported
IM → FP	0.473	2.508	0.05	Supported

Discussion

The entrepreneurial orientation positively influenced the marketing capability with a path coefficient of 0.933 and a t-value of 16.810. The empirical data support the hypothesis at a statistical significance level of 0.001, consistent with Rofiaty (2019) and Solano-Romo et al. (2016) findings. The entrepreneurial orientation positively influenced innovation management with a path coefficient of 0.368 and a t-value of 2.392 at a statistical significance level of 0.05, consistent with Peridawaty et al. (2021) and Jin et al. (2018). Moreover, the result showed that entrepreneurial orientation had a positive influence on the firm performance with a path coefficient of 0.346 and a t-value of 2.033 at a statistical significance level of 0.05, which is in line with the findings of Astuti et al. (2019) and Ariasih et al. (2018). The marketability capability positively influenced innovation management with a path coefficient of 0.605 and a t-value of 3.928 at a statistical significance level of 0.01, corresponding to the research results of Peridawaty et al. (2021) and Jin et al. (2018). The Marketing capability positively influenced the firm performance with a path coefficient of 0.510 and a t-value of 2.794 at a statistical significance level of 0.01, with the finding of Cake et al. (2020) and Daliran Chamanzamin et al. (2018). Innovation management positively affected the firm performance, with a path coefficient of 0.473 and a t-value of 2.508 at a statistical significance level of 0.05, consistent with the results of Izadi Z.D. et al. (2020) and Anim et al. (2018).

Suggestions

1. To create a competitive advantage under a rapidly changing market environment in line with demand growth or changes in technology that are factors that drive businesses to differentiate themselves from competitors. Internal or external factors need to be considered instead of viewing results or external factors as most businesses did in the past. Organizations nowadays pay attention to business environment factors as they affect the transformation of entrepreneurs

who are enthusiastic, dynamic, committed to success, and have a risk appetite. On top of that, modern innovations in the operation of the organizations, product presentation, and the operational process should be changed and developed organizations under the current uncertain situations. Moreover, it is because the business environment keeps changing all the time rapidly. These rapid changes result in the need for more existing ability of the firms to create a competitive advantage. Therefore, it is necessary to find a strategy to implement things in a new way to use dynamic capabilities to create some changes to products and production processes or the ability to respond to changing market demands and generate new knowledge.

2. Entrepreneurial orientation strategy for small and medium enterprises to respond to true entrepreneurship. Entrepreneurs are vital economic forces who play essential roles in modern businesses; they can be creative and invent new products to pioneer the market domestically and internationally. Under the context of small and medium enterprises, this study unfolded the main elements of entrepreneurial orientation strategies affecting marketing capability, innovation management, and firm performance, ascending orders from innovativeness, proactiveness, and risk-taking. The organization must consider finding new practices to adapt to their firms, such as using innovations to convert customers' needs and expectations; enhancing or developing work processes to increase production efficiency and reduce costs. Firms should always be ready to adjust and adapt their strategies to all economic shifts.

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Analysis of Factors Affecting Third-Party Funds above 2 Billion Rupiah in Indonesia

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Abstract

Third-party funds above 2 billion rupiahs in Indonesia are essential in determining banking liquidity risk. The coverage limit of deposit insurance in Indonesia is 2 billion rupiahs. Conversely, third-party funds above 2 billion rupiahs have a significant share in third-party funds in Indonesia, making their party fund essential to banking liquidity and risk performance. This study aims to determine the effect of macroeconomic variables on changes in third-party funds above 2 billion rupiahs in Indonesia, especially after the Covid-19 pandemic. Analysis in research using the Auto-Regressive Distributed Lag model. The results of the study stated that household consumption and the interest rate of the guarantee of the Indonesian deposit insurance institution affected changes in third-party funds above 2 billion rupiahs in Indonesia while producing state securities and the IDR-US Dollar exchange rate in the short and long term.

Keywords: 1) Third-party fund 2) banking 3) guaranteed interest rate 4) household consumption 5) saving

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Introduction

Third-party funds are funds from the public that banks have collected. According to Schumpeter, the availability of savings is vital in forming capital accumulation which will determine economic growth. Geopolitical conditions and the risk of recession due to post-pandemic inflation increases Indonesia's economic pressure making third-party funds vital in maintaining consumer welfare (IMF, 2012). Savings also determine the ability of banks to extend credit to boost the Indonesian economy. Bank deposits in Indonesia are guaranteed by the Deposit Insurance Corporation, with a maximum deposit limit guaranteed by the Deposit Insurance Corporation is 2 billion rupiahs. Deposits guaranteed by IDIC account for 99.93% of commercial bank accounts and 99.98% of people's credit banks which are fully guaranteed. Third-party funds above 2 billion rupiahs, which are not guaranteed in whole or part, are 3,751,182 billion rupiahs or 47.3% of the total third-party funds in Indonesia. Research conducted by Trinugroho et al. (2020) states that third-party funds below 2 billion rupiahs are less effective in carrying out market discipline than third-party funds above 2 billion rupiah and third-party funds below 2 billion rupiahs in state-owned banks are more effective for bank conditions and macroeconomic stability compared to foreign and private banks.

The low level of third-party funds can potentially drive a high loan-to-deposit ratio, creating liquidity risk for banks. The magnitude of the influence of third-party funds above 2 billion rupiahs on the loan-to-deposit ratio occurs because banks require a large capital adequacy ratio to expand credit so that banks with high liquidity will have significant funds to meet credit demand and encourage an increase in the loan to deposit ratio (Syafi, 2015)

In the macroeconomic aspect, third-party funds play a role in economic growth through the ability to channel bank credit and investment opportunities. A large amount of domestic third-party funds allows for higher investment capabilities, whereas countries with low savings rates generally only rely on incoming foreign capital. The high correlation of domestic DPK to high investment is in line with the results of research conducted by M. I. Khan et al. (2017), Higgins (1998), Cavallo & Pedemonte (2016), and Kim et al. (2018)

Households generally dominate domestic third-party funds in Indonesia. This condition aligns with research conducted by Rajakumar et al. (2015) that household savings generally influence domestic savings.

Macroeconomic analysis is vital in analyzing the growth of third-party funds, which has decreased yearly even though the amount of accumulated third-party funds after the Covid-19 pandemic has increased. The decline in the growth of third-party funds above 2 billion rupiah is inversely proportional to the tendency of third-party funds below 2 billion rupiah in Indonesia, which has experienced an increase in growth from year to year.

Analysis of changes in deposit growth when economic conditions are uncertain is vital because people will tend to increase savings in good economic conditions but reduce deposits when economic conditions decline and spending increases (Hashim et al., 2017). An increase in

third-party funds above 2 billion rupiah can also be due to high corporate deposits, which indicate an increase in profits (Feldstein, 2008 and Chen et al., 2017) so a decrease in third-party funds above 2 billion rupiah is caused by a decrease in profits received by corporations. The deposit guarantee level limit of up to 2 billion rupiahs is vital in determining the investment and risk behavior of the fund's owner.

Third-party funds play a role in forming cheaper capital even though they have a lower return rate than investment activities with a certain level of risk (Allen et al., 2014). Interest rates can also affect deposit rate changes (A. Khan & Hasan, 1998). Research on the factors that affect changes in third-party funds above 2 billion rupiahs becomes interesting when elaborating on the research results of Rasmidatta and Lin (2011) that the growth of domestic savings will encourage economic growth, which is contrary to the results of research (Roy & Sen, 1991) that high levels of deposits in developing countries do not contribute to economic growth.

Economic growth that will encourage the development of digital technology in the financial sector will also impact the risks banks face, so the growth of third-party funds above 2 billion rupiahs in Indonesia is vital in determining banking risk. Research related to the structure of banking deposits previously stated that adjustments to the deposit insurance rate limit would encourage changes in savings made by households to increase their utility so that they have the potential for financial system stability through market risk (Damar et al., 2019). There still needs to be discussion regarding changes in third-party funds above 2 billion rupiahs which exceed the deposits guaranteed by the Deposit Insurance Corporation because macroeconomic factors make this research necessary to examine. This study aims to find out how macroeconomic influences affect the growth of third-party funds above 2 billion rupiahs in Indonesia in terms of mitigating market risks that may occur

Literature Review

Portfolio Choice Theory

The portfolio choice theory states that in managing wealth assets, an individual must consider welfare factors, expected rate of return, risk, and liquidity so that an increase in welfare will encourage the individual's ability to buy assets so that when welfare increases, it will encourage an increase in demand for assets (Mishkin, 2022). Individuals who own assets will tend to increase the value of assets owned by trying to own assets that have the opportunity to experience value growth so that it will encourage an increase in demand for the number of assets that have expected returns while taking into account the level of risk and liquidity of assets owned. Individuals tend to choose assets that have the opportunity to increase in value with a certain level of risk and the liquidity capabilities of the assets they have.

Liquidity Preference Theory

The liquidity preference theory states that interest rates will affect the demand for money

and that the circulation of money has a constant speed (Origiriki & Andabai, 2014). There are three individual motives for holding money; income levels influence holding money for transaction purposes, the need for unexpected future transactions on income levels, and speculation motives, which have two choices, namely non-interest-bearing assets (M1) and interest-bearing assets (bonds). The higher expectations of long-term interest rates will drive down demand for M1, so long-term interest rates have a negative relationship to demand for M1.

The relationship between the rupiah exchange rate and deposits above 2 billion

The depreciation of the exchange rate results in an increase in the deposit rate due to an increase in aggregate demand for traded goods to non-traded goods, thereby causing an increase in the real interest rate to maintain the balance of the internal balance. High-interest rates will maintain aggregate demand as part of an increase in the domestic saving rate, so there is a causal relationship between the real exchange rate and the deposit rate. Increased savings encourage lower real wages due to the depreciation of the exchange rate, which makes companies want to invest more, thereby increasing savings to make additional investments (Levy-Yeyati & Sturzenegger, 2007). A high level of savings will result in a higher current account surplus large compared to domestic capital accumulation due to exchange rate depreciation (Dooley et al., 2004). The higher US Dollar exchange rate will encourage the growth of foreign currency third-party funds above 2 billion rupiahs in Indonesian banking.

The relationship between government bond yields and deposits is above 2 billion rupiahs

The availability of third-party funds above 2 billion rupiah plays a vital role in supporting the ability of banks to provide funding. The availability of banking funds is strongly influenced by interest rates closely related to macroeconomic factors. According to Bikker & Gerritsen (2018), market interest rates, market volatility, inflation rates, and market pressure levels strongly affect economic factors. Economic growth rates and concentration indexes negatively affect banking participation in public debt. The dominance of banks holding government bonds reached 33.42% or a value of 1,796.80 trillion rupiahs on 1 February 2023 (DJPPR Ministry of Finance of the Republic of Indonesia, 2023). The high number of government bonds owned by banks makes changes in government bond interest rates pose a market risk to banks. An increase in government bond interest rates harms the balance sheet of commercial banks. The size, structure, and maturity of the bank's overall balance sheet and hedges through macroeconomic scenarios are determined to harm the balance sheet of commercial banks (OECD, 2013). The oriented behavior of individuals toward maximizing their utility can be in line with Damar's research (2019), which explains that consumers will adjust their deposit rates according to the level of deposit insurance. The results of the research can occur because an increase in the level of deposit insurance will encourage banks to increase the interest rate on deposits offered to attract consumers, in line with the theory of portfolio choice and liquidity preference, which explains speculative motives for individuals in holding money by considering the level of return and risk.

The relationship between IDIC guarantee interest rates and deposits above 2 billion rupiah

The interest rate for the Deposit Insurance Corporation (IDIC) guarantees one of the conditions for ensuring that deposits meet the guarantee by IDIC. The IDIC guarantee interest rate has a negative effect on BPR deposits so that it can show BPR customers are inelastic to changes in guarantee interest rates (Juniasti, 2022). The IDIC guarantee interest rate is closely related to the interest rate offered to customers. The interest rate positively and significantly affects the deposit rate (Raza et al., 2017) because the interest rate determines the behavior of money savings. High-interest rates will encourage consumers to tend to reduce current consumption. (Keynes, 1936) stated that the interest rate is the return on the distribution of liquidity, which determines the choice of the opportunity cost of current consumption or profits to be obtained in the future. An increase in interest rates, in terms of welfare effects, will encourage expectations of higher future income so that consumers will reduce consumption and increase savings (Summers, 1981)

The relationship between household consumption and savings is above 2 billion rupiahs.

Keynesian economic theory states that an increase in aggregate consumer income will encourage consumers to save rather than spend their money to buy goods and services. Households also make savings by accumulating income during working age to prepare for retirement. Hence, countries with a developing economy with a working-age population tend to have higher savings than elderly residents who are not working, even though there are conditions where households enter retirement age with insufficient savings to meet expenses, thus contradicting the predictions of the life-cycle model. Companies made deposits to use part of their profits to make investments. Andrejovská & Buleca (2015) state that the income households are ready to spend influences the level of savings.

Methods

The research used is a quantitative study using secondary data. The population used in this study is deposited from commercial banks supervised by the Financial Services Authority and are participants in the Deposit Insurance Corporation's guarantee. The type of data used in this study is secondary data sourced from the publication of Indonesian Economic and Financial Statistics (SEKI), the Central Bureau of Statistics data portal, and Bloomberg, supported by journal references. The data used in this study are from the deposit rate obtained from the Deposit Insurance Agency website, consumption rate from the Central Statistics Agency website, Rupiah-US Dollar exchange rates, moderate rate, foreign exchange from Bank Indonesia, and 10-year government bond yields from Bloomberg. Research also uses library research by reviewing previous research.

The data analysis method uses the autoregressive distributed lag (ARDL) method. ARDL is the least regression with at least the lag of the dependent and explanatory variables. ARDL models allow static models to become dynamic because they take into account time and lag (Gujarati & Porter, 2009).

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Results

The stationarity test aims to see the distribution of data for each variable around the average value and is not affected by time and variance—stationarity testing using Philip's method (listed in table 1). Most of the test values on the variables tested at the level are higher than the p-value of 0.05, so it can be concluded that the variable is not stationary. Tests at the first difference level have the result of a test value on a variable lower than the p-value of 0.05, so it is concluded that the variable is stationary at the first difference.

The selection of the best ARDL model using the optimal combination of lags was carried out based on the Akaike info criterion (listed in Figure No. 1) so that the optimum model in this study was ARDL(2, 4, 1, 4, 1) with an R-squared of 0.370 and an adjusted R-squared of 0.267. The R-squared value of 0.37 explains that 37% of the variation in variables related to third-party funds above 2 billion rupiahs can be explained by each of the selected model-independent variables

The short-term estimation results (listed in table 2) show that the DConsumption variable (-4) has the most significant coefficient, -0.732699, with a probability of 0.0034. The ExRate variable has a coefficient of 0.182583 with a probability level of 0.0051 which increases compared to the ExRate variable (-1)). DIDICRate(-3) -0.251448 with a probability of 0.0035 and a DYIELDSBN coefficient of -0.086 with a probability of 0.0057

Long-term estimates are needed to see the effect of each variable on changes in third-party funds above 2 billion in Indonesia. The long-term ARDL estimation (listed in table 3). shows that the DYieldSBN variable has a coefficient of -0.142240 probability of 0.0002, and the USD exchange rate variable has a coefficient of 0.274534, with a probability of 0.0029 which affects changes in DPK above 2 billion.

The next stage is to test the model's suitability to ensure that the model formed does not violate econometric rules (listed in table 4). The selected ARDL model at the 95% confidence level has no autocorrelation in the residual model. Long-term stability tests with short-term adjustments need to be carried out to see the stability of the short-term and long-term models using the CUSUM and CUSUMQ methods. The CUSUM and CUSUMQ test results (listed in Figure 2 and 3). show that the model is relatively stable.

The results of the bound test for the ARDL model (listed in table 5) show that the F-statistic value is 16.805244, which is greater than the lower and upper bound values at the 5% to 1% confidence level so that the variables in the study are consumption level, USD exchange rate, IDIC guarantee interest rate, and SBN yield ten years moving together in the long run.

Cointeq (listed in table 6) shows that the speed of adjustment measures the speed of adjustment in response to changes that occur and is valid if it has an error below 5% and a negative coefficient (Anggraini, 2021). The model used has a CointEq(-1) of -1.139170, which means 113.91% of changes that occur toward an imbalance are corrected in one period.

Conclusion and Discussion

Research conducted explains that changes in third-party funds above 2 billion rupiahs in Indonesia are influenced by the yield of 10 state securities and the US Dollar exchange rate in the long term and consumption, the IDIC guarantee interest rate, the yield of state securities and the IDR/US Dollar exchange rate in the short term. The negative and significant correlation to third-party funds above 2 billion rupiahs in Indonesia follows Hamim's research (2017), which states that increased savings are related to improving economic conditions. Declining consumption amidst a downturn in the economy has forced households to make consumption adjustments. The increase in savings due to reduced consumption by households occurs because households consume using their savings allocation. This phenomenon can be explained during the 2010-2022 period, where there was an increase in fuel prices and the Covid-19 pandemic, which prompted an adjustment in the price of goods and services, which resulted in a decrease in sizeable third party funds deposits because production costs and consumption expenditures were more significant even though the income received did not increase. This phenomenon aligns with research conducted by Izzati et al. (2023) that increases will always follow increases in fuel prices in inflation and poverty rates. The deposit guarantee interest rate for deposit insurance institutions positively and significantly contributes to third-party funds of over 2 billion rupiahs in the short term. The IDIC guarantee interest rate encourages commercial banks to increase deposit interest rates to attract customer interest. The study's results are different from Juniasti's research (2022), which states that the IDIC guarantee interest rate has a negative effect on people's credit bank deposits, so it can show that people's credit bank customers are inelastic to changes in guarantee interest rates. Government securities yield significantly negatively contributes to changes in third-party funds above 2 billion rupiahs in Indonesia. The fact that state securities are an alternative investment instrument besides deposits causes A negative correlation between the yield of state securities and DPK above 2 billion rupiahs. The higher the yield of state securities, the more interested investors will be in investing in state securities rather than through deposits. The US Dollar exchange rate has a positive correlation with third-party funds above 2 billion rupiahs because it will increase the foreign exchange rate in third-party funds so that the higher the value of the US Dollar against the rupiah it will encourage the growth of third-party funds above 2 billion rupiahs and export growth is carried out even though it has the implications of import activities will be more expensive.

The results of the study have been able to explain the formulation of the problem and the research objectives, namely knowing that third-party funds above 2 billion rupiahs are influenced by consumption growth and state securities instruments so that policy-making that affects public consumption, the rupiah exchange rate and the determination of the rate of return on state securities instruments needs to pay attention to changes the structure of third party funds above 2 billion against the level of risk faced by banks. This research needs to consider the index of customer confidence in the credibility of monetary institutions in making policy as one of

the monetary instruments and the index of consumer confidence in the economy so it can be a consideration for further research.

Table 1 Unit root test results

No.	Level		First Difference	
	Series	Prob.	Series	Prob.
1	TPF2B	0,0312	D(TPF2B)	0,0000
2	Consumption	0,3185	D(Consumption)	0,0000
3	ExRate	0,4542	D(ExRate)	0,0000
4	YieldSBN	0,0691	D(YieldSBN)	0,0000
5	IDICrate	0,2629	D(IDICrate)	0,0000

Reference: Authors

Table 2 ARDL short-term estimation

Variable	Coefficient	Std. Error	t-statistic	Probability*
DTPF2B(-1)	0,101248	0,090336	1,120798	0,2651
DTPF2B(-2)	-0,160907	0,090524	-1,777493	0,0786
DConsumption	-0,006921	0,003905	-1,772481	0,0794
DConsumption(-1)	0,385313	0,246016	1,566209	0,1205
DConsumption(-2)	-0,347554	0,284421	-1,221970	0,2246
DConsumption(-3)	0,371815	0,214997	1,729393	0,0869
DConsumption(-4)	0,069573	0,280300	0,248210	0,8045
DExRate	-0,576708	0,247293	-2,332085	0,0217
DExRate(-1)	-0,025810	0,027166	-0,950088	0,3444
DIDICrate	0,048274	0,027682	1,743878	0,0843
DIDICrate(-1)	0,190636	0,068734	2,773533	0,0066
DIDICrate(-2)	-0,160389	0,069227	-2,316874	0,0226
DIDICrate(-3)	0,029547	0,072095	0,409830	0,6828
DIDICrate(-4)	-0,260161	0,085866	-3,029861	0,0031
DYIELDSBN	0,136706	0,081244	1,682653	0,0956
C	-0,000740	0,001815	-0,407799	0,6843
R-squared	0,370548	Mean Dependent Var		0,267780

Reference: Authors

Table 3 ARDL long-term estimation

Variable	Coefficient	Standard Error	t-statistic	Probability*
DConsumption	-0,284390	0,283487	-1,003182	0,3182
DExRate	0,274534	0,089778	3,057912	0,0029
DIDICrate	-0,065392	0,072233	-0,905289	0,3675
DYieldSBN	-0,142240	0,036378	-3,910089	0,0002
C	0,000650	0,001594	-0,407713	0,6844

Reference: Authors

Table 4 Autocorrelation test results

Breusch-Godfrey Serial Correlation LM Test			
F-statistic	1,673314	Prob. F(4,94)	0,2984
Obs*R-squared	7,569079	Prob. Chi-Square (4)	0,2166

Reference: Authors

Table 5 ARDL model-bound tests

F-Bound Test Statistic	Value	Null Hypothesis Signif.	No Level Relationship	
			I(0)	I(1)
F-statistic	15,71779	10%	2,2	3,09
		5%	2,56	3,49
		2,5%	2,88	3,87
		1%	3,29	4,37

Reference: Authors

Table 6 ARDL Short-Term Estimation

Variable	Cointegrating Form		t-statistic	Probability*
	Coefficient	Standard Error		
D(DTPF2B (-1))	0,203767	0,080679	2,525652	0,0132
D(Consumption)	0,537448	0,224431	2,394717	0,0185
D(Consumption (-1)	0,257948	0,156602	1,647155	0,1027
D(Consumption (-2)	0,465904	0,161806	2,879399	0,0049
D(Consumption (-3)	0,732699	0,219035	3,345119	0,0012
D(DExRate)	0,182583	0,043295	4,217198	0,0001

| Variable	Cointegrating Form		t-statistic	Probability*
	Coefficient	Standard Error		
D(DIDICrate)	0,132604	0,059829	2,216363	0,0290
D(DIDICrate (-1))	0,036380	0,074181	0,490420	0,6349
D(DIDICrate (-2))	0,077919	0,075571	1,031078	0,3050
D(DIDICrate (-3))	-0,173529	0,074288	-2,335891	0,0215
D(DYIELDSBN)	-0,086000	0,022627	-3,800780	0,0003
CointEq(-1)*	-1,139170	0,110659	-10,29446	0,0000

Reference: Authors
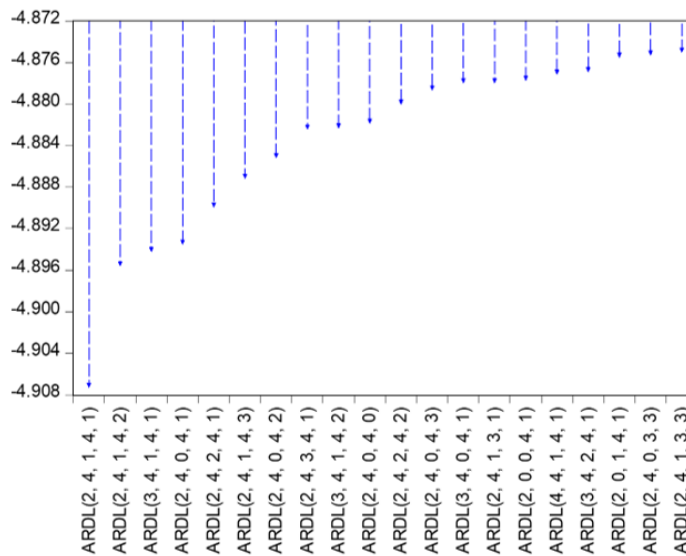
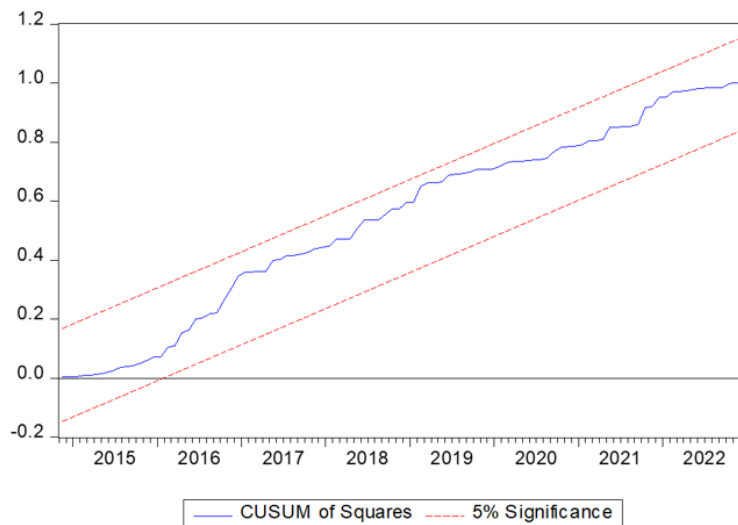**Figure No.1** Optimum Lag Selection

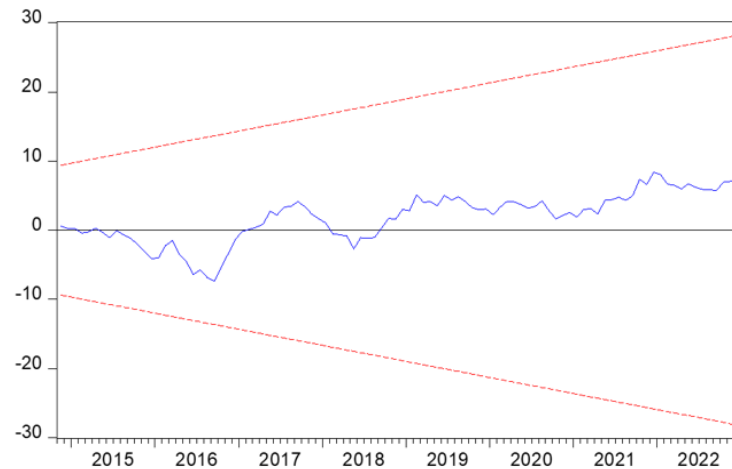**Figure No.2** CUSUM of Squares Test

Figure No.3 CUSUM Test

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Factors Affecting Customer Purchase Intensions of Electric Vehicles in Bangkok, Thailand

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Abstract

This research aimed to predict market mix, brand equity, and environmental awareness that impact consumers' electric cars purchasing intentions in Bangkok. The sample group used in this study was 100 consumers who intend to buy electric cars. The research tool is questionnaires. Statistical analysis includes the normality test by the Shapiro - Wilk, the Spearman rank correlation coefficient, and regression analysis by entering the method. The descriptive results showed that the marketing mixed, environmental awareness, and brand equity were at high levels consecutively. The inferential results indicate that marketing mixed, brand equity, and environmental awareness could explain the change of dependent variables, including consumers' electric car purchasing intentions 23.70%, which was the most among all models, while the rest, 76.30%, were due to other factors. Its independent variable has a predictive correlational design with behavior on purchasing intentions management at a significant level of 0.05.

Keywords: 1) Marketing Mixed 2) Brand Equity 3) Environmental Awareness 4) Purchasing Intension 5) Electric Vehicle

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Introduction

The air pollution problem in Thailand has grown alarmingly, but the public and private sectors have not realized its importance. Especially in Bangkok, roadside areas with heavy traffic. The measurements found dust, smoke, and gas pollution exceeded the standard near industrial plants, especially ozone gas and carbon monoxide. The rapid increase in the number of cars and other vehicles causes this. The amount of delicate particulate matter that exceeds the standard is considered the primary and most severe problem. In addition, the amount of ozone and carbon monoxide gases that exceed the standard on roadsides is also an equally important problem (Holis, 2017). The basic concept of electric cars technology is that using electric power to drive electric cars was widespread with the advent of petrol cars. At that time, both types of vehicles had different advantages and disadvantages. Even technological advances allow cars to use gasoline to resolve their penalties first, whether it is the engine's sound, loud difficulty starting each machine, or high smoke volume. While the weakness of electric cars at that time, such as the problem of short travel distances and the high cost of batteries with low capacity. As a result, the popularity of electric cars has gradually decreased. However, due to environmental conservation trends and current fluctuations in petroleum prices; as a result, electric cars technology is again an exciting alternative. The electric car market is a market with a very high growth rate. (Jamfah, 2019)

The essential thing in pushing electric car technology is that these electric cars can reduce greenhouse gas emissions enough. The use of electric cars, which is suitable for cities with high populations from the user's perspective, is because electric cars can reduce costs in the long run because this electric train is an efficient car and avoids continuously increasing fuel costs. Therefore, the starting price of this electric train will continue to decrease (Yodpradit, 2018) the above. The researcher conducted a study on a study of factors affecting the purchase intention of electric cars of people in Bangkok in 5 districts, namely Nong Khaem, Pathum Wan, Bang Na, Phra Khanong, and Lat Krabang, because the survey found that electric cars charging points in 5 districts in Bangkok have many electric cars chargers installed and have more electric cars charging points than any other district in Bangkok. The population living in Bangkok in 5 districts found that they are in an area that uses many cars and emits air pollution such as PM 2.5 dust from the combustion of internal combustion engines. Therefore, the researcher sees the importance of studying factors to affect purchase intention so that business operators who sell electric cars can use the information to improve the quality and plan strategies for doing business appropriately.

Research Objective

1. To study the relationship between the marketing mixed, brand value and environmental awareness of the population in Bangkok in 5 districts, namely Nong Khaem, Pathum Wan, Bang Na, Phra Khanong, and Lat Krabang.

2. To test the factors affecting customer purchase intentions of electric cars of the popula-

tion in Bangkok. The predictor variables were the marketing mix, brand value, and environmental awareness.

Literature Review

Philip Kotler (2003) explained that marketing mixed factors. It is the heart of marketing management. Making the operation of the business success depends on improving the appropriate relationship of the marketing mixed. Controllable marketing tools the business integrates these tools to meet the needs and satisfy the target customers. The marketing mixed comprises everything an entity uses to influence its product demand. The marketing mixed means four groups known as the 4 P's which are products, price, place and sales promotion. Sereerat et al. (2009) explained that marketing mixed theory is a marketing variable that businesses must use together to meet the target market's needs. It consists of everything that influences the creation of demand for the product, pricing, location or distribution channel and marketing promotion. Wongmontha (1999) explained that the marketing mixed has products that can meet target consumers' needs, selling products at prices that consumers accept, including consumers agreeing to pay. Because it sees the value that will be received and has a distribution channel to distribute products thoroughly according to the behavior and needs of consumers to motivate demand for products consisting of products, this means the business has an effect that can satisfy the target group of consumers. Price means there is a price that consumers accept and are willing to pay because they see the value. Distribution refers to distribution, distribution, and convenience consistent with consumer behavior. Finally, marketing promotion means to induce the element of the product and the proper Behavior, consisting of advertising, promotion, public relations, and personal sales.

Wongmontha (1999) said that brand equity is the value of creating a brand in the eyes of consumers is the value that customers, salespeople, and distributors think and feel about the brand compared to competitors at the time of purchase. Therefore, building brand value is essential. A brand is only valuable when consumers perceive brand differentiation positively. If consumers do not see the difference in the brand, the brand has no value, which value (equity) will occur when people are familiar with the brand. Moreover, please keep it in memory, which can memorize essential characteristics of that brand. Schiffman (1994) said that brand equity refers to the value of a well-known brand. It shows the acceptance of new products. Better product placement, perceived quality, perceived value, and promotion will result in confusion among consumers, so marketers need to create value for the brand. Furthermore, generate loyalty to the product in consumers. Keller (1993) mentions brand value, focusing on marketing, that is, the different effects consumers have on the brand's knowledge of how it reacts to that brand's marketing. Clow (2005) points out the meaning of brand value as a unique set of qualities that distinguish a brand from the marketplace and can help companies make more money from the product. And still able to maintain a market share more than non-branded products. Rungruengpol (2009) brand value means a brand that is accepted and trusted as capital or added value in the product that

helps create value for the brand from the consumers' point of view is the result of excellent and continuous marketing and advertising activities as well as a good experience that regular customers expect from using one's brand. As a result of a positive attitude towards the products or services of the organization. Farquhar (1989) defined the meaning brand value as it is the value added to companies, stores, or consumers. Which the brand has made with the product. Marconi (1993) has given the meaning of the brand value that brand value is the recognition of the value of the brand

Iran (2012) explained that awareness of the environment is an indicator of attention or awareness of environmental problems. There was a positive correlation with the behavior of using environmentally friendly products. Manaruaysombat (2011) explained that environmental awareness is an emotional trait of a person expressing concern, interest, concern, or dislike. On ecological issues nowadays, more and more people are turning their attention to environmentally friendly products because of the fear of the effects of the environment on themselves and their families. The problem that peoples are most worried about. is the problem with water quality. Furthermore, toxic waste, which is challenging to dispose and nuclear waste, followed by pollution from cars: water conservation, deforestation, global warming, and overpopulation. In contrast, the problem of oil leakage and urbanization were the least of the people's concerns. Jing (2015) states that purchase intentions are the process by which consumers can purchase a product or service in the future to meet their needs. This process takes place before actual buying behavior. Howard (1994) states that purchase intentions are psychological. That indicates a consumer's intention to purchase a particular brand. At any given time, The purchase intent from the positive attitudes of consumers toward the brand and the confidence of consumers in past evaluations of the brand. Das (2014) states that purchase intentions are consumer attempts to purchase goods and services. It depends on factors such as brand, distributor, and purchase time of various products and services. It is an enjoyable experience; for example, satisfaction and purchase intent directly affects the estimated purchase of goods and services from the distributor. The consumer's purchase intention usually arises after the consumer is aware of the utility. And the value of products and services. In addition, the purchase intention influenced the purchasing behavior in the resultant way, namely purchase volume. Apiprachayasakul (2015) said that purchase intentions mean what marketers can study about consumer brand loyalty or purchase behavior. Brand loyalty is the order of brand selection preference and proportion of purchases. Kotler (2012) states that purchase intentions often lead to purchase decisions, but only sometimes because there is an insertion between purchase intent and purchase intent with the actual purchase. The insertion factors are other people's attitudes and unexpected situational factors.

Based on the literature review mentioned above. The independent variables are marketing mix, brand value, and environmental awareness, affecting the dependent variable, namely the intention to buy electric cars of consumers in Bangkok.

Research Assumptions

Hypothesis 1: Marketing mixed factors positively affect the intention to buy electric cars.

Hypothesis 2: Brand value positively affects the intention to buy electric cars.

Hypothesis 3: Environmental awareness positively affects the intention to buy electric cars.

Hypothesis 4: Marketing mixed and brand equity positively affect the intention to buy electric cars.

Hypothesis 5: Marketing mixed and environmental awareness Positively affect the choice to purchase electric cars.

Hypothesis 6: Brand value and awareness positively affect the intention to buy electric cars.

Hypothesis 7: Marketing mixed factors brand value and environmental awareness positively affect the choice to purchase electric cars

Methods

Scope of content it is a study of factors affecting the population's intention to buy electric cars in 5 districts in Bangkok, namely Nong Khaem, Pathum Wan, Bang Na, Phra Khanong, and Lat Krabang. The primary variables were the factors affecting the intention to buy electric cars, three elements, namely, the marketing mixed factor (4 P's), brand value and environmental awareness. The dependent variable is an intention to buy an electric car. Scope of population and sample, the population used in this research is the population in Bangkok. There are a total of 5 study areas: Nong Khaem, Pathum Wan, Bang Na, Phra Khanong, and Lat Krabang. The sample size was determined using W. G. Cochran 's formula, a confidence level of 90%, and an error of 10 % (W. G. Cochran, 1997). Therefore, the researcher has 100 samples. The instrument used in this research was a questionnaire.

The researcher has checked the validity of the tool by calculating the item objective con-gruence index; the criteria used is that it should be higher than 0.50. Kongsat (2008) which found that each question was more significant than 0.5 for all items. In addition, the reliability of the data calculates the Cronbach's alpha coefficient with a reliability level not lower than 0.7 according to the criteria of Naresh (2007) and the accuracy of the data by correlation analysis (Corrected Item–Total Correlation), which must have a value from 0.20 up. Cronbach's alpha of 0.942 is acceptable, and a Corrected Item–Total Correlation was greater than 0.20 for all items. Descriptive statistics is an essential statistical value to show the distribution of answers or opinions. Moreover, explain the characteristics of the preliminary data by using percentage, mean, frequency and standard deviation and testing the normal distribution of the data. Inferential statistics consists of Spearman rank correlation coefficient to analyze the relationship between each pair of variables between marketing mixed factors, brand value and environmental awareness affect the intention to buy an electric vehicle. Hinkle and Wiersma (2003) multiple regression analysis to create equations

to predict consumers' intention to buy electric cars by marketing mixed factors, brand value and awareness of the environment through the Enter method.

Results

Regarding the results from analyzing marketing mixed (MM), brand equity (BE), environmental awareness (EA) and purchasing intentions (PI) of electric cars in Bangkok of Thailand; it was found that the levels were at high in the overall terms. Additionally, the data had the normal distribution that was statistically significant at the significance level of .01 as shown in Table 1.

Table 1 Mean, standard deviation, level of comments, testing normality and p-value.

Variables	Mean	S.D.	Level of Comments	Testing Normality (W)	P-value
MM	3.98	0.704	High	-0.797**	0.00
BE	3.84	0.788	High	-0.810**	0.00
EA	3.90	0.714	High	-0.793**	0.00
PI	3.89	0.726	High	-0.798**	0.00

**Statistically significant at the 0.01 level ($p < 0.01$)

The results from analyzing the correlation coefficients between the variables of the marketing mixed, brand equity and environmental awareness influencing the purchasing intentions of electric cars in the Bangkok of Thailand showed the correlation coefficients between the different variables from zero that mean the statistically significant relationships at the significance level of 0.01 for all pairs of the variables. All pairs of the variables had the positive relationships that were 0.266 – 0.399. The pair with the highest correlation coefficient was the relationship between environmental awareness and purchase intention. The correlation coefficient was 0.399. The pair with the lowest correlation coefficient was the relationship between brand equity and environmental awareness. The correlation coefficient was 0.266. It was statistically significant at the significance level of 0.01 as shown in Table 2.

Table 2 correlation coefficient matrix between variables

variables	MM	BE	EA	PI
MM	1.000			
BE	0.347**	1.000		
EA	0.397**	0.266**	1.000	
PI	0.310**	0.360**	0.399**	1.000

**Statistically significant at the 0.01 level ($p < 0.01$)

The results from regression analysis, it was found that the model 7 had the coefficient of decision (R^2) equal to 0.241 and considering the value of R^2 modified R^2 adj. found to be equal to 0.237 which is reduced by the decision coefficient R^2 just a little It shows that the initial variable is the marketing mixed, brand value and environmental awareness can explain the change of the dependent variable, for example, purchasing decisions equal to 23.70 % which is the most than all models, while the other 76.30 % is the result of other factors, so it is appropriate to be used in forecasting. Therefore, the F value from one-way analysis of variance is considered, which is 52.525. (F = 52.525), therefore, the result was found to be statistically significant at the level of 0.01. Therefore, it was necessary to test further to see if any of the variables in this model were suitable to be used in forecasting.

Environmental awareness, It is the variable that affects the purchase decision the most because it has a coefficient. The regression of independent variables in terms of standard score (β = 0.279) was the most followed by brand value (β = 0.243) and marketing mixed (β = 0.127) brand value and marketing mixed factors there is a predictive relationship with purchasing decisions. statistically significant at the 0.01 level, where this model has a constant value of 1.428 and the regression coefficient of the independent variable in terms of raw score (B) of environmental awareness, brand value and marketing mixed were 0.287, 0.226 and 0.127 respectively with a statistical significance at the 0.01 and .05 level, as shown in Table 3.

Table 3 Multiple regression analysis

	Model	1	2	3	4	5	6	7
	Constant	2.626 **	2.605 **	2.330 **	2.023 **	1.844 **	1.645 **	1.428 **
	MM	0.326 *	-	-	0.220 *	0.202 *	-	0.127 *
B	BE	-	0.342 **	-	0.267 **	-	0.260 **	0.226 **
	EA	-	-	0.407 **	-	0.326 **	0.327 **	0.287 **
	MM	0.325 *	-	-	0.219 *	0.202 *	-	0.127 *
β	BE	-	0.368 **	-	0.286 **	-	0.279 **	0.243 **
	EA	-	-	0.396 **	-	0.318 **	0.318 **	0.279 **
	F	59.015 **	77.815 **	92.752 **	53.337 **	58.851 **	73.667 **	52.525**
	R^2	0.106	0.135	0.157	0.177	0.191	0.229	0.241
	R^2adj	0.104	0.133	0.155	0.173	0.188	0.226	0.237

*Statistical significance at the 0.05 level (p< 0.05), ** Significant at the 0.01 level (p < 0.01), β (Beta) is the regression coefficient of the independent variable in terms of standard scores and B is the regression coefficient of the independent variable in terms of raw scores.

Conclusions

The purpose of this research was to study the relationship and forecast of marketing mixed

factors, brand value and environmental awareness affecting consumers' purchase intentions for electric cars in Bangkok. By collecting information from consumers who have bought or are deciding to buy an electric car, 100 people, mostly male, aged 31-40 years old, have a bachelor's degree. Occupation, private business. Average monthly income 30,001- 40,000 bath residential area in Nong Khaem district. Drive an electric car brand MG ZED EV. Driving hours are from 6:01 a.m. to 12:00 noon. The amount of electric cars charging is 3-4 times per week and the frequency of using electric cars for more than 5 days. According to the survey of overall market mix factors, there was a high level of purchase intent. The overall brand value has a high level of purchase intent. Overall environmental awareness has a high level of purchase intent. and the overall opinion of consumers in terms of purchasing intent was at a high level and all data were unmorally distributed at the statistical significance level of 0.01. Therefore, the Spearman correlation coefficient was used to find that all 4 variables were related in the same direction and from the theoretical review found that the mixture factors marketing mixed, brand value and environmental awareness drives consumers' purchase intentions. Therefore, it was considered which variable had the greatest effect by regression analysis and found that all three variables were suitable to be used to create a forecasting equation. The regression analysis, testing the hypotheses of the quantitative study could be concluded as shown in Table 4.

Table 4 Results of research hypothesis testing

Hypothesis	Beta value	F-value	P-value	Conclusion
H1	0.325	59.015	0.00	Supported
H2	0.368	77.815	.00	Supported
H3	0.396	92.752	.00	Supported
H4	0.219, 0.286	53.337	.00, .00	Supported
H5	0.202, 0.318	58.851	.00, .00	Supported
H6	0.279, 0.318	76.667	.00, .00	Supported
H7	0.127, 0.243, 0.279	52.525	.05, .00, .00	Supported

Discussions

The important issues found in this research were discussed by the researcher in order to conclude a conclusion to know the facts by bringing relevant documents and research to support or contradict each other. According to the research results, it was found that Marketing mixed factors have a positive effect on consumers' purchase intentions for electric cars in Bangkok. Statistically significant obtained at the level of 0.01, with the regression coefficient of the independent variable in the form of standard score equal to 0.217, that is, marketing mixed is one method to create. Competitive advantage with other organizations to make consumers turn

to buy more electric cars of the organization it consists of products, prices, distribution channels and marketing promotion which can be compared with each company in terms of products, there must be variety. Quality and modern in terms of price, it must show value for money, be clear, reasonable in use. As for distribution channels, it should be convenient for customers and should have a service that will impress customers and marketing promotion it should be a strategy. to make advertisements to interest customers these elements will increase the intent of customers to buy electric cars. This is consistent with the research of Wongkittiwat (2016) studying factors influencing the decision to buy electric cars of working age consumers in Bangkok with B = 0.169 and Beta = 0.176, Pakdeesuk (2018) conducted a study on attitude factor. The factors of marketing mixed and technology acceptance affecting people's decision to buy electric cars in Bangkok and its vicinity are B = 0.107 and Beta = 0.132. Therefore, it can be concluded that Increasing marketing mixed also results in increased purchase intentions for electric cars.

It was found that Brand equity has a positive effect on consumers' willingness to buy electric cars in Bangkok. The statistical significance obtained at the level of 0.01 with the regression coefficient of the independent variable in the form of a standard score equal to 0.2 26, that is, the brand value. can make consumers satisfied and persuade them to buy products by creating products that consumers can remember the brand name have an awareness of quality. The study found that Consumers are interested in electric cars brands that are global brands. at the very opinion level Probably due to the trust in the quality of the product and the publicity of electric cars which discusses the benefits and good features of most electric cars that, if compared to other brands and competitors will often show the difference of the product in a good way If consumers can't see the difference in the product Shows that the brand is not quality not memorable which is consistent with the research of Wongkittiwat (2016) conducted a study on factors influencing the decision to buy electric cars of working age consumers in Bangkok with B = 0.446 and Beta = 0.447. Therefore, it can be concluded that Increased brand value also results in increased purchase intentions for electric cars.

According to the research results, it was found that Environmental awareness has a positive impact on consumers' willingness to purchase electric cars in Bangkok. Statistically significant was obtained at the 0.01 level, with the regression coefficient of the independent variable in the form of standard score equal to 0.287. In other words, awareness of the environment. It can make customers feel worried and think about the current and future environment. If the product has the ability to help save energy. environmentally friendly reduce exhaust emissions and greenhouse gas emissions. It is considered a new alternative that will make consumers more interested in the product which is consistent with the research of Thangphet (2017) conducted a study on factors affecting the intention to purchase battery electric cars of Generation X and Generation Y in Bangkok and its vicinity with B = 0.316 and Beta = 0.219, Thananusak (2018) conducted a study on factors affecting the intention to buy electric cars: empirical evidence from Thailand which

has Beta = 0.156 and R^2 = 0.567. Therefore, it can be concluded that increased awareness of the environment has also resulted in increased purchase intentions for electric cars.

Suggestions

Managerial suggestion

1. Marketing mixed factors affecting the purchase intention of electric cars Companies that trade electric cars should be interested in optimizing the maintenance costs of electric cars by providing more benefits such as having product insurance if damage occurs prematurely Giving discounts to consumers who are regulars, etc. The company should add a service center that has a full range of standards, dealers who are reliable in their work, such as having good manners have a passion for service will be able to increase the purchase rate of more products And the company should have pre- and after-sales service after the consumer has bought the product to make consumers satisfied Impressed with the service and the product can cause repeat purchases in the future and should advise dealers to maintain relationships with customers, such as organizing annual training.

2. Brand value affecting the purchase intention of electric car companies should make consumers confident about the performance of their branded electric cars by presenting the strengths of the product and various benefits that consumers will receive, including the design of electric cars that are more convenient to use by adding functions to meet their needs and make the product more quality to make consumers remember the product and make them aware of the good parts of that product when consumers get to know the strengths and advantages that who can be compared to competitors if consumers see a brand positively, they will be more intent on buying it and will make repeat purchases in the future.

3. Environmental awareness affecting the purchase intention of electric cars the company should offer products that are environmentally friendly, such as energy saving. reduce oil consumption Reduce the amount of exhaust gases that will be released into the atmosphere. Make consumers see new alternatives to conserve nature increase social influence on current situations by advertising to consumers to turn to use more electric cars. There are electric cars that meet the needs of most applications and have a variety of functions and more efficient than internal combustion vehicles Including in terms of reasonable prices. This can make customers see the difference and change their minds to use more electric cars because foreseeing that the product is conserving nature Meet the needs of today and in the long-term future.

Academic suggestion

The study of predicting factors, including marketing mix factors, brand value, and environmental awareness affecting consumers' purchase intentions for electric cars in Bangkok, can explain the change of dependent variables, including an intention to buy an electric car, equal

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to 23.70%. The other 76.30% is the result of other factors, which should be further studied or reviewed in the literature to find independent variables that influence the intention to buy an electric car has increased.

The analysis of components or structural equation models of variables that affect the intention to buy electric cars should be studied.

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The Study of Service Quality Factors on Student Satisfaction and
Student Loyalty in Language Institute at Tak Special Economic Zone

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Abstract

This research was conducted using a descriptive research method, The objectives of this research were 1) to study of service quality factors on student satisfaction in language institute at Tak Special Economic Zone and 2) to study of service quality factors on student loyalty in language institute at Tak Special Economic Zone. The sample group was 357 student who attend 10 private language schools, the educational year 2022 in Tak Special Economic Zone by random sampling. The research instrument was on-line questionnaire in 4 part; 1) general information of the respondents 2) service quality in language institute at Tak Special Economic Zone 3) student satisfaction in language institute at Tak Special Economic Zone and 4) student loyalty in language institute at Tak Special Economic Zone. The data was analyzed by frequency distribution, percentage, mean, standard deviation and multi regression analysis.

The finding indicated that

1) The factors affecting on student satisfaction in language institute at Tak Special Economic Zone, P-value < 0.05, 5 variables predict the student satisfaction in language institute at Tak Special Economic Zone at 86.7% according empathy, assurance, tangibility, reliability and responsiveness.

2) The factors affecting on student loyalty in language institute at Tak Special Economic Zone, P-value < 0.05, 5 variables predict the student loyalty in language institute at Tak Special Economic Zone at 85.1% according empathy, tangibility, assurance, reliability and responsiveness.

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Introduction

In the midst of a situation full of increasing competition in the educational business which will be seen as the number of courses emerging continuously in language institutes increases (Annamdevula & Bellamkonda, 2014). As a result, educational institutions have the goal of acquiring leadership in business and gaining market share in the highest ratio. For this reason, each institution focuses on developing strategies and ideas to achieve the goals set. Therefore, the idea of satisfaction and loyalty come to play a huge role in attracting new students to study and satisfy the old students to maintain the old student base. However, the concept of student satisfaction and loyalty has gained attention in many years ago and has become one of the important tools used to achieve the goals of private educational institutions placed.

In the Tak Special Economic Zone, the competition in the education industry tends to increase as well which has opened courses continuously increasing. Thus, creating satisfaction and loyalty to students has become the main mechanism for create a competitive advantage that will lead to attracting new students come to study. Including as a treatment student to continue their studies in the original institution. At the same time, research studies on the concept of student satisfaction in context not much in Thailand, so educational institutions should pay attention and aim to raise satisfaction and student loyalty to develop the capacity to meet the needs of private education institutions as much as possible.

Literature Review

1. Tak Special Economic Zone Background

Economic Zone is a development method that has been studied for a long time in Thailand. The idea to develop an area into a special economic zone aims to expand development into different areas through various economic activities as the core of the development. This brings about some investment and improvement of the quality of life of people in a specific area and other areas nearby. However, the method to develop and mobilize the Special Economic Zone to be concrete has received a clearer development direction since the National Council for Peace and Order (NCPO) managed the country. The National Council for Peace and Order (NCPO) has issued an order no. 72/2014 to appoint the Commission of Special Economic Development Zone Policy. In the meeting no.1/2014 of the Commission of Special Economic Development Zone Policy on 15 July 2014, chaired by Gen.Prayuth Chan-Ocha-- the head of the National Council for Peace and Order (NCPO), approval was made on the areas with suitable potential to be a special economic zone in the initial period of Thailand in 5 border areas to support complete admission to AEC in 2015 including 1. Mae Sot District, Tak Province, 2. Aranyaprathet district, Sa Kaeo Province, 3. border area in Trad Province, 4. Border area in Mukdahan Province, 5. Sadao District, Songkhla Province. (National Statistical Office, 2022)

2. Service Quality

The quality concept which is an established phenomenon in the management literature was first proposed by Juran (1974) and Deming and Edwards (1982); however, Service-Quality is a relatively new concept which was introduced. The past two decades, researchers have spoken extensively about Service-Quality, and it had become an established concept because of the dynamic requirements of businesses globally. Service quality in the educational sector is considered by various researchers because of its importance and outcomes. Quality in higher education is a complex and multi-faceted concept and a single correct definition of quality is lacking (Zaltman & Wallendorf, 1979). Regard students as primary consumers of higher education service. Based on findings in the service quality literature, Waterschoot & Van (1992) define service quality in higher education as "the difference between what a student expects to receive and his/her perceptions of actual delivery".

2.1 Tangibility: The physical look of buildings, machinery or equipment, people, and communication tools is different from each language schools. Most learners frequently want spick-and-span establishments and stores, well-groomed and tidy workers, and professionally written and produced products like menus, websites, and signs when attending the language class. Paying attention to appearance might show that the business values consumer comfort. Even though it is not the most important aspect of service, appearance does have an impact on how people view private language schools, particularly if the brand of the private language schools promises a premium or luxurious experience. The tangible features of a service have a big impact on how people feel about how good it is. The language schools in Tak Special Economic Zone in terms of the structure size, and complexity of the organization, which does not make a good environment for the learners so most private language schools need to adapt for the learners to have individual capabilities. (Ismail, 2017)

2.2 Reliability: Responsibility and quality are linked to reliability (Tatar & Erdoğmus, 2016). There are several predecessors that also support the fundamental approach for influencing the student's perceptions of the administration's quality and dependability in Tak Special Economic Zone. Some of these previous efforts are related to the benefits of language school and include the easy accessibility of resources, the expert's level of expertise and productive issue determination, correspondence quality, customer care quality, an exhibition of information, client respect, staff proficiency, representatives' ability to listen to student's inquiries and respond emphatically to their needs and complaints, security, worker dependability, and less waiting time. The following factors are essential for some private language schools to follow and adapt.

2.3 Responsiveness: These elements aid businesses in improving how well-received their services are by the students. most language schools primarily offer courses on-site rather than providing services online. and there are no partners or providers for the language institutes personnel to provide outstanding language learning for the learners and Language courses are well-provided

at the Language institutes. In terms of instructors, Thai instructors are preferred to teach English hence the language institutes should supply local instructors to teach the courses. The language offers a wide range of language courses.

2.4 Assurance: The talents and abilities employed in providing services to the students are referred to as assurance. employee abilities and competencies contribute to the student's trust and confidence, which in turn fosters emotions of safety and comfort during the provision of services Waterschoot and Van (1992). If patrons have faith in the staff's capacity to complete their duties, they are more likely to return. the most crucial elements in reassuring the students are expertise, civility, a good attitude, and effective communication Additionally, there are other considerations like the facility's operational security and the clients' services' established level of quality (Voss, 1991).

2.5 Empathy: The level of individualized attention provided to customers is referred to as empathy. During the interaction, the service providers go above and beyond to make the client feel valued and special. Empathy necessitates putting oneself in the customer's situation and understanding their demands the traits that foster empathy include the staff's politeness and friendliness, their comprehension of the student's unique needs, their special attention, and their willingness to take the time to explain the practices and procedures to be followed during the service delivery process (Thakur, 2016).

3. Satisfaction

Definition

The increasing amount of literature on customer satisfaction marks its importance in marketing literature. Satisfaction has been defined as the consumer's value judgment regarding pleasure derived from the utilization of level fulfillment (Wuttke & Cohen, 2008). Satisfaction is an emotional reaction to a product or service experience. The satisfaction concept has also been extended recently to the context of higher education. The still limited amount of research suggests that student satisfaction is a complex concept, consisting of several dimensions definition of satisfaction.

The relationship between customer satisfaction and service quality is still ambiguous in marketing literature (Thakur, 2016). Many research studies have been conducted to determine whether satisfaction is influenced by service quality or vice versa. Thakur (2014) found that this is only relationship found from the literature review between service quality and customer satisfaction, and all service encounters should be managed to increase consumer satisfaction. However, stronger empirical evidence is required to strengthen the common understanding on the relationship between these two constructs. Thakur (2014) states that both service quality and customer satisfaction are treated as one and the same by the business press. In contrast, Taylor and Baker (1994) strongly supported the view that service quality and customer satisfactions are separate and distinct constructs.

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Initially, Voss (1991) proposed that perceived service quality is an antecedent to customer satisfaction, but the studies conducted by Tatar and Erdoğmus (2016). concluded that customer satisfaction is an antecedent to service quality. However, the results of the research model developed indicated that perceived service quality, in fact, leads to satisfaction as proposed. Strong arguments were made by the researchers to consider satisfaction judgments to be the least causal antecedent of service quality. Through the improvement of conceptual foundation and empirical evidence, the majority of recent publications consider service quality as an antecedent to customer satisfaction. Further support can be found in Ismail (2017) show that students'perceived service quality is an antecedent to student satisfaction. Therefore, there is a current consensus among the researchers with regard to the causal order between these two constructs. With this theoretical background, the present study considers student perceived service quality as an antecedent to student satisfaction in higher education sector.

The private fee-paying education industry in Syria has seen significant changes in the previous ten years because of some government officials' desire to give the private sector a stronger role in education supply. This mindset has resulted in the implementation of ambitious reforms across the entire educational system, to increase participation and even generate a competitive environment between the commercial and public sectors, as well as the NGO sector. The rapid and dramatic expansion in the number of private fee-paying EFL institutes operating in the Syrian market is an excellent example of this transformation. (Thakur, 2016)
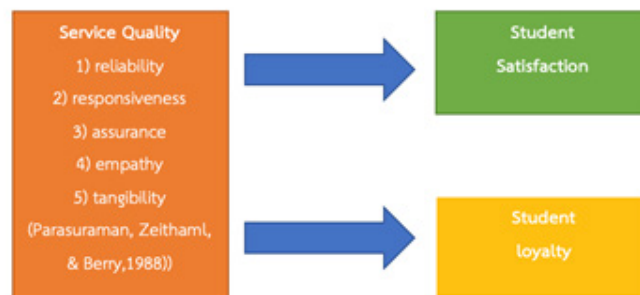
4. Loyalty

Definition

Customer loyalty can be defined in some circles as repeat purchasing frequency or relative volume of same-brand purchasing (Allender & Richards, 2012). Customer loyalty can be viewed as the strength of the relationship between an individual's relative attitude and repeat patronage. The central theme of any organization relies on development, maintenance and enhancement of customer loyalty towards its product or services (Tatar & Erdoğmu, 2016). Although loyalty has received considerable attention in academic research, it has not been determined in common terms. Different researchers defined loyalty in different terms based on the marketing activities, business type, etc. Thakur, (2014) has defined customer loyalty as:

"………a deeply held commitment to rebuy or repatrionize a preferred product or service consistently in the future, despite situational influences and marketing efforts having the potential to cause switching behavior….."

Studies focused on student loyalty in higher education sector, which helps college administrators to establish appropriate programs that promote, establish, develop and maintain successful long-term relationships with both current and former students. In educational services, loyalty requires developing a solid relationship with students who eventually provide the financial basis for future university activities. An educational institution benefits from having loyal students not

only when students are formal attendees, the success of an educational institution also depends upon the loyalty of former students. The studies also support the perception of high quality positively affects intended behavior (loyalty) (Back & Parks, 2003, 2003). The quality of teaching and the students' emotional commitment to their institution are crucial for student loyalty (Allender & Richards, 2012). This paper measures student loyalty on the attitudinal component of the concept, that is, the behavioral intentions (Annamdevula & Bellamkonda, 2014) of students who are formally enrollec

Picture 1 Conceptual Framework

Methods

Research objectives

    1. To study of service quality factors on student satisfaction in language institute at Tak Special Economic Zone

    2. To study of service quality factors on student loyalty in language institute at Tak Special Economic Zone

Research Population

    661 student who study at private language schools at Tak Special Economic Zone (Special Economic Zone, 2021)

Research Sample

    357 student who attend private language schools, the educational year 2022 in Tak Special Economic Zone. By random sampling (Yamane, 1973) student who attend private language schools.

Research instrument

    On-line questionnaire in 4 part; 1) general information of the respondents 2) service quality in language institute at Tak Special Economic Zone 3) student satisfaction in language institute at Tak Special Economic Zone and 4) student loyalty in language institute at Tak Special Economic Zone.

Data collection

    400 On-line questionnaire was sent to student and give back 357 papers or 89.98 % which properly to multi regression analysis.

Data Analysis

The data was analyzed by frequency distribution, percentage, mean, standard deviation and multi regression analysis.

Results

The study of service quality factors on student satisfaction and student loyalty in language institute at Tak Special Economic Zone found that

Table 1 Number and percentage of general information of the respondents

	Items	No.	Per.
Gender	Male	224	37.3
	Female	133	62.7
	Total	**357**	**100**
Class duration attending	1-2 month	52	14.6
	3-4 month	86	24.2
	5-6 month	147	41.3
	More than 6 months	71	19.9
	Total	**357**	**100**
Language Institute	Foreign Language School	24	6.72
	Lao Suan language School	26	7.28
	Maestri Vocational Development	32	8.96
	Muang Tak Language School	33	9.24
	Plearnpasa Language School	36	10.08
	Ban Phase language School	31	8.68
	Hug Phase Language School	33	9.24
	The best Language School	33	9.24
	Ban Phase Chin Language School	32	9.00
	Ban Phase Lao Sue Nat Language School	77	21.56
	Total	**357**	**100**

From Table 1 found that most of respondents were male at 62.7 percent, most class duration attending was 5-6 month at 41.3 percent, 3-4 month at 24.2 percent, more than 6 months at 19.9 percent by respectively. The respondents were study at Ban Phase Lao Sue Nat language school at 21.56 percent, Plearnpasa language school 10.08 percent by respectively.

Table 2 Level of student satisfaction in language institute at Tak Special Economic Zone

Students satisfaction in Language Institute	$\bar{X}$	S.D.	level
1. Language institute meet your needs in accordance with your real-life language style	4.58	0.68	strongly agree
2. Being a customer of the language institute makes you receive "Added value from various privileges" such as wi-fi, member card	4.03	0.54	agree
3. Confidence in the quality of teaching and service of language institutes	4.15	0.69	agree
4. Get enough information about the course and the services of the language institute from being a customer	4.32	0.70	strongly agree
5. Language Institute takes good care of customers	4.30	0.68	strongly agree
6. The staff of the language institute provide friendly service	4.20	0.64	agree
7. Language institute has a convenient and fast communication system	4.26	0.66	strongly agree
8. Language institute organizes various activities that are beneficial to customers	4.34	0.67	strongly agree
Total	**4.27**	**0.65**	**strongly agree**

From Table 2 found that level of student satisfaction in language institute at Tak Special Economic Zone as a whole at strongly agree level ($\bar{x}$ = 4.27, S.D. = 0.65). The highest average score is language institute meet your needs in accordance with your real-life language style ($\bar{x}$ = 4.58, S.D. = 0.68) followed by language institute organizes various activities that are beneficial to customers ($\bar{x}$ = 4.34, S.D. = 0.67) and get enough information about the course and the services of the language institute from being a customer ($\bar{x}$ = 4.32, S.D. = 0.70) by respectively.

Table 3 Level of student loyalty in language institute at Tak Special Economic Zone

Students loyalty in Language Institute	$\bar{X}$	S.D.	level
1. You have trust and trust in language institutions	4.56	0.71	strongly agree
2. You believe that language institutions understand and deal with your problems well	4.07	0.61	agree

Students loyalty in Language Institute	$\bar{X}$	S.D.	level
3. You believed that he would be cared for by the Language Institute	4.10	0.71	agree
4. You are pleased to continue to be a customer of the Language Institute of the Language Institute	4.27	0.71	strongly agree
5. You greatly appreciates the language institute as a whole	4.31	0.73	strongly agree
6. You have a sense of belonging. and close ties with language institutions	4.22	0.67	strongly agree
7. You will encourage others to apply for language institute clients	4.23	0.68	strongly agree
8. If others have misconceptions about language institutions. You will help correct that misunderstanding immediately	4.31	0.68	strongly agree
Total	4.25	0.68	strongly agree

From Table 3 found that level of student loyalty in language institute at Tak Special Economic Zone as a whole at strongly agree level ($\bar{x}$ = 4.25, S.D. = 0.68). The highest average score is you have trust and trust in language institutions ($\bar{x}$ = 4.56, S.D. = 0.71) followed by if others have misconceptions about language institutions. You will help correct that misunderstanding immediately ($\bar{x}$ = 4.31, S.D. = 0.68) and you greatly appreciates the language institute as a whole ($\bar{x}$ = 4.31, S.D. = 0.73) and you are pleased to continue to be a customer of the Language Institute of the Language Institute ($\bar{x}$ = 4.27, S.D. = 0.71) by respectively.

Table 4 Level of service quality in language institute at Tak Special Economic Zone as a whole

Service Quality in Language Institute	$\bar{X}$	S.D.	level
1. Tangibility	4.31	0.20	strongly agree
2. Responsiveness	4.29	0.12	strongly agree
3. Reliability	4.27	0.10	strongly agree
4. Assurance	4.29	0.12	strongly agree
5. Empathy	4.28	0.07	strongly agree
Total	4.28	0.12	strongly agree

From Table 4 found that level of service quality in language institute at Tak Special Economic Zone as a whole at strongly agree level ($\bar{x}$ = 4.28, S.D. = 0.12). The highest average score is tangibility ($\bar{x}$ = 4.31, S.D. = 0.20) followed by responsiveness ($\bar{x}$ = 4.29, S.D. = 0.12) and assurance ($\bar{x}$ = 4.29, S.D. = 0.12) and empathy ($\bar{x}$ = 4.28, S.D. = 0.12) by respectively.

Table 5 Service Quality which effect on student satisfaction in language institute at Tak Special Economic Zone

Variables	b	SEb	B	t	P-value
Tangibility (TAN)	.167	.033	.178	5.026	<0.001*
Responsiveness (RES)	.119	.038	.126	3.164	0.002*
Reliable (REL)	.149	.037	.155	3.975	<0.001*
Assurance (ASS)	.262	.038	.265	6.833	<0.001*
Empathy (EMP)	.275	.036	.297	7.685	<0.001*
	R = .931				
	R Square = .867				

* statistic significant at .05

From Table 5 found that tangibility factor (TAN), reliability factor (REL), assurance factor (ASS) and empathy factor (EMP) effect on student satisfaction in language institute at Tak Special Economic Zone by statistic significant at .05 according with hypothesis by assigning descending order; empathy, assurance, tangibility, reliability and responsiveness.

When R Square consideration found that all independent variables can predict on student satisfaction in language institute at Tak Special Economic Zone in 86.7 percent

By the research result can bring coefficient value to predict in equation of student satisfaction in language institute at Tak Special Economic Zone by following

SAT = 0.105 + 0.167(TAN) + 0.119(RES) + 0.149(REL) + 0.262(ASS) + 0.275(EMP)

Equation can describe by following;

Value 0.167 (TAN) mean if tangibility (TAN) increase 1 student satisfaction (SAT) will increase 0.167, significant (P-value < 0.05). Thus tangibility (TAN) effect on student satisfaction (SAT).

Value 0.119 (RES) mean if responsiveness (RES) increase 1 student satisfaction (SAT) will increase 0.119, significant (P-value < 0.05). Thus reliable (REL) effect on student satisfaction (SAT).

Value 0.149 (REL) mean if reliable (REL) increase 1 student satisfaction (SAT) will increase 0.149, significant (P-value < 0.05). Thus reliable (REL) effect on student satisfaction (SAT).

Value 0.262 (ASS) mean if assurance (ASS) increase 1 student satisfaction (SAT) will increase 0.262, significant (P-value < 0.05). Thus assurance (ASS) effect on student satisfaction (SAT).

Value 0.275 (EMP) mean if empathy (EMP) increase 1 student satisfaction (SAT) will increase 0.275, significant (P-value < 0.05). Thus empathy (EMP) effect on student satisfaction (SAT).

Table 6 Service quality which effect on student loyalty in language institute at Tak Special Economic Zone

Variables	b	SEb	B	t	P-value
Tangibility (TAN)	.250	.037	.252*	6.749	<0.001*
Responsiveness (RES)	.113	.042	.113	2.687	0.008*
Reliable (REL)	.188	.042	.185*	4.496	<0.001*
Assurance (ASS)	.230	.043	.220*	5.369	<0.001*
Empathy (EMP)	.239	.040	.245*	5.991	<0.001*

R = .923

R Square = .851

* statistic significant at .05

From Table 6 found that tangibility factor (TAN), reliability factor (REL), assurance factor (ASS) and empathy factor (EMP) effect on student loyalty in language institute at Tak Special Economic Zone by statistic significant at .05 according with hypothesis by assigning descending order; empathy, tangibility, assurance, reliability and responsiveness.

When R Square consideration found that all independent variables can predict on student loyalty in language institute at Tak Special Economic Zone in 85.1 percent

By the research result can bring coefficient value to predict in equation of student loyalty in language institute at Tak Special Economic Zone by following;

LOY = -0.122 + 0.250(TAN) + 0.113(RES) + 0.188(REL) + 0.302(ASS) + 0.239(EMP)

Equation can describe by following;

Value 0.250 (TAN) mean if tangibility (TAN) increase 1 student loyalty (LOY) will increase 0.250, significant (P-value < 0.05). Thus tangibility (TAN) effect on student loyalty (LOY).

Value 0.113 (RES) mean if responsiveness (RES) increase 1 student loyalty (LOY) will increase 0.113, significant (P-value < 0.05). Thus tangibility (TAN) effect on student loyalty (LOY).

Value 0.188 (REL) mean if reliable (REL) increase 1 student loyalty (LOY) will increase 0.188, significant (P-value < 0.05). Thus reliable (REL) effect on student loyalty (LOY).

Value 0.230 (ASS) mean if assurance (ASS) increase 1 student loyalty (LOY) will increase 0.230, significant (P-value < 0.05). Thus assurance (ASS) effect on student loyalty (LOY).

Value 0.239 (EMP) mean if empathy (EMP) increase 1 student loyalty (LOY) will increase 0.239, significant (P-value < 0.05). Thus empathy (EMP)effect on student loyalty (LOY).

Conclusion and Discussion

Conclusion

1) The level of student satisfaction in language institute at Tak Special Economic Zone as a whole at strongly agree level. The highest average score is language institute meet your needs

in accordance with your real-life language style followed by language institute organizes various activities that are beneficial to customers and get enough information about the course and the services of the language institute from being a customer by respectively.

2) The level of student loyalty in language institute at Tak Special Economic Zone as a whole at strongly agree level. The highest average score is you have trust and trust in language institutions followed by if others have misconceptions about language institutions. Student will help correct that misunderstanding immediately and student greatly appreciates the language institute as a whole and student are pleased to continue to be a customer of the language institute by respectively.

3) The level of service quality in language institute at Tak Special Economic Zone as a whole at strongly agree level. The highest average score is tangibility followed by responsiveness and assurance and empathy by respectively.

4) The factors affecting on student satisfaction in language institute at Tak Special Economic Zone, P-value < 0.05, 5 variables predict the student satisfaction in language institute at Tak Special Economic Zone at 86.7% according empathy, assurance, tangibility, reliability and responsiveness.

5) The factors affecting on student loyalty in language institute at Tak Special Economic Zone, P-value < 0.05, 5 variables predict the student loyalty in language institute at Tak Special Economic Zone at 85.1% according empathy, tangibility, assurance, reliability and responsiveness.

Discussion

1) The level of student satisfaction in language institute at Tak Special Economic Zone as a whole at strongly agree level may be due to language institute at Tak Special Economic Zone try to meet student needs in accordance with their real-life language style and also being a customer of the language institute makes receive "Added value from various privileges" such as wi-fi, member card. When, the researcher was criticizing by detail found that the highest score average was language institute meet student needs in accordance with their real-life language style. Shows that language institute at Tak Special Economic Zone have the attention to preparing and try to develop learning process and bring innovation for quality. The student can use this benefit for their need and effect to satisfaction accordance with Annamdevula & Bellamkonda (2014) "the learners' satisfaction is the degree to which a learner is delighted towards the involvement in course learning. During the course design, the higher educational institutes switched from traditional learning methods to staff encourage learning methods. To develop courses, the institutes consider factors that affect the efficiency of learning while student satisfaction and other course-related aspects are influenced by the strategies adopted to provide learning during the coirse design, factors influencing learning, such as technicality issues, lack of social support and sense of isolation, impact the satisfaction of the students and student emotions, for instance, anger, anxiety and enthusiasm also affect student satisfaction.

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2) The level of student satisfaction in language institute at Tak Special Economic Zone as a whole at strongly agree level may be due to satisfaction language institute at Tak Special Economic Zone try to made organization by systematic and confidence in the quality of teaching and service of language institutes. The institute made student believe that language institutions understand and deal with their problems well and believed that would be cared for by the language institute. When, the researcher was criticizing by detail found that the highest score average was student have trust and trust in language institutions according with Allender & Richards (2012) "...good customer relationship management creates customer loyalty. Consequently, loyalty customers positively talk about the company and its services or products and stay loyal. On the contrary, dissatisfied customers criticize the product or service to others and they usually turn to competitors. There is a considerable difference in the loyalty of customers with different level of loyalty. Study shows that even an insignificant drop in complete satisfaction cause a huge drop in loyalty. Although Allender defines loyalty in general as "deeply held commitment to repatronize a preferred product or service", in case of higher education applies Annamdevula and Bellamkonda (2014) definition of student loyalty as "willingness to recommend the institution and the programmes to others, considerations whether the student would have chosen the same institution and programme today, and willingness to continue education or participate in conferences at the institution in the future" or a similar definition by Ismail (2017) defined that "as the tendency of a student to choose same provider (i.e. HEIs) or service over another for a particular need."

3) Tangibility factor found that tangibility was effect to student satisfaction in language institute at Tak Special Economic Zone according with Wuttke and Cohen (2018) study about spa retail found that tangibility effect to customer satisfaction by statistic significant at .05 level

4) Responsiveness factor found that responsiveness was effect to student satisfaction in language institute at Tak Special Economic Zone according with Booms and Bitner (1981) study about spa retail found that responsiveness effect to customer satisfaction by statistic significant at .05 level

5) Reliability factor found that reliability was effect to student satisfaction in language institute at Tak Special Economic Zone according with Tatar and Erdoğmus (2016) study about hotel business found that reliability effect to customer satisfaction by statistic significant at .05 level

6) Assurance factor found that assurance was effect to student satisfaction in language institute at Tak Special Economic Zone according with Chieochankitkan and Sukpatch (2014) study about spa retail found that assurance effect to customer satisfaction by statistic significant at .05 level

7) Empathy factor found that empathy was effect to student satisfaction in language institute at Tak Special Economic Zone according with Allender and Richards (2012) study about hotel business found that empathy effect to customer satisfaction by statistic significant at .05 level

8) Tangibility factor found that tangibility was effect to student loyalty in language institute

at Tak Special Economic Zone according with Zaltman and Wallendorf (1979) study about spa retail found that tangibility effect to customer loyalty by statistic significant at .05 level

9) Responsiveness factor found that responsiveness was effect to student loyalty in language institute at Tak Special Economic Zone according with Waterschoot and Van (1992) study about spa retail found that responsiveness effect to customer loyalty by statistic significant at .05 level

10) Reliability factor found that reliability was effect to student loyalty in language institute at Tak Special Economic Zone according with (Thakur, 2016) study about spa retail found that reliability effect to customer loyalty by statistic significant at .05 level

11) Assurance factor found that assurance was effect to student loyalty in language institute at Tak Special Economic Zone according with Wuttke and Cohen (2018) study about hotel business found that assurance effect to customer loyalty by statistic significant at .05 level

12) Empathy factor found that empathy was effect to student loyalty in language institute at Tak Special Economic Zone according with Tatar and Erdoğmus (2016) study about hotel business found that empathy effect to customer loyalty by statistic significant at .05 level

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Factors Affecting Success of Second-Hand Car Business

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Abstract

This research aims to study the level of Factors Related to Success of Second-Hand Car Business, to Study on Relationship between Factors on External Environment, Characteristics of Entrepreneurs, Service Quality, Organizational Quality Management and Success of Second-Hand Car Business , and to predict the Success of Second-Hand Car Business. The samples were the entrepreneurs, managers, assistant managers and supervisors who operated second-hand car businesses in Bangkok Metropolitan area, which consisted of 400 persons used Stratified Random Sampling in order to obtain complete and comprehensive data through stratified random sampling. . Questionnaires with a 5-point rating scale were used as a research instrument Cronbach alpha reliability coefficient is 0.85. The statistics used to analyze data were Standard Deviation (SD), Pearson's Product Moment Correlation Coefficient, and the Multiple Regression Analysis. The results showed that 1) the Study on Level of Factors Related to Success of Second-Hand Car Business and the factor of External Environment, Characteristics of Entrepreneurs, Service Quality, Organizational Quality Management were all at the high level 2) the Relationship between Factors on External Environment, Characteristics of Entrepreneurs, Service Quality, Organizational Quality Management and Success of Second-Hand Car Business had a high level of correlation by all aspects having a positive correlation with statistical significance of 0.01, and 3) the prediction of Success of Second-Hand Car Business can predict the Success of Second-Hand Car Business at 76 percent.

Keywords: 1) Success of Second-Hand Car 2) External environment 3) Characteristics of entrepreneurs 4) Service Quality 5) Organizational Quality Management

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Introduction

Among problems on new car price that has been increased every year causing increase of personal living expenses, current consumers have to adjust themselves by reducing their expenses. Therefore, used car (second-hand car) is another alternative to respond to demands and reduce expenses. Second-hand car is considered as the important factor to support business operation and better living of people. Moreover, it also stimulates other business sectors directly and indirectly, for example, second-hand business helps new car business by causing car circulation. Importantly, COVID -19 built new dimension of world second-hand car market. Two positive factors supporting this dimension are increasing demands on using private cars instead of using public transport services whereas the number of manufactured cars is decreased due to the problem on the lack of important parts. Currently, this problem is also expanded to other parts besides electronic chips. In addition, such problem on the lack of parts also affects to new car manufacturing. Those factors cause new phenomenon in world second-hand car market, i.e., rapid increase to the highest level in several years or the highest record of second-car price in several countries due to the problem on the lack of cars. Although people have more demands on private cars, slowing down of economy causes reduction of car purchasing power. Since finance companies issue the measures to extend duration of debt payment, the number of cars that are seized as second-hand cars is also reduced. Consequently, second-car price has been increased during these years (Kasikorn Research Center, 2021)

From the above information, second-hand car business has gained high popularity leading to high competition in second-hand car market. During these years, many entrepreneurs turned to operate second-hand car business therefore competition of second-hand car business is short-term competition among small entrepreneurs (Manoon Promluck, 2021). Since new target groups of customers are always occurred with consecutive growth, marketing strategies are important for enabling these entrepreneurs to achieve their business goals effectively with abilities to deal with serious competition (Nattapong Srijaiwong and Thanom Kanitpanyacharoen, 2022). To attract consumers, it is required to build confidence of consumers. Entrepreneurs of second-car business should build new alternatives for consumers increasingly and those alternatives should be consistent with demands of each person. Consumers should be suggested to realize on pros and cons of second-hand car, for example, it is advantageous for consumers who are required to use cars immediately whereas their first cars are unable to be delivered because second-hand car business can deliver cars immediately or even price advantages. Although consumers are supported by some policies of the government, they are only short-term policies. There are many consumers who want to use cars but they are not ready to utilize the policies supported by the government (Nattapong Srijaiwong and Thanom Kanitpanyacharoen, 2022).
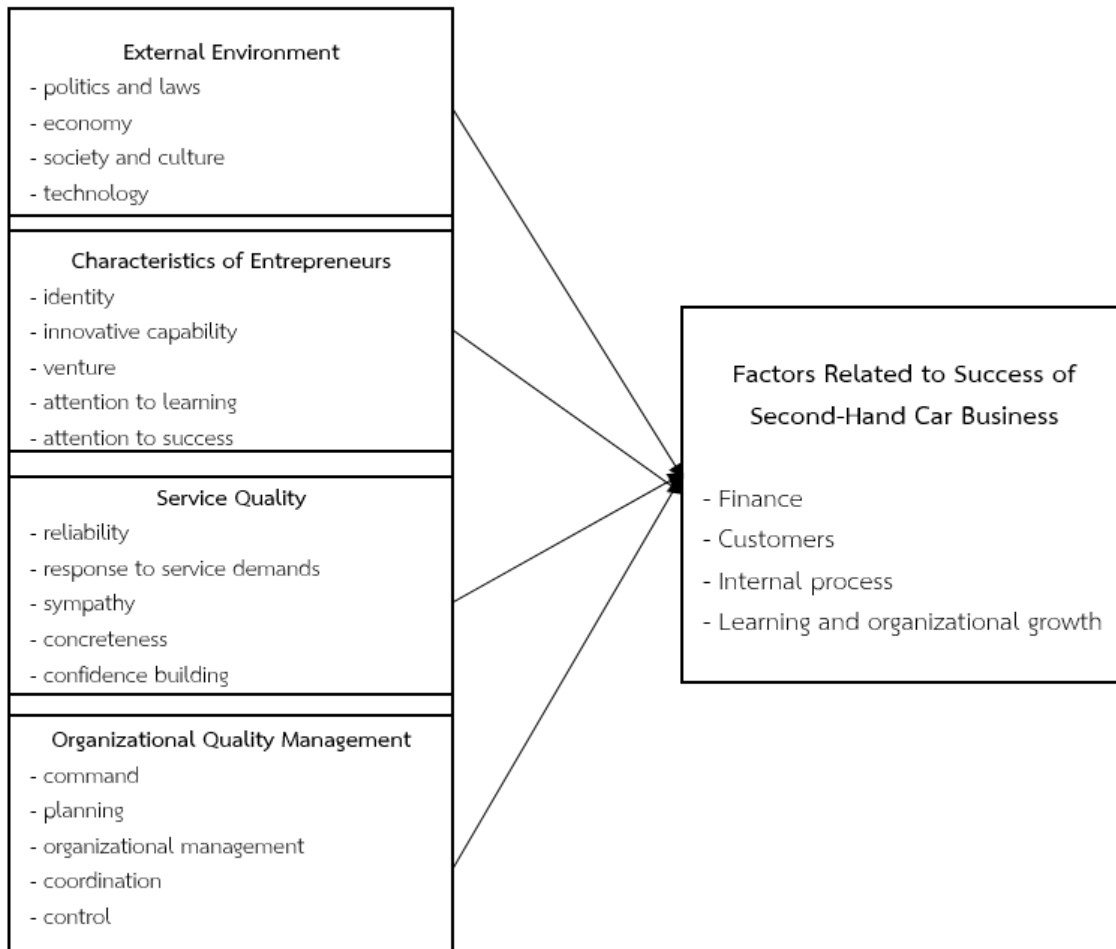
From the above situation and information, the researcher was interested in studying on success pattern of second-hand car business in Thailand therefore the research studied on suc-

cess level of second-hand car business, external environment, characteristics of entrepreneurs, organizational quality management, and service quality. In addition, the researcher also studied on causal factors affecting to success of second-hand car business and success pattern of second-hand car business in Thailand as the guidelines on business operation for entrepreneurs in the future.

Objectives of the Study

1. To study the level of Factors Related to Success of Second-Hand Car Business

2. To Study on Relationship between Factors on External Environment, Characteristics of Entrepreneurs, Service Quality, Organizational Quality Management and Success of Second-Hand Car Business

3. To predict the Success of Second-Hand Car Business

Conceptual Framework

External Environment
- politics and laws
- economy
- society and culture
- technology

Characteristics of Entrepreneurs
- identity
- innovative capability
- venture
- attention to learning
- attention to success

Service Quality
- reliability
- response to service demands
- sympathy
- concreteness
- confidence building

Organizational Quality Management
- command
- planning
- organizational management
- coordination
- control

Factors Related to Success of Second-Hand Car Business

- Finance
- Customers
- Internal process
- Learning and organizational growth

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Literature Review

From reviewing related researches, it was found that the research conducted by Sawali Wongchaiya and Pitchayada Puenpa (2018) who studied on influence of business strategies and characteristics of entrepreneurs affecting to success of business and found that self-confidence was the most important factor affecting to success of the business. This success may be caused by high level of self-confidence of medium and small entrepreneurs in Ubon Ratchthani Province. They dared to try new things, make decisions, and solve immediate problems properly. They were able to control situations with their own styles and be able to develop and improve their businesses consecutively. Consequently, their businesses could gain more success. The research conducted by Jakkrawal Wongmanee (2018) who studied on external environment affected to business revealed that future business operation would be affected by several changes that were crucial factors including factors on society, culture, population structure, urbanization, technology system and digital life, economic condition, environment, and political policies, business competition, and changing behaviors of consumers. Therefore, business was always required to prepare for dealing with changes. The important things were data, modern technology, flexibility, and abilities on data analysis. These things could be applied to operate business to meet with contexts on economy, society, culture, and environment. Therefore, entrepreneurs could be able to compete among changing situations. Consequently, they could be successful and gained consecutive and sustainable profits.

Methods

1) The populations used in quantitative research were entrepreneurs, managers, assistant managers and supervisors who operated second-hand car businesses in Bangkok Metropolitan area consisted of Nakhon Pathom Province, Nonthaburi Province, Samut Prakarn Province, and Samut Sakorn Province.

2) The samples were the entrepreneurs, managers, assistant managers and supervisors who operated second-hand car businesses in Bangkok Metropolitan area The sample size was identified by using the Yamanae formula (Yamanae, 1973). Therefore, the sample size of this research is equal to 400 persons Data were collected by using Probability Sampling whereas members of all populations units were probably selected as samples equally. Collected data were tested on statistical significance and the obtained results could be referred on populations in overview (Kittipan Kongsawatkiat et al., 2009). The researcher used Stratified Random Sampling in order to obtain complete and comprehensive data through stratified random sampling.

3) Tools Used for Collecting Data

The researcher collected data from opinions of persons with some experiences on purchasing second-hand cars in Bangkok Metropolitan area on success pattern of second-hand car business in Thailand. Quality of research tool was ested by using reliability test in order to inspect

defects of created questionnaires for correcting before collecting actual data. Data were analyzed by using Croncach's alpha coefficient analysis (Alpha Coefficient: ∝) (Cronbach, 1990).

4) Data Analysis

4.1) Descriptive statistics analyzed Frequency, Percentage, Mean, and Standard Deviation (S.D.).

4.2) Data analysis using the Inferential Statistics were the Pearson's Product Moment Correlation Coefficient and the Enter Multiple Regression Analysis.

Results

Personal Data of Respondents

For genders, most respondents, i.e., 269 respondents, were female calculated to be 67.25%. For ages, most of them, i.e., 162 respondents, were aged between 30-40 years old calculated to be 40.50% followed by below 30 years old in the amount of 132 respondents calculated to be 33.00% and between from 41-50 years old in the number of 74 respondents calculated to be 18.50%. For education, most of them, i.e., 208 respondents, graduated in Bachelor Degree calculated to be 52.00% followed by lower than Bachelor Degree in the number of 159 respondents calculated to be 39.75% and higher than Bachelor Degree in the number of 33 respondents calculated to be 8.25%. For work experience, most of them, i.e., 133 respondents, had work experience less than 5 years calculated to be 33.25% followed by 5-10 years in the number of 124 respondents calculated to be 31.00% and 11-15 years in the number of 70 respondents calculated to be 17.50%. For position, most of them, i.e., 199 respondents, held the position of supervisor calculated to be 49.75% followed by Assistant Manager in the number of 82 respondents calculated to be 20.50% and Manager in the number of 71 respondents calculated to be 17.75%.

Results of Study on Level of Factors Related to Success of Second-Hand Car Business

Table 1 Mean and Standard Deviation of Opinions towards Success of Second-Hand Car Business

Success of Second-Hand Car Business	Mean	SD	Meaning
finance	3.94	1.00	high
customers	3.98	1.04	high
internal process	3.99	0.97	high
learning and organizational growth	4.02	0.99	high
Total Average	3.98	1.00	high

From Table 1, it was found that mean and Standard Deviation of opinions towards success of second-hand car business in 4 dimensions was in high level. When considering on each dimension, it was found that opinion towards learning and organizational growth was in the highest level with mean of 4.02 followed by opinion towards internal process with mean of 3.99, opinion towards customers with mean of 3.98, and opinion towards finance with mean of 3.94, respectively.

Table 2 Mean and Standard Deviation of Opinions towards External Environment

External Environment	Mean	SD	Meaning
politics and laws	3.91	0.98	high
economy	3.86	1.01	high
society and culture	3.83	1.00	high
technology	4.04	0.92	high
Total Average	**3.91**	**0.98**	**high**

From Table 2, it was found that mean and standard of opinions towards success of second-hand car business in 4 dimensions was in high level. When considering on each dimension, it was found that opinion towards technology was in the highest level with mean of 4.04 followed by opinion towards politics and laws with mean of 3.91, opinion towards economy with mean of 3.86, and opinion towards society and culture with mean of 3.83, respectively.

Table 3 Mean and Standard Deviation of Opinions towards Characteristics of Entrepreneurs

Characteristics of Entrepreneurs	Mean	SD	Meaning
identity	4.00	0.98	high
innovative capability	4.09	0.98	high
venture	4.03	0.96	high
attention to learning	4.05	1.01	high
attention to success	4.06	0.97	high
Total Average	**4.05**	**0.98**	**high**

From Table 3, it was found that mean and Standard Deviation off opinions towards characteristics of entrepreneurs in 5 dimensions were in high level. When considering on each dimension, it was found that opinion towards innovative capability was in the highest level with mean of 4.09 followed by opinion towards attention to success with mean of 4.06, opinion towards attention to learning with mean of 4.05, opinion towards venture with mean of 4.03, and opinion towards identity with mean of 4.00, respectively.

Table 4 Mean and Standard Deviation of Opinions towards Service Quality

Service Quality	Mean	SD	Meaning
reliability	4.08	0.97	high
response to service demands	4.09	0.99	high
sympathy	4.11	0.98	high

Service Quality	Mean	SD	Meaning
concreteness	4.09	0.97	high
confidence building	4.13	0.96	high
Total Average	**4.10**	**0.97**	**high**

From Table 4, it was found that mean and Standard Deviation of opinions towards service quality in 5 dimensions were in high level. When considering on each dimension, it was found that opinion towards confidence building was in the highest level with mean of 4.13 followed by opinion towards sympathy with mean of 4.11, opinion towards response to service demands and concreteness with mean of 4.09, and opinion towards reliability with mean of 4.08, respectively.

Table 5 Mean and Standard Deviation of Opinions towards Organizational Quality Management

Organizational Quality Management	Mean	SD	Meaning
command	4.01	1.03	high
planning	3.99	1.03	high
organizational management	3.99	1.03	high
coordination	3.98	1.03	high
control	3.99	1.01	high
Total Average	**3.99**	**1.03**	**high**

From Table 5, it was found that mean and Standard Deviation of opinions towards organizational quality management in 5 dimensions were in high level. When considering on each dimension, it was found that opinion towards command was in the highest level with mean of 4.01 followed by opinion towards planning, organizational management, and control with mean of 3.99, and opinion towards coordination with mean of 3.98, respectively.

Results of Study on Relationship between Factors on External Environment, Characteristics of Entrepreneurs, Service Quality, Organizational Quality Management and Success of Second-Hand Car Business

Table 6 Correlation Coefficient between Factors Affecting to Success of Second-Hand Car Business

Factor	X_1	X_2	X_3	X_4	Y
X_1	1				
X_2	.846**	1			
X_3	.693**	.838**	1		
X_4	.741**	.881**	.879**	1	

Factor	X_1	X_2	X_3	X_4	Y
Y	.766**	.843**	.818**	.797**	1
Mean	3.91	4.05	4.10	3.99	3.98
SD	0.81	0.86	0.89	0.94	0.85

**$p < 0.01$

Note: External Environment (X1), Characteristics of Entrepreneurs (X2), Service Quality (X3), Organizational Quality Management (X4), Success of Second-Hand Car Business (Y)

From Table 6, it represented that factors affecting to success of second-hand car business had relationship with one another with statistical significance at 0.01 and correlation coefficient was ranged from .693-.881. Variable with the highest level of correlation coefficient and success of second-hand car business was characteristics of entrepreneurs at 0.843 followed by quality service at 0.818, organizational quality management at 0.797, and external environment at 0.766, respectively.

Results of Prediction on Success of Second-Hand Car Business based on Factors on External Environment, Characteristics of Entrepreneurs, Service Quality, and Organizational Quality Management by using Enter Multiple Regression Analysis

The researcher analyzed on factors on external environment, characteristics of entrepreneurs, service quality, organizational quality management, and success of second-hand car business for predicting success of second-hand car business. The results of this analysis were shown in Table 8.

Table 7 Multiple Correlation Coefficient of Prediction on Factors Affecting to Success of Second-Hand Car Business

Factor	b	S.E.	Beta	t	Sig.
(Constant)	.235	.109		2.158	.032
External Environment (X_1)	.215	.048	.206	4.480	.000
Characteristics of Entrepreneurs (X_2)	.343	.067	.346	5.154	.000
Service Quality (X_3)	.366	.051	.383	7.167	.000
Organizational Quality Management (X_4)	.002	.056	.002	.034	.973

$R = 0.874$, $R2 = 0.765$, Adjust $R2 = 0.762$, S.E.est = 0.41, F = 320.896, ** $p < .01$

From Table 7, it was found that predictive power of 4 factors affecting to success of second-hand car business revealed that there were 3 factors that could predict success of second-hand car business with statistical significance at 0.01, i.e., factors on external environment, characteristics of entrepreneurs, and service quality. These 3 factors could predict success of second-hand car business by 75% with standard error of prediction ± 0.41.

Conclusion and Discussion

From studying on factors on external environment, characteristics of entrepreneurs, service quality, and organizational quality management affecting to success of second-hand car business, it was found that all factors and dimensions were in high level. When considering on each factor, it was found that success of second-hand car business emphasized on learning and organizational growth in the highest level. For factor on external environment, technology was emphasized. For characteristics of entrepreneurs, innovative capability was emphasized. When considering on service quality, confidence building was emphasized in the highest level whereas command was emphasized in the highest level for organizational quality management.

For study results factors affecting to success of second-hand car business had relationship with one another with statistical significance at 0.01 and correlation coefficient was ranged from .693-.881. Variable with the highest level of correlation coefficient and success of second-hand car business was characteristics of entrepreneurs at 0.843 followed by quality service at 0.818, organizational quality management at 0.797, and external environment at 0.766, respectively. As a result, second-hand car entrepreneurs should emphasize on application of innovation to operations with website development and usage patterns of website in order to enable customers access and use website easily. In addition, additional knowledge should be sought until expertise and skills on business operation were obtained. This was consistent with the research of Wanwisa Chokeprom-anan et al. (2015) who studied on characteristics of entrepreneurs affecting to success of business operation of entrepreneurs. The results of this research revealed that characteristics of entrepreneurs on competitive aggressiveness and attention to success had positive influence on success of business operation.

If considering Prediction on Success of Second-Hand Car Business predictive power of 4 factors affecting to success of second-hand car business revealed that there were 3 factors that could predict success of second-hand car business with statistical significance at 0.01, i.e., factors on external environment, characteristics of entrepreneurs, and service quality. These 3 factors could predict success of second-hand car business by 75%. Therefore, to make second-hand car business successful, it must emphasize on external environment regarding technology. For characteristics of entrepreneurs, innovative capability should be emphasized. For service quality, confidence building should be emphasized in the highest level. This was consistent with the research of Gupta and Mirchandani (2018) who checked success factors of entrepreneurs of SMEs. The results revealed that personal and environmental factors as well as government support had importance and positive effect on success of SMEs.

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A Design and Development of Recycling Business Application for
a Digital Entrepreneurial Society

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Abstract

The objective of this study is to investigate the operational procedures of a waste recycling business, from receiving offers from customers to the collection of waste. The research involved studying operating procedures, flow charts, operational process charts, cause-and-effect diagrams, and 5W 1H analysis to identify opportunities for improvement. Results showed that specific work procedures for staff collecting waste from customers were complicated and redundant, while accounting staff faced challenges in recording data, calculations, and summarizing waste types. The study developed an application using ECRS principles and industrial engineering techniques to optimize operational efficiency. The application uses the AppSheet program to link the database with Spread Sheet, an online storage system. The system can record purchases, calculate transactions, create receipts, and send notifications via Line and E-mail programs to relevant parties within the organization.

Keywords: 1) Waste Recycle Business 2) Application 3) Digital Entrepreneurial Society 4) Operational Procedures

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Introduction

Currently, urban communities are expanding rapidly, leading to a shift in lifestyles from agrarian to urban societies, driven by both economic and social factors. This expansion has resulted in a rise in the number of businesses and homes, as well as an increase in the latent population due to migrant workers coming to work in these areas. Additionally, the public's consumption habits favor greater convenience, including online ordering services that result in a significant amount of plastic waste from food packaging. Furthermore, tourism has been promoted, exacerbating the problem of residual waste in both commercial and residential areas due to inadequate waste management practices (Pollution Control Department, 2021)

According to the Pollution Control Department's statistics on municipal solid waste, hazardous waste, and hazardous substances, the amount of solid waste generated in the country was 1.5 million tons in 2015. By 2019, the amount of waste had increased significantly to approximately 28.71 million tons, representing to grow by 3 percent increased from 2018. Furthermore, in 2019, there were efforts to improve the management of solid waste, with municipal solid waste being sorted at the source and recycled, accounting for 44 percent of the total amount of solid waste generated, or approximately 12.52 million tons.

Additionally, 34 percent of the waste, equivalent to 9.81 million tons, was accurately disposed of through proper sorting and utilization methods. According to the announcement of solid waste management as a national agenda, the government has been encouraging sorting mechanisms to ensure that waste is recycled as much as possible. This has resulted in an increase in the amount of waste being utilized (Department of Business Development, 2022)

Both global and national contexts, agencies campaign for people to adopt the 3R (Reduce: Reuse: Recycle) principle to decrease the amount of waste and conserve limited natural resources. One of the most popular waste reduction strategies is to encourage the recyclable materials separation returned into industrial systems, where they can be repurposed into other products, thereby reducing waste generation. The recycling separation campaign remains a challenge for all departments and waste generators as there is still a gap between educating people on proper waste separation and raising awareness of their social responsibility. Thus, the research team is proposing the use of digital technology to develop a waste trading system that can be used to incentivize proper waste separation and promote positive waste management behavior.

Related theories and research

This research applies to industrial business tools. Various and wasted reduction with ECRS principle to develop an application for a recycling business, details are as follows:

Work education and time study

Operational process hearts (Kanjanapanyakom, 2010) are tools used to record data. They

include subtitles and symbols to indicate the details of procedures, supported to clearly visualize the entire process from the beginning till the end. By doing so, the operational process flow charts can represent how to be involved in the work process development and improvement. Rijiravan-ich (2009) analyzes the flow of raw materials or parts, as well as the movement of employees and equipment during the process. These charts indicate five standard symbols, as shown in Figure 1, to represent the various activities involved.
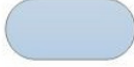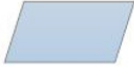
Symbol	Name	Function
	Start/end	An oval represents a start or end point
→	Arrows	A line is a connector that shows relationships between the representative shapes
	Input/Output	A parallelogram represents input or output
	Process	A rectangle represents a process
	Decision	A diamond indicates a decision

Figure 1 Standard process symbols

Source : https://www.smartdraw.com/flowchart/flowchart-symbols.htm

Cause and effect diagrams

Cause and effect diagrams used to analyze the various causes behind a particular problem, and how they related to each other. These diagrams are divided into two main parts: the fish header, which represents the problem being analyzed, and the herringbone, which branches out to show the various causes behind the problem. Both the main causes and the sub-causes are linked together in the diagram, as shown in Figure 2 (Saenphakdee, 2021).
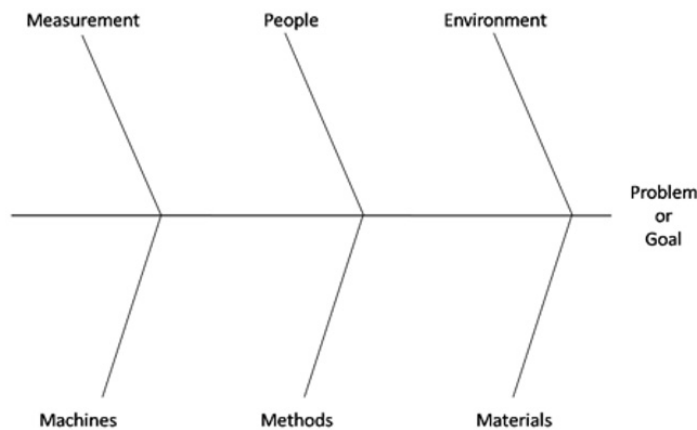
Figure 2 Cause-effect diagram

Source : https://www.spcforexcel.com/spc-blog/what-cause-and-effect-fishbone-diagram

Analysis principles - 5W 1H

The 5W 1H analysis is a questioning technique (Saenphakdee, 2021) that aims to gather more information about a workflow. It is a tool that helps in finding facts as a basis for making decisions, and it enables the identification of causes and determination of solutions. The technique also assists in adjusting the efficiency of operations by using a setting technique. The 5W 1H analysis includes the following questions: What (what is being done), Who (who is doing it), Where (where it is being done), When (when it is being done), Why (why it is being done), and How (how it is being done).

Reducing waste with ECRS principles

Waste refers to what happens but does not cause (Akaraprathompong, 2009). There is an added value to the process, of which there are seven wastes. It consists of 1) overproduction 2) waiting. 3) Unnecessary movement 4) Unprofitable operation 5) Excessive storage of goods 6) Unnecessary movement 7) waste. The seven wasteful disposal is disposal. Wasteland and continuous improvement of quality in production process or how many working processes to add performance for that activity. The ECRS principle is a methodology that aims to reduce waste in the operational process. It comprises the following four steps:

Eliminate: This step involves identifying and eliminating any unnecessary activities, processes, or resources that do not add value to the final product or service.

Combine: The combined step involves merging similar activities or processes to reduce duplication and streamline the process.

Rearrange: The rearrange step involves reorganizing the process flow to minimize waste and improve efficiency.

Simplify: The simplify step involves finding ways to simplify complex processes, making them easier to understand, manage, and execute.

By following the ECRS principle, organizations can identify and eliminate inefficiencies in their processes, reduce waste, and improve productivity.

The researchers utilized a variety of theoretical principles and industrial engineering tools mentioned above and employed the AppSheet program to develop applications for recyclable waste business.

AppSheet Program

AppSheet is an application development platform that allows users to create custom apps with minimal coding experience. It offers features like those found in enterprise office software and can be used in various organizational settings. These include resource planning (ERP), documentation, bookkeeping, employee satisfaction data collection, and stock measurement. Sales tracking for marketing departments can now be accessed through a web browser on smartphones, tablets, and desktop computers. This feature is made possible through AppSheet, which allows users to create databases using spreadsheets such as Google Sheets or table with this functionality,

teams can easily track and analyze sales data from anywhere and on any device, providing greater flexibility and efficiency in the sales tracking process. The waste business is supported by the application development process, which takes into consideration the context and appropriateness of employee work to ensure that the developed apps and functions are as effective as possible. By prioritizing the needs and workflow of employees, the application can better streamline processes and improve productivity for the waste business.

Related Research

Iklil (2021) conducted research on designing and developing a production information system for a farmers group using AppSheet. The study aimed to create an application that could input and predict harvests, report planting and harvesting data, and manage timing for various departments. Results from tests conducted by individual farmers showed that the application was user-friendly, visually appealing, and met the user requirements.

Harraz (2018) developed an application using AppSheet for one of Egypt's largest retail companies. The application was designed to check the availability of retail shelves and update the information to managers and employees involved. The application allowed for online access to inventory information and connected data through Excel sheets, increasing work efficiency, and reducing the cost of purchasing on-premises management aids.

It is evident that the development of programs using AppSheet has become increasingly popular in various industries, including agriculture and trade. These programs have been designed to improve work processes, resulting in enhanced efficiency and cost reduction. As such, AppSheet has become widely accepted and well-worked in these industries.
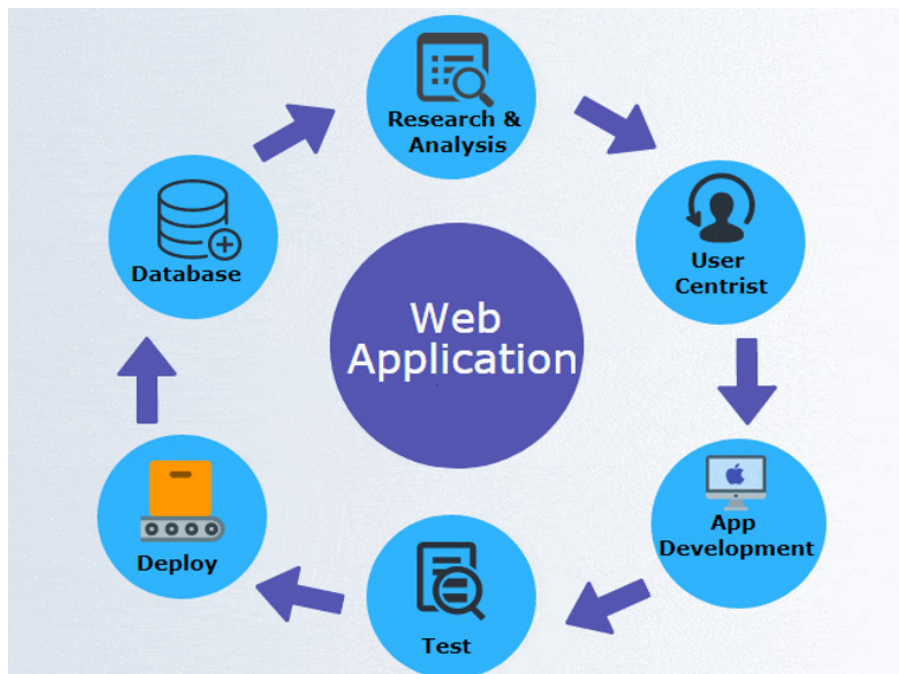

Figure 3 Web application development

Source : https://www.educba.com/what-is-web-application/

Research Procedures

The research procedures included a study of the operation process of the recycling business and a survey of the current problem condition of the waste business. These activities aimed to identify the reasons for inefficiencies in the operational process and to determine ways to improve work efficiency.

Statement of the Problem

The research involved a study of the operational process of a recycling business. This was done by monitoring the performance of employees within the waste buying business, starting from the process of receiving waste offerings from customers, through to the operation of accounting staff who monitored and recorded the amount of waste purchased. Additionally, the researchers observed the department employee who went out to buy waste from customers, made receipts, and sent money to customers. Based on the study of operational processes, a step map can be written.

The study of the process map of the recycling business, as shown in Figure 3, led to an analysis with a diagram that illustrated the cause and effect of managing the store's operation system.

The researchers identified the primary cause of the problem, which had the following characteristics:

1. Controllable: The cause was within the control of the organization and could be addressed through management intervention.

2. Operational inefficiency: The case study business lacked a proper data management system, which resulted in redundant work by employees.

3. Identified through monitoring and studying: The researchers observed and analyzed the operational processes of the waste buying department and accounting staff.

4. Redundant and defective work: The researchers found that staff in these departments were performing redundant and defective work in some steps, leading to inefficiencies in the overall system.

Application Design and Development

To improve the work processes in the waste business, the researchers conducted an analysis of the operating procedures and case studies and applied ECRS principles. The following steps were taken to design the functionality of the application.

Application Development

The application was designed to streamline the recording of various data related to the waste business operations. The data receipt flowchart for the application was developed to facilitate the recording of data.

The main components of the application were designed to act as a database, linking the relevant data to be displayed in different parts of the application. These components were carefully structured to ensure that data could be easily accessed and displayed as needed.

Application Database Relationship Design

The chart of application database relationships that will store data in various components to be used as a database within the application. The chart comprises interrelated parts for data collection and parts solely for storing data. The component data is classified into three parts:

1. Personal database: Used for recording customer and employee information.

2. Recyclable waste database: Used for determining the price of various types of waste and logging garbage purchases.

3. Result database: Used for displaying all receipt information.
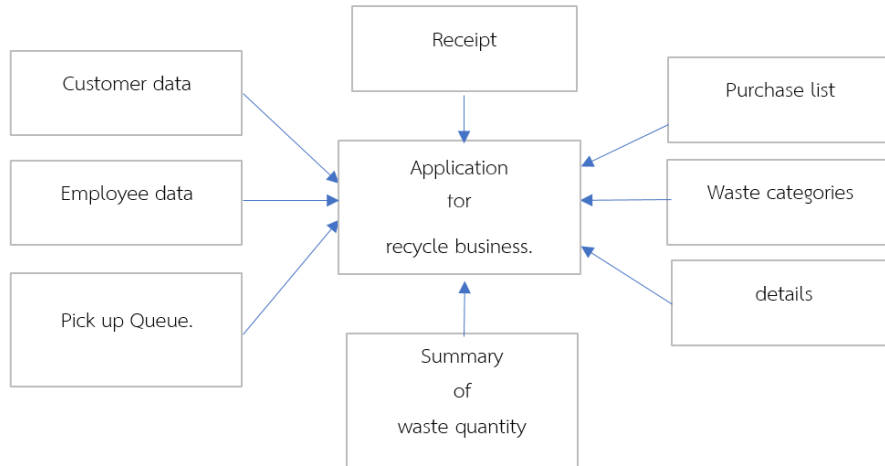

Figure 4 User Interface Design

The user interface of the application was designed to be accessible both on the website via a computer system and on smartphones, supporting both Android and iOS operating systems. The application can be accessed by the developer by sending a link to install it on a smartphone and installing AppSheet to allow access to the application. This section specifically describes the display of the application usage on smartphones, which are primarily used by employees working inside the waste business. The user interface was designed to be user-friendly, intuitive, and optimized for mobile devices.

Example for the development of recycling business applications

Figure 5 User Interface Design of recycling business applications

Digital entrepreneurial society

The development of recycling business applications is significantly related to a digital entrepreneurial society because of many reasons. Firstly, it helps students to cultivate their knowledge in doing recycling business, such as trading plastic water bottles from their daily consumption from the starting point until the end process. They have individually learnt from the real tools. Not only cultivating knowledge but also gaining new experiences for entrepreneurial skills before their graduation is also included. They have work as teams to finish their variety of tasks during the trading activities. Furthermore, this application crucially meets their lifestyles and their needs because it provides them with high and convenient accessibility. According to the survey from the recycling trading with 719 university students collected between December 2022 and February 2023, the result demonstrates that they all used online communication channels, especially via E-mails, the Facebook Pages, and the official LINEs more than 4 years to fulfill their interests. In addition, it is found that 624 student participants (473 survey participants, 41 interviewees, and 10 informal conversational respondents) said that they would preferably use a trading application if it can close the gaps of the weak points from other online platforms whether it's on the user side and the operation side.

Conclusion

In conclusion, the design and development of the application for the recycle business was successful in addressing the operational inefficiencies identified through the analysis of waste business procedures and case studies. By applying ECRS principles and carefully designing the application's functionality, database relationships, and user interface, the application can streamline data recording and reduce redundancy and defects in the work processes of the waste buying department and accounting staff.

The application can be accessed both on the website via a computer system and on smartphones, supporting both Android and iOS operating systems. This allows employees to easily record and access data while working inside the waste business, improving their productivity and efficiency.

Overall, the application provides an effective solution to improve the operational processes of the recycle business, and the careful design and development process ensures that it is user-friendly and optimized for mobile devices.

In addition, the evaluation of economic digital values was applied to implement the direction of area-based development.

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