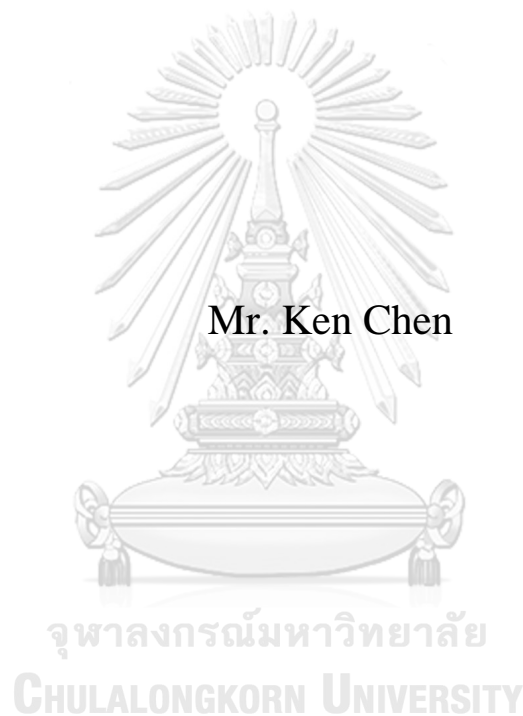Effects of E-commerce Trend on Firm Performance of Thailand Retail Industry: a case of Berli Jucker Public Company Limited

Mr. Ken Chen

An Independent Study Submitted in Partial Fulfillment of the Requirements
for the Degree of Master of Arts in Business and Managerial Economics
Field of Study of Business and Managerial Economics
FACULTY OF ECONOMICS
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Independent Study Title	Effects of E-commerce Trend on Firm Performance of Thailand Retail Industry: a case of Berli Jucker Public Company Limited
By	Mr. Ken Chen
Field of Study	Business and Managerial Economics
Thesis Advisor	Associate Professor CHAIRAT AEMKULWAT, Ph.D.

Accepted by the FACULTY OF ECONOMICS, Chulalongkorn University in Partial Fulfillment of the Requirement for the Master of Arts

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จุฬาลงกรณ์มหาวิทยาลัย
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เคน เฉิน : -. (Effects of E-commerce Trend on Firm Performance of Thailand
Retail Industry: a case of Berli Jucker Public Company Limited)
อ.ที่ปรึกษาหลัก : ชัยรัตน์ เอี่ยมกุลวัฒน์

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สาขาวิชา	เศรษฐศาสตร์ธุรกิจและการจัดการ	ลายมือชื่อนิสิต ....
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In this study, the key purpose is to investigate the relationship between e-commerce trend and firm performance of retail industry in Thailand. Objectives of this research are explored as following: to investigate the effect on BJC's both financial and market performance of e-commerce trend in Thailand; to study the relationship between e-commerce trend and Thailand domestic market performance; and to compare and contrast the effects of e-commerce trend on BJC's firm performance and market performance. The scope of this study focused on Thailand domestic retail market; and BJC as a case study since it is a leading retail industry in Thailand. Data were collected from secondary sources, and recent ten years related data were collected. Main method of this research will be regression analysis to combine each factors of e-commerce trend and firm performance. The findings of this study wound benefit Thai retail firms to adjust online marketing strategies to adapt transformation of e-commerce trend. The results of this study would also help Thai retail firms to decide how to improve their online payment system to compromise e-commerce trend and inspire managers of Thai retail firms to consider their online platform or other cooperation with existing platform to improve their sales.

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Executive Summary

As e-commerce trend has become an evitable fact under current economic environment, industries in developing countries like Thailand may be affected somehow. From our study, we have investigated the effects of e-commerce trend on retail industry in Thailand, taking BJC as a case to demonstrate the effects in micro and macro aspects.

Based on our research result, we find out that as the increasement of online payment transaction during recent years, financial-based firm performance of BJC which measured by ROA in our study has positive relationship with online payment transactions. It indicates that when online transferring has become more and more popular under e-commerce trend, retail industries like BJC can benefit from this convenient and increasingly popular payment function. It may shorten turn over period for corporate during operating process, or ease corporates' financing process. That's can be the reason why online payment transactions have positive effects on firm's financial performance. In addition, our study result indicates that mobile phone banking volume have negative relationships with firm's market performance which measured by Market/Book ratio of BJC. As the popularity of smart phone, major populations are the users of a mobile phone, and mobile banking services has become a general way to deal with basic banking operations. Revenue dose transfer to BJC as the increase convenience of mobile banking, which may indicate that payment system in BJC did a good job to encourage customers pay by their mobile banking system.

Depends on analysis results, only online payment transactions have relationships with retail industry sales which measured by retail sales index in Thailand. In addition, online payment transactions have positive effects on retail sales index. Both internet users and online payment transactions have close relationships with e-commerce development in recent years, and it refers that retail industry in Thailand benefits from the internet development improved payment system which means people can adopt online services to complete their retail consumption process; and this improvement stimulates people's incentives or ease the process when they consume. However, internet users is still negative to retail industry sales index from out study, which may because retail industries in Thailand was being through a period of transformation under ecommerce environment.

According to study results, security market indicators which measures by SET index has statistical relationships which internet users and mobile banking volume as e-commerce trend indictors in our study by hypothesis testing. The result is similar with retail industry, mobile banking volumes have positive relationship with market indicators, whereas, internet users have negative relationship with market indicators. It demonstrates that e-commerce trend indicators do have credits on security market during recent years, and SET index increasement benefits from e-commerce trend profits. E-commerce trend has not only influence on market performance, but on certain industries and even for specific corporates. On the other hand, internet users have negative effects on market index of SET, which is not respond to our general expectation. However, when we omit other variables of e-commerce trend indicators, mobile banking become positively affects market index, which can be explained by the correlation among variables of e-commerce trend.

Comparing results from BJC as an individual corporate and industry and market index relationships with e-commerce trend indicators, we can conclude that e-commerce trend do have relatively positive influence on retail industry in Thailand. However, for some specific firms, e-commerce may harmful to their traditional way of operation since it is new and firms still need time to figure out the way to adapt it, which can be explained by the negative effects of internet effects on BJC's market-based firm performance, retail industry sales index, and security market index. Despite of it, online payment transaction have positive influence on both financial-based performance and retail industry sales index in Thailand, and mobile banking volume have positive influence on market-based performance of BJC and security market index, which would influence BJC as a part in the industry so for market. Somehow, the study is generally consistent along firm, industry and market, so we can acquire information that how the e-commerce trend in external economic environment affects industries in Thailand.

This study takes BJC as a case to research on retail industries in Thailand; and does not take any other corporates as reference. Thus, the results are only based on BJC's firm performance and roughly compare with industry index and market index. Furthermore, the data collection is only retrieved from recent ten years quarterly data; and has not worked on more precisely time period. So, the results can only reflect seasonal changes of e-commerce trend and firm, industry and market indicators; and cannot reveal daily or monthly changes among variables.

1 Introduction
1.1 Background and Significance of the Problem
1.1.1 E-commerce Trend

Date back to 25 years ago as the first online book was ordered from Amazon, e-commerce industry has created more than 2 trillion dollars around the world 20 years later (Mohsin,2020). As the increasingly widespread usage and faster transfer speed of Internet, e-commerce market becomes a "pure land" with low market saturation for many business fields. At the same time, competitions among the market arise dramatically. E-commerce trend become a key consideration when a firm decides to share a piece of cake in this upcoming 4th industrial revolution. Online shopping as one of the most frequent online activities, its sales volume from 1.3 trillion dollars in 2014 will be tripled in 2021(Clement, 2020). Besides, arising environmental issues evokes consumers' awareness towards a more environmental-friendly consuming style which will boost the development of green consumerism. In addition, sales made by mobile devices increased 15% in 2016 and there will be 73% e-commerce sales from mobile devices by 2021 (Loesche & Richter, 2018). Not only that, popularity of social media advertising, increasingly utilizing of AI and AR technology, more matured online payment system, and customized shopping experience have inevitably become the trend of e-commerce in the future (Mohsin, 2020).

1.1.2 Thailand Retail Industry and E-commerce

From a report of Bangkok Post, it says Thailand retail industry is experiencing an unprecedented technology transformation and retailers have a great challenge to adapt into this change of shopping mode (CBRE, 2019). On the contrary, it could be an opportunity for companies in Thai retail industry that acquiring a new status in the market by first -moving advantage. As the changes of consumers' behavior, new retail mode has emerged, and conventional retailers have to improve their style of selling and adjust their investment strategies to information technology in order to cater customers' demands. By observing CEIC data, Thailand retail sales index (RSI): at 2002 price has increased from 150 in 2009 to 280 in 2019 which almost doubled within these ten years (2020), and it may benefit by increasing of household income and their expenditures annually. CEIC data shows that Thailand household income per capital increased from 2122 dollars 10 years ago to 3322 dollars till now and expenditure per capital increase from 2164 dollars 10 years ago to 2697 dollars till now (2020). It is undoubtable that retail industry in Thailand take a huge proportion in national development, and the competitions between retailers become fiercer.

As e-commerce have significant influence on consumer behavior which can provide consumers more choices which physical store cannot achieve, it is a challenge to traditional retailers to balance the upcoming trend and firm's development (CBRE, 2019). From the data of CBRE, by the first quarter of 2019, the total supply of retail in Bangkok was 7.8 million square meter which increased 3.7% from last year, and most of the supply located in developed downtown Bangkok. It implies that competitions among retail industry will be more dramatical in the future. Based on the data from Electronic Transaction Development Agency (ETDA), Thailand e-commerce value has reached 3.2 trillion

baht in 2018 and it is expected to increase by 20% in 2019; from the report of Digital Economy and Society Ministry, Thailand's digital economy will become vital in every industry and reach 25% of GDP by 2027. In addition, China's largest e-commerce company Alibaba and Tencent has invested billions of dollars to develop omnichannel ecosystem in South East Asia region. All of these evidences show that e-commerce trend has played an essential role in Thailand economy, especially for retail industry.

1.1.3 BJC Background and Market Position

Berli Jucker Public Corporate Limited (BJC) was founded in 1882. As one of the leading companies in Thailand, BJC has evolved from a supply chain and distribution powerhouse into a leading comprehensive retail platform in ASEAN countries with strong capability of manufacturing and distribution. The largest proportion of revenue structure of BJC is from their modern retail supply chain. BJC 2018 annual report implied that since Big C Supercenter Public Company Limited (Big C) was acquired successfully in March 2016, they are capable to access to retail customers directly, and to create a vertically integrated supply chain and strengthened their position significantly as one of the top corporates in ASEAN area (2019). Also, they demonstrated that they have constructed strong relationships system over decades to centuries, "with their customers, suppliers, employees, business partners, shareholders, governments, and society as a whole" (2019). Additionally, so as their strong business connections in Thailand, all parts of BJC's supply chain will be developed continually to enhance their achievement in Southeast Asia region (2019).

BJC controls 132 Big C Supercenters as a hyper market in Thailand till 2018 which targeting to mid-to-low income customer segment with goods and services in the mall. Also, BJC have 15 Big C Extra stores which provide food in cities of Thailand. Not only that, BJC owns 60 Big C Markets which are operated as a supermarket, 1 Big C food court in Bangkok, 783 Mini Big C as convenience stores and 140 Pure drugstores in Thailand. More important is that e-commerce is one of the omni-channel strategies of BJC, their provide customers "click and collect" services online, people can order grocery from websites and get it by delivery or pick up. Cooperation with Shopee which is the largest online shopping platform in Thailand, provides BJC an additional platform to exhibit their products. Partnership with Happy Fresh and Honest Bee, both are leading grocery online marketplace in Thailand, provides customers more accessibility to Big C shopping online platform as well.

In Thailand retail market, there are three major players which are Big C, Tesco Lotus and CP ALL/ Makro. In hyper market segment, the biggest competitor of BJC is Tesco Lotus and some overlapped of Cash & Carry operator with Siam Makro. In supermarket segment, the major competitors include Tesco Lotus, Tops, MaxValu, Home Freshmart, Villa Market and Foodland. In small store segment, main competitors are CPALL, Tesco Lotus Express, Tops Daily and MaxValu Tanjai, FamilyMart, and Lawson108.

1.2 Research Question
The research question of this paper is that what is the impact of e-commerce trend

on firm performance of retail industry in Thailand and take BJC as a case study?

1.3 Research Objectives
1. To investigate the effect on BJC's both financial and market performance of e-commerce trend in Thailand.
2. To study the relationship between e-commerce trend and Thailand domestic market performance.
3. To compare and contrast the effects of e-commerce trend on BJC's firm performance and market performance.

1.4 Scope of Study
This study is to investigate the effect of e-commerce trend on firm performance of retail industry. BJC as a leading corporate in retail industry of Thailand will be taken as a case study; and this study will focus on Thai domestic market only. Data will be collected from secondary sources, and recent ten years related data will be collected.

Because e-commerce trend is a combined concept, this study will measure e-commerce trend by multiple index including online sale, online payment usage and mobile phone usage. The data of online sale volume will be collected from secondary source in Thai Baht; online payment usage will be measured by e-wallet accounts number, e-payment volume and percentage in payment transactions; and mobile phone usage will be measured by user amounts and its percentage in population. Firm performance will be measured by both accounting and market-based measures. Accounting-based measures include ROA, ROE, ROS and PM, and market-based measures include Tobin-Q, market-to-book value (MTBV) and annual stock return (RET). Most of those data will be collected from SET and financial report of BJC.

Main method of this research will be multiple regression analysis to combine each factors of e-commerce trend and firm performance. In order to analyze their relationship, both e-commerce trend and firm performance will be defined by several measures and the key is to find out the effects of online sale, online payment usage and mobile phone usage on firm performance respectively and then combine them together to find out the results. This study will set up hypothesis and check out the significance of the effects by Gretl. After receiving results, demonstrate conclusion for results and illustrate the importance of e-commerce trend on retail industry in Thailand. Recommendations to future study and existing players in industry will be giving.

1.5 Possible Benefits
1. The findings of this study wound benefit BJC or other similar companies to adjust online marketing strategies to adapt transformation of e-commerce trend.
2. The results of this study would help Thai retail firms to decide how to improve their online payment system to compromise e-commerce trend.
3. The study would inspire managers of Thai retail firms to consider their online platform or other cooperation with existing platform to improve their firm reputation.

2   Literature Review
2.1   Theoretical Foundation
2.1.1 Definition of E-commerce and Overview

From academic view, the definition of e-commerce is a scholar utilization that related to businesses and automated system by using telecommunication, internet connection or other electronic approach (Ye & Ma, 2017). E-commerce helps business players including customers, suppliers and managers to reduce the cost and improve the character of goods and services by utilizing digital information transactions of products, services and payments among individuals or organizations. Because e-commerce enabled companies to complete business processes through internet and online services, it pushes enterprises to establish an competent business model by consolidating business processes, application systems and organizational structure (Ye & Ma, 2017).

From business view, there are two acknowledgements of e-commerce: one is electronic commerce as the narrow sense of definition, and electronic business as the broad sense definition. Electronic commerce refers to typical transactions that using any interconnected networks like telecommunication, broadcasting, TV and mobile networks to complete the process of selling information, products and services (Ye & Ma, 2017). Diversely, electronic business means any economic activities including commerce, administrative operations, logistics and other organizational administrative activities which facilitate electronical connections like computers and telecommunication technology and information technology (Ye & Ma, 2017).

Figure 2.1. Definition of E-business.
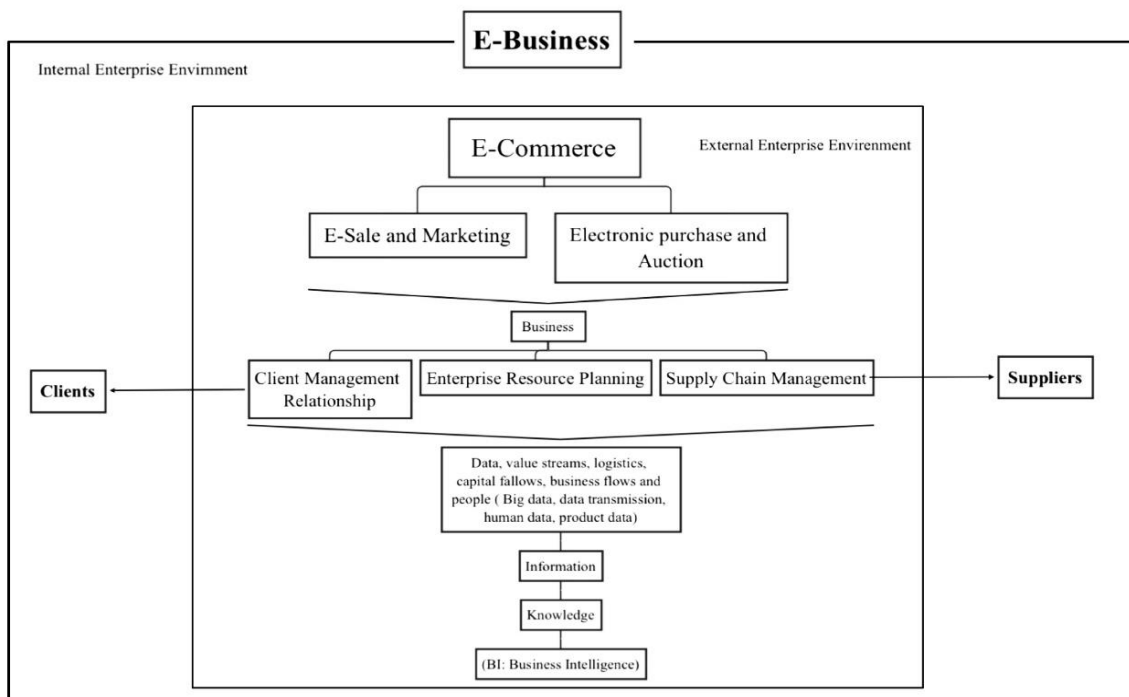
Source: Ye, Q. and Ma, B. (2017), "Connotation Of E-Commerce"

Based on both academic and business views, the e-business concept has narrow

and broad definitions. The narrow definition is about business activities which have close relationship between business and internet or other internet related networks. In addition, the narrow definition of e-business is included in the broad definition of e-business, along with business intelligence (BI), customer relationship management (CRM), supply chain management (SCM), enterprise resource play (ERP), and SoloMo business models (social, local, and mobile) (Ye & Ma, 2017). Both narrow and broad definition of e-business and their relationships are shown in Figure 2.1.

In October 2018, Thailand formally launched Thailand 4.0 initiative. It focuses on technological innovation, reginal competitiveness, and financial empowerments for Thai people among wide categories and various industries (Janio, 2019). International Labor Organization called Thailand 4.0 initiative as "an economic model based on creativity, innovation, new technology and high-quality services" which aim to improve people's living standard (Janio, 2019). Many of its programs and goals obviously support e-commerce market development in Thailand, and the total sell of e-commerce are expected to increase from 1 percent to 5 percent in total retail sales over five years. Especially for Agenda 2, "development of technology cluster and future industries", targeted industries of digital, Internet of Things (IoT), artificial intelligence and embedded technology (Janio, 2019). Development of robotics technicians and IoT specialists can motivate and automate logistics field including picking and packing, labelling, and delivery, which benefit e-commerce sellers and buyers by shortening delivery time, improving parcel tracking accuracy and reducing risks of lost and stolen packages (Janio, 2019). In a word, Thailand 4.0 initiatives lubricate e-commerce development by a national level policy which create a long-term vision for e-commerce success in Thailand.

From the report of Electronic Transaction Development Agency (ETDA), the value of Thai e-commerce was 2.7 trillion baht in 2017 which grew from 2.5 and 2.24 trillion baht in 2016 and 2015. In 2018 the total value reached 3.2 trillion baht and grew 14 % along this year (2019). In ASEAN countries, Thailand is the top growing market in e-commerce development that mostly attributes to change of consumer behavior. From the interview of Bangkok Post, ETDA president Surangkana Wayuparp said that, "the value of e-commerce in Thailand has grown 8-10% per year depends on the data collecting from 2014" (2019).

In addition, based on ETDA study, internet user amount has grown three times in past decades, and there are many Thai-international platform arise to compromise the growing number of internet users. In 2017, there were 16.1 million internet users and grew to 45.2 million in 2018. This evident shows that advancement of technology and communication devices leads to the change of consumer behavior which results in more internet access volume (Leesa-Nguansuk, 2019).

"Online digital marketing has also grown 70% since 2017, with Facebook capturing the bulk of this" said by Suchit, a reporter of Bangkok Post. Digital marketing are widely used by services providers, 92.9% of them use information to create marketing strategies and 85.7% of them use big data to analyze multiple elements in business environment which may influence consumer's decisions, then they can adjust their products distribution accordingly.

Online grocery as the main e-commerce service of BJC retail business from huge

opportunities. Based on the data from Stastita indicate online food and personal care purchase in Thailand is more than half billion dollars in 2018, along with rapid expanding online grocery sector in Thailand. Online grocery purchase increased 30% in 2018 compare with previous year, and Thailand become the top five online grocery growth market in the world. It thanks to Thai's quick adaption to modern grocery retail formats compare with any other Southeast-Asian countries. "Euromonitor and DBS Bank indicated that Thailand will have the largest modern trade grocery market in Southeast Asia by 2021", mentioned by Kemp and Moey (2019).

2.1.2 Measurement of Firm Performance

"Performance measurement refers to the progress of measuring the action's efficiency and effectiveness" (Al-Matari et.al, 2014). Performance measurement is the reference of complicated performance in reality, and it organized performance into symbols which can be indexed in the same situation (Lebas, 1995). Under present business environment, performance measurement is treated more essentially than quantitative and accounting method (Koufopoulos et.al, 2008). Theoretically, performance concept forms the essence of strategic management; empirically, business performance is widely used to construct in most strategy studies to test different strategies and resolve issues; in management, the importance of performance is emphasized by innovation of various solutions towards performance optimization (Al-Matari et.al, 2014). From previous studies, performance measurements are generally categorized into two classification which are accounting-based measurement and marketing-based measurement.

Accounting-based measurement usually be seen as an effective indicator of profitability of company, and comparison between business and standard rate of return equal to the average cost of capital weighted adjusted risk (Al-Matari et.al, 2014). Based on previous studies, accounting-based measurement shows the corporate profitability in short run like return on asset (ROA), return on equity (ROE), profit margin (PM), return on sales (ROS), earning per share (EPS), etc. The highest rate of measure of accounting-based measurement is ROA which takes 46% of sample research, followed by ROE with 27%, and PM with 8%, ROS with 8%.

On the other hand, marketing-based measurement is focusing on expectation field which reflects shareholders' anticipation of firm's future performance based on previous or current performance. In addition, management strategies might adjust their expectation to future performance because of market-based expectation for firm performance (Sanchez-Ballesta & Garcia-Meca, 2007). Most frequent feasible marketing-based measurement are Tobin-Q, Market-to-Book Value (MTBV), Annual stock return (RET), Dividend Yield (DY), Price-Earnings Ratio (PE), etc. When companies marketing-based performance is better than Tobin-Q, it implies that the company has achieved its goal performance, conversely, if the performance less than Tobin-Q, the company need to consider to adjust its strategies to improve short run performance (Al-Matari et.al , 2014).

2.2　Literature Review
2.2.1 Retail Industrial in Thailand

Retailing is a feasible way to observe economic activities since it is directly influenced by consumers' living spending (McGoldrick, 2002). There are various forms of retailing in current economy development, which include traditional retail and modern retail mode. Depends on a market research report of Colliers International Thailand, format of retail has been divided into six categories, including entertainment complex, supporting retail, special store, department store, community mall, superstore, and shopping mall. Among them, shopping mall takes the major part of retailing which takes 60% of market, and along with community mall which takes 16% in market. Figure 2.2 shows the proportion of each forms of retail supply in 3rd quarter of 2019. Occupancy rate of all retail formats is quite high which above 97% on average, and most of projects are fully occupied or have few spaces available to rent in Bangkok region. Figure 2.3 shows the occupancy rate by types in 4th quarter of 2019. From the research department of Colliers, domestic economic trends, exports, tourism policies and increasingly competition of e-commerce are the main factors affects retail business in following year (Taweewong & Dechgitvigrom, 2020).

However, in another market analysis report which from CBRE, the situation of retail industry in Thailand is not that optimistic. Depends on CBRE's report, Thailand's consumer confidence index (CGI) fell 11.1% in the last month of 2019 which reached the lowest level in 68 months. At the same time, overall spending power is shocked by high level household debt which reached 79.1% of total GDP. Malls in Thailand are facing risks from decreasing spending power and increasing e-commerce industry at the same time. Even though modern era retailers are treating the rise of technology and e-commerce trend as an opportunity instead of a risk compare with those who are unable to adapt new environment, retailers who started invested in technology and generate e-business model that combine offline stores and online technology is not sufficient. Using data analysis to create a unique experience to consumers seems like a key to compromise their personalized demand, and data mining, machine learning, and artificial intelligence become the tools. Moreover, electronic payment with upcoming 5G technology may be easy to threat retailers. Retailers have to invest their own business model to embrace e-commerce advantage and focus on offline experience to keep competitiveness simultaneously.

2.2.2 E-commerce in Developing countries

There is no doubt that e-commerce boosts in developing world since 21th century, however, when market receive this huge bonus from e-commerce, there are serious revolutions and adaptions for both government and market. India, as a typical developing country, have a great increasingly developing electronic technology environment for e-commerce business. Previous study from Ray has illustrated the evolution of e-commerce, physical and financial growth of e-commerce, benefits acquired from e-commerce and barriers in booming e-commerce in India (2011). Qualitative methodology is mainly used in this research, along with detailed descriptive analysis. From the first invention of electronic computer in 1946 to over 200 countries' internet connection and 2 billion internet users in 2011, e-commerce development depends on the World Wide Web advancement. Categories of e-commerce can divide into B2B (Business to

Business), B2C (Business to Consumer), C2C (Consumer to Consumer), and C2B (Consumer to Business). Companies involved in e-commerce in India provide services include shopping carts, database programmers, graphic design, Flash design, etc. From the data of internet and mobile association of India, online travel takes 80% market share of e-commerce business in 2010. The growth of e-commerce in India can be measured by e-commerce transactions which grew from 31.38 million dollars in 1999 to 6790 million dollars in 2011. However, by 2011, e-commerce sales of India are so little with 5.6 billion dollars compare with 24.1 billion in China and 90.0 billion in Japan. Thus, when India enjoy the development of Internet and e-commerce benefits, it also confronted of legal system incomplete towards e-commerce. How to effectively manage risk and protect e-commerce companies become a challenge for India as a developing country. The role of government is vital for development of e-commerce in India both domestically and internationally.

There another research refers to e-commerce trend in developing countries which takes Tanzania as an example. This study discussed the Novel framework for Assuring Secure e-commerce transactions in Tanzania (Mlelwa et.al, 2015). This study utilizes case study, interview and questionnaires to investigate the attitude of consumers towards e-commerce and inference of e-commerce situation in Tanzania. All stakeholders in e-commerce activities as the research population, most of interviewers with 67% have positive attitudes to e-commerce, 47% of them have never used online shopping before and the main reason is concern about payment security. Price and convenience are the main factors consumers care about, and service recovery policy is considered the key factors to influence customers satisfaction. Confirmation on orders or purchase and possible online assistance are very important for customers when they are shopping online. As for websites quality and brand, rating, reputation and recommendation, design of websites, functionality of websites and convenience of using are important for a positive attitude to online shopping experience and higher purchase intention. As a result, infrastructure construction is a key to improve internet coverage and appropriate technology and bandwidth can help relieve the limitation of local e-commerce environment in Tanzania. In addition, even most people have positive attitudes towards e-commerce, there is a huge part of them have never tried before which indicates that publicity of e-commerce is required Tanzania. Plus, payment security and trust problem are the main obstacles for consumers to try e-commerce which implies payment problems can be a fundamental issue for start period of e-commerce especially in developing countries. Similarly, financial regulation and legal stipulation problem is common for e-commerce development in developing countries.

2.2.3 E-commerce Adoption and Firm Performance

Previous study from Michael Abebe has studied the relationships between e-commerce adoption and performance of SMEs and researched the moderate effects of entrepreneurial orientation between e-commerce adoption and firm performance (2014). This study designed a questionnaire for owners of SMEs and utilized a moderated regression analysis to test the hypothesis, both hierarchical multiple regression and one-way analysis of variance are adopted to verify the relationships

between e-commerce adoption and firm performance. The data were collected from 55 SMEs in manufacturing and service sectors which located in Texas State from year of 2008 to 2009. This research found that there are positive effects on SMEs' average sales growth rate of e-commerce adoption significantly. Also, entrepreneurial orientation has positive moderate effects on relationship between e-commerce adoption and SMEs' performance. Thus, besides of e-commerce adoption which have positive effects on corporate performance, managers who have higher level of entrepreneurial orientation would enhance this positive effect on firm performance. SME managers' ability as a part of efficiency of firm, their proactiveness, risk-taking skills, and innovational attitudes would strengthen companies' annual sale growth rate once they adopt e-commerce technology to improve corporates.
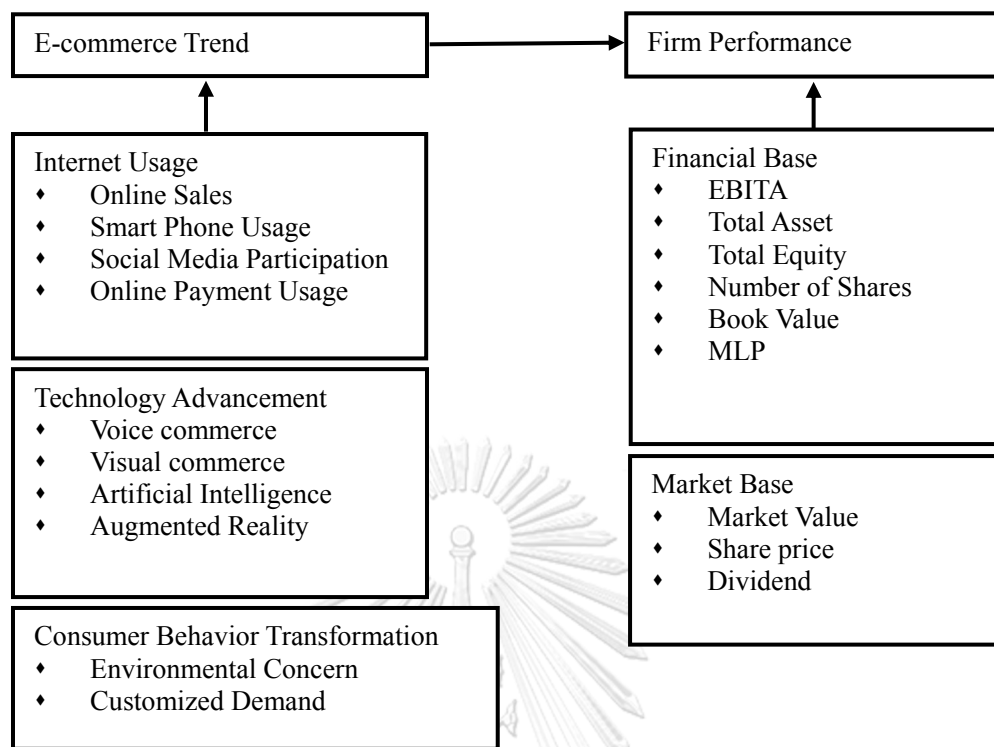
Another research studied the relationship of e-commerce adoption and organizational capacities of hotel sector of tourism industry in Malaysia. This research utilized questionnaires to collect data including indicators of e-commerce business network, e-commerce competency and organization performance from hotel industries in Malaysia (Abd Halim et.al, 2014). Then, researchers conducted stepwise regression analysis including validity and reliability tests, Pearson correlation analysis and descriptive statistics, and multiple regression model to study the factors affect organization performance. The results illustrated that e-commerce business network have significant relationships with e-commerce competency under the e-commerce adoption situation, which means the more the e-commerce adopted comprehensively, the business network will be more complete and can be more efficient in addition. Plus, e-commerce competency has strong effects on organization performance also (Abd Halim et.al, 2014), which indicates that despite adoption of e-commerce, the level of e-commerce competency in an organization can influence its performance. The key is not only adopting e-commerce as a strategy in an organization, but how well the organization can complete e-commerce in the system which can improve business network, then boost organization's performance.

3 Research Methodology
3.1 Conceptual Framework

E-commerce trend supposed to have influence on firm performance under the macro market environment. In addition, e-commerce trend consists with internet usage which can be measured by online sale, smart phone usage, social media participation and online payment usage; technology advancement which can be measured by voice and visual commerce, AI and AR technology; and consumer behavior transformation which measured by environment concern and customized demand. Besides, firm performance will be determined by both financial and market-based factors which can be measured by financial indicators like EBITA, asset, equity, and market value, etc.

Figure 3.1 Conceptual Framework

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┌─────────────────────────┐          ┌─────────────────────────┐
│   E-commerce Trend      │─────────▶│    Firm Performance     │
└─────────────────────────┘          └─────────────────────────┘
             ▲                                    ▲
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Internet Usage
- Online Sales
- Smart Phone Usage
- Social Media Participation
- Online Payment Usage

Technology Advancement
- Voice commerce
- Visual commerce
- Artificial Intelligence
- Augmented Reality

Consumer Behavior Transformation
- Environmental Concern
- Customized Demand

Financial Base
- EBITA
- Total Asset
- Total Equity
- Number of Shares
- Book Value
- MLP

Market Base
- Market Value
- Share price
- Dividend

3.2 Data Collection

3.2.1 Data Summary

Data of internet users will be collected to represent internet generalization in Thailand, the world bank data provide individual using the internet as a percentage of population and population in recent 10 years. Online payment usage will be found in data of Bank of Thailand which measured by payment transaction volume through e-money in thousands unit in every quarter. Mobile banking usage can be collected from use of mobile banking transaction value in billions of baht from Bank of

Thailand in every quarter. Financial performance and market performance of BJC will be measured by ROA which from BJC's financial report, and market/book ratio from Stock Exchange of Thailand. Industry index is represented by retail sales index from data of BOT as 2002 base year. Domestic market indicator is SET index from data of SET.

TABLE 3.1 Summary of Variables			
Variable	**Measurement**	**Source**	**Unit**
Internet Users	Individual using the internet	World Bank	Millions
Online payment usage	Payment transaction volume through e-money	BOT	Millions of transactions
Mobile banking usage	Use of mobile banking	BOT	Billions of Baht
Financial performance	ROA	BJC financial report	%

Market performance	Market/Book Ratio	Yahoo Finance	Times
Industry index	Retail Sales Index	BOT	index
Domestic market indicator	SET Index	SET	index
Source: data collected by the Word Bank, Bank of Thailand (BOT), BJC financial report, Yahoo Finance, and Stock of Thailand			

Internet users measured by individual using the internet in Thailand population, mean value is 24.84 million through 10 years and standard deviation is 9.17 million which indicated a huge deviation of internet users in these years. Online payment usage measures by payment transaction volume through e-money including traditional banking system and non-bank formats. Mean value is 840.301 millions of transactions, standard deviation shows 604.257 which indicates a huge difference through recent years. Mobile banking measures by use of mobile banking data collected by BOT. Average value is 1573.75 billion of baht, and standard deviation is 2051.30 billion baht. Financial performance measures by ROA from financial report of BJC shows the mean of 4.40% and standard deviation 2.15%. Market performance measured by market/book ratio shows the mean of

TABLE 3.2 Variables Description

fin	financial-based measurement as quarterly ROA , 2010 – 2019 (in percentage)
mkt	market-based measurement as quarterly market/book ratio, 2010 -2019
inds	quarterly retail sales index of Thailand as base year of 2002, 2010 - 2019
set	financial market performance as quarterly SET index closed price, 2010 - 2019
users	internet users in Thailand, 2010 – 2019 (in millions)
opay	quarterly payment transactions volume (queries) through e-wallet (in millions)
mob	quarterly value of transactions through mobile banking (in billions of baht)
Source: data collected by the Word Bank, Bank of Thailand (BOT), BJC financial report, Yahoo Finance, and Stock of Thailand	

3.15 and 1.60 times as standard deviation.

TABLE 3.3 Summary Statistics

Variable	Mean	Standard deviation	Maximum	Minimum
Internet users	24.84	9.17	29.45	13.44
Online payment	840.301	604.257	2611.18	261.75
Mobile banking	1573.75	2051.30	6800	23
Financial performance	4.40%	2.15%	8.41%	0.5%
Market performance	3.15	1.60	7.91	0.77
Industry index	219.96	26.45	270.46	164.47
Domestic market indicator	1392.56	267.40	1776.26	787.98

Source: data calculated by the Word Bank, Bank of Thailand (BOT), BJC financial report, Yahoo Finance, and Stock of Thailand

3.2.2 Motivative Graphics
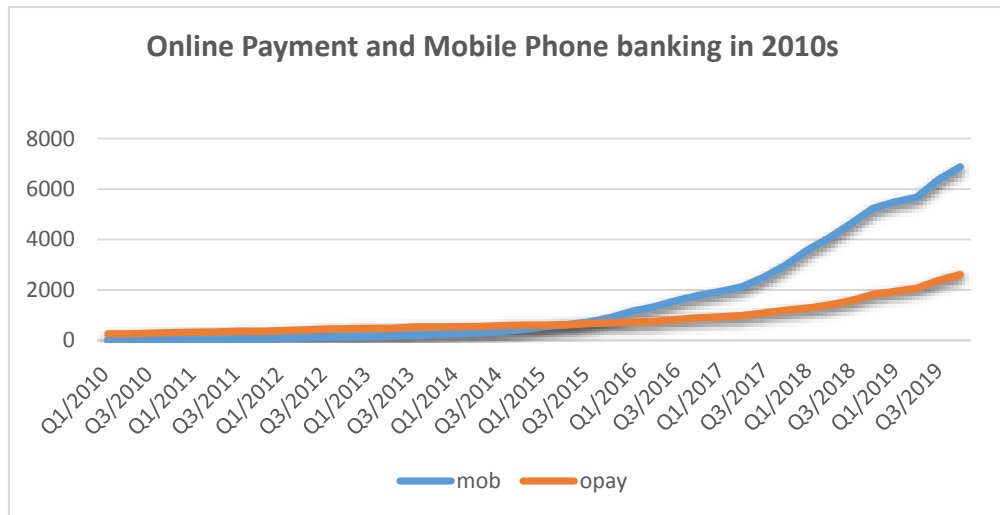
Figure 3.2 Online payment and mobile phone banking in 2010s
Source: data collected by Bank of Thailand (BOT)

From the timeline of online payment transactions and mobile phone banking volume, it clearly shows the trend of e-commerce development in Thailand. From year of 2015, not only online payment but mobile transactions began to have a significant increment compare with previous years. From the shape of the curve which is similar with an exponential curve indicates that the development of online payment and mobile transactions are keep increasing these years. The information behind those data implies the e-commerce trend has become the key commerce trend in Thailand, which may affect every industry in Thailand and may have influence on firm's performance somehow.

Financial and market indicators of BJC which are represented by ROA and Market/Book ratio are presented above; intensive fluctuations can be explained in the graphic. ROA is calculated from Du Pont equation from product of profit
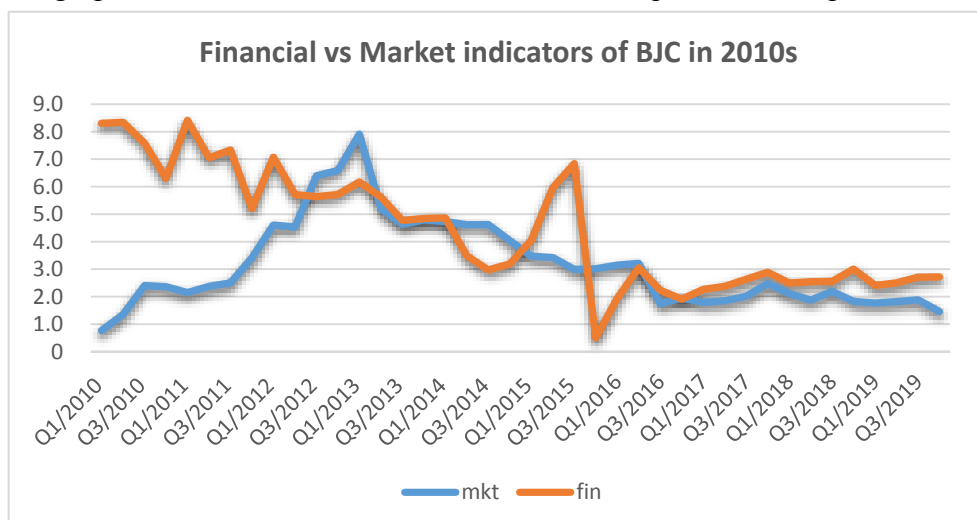
margin and total asset turnover (Brigham & Enrhardt, 2008), was frequent used to assess a company's profitability and used to measure firm's performance efficiently. There is an obvious decreasing trend of ROA of BJC in last decade; and it confronted a huge turbulence during year of 2015. Market/Book ratio indicates the level that investors' willingness to pay compare with the book value, which reflects the expectation of investors towards a company (Brigham & Enrhardt, 2008). Through last decades, Market/Book ratio of BJC reached a peak in first quarter of 2013 and keep decreasing in following years. It stimulates people's arguments that whether traditional retail industries are facing an era of decay or there are opportunities ahead.

Figure 3.3 Financial vs. market indicators of BJC in 2010s
Source: data collected by the BJC financial report, Yahoo Finance.

3.3 Data Analysis

Model 1 financial firm performance and external environment

Financial based firm performance of BJC is measured by ROA from financial report. Model 1 analyzes the relationships between percentage change of financial based firm performance and percentage change of external environment of ecommerce trend which measured by internet users, online payment transactions and mobile banking.

$$\ln(fin) = \beta_0 + \beta_1 \ln(user) + \beta_2 \ln(opay) + \beta_3 \ln(mob) + \varepsilon$$

fin: financial-based measurement as ROA
user: internet users in Thailand in percentage of population.
opay: payment transactions volume through e-wallet in millions of queries.
mob: value of transactions through mobile banking in billions of baht.

Model 2 market firm performance and external environment

Indicators of e-commerce trend are internet users, online payment and mobile banking. Market based measurement of firm performance as market/book ratio retrieved from both Yahoo finance and financial report of BJC. Model 2 analyzes regression of percentage change of market/book ratio and percentage differences of external environment indicators.

$$\ln(mkt) = \beta_0 + \beta_1(user) + \beta_2 \ln(opay) + \beta_3 \ln(mob) + \varepsilon$$

mkt: market-based measurement as market/book ratio
user: internet users in Thailand in percentage of population.
opay: payment transactions volume through e-wallet in millions of queries.
mob: value of transactions through mobile banking in billions of baht.

Model 3 industry performance and external environment

Taking retail sales index as an indicators of retail industry in Thailand as dependent variables, measures the relationships between percentage change of industry sales index and percentage change of external environment of e-commerce trend including internet users, online payment transactions and mobile banking.

$$\ln(inds) = \beta_0 + \beta_1 \ln(user) + \beta_2 \ln(opay) + \beta_3 \ln(mob) + \varepsilon$$

inds: retail sales index of Thailand as base year of 2002
user: internet users in Thailand in percentage of population.
opay: payment transactions volume through e-wallet in millions of queries.

mob: value of transactions through mobile banking in billions of baht.

Model 4 market performance and external environment

Market performance indicators takes SET index as dependent variable to represent the whole Thailand financial market performance; and analyze the period change of market performance and period percentage change of internet users, period percentage change of online payment transaction and period change of mobile banking volume.

$$\ln(set) = \beta_0 + \beta_1 \ln(user) + \beta_2 \ln(opay) + \beta_3 \ln(mob) + \varepsilon$$

set: financial market performance as SET index
user: internet users in Thailand in percentage of population.
opay: payment transactions volume through e-wallet in millions of queries.
mob: value of transactions through mobile banking in billions of baht.

4 Research Results and Analysis
4.1 Unit Root Tests

Adoption of an augmented Dickey-Fuller test in this study tests unit root in order to test the stationarity of time series data. It is important to test the unit root because OLS regression analysis method can be valid when time series data are stationary and implies that results is trustworthy. Test will be held from 1 period as t-statistic as criteria; and test time series with constant and trend.

Augmented Dickey-Fuller test results are shown below:

Table 4.1 ADF unit test results

Variables	Level				First difference			
	constant	p-value	constant and trend	p-value	constant	p-value	constant and trend	p-value
user	0.0613	0.9585	-2.7177	0.2355	-6.4148	**1.13e-08**	-6.4840	**6.758e-08**
ln(user)	-0.537199	0.8728	-3.53931	**0.04896**	-6.9236	**5.313e-10**	-6.82965	**7.627e-09**
opay	11.7533	1	6.4449	1	-1.3930	0.5755	-3.0516	0.1323
ln(opay)	3.2465	1	1.0362	0.9998	-5.0528	**0.00018**	-5.8588	**0.0001**
mob	2.7609	1	1.2090	1	-1.5619	0.4919	-3.7931	**0.0279**
ln(mob)	-1.4674	0.5393	-0.2231	0.9902	-2.8576	**0.0504**	-5.9333	**9.481e-05**
fin	-2.4487	0.1356	-4.4436	**0.0055**	-6.6728	**2.448e-09**	-6.6829	**1.954e-08**
ln(fin)	-3.1913	**0.028**	-5.1625	**0.00079**	-7.5971	**7.289e-12**	-7.5283	**6.406e-11**
mkt	-1.6581	0.4441	-2.4461	0.3516	-6.0941	**8.488e-06**	-6.3595	**2.691e-05**
ln(mkt)	-2.4940	0.1246	-3.9166	**0.0206**	-5.5176	**4.63e-05**	-5.9672	**8.596e-05**
inds	-1.7235	0.4119	-2.4993	0.3267	-7.8537	**7.61e-08**	-7.7989	**1.768e-07**
ln(inds)	-2.1166	0.2382	-2.7216	0.234	-8.2535	**3.096e-08**	-8.2561	**2.298e-08**
set	-2.2831	0.1822	-2.5899	0.2867	-6.5134	**2.541e-06**	-6.7263	**8.581e-06**
ln(set)	-2.7112	0.0812	-2.6309	0.2696	-6.0332	**1.014e-05**	-6.3879	**2.468e-05**

Note:

1. significant level at 5% as implies.
2. ln(variables) implies nature log of variables.
3. ADF statistic is calculated by $(1 - L)y = b_0 + (a - 1)y_{-1} + e$ where (a-1) is coefficient estimated.
4. The null and the alternative hypotheses are $b_0 = 0$ (series is non-stationary) and $b_0 \neq 0$ (series is stationary) respectively.
6. As the coefficient b_0 has a non-standard distribution, it is compared with critical values tabulated by MacKinnon (1991).

Table 4.1 demonstrates the results of ADF unit root test of all variables included

in the models including original values, nature log values and first difference of them. All the variables are stationary after taking the first difference except online payment transactions under the significance level 5% with both constant and trend. It implies that dynamic value from previous one quarter is available for data analyzing as long as we consider change of differences between adjacent values. However, all the original values and nature log values are non-stationary expect nature log of financial based measurement of BJC firm performance. It indicates that we cannot find any statistically reason to analyze or even predict future value from them.

4.2 Correlation Analysis

Table 4.2 Correlation matrix of variables

Correlation coefficients, using the observations 2010:1 - 2019:4					
5% critical value (two-tailed) = 0.3120 for n = 40					
mob	**opay**	**user**	**mkt**	**fin**	
1.0000	0.9900	0.9154	-0.5070	-0.6060	**mob**
	1.0000	0.9062	-0.4388	-0.6262	**opay**
		1.0000	-0.4774	-0.8021	**user**
			1.0000	0.2069	**mkt**
				1.0000	**fin**

Source: data calculated by the Word Bank, Bank of Thailand (BOT), BJC financial report, Yahoo Finance, and Stock of Thailand

Correlation measures the strength and direction of association between two variables. From the correlation matrix above, online payment transactions have a very strong and positive correlation to mobile banking usage. Indeed, online payment transactions can be executed by both computer and mobile devices. As the increasingly development of telecommunication technology, mobile devices can complete a bunch amount of online transactions through a simple click and compromise to most dwellers' demand of micropayment or transactions. Also, internet users in Thailand has a very strong and positive correlation to mobile banking usage, which explains that internet and the technology foundation for online banking provide possibility to mobile banking. Internet users are also positively and strongly correlated to online payment transactions with the same reason. Plus, market-based measurement has moderate and negative correlation to internet users, online payment transactions and mobile banking usage; it indicates that when during the increasing of internet-based market, financial services and technology advance, market-based measurement of BJC's firm performance are decreasing. Financial based measurement also has moderate and negative correlation to mobile banking usage and online payment transactions, and strong and negative correlated to internet users in Thailand. Besides, market-based measurement and financial based measurement of firm performance of BJC have a weak and positive correlation.

4.3 Regression Analysis

TABLE 4.3 OLS Results. Dependent Variable: BJC Financial-based Performance (ln(fin))

Independent Variables	(1)	(2)	(3)
ln($user$)	0.00476116	0.0787821	−1.13213
	(1.27897)	(1.21916)	(1.10645)
Δln($user$)	−2.37953*	−2.41215*	−
	(1.23643)	(1.19637)	
ln($opay$)	0.627155	0.746732*	0.952498**
	(0.475302)	(0.379098)	(0.380754)
Δln($opay$)	0.732719	−	−
	(2.02537)		
ln(mob)	−0.458343	−0.503268**	−0.326462
	(0.271533)	(0.243729)	(0.237156)
Δln(mob)	−0.441412	−	−
	(1.11082)		
Constant	0.143635	−0.614078	0.696076
	(3.00913)	(2.40992)	(2.42014)

Note: The quantities in parentheses below the estimates are the standard errors.

Table 4.3 shows the results of OLS regression of model 1, which can be presented as $\ln(fin) = 0.696 − 1.132 \ln(user) + 0.952 \ln(opay) − 0.326\ln(mob)$. It can be interpreted as one percent increase of internet users can lead to 1.132 percent of decrease of financial performance of BJC. Unit percent increase of online payment transactions while holding all other variables constant give financial performance of BJC increase 0.952 units percent; and unit percent increase of mobile banking volume cause 0.326 percent decrease of dependent variables. However, we still need to consider the significance of each variables explained in this model. Online payment is highly significant, but internet users and mobile banking are not significant in this model, which means we cannot conclude that percentage change of internet users and mobile banking can explain the percentage change of financial firm performance at least under present condition.

From the results of OLS regression of model 1, we can conclude that online payment transactions increasement trends with increase of financial performance of BJC. It implies that improvement of online transactions indeed benefits BJC's financial system, and firm performance reflects a positive phase during e-commerce environment.

TABLE 4.4 OLS Results. Dependent Variable: BJC Market-based Performance (ln(mkt))			
Independent Variables	(1)	(2)	(3)
ln($user$)	−5.83082***	−6.00037***	−4.38923***
	(0.954466)	(0.920742)	(0.997939)
Δln($user$)	3.19550***	3.21326***	−
	(0.922716)	(0.914053)	
ln($opay$)	0.508761	−	−0.338981
	(0.354705)		(0.343413)
Δln($opay$)	−4.06850**	−2.40502*	−
	(1.51148)	(1.27991)	
ln(mob)	0.948657***	1.12633***	0.889497***
	(0.202638)	(0.188494)	(0.213897)
Δln(mob)	1.63054*	−	−
	(0.828975)		
Constant	10.1554***	13.0567***	11.6088***

	(2.24564)	(1.74095)	(2.18279)

Note: The quantities in parentheses below the estimates are the standard errors.

Table 4.4 shows the results of model 2, which can be written as

$$\ln(mkt) = 11.609 - 4.389 ln(user) - 0.339\ln(opay) + 0.889\ln(mob)$$

It can imply that online users' increment in past ten years have negative relationships with market-based firm performance of BJC, and one unit percent increase of online users leads to 4.389 percent decrease of market-based firm performance of BJC measured by market/book ratio. Besides, mobile banking volume have positive relationships with dependent variables in this model, when one percent increase of mobile banking volume, market-based firm performance would increase 0.889 percent. Percentage change of online payment transactions have negative relationships with market-based performance in this model, however, since the test result is not significant, we cannot conclude this relationship under the circumstances of our study.

The analysis result from internet users is not what we expected. The reason why internet users have negative relationships with market-based firm performance may be explained as the insufficient online services from BJC. In another words, when amount of internet users increased, they did not choose the product or services from BJC. It may be caused by two aspects, one is BJC does not have a quick transformation in ecommerce area, another is e-commerce business of BJC did not attract majority new internet users to adopt their own services.

TABLE 4.5 OLS Results. Dependent Variable: Retail Industry Sales Index of Thailand (ln(inds))			
Independent Variables	**(1)**	**(2)**	**(3)**
ln(*user*)	−0.523896**	−0.278185**	−0.381782**
	(0.204259)	(0.105367)	(0.186617)
Δln(*user*)	0.391274*	0.286476	–
	(0.197465)	(0.184806)	
ln(*opay*)	0.331677***	0.327201***	0.233484***
	(0.0759083)	(0.0627133)	(0.0642189)
Δln(*opay*)	−0.251214	–	–
	(0.323463)		
ln(*mob*)	0.0517112	–	0.0510159
	(0.0433653)		(0.0399992)
Δln(*mob*)	0.331262*	0.340562**	–
	(0.177404)	(0.151776)	
Constant	4.50925***	4.07107***	4.75217***
	(0.480575)	(0.132234)	(0.408187)

Note: The quantities in parentheses below the estimates are the standard errors.

Table 4.5 refers to result of OLS regression analysis which research on retail industry index and e-commerce trend indictors. The result of this model displays as

$$\ln(inds) = 4.752 - 0.382\ln(user) + 0.233\ln(opay) + 0.051\ln(mob)$$

It can be interpreted as one percent increase of internet users, online payment transactions and mobile banking volume can lead to 0.382 percent decrease, 0.233 percent increase or 0.051 percent increased of retail industry index respectively when holding other factors constant. Online users and online payment transactions in this model are significant under 1% significance level, which means they are have statistical

meaning in this model. Since mobile banking volume is not significant in this model, we don't have enough evidence to interpret the meaning of it.

Online payment transactions along with increase of retail industry sales index. It means when e-commerce trend occurs in recent 10 years, retail industry in Thailand benefits from this profit by online transaction since many retailers are adopting various online payment methods to compromise customer's need. However, internet user has negative relationship with retail industry sales index. It can be explained that e-commerce trend is the challenge for some traditional retail industries in Thailand. When consumers' behavior transferred from physical retail stores to online shopping, traditional retail stores are facing the challenge of operational strategic revolution. Because e-commerce just rises in recent years, traditional retailers need time to adjust their strategies to adapt this new economic environment. How to transfer their original business online become an essential problem for them which refers to channels, revenue structure, new platform, and new customer relations. We assume that traditional retail industries are still in the period of transformation in past 10 years respond to ecommerce trend, and I believe in next ten years under the policy, retail industries in Thailand would have a better performance under ecommerce environment.

TABLE 4.6 OLS Results. Dependent Variable: Security Market Index of Thailand (ln(set))

Independent Variables	(1)	(2)	(3)
$\ln(user)$	−0.855994** (0.334884)	−0.645653** (0.285201)	−0.628358** (0.284587)
$\Delta\ln(user)$	0.428188 (0.323744)	–	–
$\ln(opay)$	−0.0118084 (0.124452)	−0.0585916 (0.106865)	−0.100881 (0.0979325)
$\Delta\ln(opay)$	−0.530298 (0.530319)	−0.467606 (0.472232)	–
$\ln(mob)$	0.279071*** (0.0710975)	0.251200*** (0.0613315)	0.257362*** (0.0609980)
$\Delta\ln(mob)$	0.0360978 (0.290854)	–	–
Constant	8.29009*** (0.787904)	8.11896*** (0.642370)	8.27536*** (0.622476)

Note: The quantities in parentheses below the estimates are the standard errors.

Table 4.6 shows the results of model 4 from OLS regression analysis about domestic market measures as SET index and e-commerce trend of external environment. Model can be expressed as follow:

$$\ln(set) = 8.275 - 0.628\ln(user) - 0.101\ln(opay) + 0.257\ln(mob)$$

It indicates that one unit percent increase of internet users leads to 0.628 percent decrease of SET index; one unit percent increase of online payment transactions leads to 0.101 percent decrease of SET index; and one unit percent increase of mobile banking volume leads to 0.257 percent increase of SET index as a market indicator. Plus, internet users and mobile banking volume in this model are statistic significant on 1% significant level, which can conclude that these independent variables can explain the dependent variable statistically in this model. On the other hand, online payment transactions are not statistically significant in the model, so we cannot conclude that online payment transactions have relationships with SET index in this model.

As expectation, mobile banking volume have positive influence on market index, in other words, e-commerce trends in past 10 years indeed have positive effects on market performance at least we can conclude from SET index. Nevertheless, internet users do not have positive influence on market from our study; it may be interpreted that increase of internet users does not boost financial sectors in these years.

5 Conclusion

As e-commerce trend has become an evitable fact under current economic environment, industries in developing countries like Thailand may be affected somehow. From our study, we have investigated the effects of e-commerce trend on retail industry in Thailand, taking BJC as a case to demonstrate the effects in micro and macro aspects.

5.1 BJC's Firm Performance and E-commerce Trend

Based on our research result, we find out that as the increasement of online payment transaction during recent years, financial-based firm performance of BJC which measured by ROA in our study has positive relationship with online payment transactions. It indicates that when online transferring has become more and more popular under e-commerce trend, retail industries like BJC can benefit from this convenient and increasingly popular payment function. It may shorten turn over period for corporate during operating process, or ease corporates' financing process. That's can be the reason why online payment transactions have positive effects on firm's financial performance. In addition, our study result indicates that mobile phone banking volume have negative relationships with firm's market performance which measured by Market/Book ratio of BJC. As the popularity of smart phone, major populations are the users of a mobile phone, and mobile banking services has become a general way to deal with basic banking operations. Revenue dose transfer to BJC as the increase convenience of mobile banking, which may indicate that payment system in BJC did a good job to encourage customers pay by their mobile banking system.

5.2 Retail Industrial Sales and E-commerce Trend

Depends on analysis results, only online payment transactions have relationships with retail industry sales which measured by retail sales index in Thailand. In addition, online payment transactions have positive effects on retail sales index. Both internet users and online payment transactions have close relationships with e-commerce development in recent years, and it refers that retail industry in Thailand benefits from the internet development improved payment system which means people can adopt online services to complete their retail consumption process; and this improvement stimulates people's incentives or ease the process when they consume. However, internet users is still negative to retail industry sales index from out study, which may because retail industries in Thailand was being through a period of transformation under ecommerce environment.

5.3 Security Market and E-commerce Trend

According to study results, security market indicators which measures by SET index has statistical relationships which internet users and mobile banking volume

as e-commerce trend indictors in our study by hypothesis testing. The result is similar with retail industry, mobile banking volumes have positive relationship with market indicators, whereas, internet users have negative relationship with market indicators. It demonstrates that e-commerce trend indicators do have credits on security market during recent years, and SET index increasement benefits from e-commerce trend profits. E-commerce trend has not only influence on market performance, but on certain industries and even for specific corporates. On the other hand, internet users have negative effects on market index of SET, which is not respond to our general expectation. However, when we omit other variables of e-commerce trend indicators, mobile banking become positively affects market index, which can be explained by the correlation among variables of e-commerce trend.

5.4 BJC, Thailand Retail Industry, and Security Market

Comparing results from BJC as an individual corporate and industry and market index relationships with e-commerce trend indicators, we can conclude that e-commerce trend do have relatively positive influence on retail industry in Thailand. However, for some specific firms, e-commerce may harmful to their traditional way of operation since it is new and firms still need time to figure out the way to adapt it, which can be explained by the negative effects of internet effects on BJC's market-based firm performance, retail industry sales index, and security market index. Despite of it, online payment transaction have positive influence on both financial-based performance and retail industry sales index in Thailand, and mobile banking volume have positive influence on market-based performance of BJC and security market index, which would influence BJC as a part in the industry so for market. Somehow, the study is generally consistent along firm, industry and market, so we can acquire information that how the e-commerce trend in external economic environment affects industries in Thailand.

5.5 Limitation of Study

This study takes BJC as a case to research on retail industries in Thailand; and does not take any other corporates as reference. Thus, the results are only based on BJC's firm performance and roughly compare with industry index and market index. Furthermore, the data collection is only retrieved from recent ten years quarterly data; and has not worked on more precisely time period. So, the results can only reflect seasonal changes of e-commerce trend and firm, industry and market indicators; and cannot reveal daily or monthly changes among variables.

6 Recommendation

It cannot be denied that e-commerce trend has significant influence on current economic situation; as for retail industries, the way to adapt new environment against traditional way is the key to gain from new period of bonus from Thailand 4.0. Adjusting the balance between new inventions of marketing or management method and traditional demand of retail become a challenge from current retail industries in Thailand.

First of all, marketing strategies for retail industries like BJC should be adjusted to online costumers' behavior and demand. Since more and more customers have adapted to shopping online, modern retail sectors of BJC should pay attention to

build credits on online platforms in order to acquire more customers confidence. Since traditional way of retail of BJC has an abundant customer base, it is an advantage to introduce people a new online path to acquire detailed information of goods, promotions, and inventories, which can provide customers a better way to know more about the goods they want without coming to physical store. Also, people can be informed with more specific promotion policies through online platform especially for existing membership. Besides, the online channel needs to be designed organized and available to use, which can keep customers longer and improve loyalty to BJC's modern retail services.

Secondly, payment method is the lubricant of buying process. If the payment method is not available for most of customers who shop online, there will be bunch of unnecessary loss during the last step of deal completion. Credit cards have already generalized in current market; nowadays, people are likely to adopt a more trustful way to complete payment which are mobile banking, and e-wallets. Since Thailand has numerous platforms provide mobile banking and e-wallets services, make a full cover of all the payment methods become a vital way to assist customers to complete payment. Not only for brick-mortal store, but for online platforms.

Thirdly, last mile problem is always be a serious concern when merchandises commit an online selling activity, so ease the way to delivery grocery to customers is the method to keep old customers to stay on your side; and attract more new customers to try the online services instead. Exploring a new services or delivery seems to a good way for retailing store like BJC. Even to cooperates with third party delivery is convenient for merchandise, but when environment of delivery has not been mature yet, self-delivery is a better way to monitor feedbacks and solve post-purchase problems.

Lastly, cooperation with existing platforms is the brilliant way to promote modern retails services. We have known that Big C has cooperation with LAZADA that have a flagship store on its platform, but the groceries do not include fresh food. I believe they are working on it because fresh food is more fragile than groceries with packages. It is a good chance to improve standardized package services and delivery services for fresh food, which may enhance the quality of products and build better reputations to customers about Bic C's product standards and earn more market share from it.

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