

-RESEARCH ARTICLE-

## DETERMINANTS OF THE MARKET VALUE OF LISTED FIRMS IN THE SERVICES SECTOR: A CASE OF THAILAND

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### -Abstract-

The study examines the determinants of firms' market value which contribute to the continued growth of services sector in Thailand. This study uses data from the stock exchange of Thailand for the period of 2003 to 2019 to estimate the fixed effect model of the determinants. Accounting variables that include book value, return on assets, and size positively determine the market value. With respect to non-accounting variables, the firm's value depends positively on productivity but negatively on capital intensity. Furthermore, the results indicate a significant rise of the firms' values as a result of the advancement in the technology of information and telecommunication that has enormously accelerated after 2009.

**Keywords:** Firm performance, market value, return on assets, role of the services sector, productivity, capital intensity, size of the firm, information and communication technology

**JEL Classification:** M21, O14

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## 1. INTRODUCTION

The process of structural change alters all aspects of production and consumption in an economy. The services sector's share in the OECD countries is as high as 75.04 per cent in 2018 as compared to 1.41 percent and 23.54 percent share of agriculture and industry sectors respectively (UNCTADSTAT Data Center). The economic development of countries in world history began with the development of agriculture sector before the transformation towards industry and services sector. Service sector's share of GDP in Thailand is reported to be merely 56.12 per cent in 2018, implying a considerable increase in the role of the services sector in Thailand in the recent years. When comparing across countries, a similar pattern of the rising contribution of the services sector can be observed by changing income status. The share of agriculture is declining while the role of industry and services is increasing. Share of the agriculture sector in the GDP of OECD countries was 39 per cent which was higher than those of industrial sector (26 per cent) and services sector (35 per cent) in 1970. The share of agriculture has risen to 47.77 per cent of GDP in 1970. In comparison, contributions of industry and services value-added per GDP is reported to be 36.38 per cent and 58.85 per cent in 1970, which already surpasses the role of agriculture for the same year.

During the 1980s and 1990s, Thailand started to be recognized as a profitable manufacturing location with expansion in exports driven by the relatively lower cost of the labor force compared to other non-Asian countries. This export expansion contributes to the rapid growth of developing Asian economies in general and Thailand in particular. Thailand could fortify the export competitiveness due to the low-cost of labor; however, wage has been rising which are reducing business profits and the previous competitive edge. Another interesting question pertaining to this is whether Thailand can sustain high economic growth and progress to become a high-income country. A possible solution is to emphasize the development of the services sector.

As the services sector is significant for growth and essential for becoming a high-income country, it is essential to examine how firms in the services sector can be growing better. Targeted policies towards investment in the services sector could then promote the country to become a high-income country as targeted in the current long-term 20-year Thailand National Strategy (2018-2037). This study uses a sample of listed firms related to the services sector in the Stock Exchange of Thailand to analyse the determinants of their market values. Most existing literature shows that development in the stock market (higher market capitalization or market value) drives economic growth (Asteriou et al., 2019; Pradhan et al., 2019). Market capitalization of the services sector in Thailand increased from 556 million Baht in 2004 to 4,257 million Baht in 2019, and the number

of listed firms also increased from 79 firms to 114 firms (Stock Exchange of Thailand, 2021).

The evaluation of the market value of the shares holds great significance vis-a-vis the financial position of individual companies as it provides a fair assessment of the worth or value of their assets. Market value of shares refers to the price at the company shares are normally sold. Individual companies should undertake measures to enhance the market value of their shares. There is thorough literature available on the factors affecting the market value of the shares. However, there is still a need to explore the drivers of the higher market value of the shares to keep pace with a dynamically evolving market environment. Our study aims to analyze both accounting and non-accounting factors to determine their effects on the firms' market value. Our study demonstrates how effectively the book value of equity, the return on assets, firm size, high productivity, capital to labor ratio, and technological progress contribute to the market value.

In the past, several studies have been conducted to explore the factors affecting the firms' market value like book value, return on assets, firm size, productivity, and the capital to labor ratio. However, the current study makes a number of novel contributions to existing literature because previous studies only focuses on the impact of any one or two of the above-mentioned factors. A few studies are found which have touched upon all the factors such as book value of the shares, return on assets, firm size, productivity, and capital to labor ratio while making analysis of the market value of the shares with reference to different companies. However, the present study deals with the influences of the book value, return on assets, firm size, productivity, and capital to labor ratio on the firms' market value collectively. Moreover, previous studies have either discussed the relationship among book value, return on assets, firm size, productivity, and capital to labor ratio and the market value of the companies generally or with reference to financial institutions, whereas the present study analyses the market value with reference to the firma in the service industry as a whole. The other contribution of this study is that technological progress variable that shifts the market value of the firms is included to be one determinant of their market values.

In the second section, the study throws light on the arguments posited by different researchers regarding the association among the five factors mentioned above. In the third section, the study states the methodology employed to collect and analyze numerical data to support the study. In the light of the collected data, which has gone through proper analysis, the study presents its findings. Finally, in the last section of the paper, these results are compared with the past studies.

## 2. Review of the Literature

Structural change in the economy has been a visible outcome of economic development. In Thailand, [Jitaree and Lee \(2019\)](#) study the impact of structural change on firm performance of Thai companies listed in the Stock Exchange of Thailand during 2000-2018, making observations based on analysis of 627 firms in 27 industries, covering all three sectors, agricultural, manufacturing, and services. Firm performance is measured as return on assets and return on equity. The results show that the sectorial GDP share is significantly and positively related to firm performance. Furthermore, as the services sector has become increasingly crucial to the Thai economy since 2010, firms in the services sector enjoy a higher return on assets and return on equity. As a result, it is also expected to end up with a higher market value of the firm. Firm performance can be measured based on accounting and the market data. The accounting-based performance utilizes past information from financial statements such as net profit, return on assets, return on equity and earnings per share. Accounting information is also subject to accounting error and estimation ([Fang et al., 2017](#)). However, market-based performance is based on stock price which reflects forward-looking information and expectation from investors and can be measured as market value or stock return. This paper focuses on determinants of the market value of firms to examine investment related prospects of the services sector in Thailand.

Previous works of literature examine whether accounting variables affect firms' market value. [Ohlson \(1995\)](#) states that accounting variables, which are book value and profitability, is the basis of the market value. By the construction of the model, book value, which is shareholders' equity shown in the balance sheet, is positively related to market value or stock price. Moreover, profitability is also positively related to market value since investors expect better prospects for higher profitability. Empirical pieces of evidence such as [Riahi-Belkaoui \(1999\)](#) and [Silvestri and Veltri \(2012\)](#) found that both variables positively determine market value. Furthermore, firms with high profitability have more funds to invest in other business opportunities that lead to higher market value ([Sudiyatno et al., 2020](#)). Furthermore, investors expect to receive high dividends from those firms and thus, are willing to buy shares at high prices ([Fajaria, 2018](#)). Higher profitability results in better market value ([Bhatarai, 2020](#); [Fajaria & Isnalita, 2018](#); [Jiang & Tang, 2018](#); [Kadim et al., 2020](#); [Öztürk & Karabulut, 2018](#); [Sudiyatno et al., 2020](#); [Zuhroh, 2019](#)).

The other accounting variable is firm size. Firm size is a proxy of total assets of the firm that influences a firm's market value due to economies of scale. In addition, larger firms have more resources and better access to funding. [Amato and Burson \(2007\)](#) found a non-linear (cubic) relationship between return on assets and firm size. Increasing return on assets implies that the market value of a firm should be higher. [Velnampy and](#)

Nimalathan (2010) found a positive relationship between firm size and profitability in a commercial bank in Sri Lanka; however, they found no relationship between them in Bank of Ceylon. Once again, the profitability of the firm will simply lead to an increase in its market value. [Dang et al. \(2019\)](#), whose sample firms are in Vietnam and [Sondakh \(2019\)](#) and [Sudiyatno et al. \(2020\)](#), whose sample firms are in Indonesia, found that firm size is positively related to market value.

It is widely accepted that productivity is an essential source of growth. Besides accounting variables, [Riahi-Belkaoui \(1999\)](#) incorporated a firm's productivity as non-accounting variables and as one determinant of market value and measured productivity as the ratio of net value added over total assets. The author recalculated accounting information to derive net value-added. [Riahi-Belkaoui \(1999\)](#) found that in addition to accounting variables i.e. book value and the return on equity, productivity is also positively related to market value. Furthermore, [Hiz \(2014\)](#) examined the relationship between productivity and market value of firms from 2002 to 2012. The study found that productivity (net value added over total assets) and firm size (total assets) are significantly positive to market value. In contrast, the return on assets is insignificant to market value. Total Factor Productivity (TFP) growth is considered an essential source of growth and a consequence of improved technology and innovation. [Bosworth \(2008\)](#) found that in Thailand during 1993-2006, the main contribution to output growth in the air transportation industry is capital and TFP. Throughout 1993-2000, capital productivity, labour productivity and the TFP all have increasing trend, and they all strikingly rise after 2000. Output growth during 1993-2000 is contributable mainly by capital or investment in technology and building infrastructure and network. However, after 2000, the TFP positively contributes to output growth because of the accelerating utilisation rate of the telecommunication network.

The other non-accounting variable that affects market value is capital intensity. Capital in economics is comparable to the accounting terms of fixed assets, tangible assets, or property, plant and equipment. For example, [Lee \(2010\)](#) studied the restaurant industry in the United States and incorporated capital intensity variable (measured as the ratio of fixed assets over revenues) in the firm's market valuation model. [Lee \(2010\)](#) found that although firm size and profitability are positive to market value, capital intensity is negative, and the author suggested that restaurants should pursue a franchising strategy to decrease capital investment and business risk accordingly. However, other studies consider only capital (rather than a ratio of capital intensity). For example, [Chauvin and Hirschey \(1994\)](#) found that tangible assets are positively correlated to market value in manufacturing and non-manufacturing sectors. Furthermore, [McConnell and Muscarella \(1985\)](#) used an event study to examine the effect of capital expenditure announcements on excess stock return and also evidenced that capital expenditures were spent on plant and equipment, research and development, and exploration and development. They

found that an increase in capital expenditures (compared to the previous year) led to higher stock price and excess return. Therefore, investors have valued the announcements as relevant information reflected in the movement of stock prices. Likewise, [Majanga \(2018\)](#) found that capital expenditure spent by firms lead to an increase in stock prices. Capital expenditure is investment in long-term tangible and intangible assets including research and development. In this way, business activities are stimulated and are able to generate future cash flow; therefore, this leads a rise in the market value of the firms.

Advanced technology can also affect the market value of a firm as it can increase the capacity and output of service production. [Murmura and Bravi \(2018\)](#) state that better technology benefits the services sector, improving workflow and process, providing new service, or enhancing data processing. [Bharadwaj et al. \(1999\)](#) found that information technology (IT) investments positively affects a firm's market value, concluding that the information technology investments are related to the firm's future performance and generated intangible benefits reflected in the firm's market value. [Bharadwaj \(2000\)](#) match the IT-leader firms with the controlled firms and find that IT-leader firms have higher profit ratios and lower cost ratios. [Im et al. \(2001\)](#) found that IT investment announcements do not affect market value. However, when dividing the sample into two groups between former and latter periods, the results indicate that IT investment announcements significantly increase market value in the latter period and conclude that IT announcements positively affect market value due to the passage of time or "time-lag effect".

Digital technology has seen remarkable advancements in recent decades. As a result, firms with digital technology are more likely to have a higher market value. [Chen and Srinivasan \(2019\)](#) studied non-technology U.S. listed firms with digital technology adoption, and examined the relationship between digital activities and market value. Evidence from their work shows that firms with digital activities have a higher market value. As a result, investors consider digital activities as representing solid growth potential, resulting in higher stock price and market value. Furthermore, firms in an industry with prevalent digital activities are more likely to have higher market value. [Sousa-Zomer et al. \(2020\)](#) also found that firms that excel in digital transformation have better performance in terms of market value and profitability. Characteristics of those firms are to improve skill of employees, to make investment and acquisition in digital technology and to change organizational culture.

Two different phases of the process of technology affecting growth can be classified in Thailand, indicating a turning point in 2009 for the services sector as the share in GDP significantly increases ([Koonnathamdee, 2013](#)). The study applies a fixed-effect model, and the results show two waves of services sector growth. The first wave was in

provinces with relatively low income in the Northeast. That is, when the service share of GDP increases, per capita income increases. For provinces with middle income, the relationship is negative. However, the second wave is in provinces with high income in Bangkok, industrial parks and seaports, and it could be the turning point to be a growth engine. By studying detailed activities, only wholesale and retail trade and construction show the positive relationship between its GDP and per capita income. Therefore, it can be concluded that wholesale and retail trade as well as construction are the main drivers of economic growth for Thailand.

This paper builds on the work of [Riahi-Belkaoui \(1999\)](#), who study determinants of firm market value based on book value, profitability and productivity; however, the novel contribution of the current study is to include more non-accounting variables other than productivity that are capital intensity and service production technology in order to analyse the economic foundation of service production. The role of advanced technology is incorporated and substantiated in the empirical model used during the course of this study. To summarize, determinants of market value in our paper are classified into accounting and non-accounting variables. First, accounting variables are composed of book value, profitability (measured as return on assets) and firm size (measured as total assets). Second, non-accounting variables include labor productivity, capital intensity and role of technological progress (measured as a dummy variable to be discussed in the next section).

### 3. Framework of the Analysis and the Model

The companies' market value is an essential indicator of the successful outcome of this study's services sector. To this end, a model of factors that significantly influence companies' market value in Thailand's services sector is constructed and estimated. Apart from the book value, profitability (return on assets) and firm size that directly affects firms' market value, capital intensity is another factor that can affect the value of services. The capital to labor ratio is an index to represent capital intensity and determine sales or output depending on the technological structure of service production. Labor productivity is widely recognized to be an important factor for promoting sales growth in existing literature. The model of the study is shown as in [Equation \(1\)](#).

$$\ln(MV_{it}) = \alpha_i + \beta_1 \ln(BV_{it}) + \beta_2 \ln(ROA_{it}) + \beta_3 \ln(PROD_{it}) + \beta_5 KLR_{it} + \beta_6 \ln(SIZE_{it}) + \beta_7 TCHN_{it} + \varepsilon_{it} \quad (1)$$

Where;

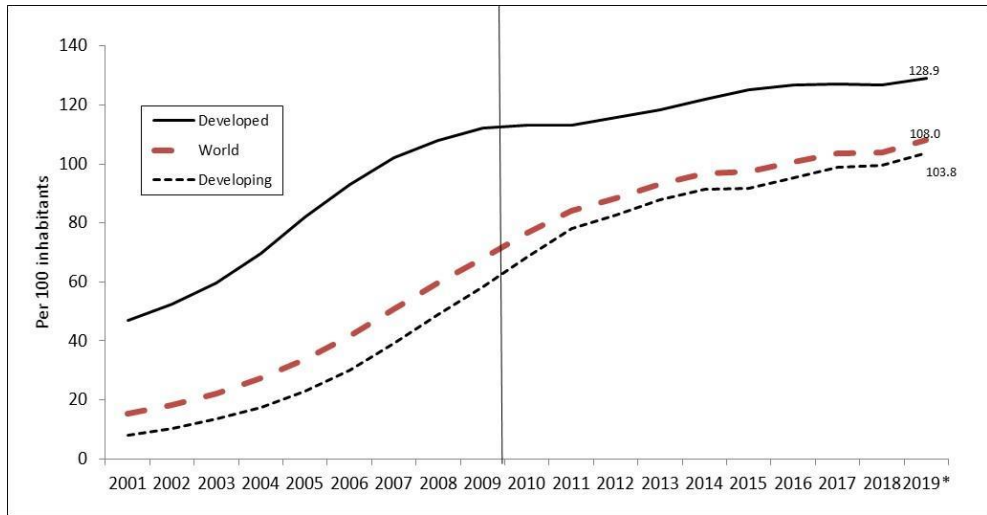
MV	=	Market Value
i	=	Companies
t	=	Time Period

BV	=	Book Value
PROD	=	Productivity
KLR	=	Capital to Labor Ratio
SIZE	=	Firm Size
TCHN	=	Technological Progress (Shift) Variable; equal to 1 if the period is from 2009 onwards and equal to 0 if otherwise

The study hypothesizes that accounting variables, which are book value, return on assets and firm size, positively affect market value. Furthermore, the book value reveals the market value and return on assets, representing potential future profitability or future return, is also positively related to market value. Moreover, a large firm can produce a higher value of service outcome. Regarding non-accounting variables, labor productivity improvement strongly determines the firm's value. In contrast, higher capital intensity or capital/labor production technology can raise or lower the marginal firm value depending on the particular type of technology appropriate for Thailand's service sector firms. Regarding an empirical finding, book value, return on equity (a proxy of future return), and productivity can positively determine the market value of firms (Riahi-Belkaoui, 1999). A firm's market value also depends on its size in terms of operation and capital intensity (capital/labor ratio). The firm size determines its profitability and, therefore, the market value as it implies the economies of scale (Sondakh, 2019; Sudiyatno et al., 2020). The capital intensity (capital/labor ratio) depends on the firm's production technology structure in services.

Furthermore, technological innovation in information technology in the digital economy is found contributable to the United States' competitive advantage (Henry-Nickie, Frimpong, and Sun, 2019). In addition, information and communication technology (ICT) plays a significant role in the growth of services of high and upper-middle-income countries (Yousefi, 2010). Therefore, the study divides time into two sub-periods: before and after periods of significant technological progress. There is a noticeably different increasing rates in the ICT users during the breakpoint period in 2009 (Figure 1). The data of the mobile-cellular subscriptions per 100 inhabitants from the ITU World Telecommunication/ICT indicators (ITU, 2019) shows that the year 2009 could be considered the beginning year of the significantly increase in ICT technology in the world. The breakpoint period of the levels of technology variable (denoted by TCHN in the model below) clearly divides the sample of ICT users into the sub-periods in 2003-2008 and 2009–2019. It is interesting to note that the breakpoint period of technology in 2009 in this study is consistent with the study findings of two waves of growth, indicating a turning point in 2009 for Thailand's services sector mentioned earlier in Koonnathamdee (2013).





**Figure 1:** Mobile-cellular subscriptions per 100 inhabitants, 2001-2019

**Source:** The author has generated, data from statistics of ITU World Telecommunication ([ITU](#), 2019)

The financial data of the sample is extracted from the financial statements of listed companies in the Stock Exchange of Thailand. Market value is taken from the Stock Exchange of Thailand (SET100), and employee data from Form 56-1 (annual information disclosure form submitted to SET). Some companies are omitted due to data unavailability as they do not disclose employee numbers. The sample covers the period of 2003-2019 of 37 companies composing of 6 ICT companies and 31 service companies across six sectors (6 in commerce, 6 in health care services, 9 in media & publishing, 6 in hotel & travel services, and 4 in transportation & logistics).

#### 4. The Results of the Analysis

In the analysis section, the descriptive statistics of all the variables have been examined which show the mean, standard deviation, minimum and maximum values of the variables. [Table 1](#) below shows these values for variables of the study.

**Table 1: Descriptive Statistics**

Variable	Mean	Median	Minimum	Maximum	Std. Dev.
ln(MV)	8.5577	8.5103	3.9512	14.878	1.9012
ln(BV)	7.8924	7.5936	0.63180	11.593	1.5944
ln(ROA)	-2.9051	-2.7222	-9.8363	-0.76083	1.0528
ln(PROD)	6.9951	2.5640	0.14628	173.23	15.820
KLR	11.325	3.5830	0.034148	203.05	27.228
Ln(SIZE)	-8.0027	-8.0513	-11.615	-3.7082	1.7151
TCHN	0.64706	1.0000	0.0000	1.0000	0.4783

The model as shown in Equation (1) is estimated and used in the study's analysis. The panel data estimation is estimated and found the significant coefficient of TCHN. The common intercept test statistics is significant, indicating that the different cross-section-specific effects model is superior. In addition, the Hausman test indicates that the fixed effect model is preferable. The result of the fixed effect panel model's estimation is shown in Table 2.

**Table 2: Fixed Effect Model (FEM)**

Ln(MV)	Coefficient	Roburst Std. Error	t-ratio	p-value	
Constant	12.8036	1.2416	10.31	<0.0001	***
ln(BV)	0.1893	0.0736	2.571	0.0104	**
ln(ROA)	0.1712	0.0300	5.707	<0.0001	***
ln(PROD)	0.4109	0.0704	5.840	<0.0001	***
ln(SIZE)	0.7042	0.0897	7.855	<0.0001	***
KLR	-0.0031	0.0019	-1.694	0.0909	*
TCHN	0.2029	0.0620	3.271	0.0011	***
Mean dependent var	8.762224		S.D. dependent var	1.908328	
Sum squared resid	134.5290		S.E. of regression	0.530511	
LSDV R-squared	0.928959		Within R-squared	0.545226	
LSDV F(42, 478)	148.8226		P-value(F)	2.7e-246	
Log-likelihood	-386.5577		Akaike criterion	859.1155	
*** $p < .01$ , ** $p < .05$ , * $p < .1$					
Joint Test Regressors: $F(6, 478) = 95.5119^{***}$ [p-value: 1.41423e-078]					
Test for Different Intercepts: $F(36, 478) = 24.3021^{***}$ [p-value: 9.21462e-086]					
Hausman Test for Random Effect $\chi^2(6) = 24.2427^{***}$ [p-value: 0.0004712]					

From the estimation of Equation (1), all coefficients are statistically significant. The signs of them are as expected. Interestingly, the TCHN variable has a significant and positive number, which indicates that the firms' market value was up the market value higher significantly in the second period after 2009. This finding confirms a contribution of the advance technology (ICT) to the market value as mentioned earlier.

The study further compares the impacts of all factors affecting firm values by examining their standardised coefficients. The standardised coefficients can be calculated as written and shown in Equations (2)–(4). Table 3 shows the calculated figures of the standardised coefficients.

$$\beta_j = \frac{s_y}{s_j} \beta_j^* \quad (2)$$

$$X_j^* = \frac{1}{\sqrt{N-1}} \left( \frac{X_{jt} - X_j}{s_j} \right) \quad (3)$$

Thus, the standardised regression model can be written and shown as in Equation (4).

$$Y_i^* = \beta_1^* X_{i1}^* + \dots + \beta_j^* X_{ij}^* + \varepsilon_i^* \quad (4)$$

The Equation (1) model's standardised coefficients can be compared to the original coefficients, as shown in Table 3. It indicates that the most influential factor in the firm's value is the firm's size. Productivity comes the second rank. The book value comes the third while shifting technology (TCHN) comes the fourth with relatively almost the same size of the book value's impact. It then follows by the return on assets and capital intensity.

**Table 3: Standardised Coefficients of Equation (1)**

	Coefficient	Standardised Coefficient
ln(SIZE)	0.7039	0.0331
ln(PROD)	0.4109	0.0152
ln(BV)	0.1893	0.0073
TCHN	0.2029	0.0066
ln(ROA)	0.1712	0.0027
KLR	-0.0031	-0.000003

**Source:** Author's calculations

The study further examines the sizes of firm-specific fixed effect on their firms' market value by sectors. The result reveals that the firm-specific effect are distinctive. Table 4 displays the relative firms' specific effect from the highest to the lowest values.

**Table 4: Firms' Specific Effects (Total 37 firms)**

Firm	Firm Spec Eff	Firm	Firm Spec Eff
24	15.7999		
14	13.8613	9	12.7378
33	13.8580	17	12.7292
8	13.7767	34	12.6461
13	13.5828	23	12.6034
18	13.4616	15	12.5980
4	13.285	27	12.5879
1	13.2369	25	12.5200
19	13.1519	32	12.4555
2	13.1217	20	12.3000
26	13.0923	22	12.2311
12	13.0825	21	12.1363
7	13.0782	36	11.7257
11	13.0371	37	11.6960
31	12.8894	6	11.6144
29	12.8866	5	11.6127
30	12.8866	3	11.5716
10	12.8026	35	11.2809
28	12.7947	16	11.1752

**Source:** Author's calculation

When ranking their firms' specific effect across sectors, the study finds that the specific effect varies across sectors (Table 5). Nevertheless, when examining detail of the specific effect in Table 5, the findings can indicate that the highest firm-specific effect is in the hotels & travel services sector and the health care services sector. The media & publishing sector's specific effects and the information & communication technology sector are in the middle rank. Most of the transportation and logistics firms are in the lowest rank. It is interesting to note that half of the commerce sector firms are in the highest specific effect group, and another half of its sample is in the smallest specific effect group. Perhaps the firms of the commerce sector are engaged in a widely different business activities by its nature.

**Table 5: Ranking of Firm's Specific Effect by Sectors**

Firm Specific Effect	Sector/ % Firms of the Sector
15.7999 – 13.1217	<b>HOTTRA 50%</b>
	<b>COMM 50%</b>
	ICT 33.3%
	HC 16.7%
	MEAPUB 11.1%
13.0923 – 12.7292	<b>HC 83.3%</b>
	MEAPUB 44.4%
	HOTTRA 16.7%
12.6461 – 12.1363	<b>ICT 66.7%</b>
	MEAPUB 44.4%
	TRANLOG 25.0%
	HOTTRA 16.7%
11.7257 – 11.1752	<b>TRANLOG 75.0%</b>
	COMM 50.0%
	HOTTRA 16.7%

## 5. Discussions and Conclusion

The study examines factors determining the market values of firms in the services industry in Thailand. The data source of the sample is from the listed companies' financial statements in Thailand's Stock Exchange during the period of 2003-2019. The firms' market value model is then constructed and estimated using the sample's firms' database. The analysis of the estimated model confirms all hypotheses of factors being significant. In terms of accounting variables i.e. the book value, return on assets, and firm size (implying economies of scale), they all are found to be positively determine the market value. In terms of the non-accounting factors, productivity positively determines the market value. The market value also significantly and negatively depends on capital intensity (implying a somewhat preferable labor intensive firm's production technique). As expected, the study results confirm that the services sector firms have boosted firms' values significantly due to the enhanced technology after 2009.

This study investigates the factors affecting the market value of shares in the stock market. It reveals that the book value of the shares has a significant impact on the market value of the shares. This result is supported by the past study of [Riahi-Belkaoui \(1999\)](#). The change in the book value of the shares brings a proportional change in the market value of the shares. The study results also indicate that the return on assets has a positive association with the market value of the shares. These results are in line with [Kadim et al. \(2020\)](#) and [Zuhroh \(2019\)](#), which demonstrates that companies which show good

performance have a good reputation in the stock market. Moreover, the results also demonstrate that the firm size is in a positive relation to the firm performance. These results are supported by the past study of [Sudiyatno \(2020\)](#), who shows that large firms easily access to capital in order to fund their business expansion or investments; therefore, their profitability and market value can increase.

With respect to non-accounting factors, the study results further indicate that the productivity level of the companies has a positive impact on the market value. Previously conducted studies by [Riahi-Belkaoui \(1999\)](#) and [Hiz \(2014\)](#), approves these results with reasonable arguments. These studies suggest that the companies having high productivity of good quality products and services has a high value for their shares in the market, as the good quality products and services improve the image of a company in the eyes of buyers and thus, enhances the demand for the shares. The study results also indicate that the capital to labor ratio has a negative association with the market value of the shares. These results are in line with the past research study of [Lee \(2010\)](#).

The estimated model's standardised coefficients are considered in comparison among the impacts of all factors affecting firms' market value. The effect of factors in the model can be ranked from the size of firm's most considerable effect on firm's market value. The productivity effect follows the size as the second rank. The book value effect comes the third that is about the equal effect of the technological progress. The return on asset effect and the capital-labour ratio effect, respectively, come the last.

Furthermore, the study examines the different values of the firms' specific fixed effect. When ranking the firm's specific effect by sectors, the study shows that the specific effect varies across sectors. Overall, the effect is quite relatively high in the health care services sector and the hotel and travel services sector. The specific fixed effects of the media and publishing sector and the information and communication technology sector are in the middle rank while most transportation and logistics firms are in the lowest rank. It is noteworthy that the commerce sector's specific fixed effect is widely different since half of its sample are in the highest specific effect group but the other half of its sample are in the smallest specific effect group.

Policy implication for investors is that people should prioritize investing in health, hospitality & travel services sector. In light of the current situation in the wake of COVID-19, it bears to note that hotel and travel businesses, despite their economic significance for the country, are seeing a major decline. Nevertheless, as the health pandemic represents a temporary state of affairs, with the reinstatement of a healthy business environment, the local and global economy is expected to resume as normal. One important implication for firms in the services sector is that investment in advanced technology should be increased in order to enhance firms' stock price and market value.

Finally, a practical implication for policymakers and other stakeholders in the services sector is to invest more in advanced technology and infrastructure, and in doing so, this can improve the market value of services sector firms which may contribute to higher economic growth.

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