How Firm Characteristic on Capital Structure Can Improve Technology Improvement in Malaysian Manufacturing SMEs?

Kuah Yoke Chin1*, Zuriawati Zakaria2, Choong Chee Keong3

1*Assistant Professor, Faculty of Business and Finance, Universiti Tunku Abdul Rahman, Malaysia,
2 Assistant Professor, Department of Finance, Faculty of Business and Finance, Universiti Tunku Abdul Rahman, Malaysia,
3 Professor, Department of Economic, Faculty of Business and Finance, Universiti Tunku Abdul Rahman, Malaysia,
kuahyc@utar.edu.my; zuriawatiz@utar.edu.my; choongck@utar.edu.my

Abstract. Small and medium enterprises (SMEs) is a important contribution to boost the economies overall the world. In fact, SMEs always struggle to access the financing compared list company. There are several factors influence the capital structure decision in SMEs. This study focuses on manufacturing SMEs companies and examines the influence of firm characteristics (firm size, tangible asset, liquidity, profitability and firm growth) on capital structure towards technology improvement. The results showed only liquidity and firm growth were found to be positive significantly affect the external financing. Furthermore, internal and external financing also able improve the manufacturing’s technology performance. Conclusion, different firm characteristics have different leverage privileges which trying to attain optimal capital structure. The variations in the capital structures affect the costs of equity or debt and cost of capital. This study provides benchmarks for corporate managers in SMEs when making a company’s decision on the company’s performance.

Keywords: Firm Characteristics, Manufacturing, SME, Financing

*Corresponding autheor: kuahyc@utar.edu.my

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INTRODUCTION

SMEs always face financial constraints compare to listed companies. Many small firms reported lack of financing is a part of obstacles to their growth (Bloom, Mahajan, McKenzie & Roberts, 2010). SMEs have limited or not able to access the external financing compare to large and publicly traded firms (Uyar & Guzelyurt, 2015). There are several reasons causes SMEs’ unable to obtain bank loans could be several reasons such as high collateral requirements, high interest rates of borrowing, and lack of good relationship with bankers (Uddin, 2014). All the reasons above will caused SMEs remain small and limit their potential growth (Wahab & Abdesamed, 2012). Furthermore, SMEs has limited resources to overcome the technology limitations and update themselves with the latest technology. Undertaking adequate technology surveillance and monitoring always poses challenges to SMEs. SMEs requires sufficient funds to invest in productive new technologies to operate efficiently. They need to invest in machinery and the latest technologies to raise the operations level of the firms. This is the perennial Malaysia problem on how to get SMEs which makes up more than 90% of the registered companies in Malaysia, but only 33% contribution in GDP and to adopt technology to boost their efficiency, productivity and competitiveness (Thurasamy, Mohamad, Omar & Marimuthu, 2009). It seems SMEs lack the resources, both financially and skilled human resources in order to adopt technology. This critical issue causes the importance of capital structure of technological improvement, especially SME. This study’s purpose is to examine the relationship between firm characteristics towards the choices of a firm’s capital structure. Next, this study continue to investigate the effect of internal and external financing on technology improvement.

LITERATURE REVIEW

Past studies related to firm characteristics are limited, especially in Malaysia. Most of the theoretical and empirical studies that addressed these topics concentrated on the large number of listed firms instead of SMEs. It is doubtfull that these findings could be applied in SMEs, when SMEs have more aversion risk than listed companies. To prevent the entrance of new stockholders, small companies will employ the debt in the capital as leverage.

Firm’ Characteristics and Financing Preferences

Firm Size

Under Trade-off theory (TOT), larger firms have greater need for diversification and hence, apply more leverage to their capital structure (Paydar & Bardai, 2012). This theory implies that small firms are prefer less leverage with the low marginal corporate tax rates. (Uyar & Guzelyurt, 2015). According to Pandey (2001), large firms are expected to issue equity as debt financing. Therefore, it could be said that there is a positive relationship between firm size and leverage under the Trade-off theory (Pandey, 2004).

Interestingly, Jahanzeb and Bajuri (2014), Akinyomi and Olagunju (2013) found a significant and negative relationship between firm size and leverage. Their finding is in line with the earlier study by Saarani and Shahadan (2013) who found a negative relationship between size of SMEs and leverage ratio. They argued that small companies preferred short-term financing due to their low level of diversification. This finding is consistent with Hewa and Locke (2014) who in their study of unlisted firms in New Zealand found that firm size has a negatively significant impact on leverage. Incidentally, in the case of Malaysia no association was evident between firm size and leverage ratio (Viviani, 2008; Paydar & Bardai, 2012).

Therefore, there is an expectation hypothesis between firm size and leverage as below:

\[ H1: \text{There is a positive relationship between firm size and internal and external financing.} \]

Profitability

TOT suggested that firms prefer to issue debt when profits are high in order to minimize the tax burden (Ting and Lean, 2011). Thus, the Trade-off theory stipulates that there is a relationship between long term debt and SMEs capital structure (Kumah, 2013). It also indicates that SMEs that are less profitable are more likely to seek external debt financing (Ibrahim & Masron, 2011). Akinyomi and Olagunju (2013), Chisti et al., (2013), Yusuf et al. (2014) found a positive relationship between profitability and leverage. Highly profitable small firms tend to have increased debt levels and accompanying tax
shields. According to Pandey (2004), firms with more profits benefit from tax shields and are able to generate more output by employing assets effectively.

In contrast, the Pecking Order theory (POT) argues that a firm would prefer to use internal financing (own capital) when there is higher profitability. This accounts for profitable firms having low level of debt (Pandey, 2001). It is consistent with the findings of Saarani and Shahadan (2013) and Ting and Lean (2011) that less profitable companies usually seek external financing.

Therefore, there is an expectation hypothesis between profitability and leverage as below:

\[ H2: \text{There is a positive relationship between firm's profitability and internal and external financing.} \]

**Tangible Asset**

TOT suggests that firms with more fixed assets will prefer to use debt financing because fixed assets serve as collateral when come to loan application (Pandey, 2004; Al-Najjar & Taylor, 2014; Baharuddin et al. 2011; Ting & Lean, 2011). A company with tangible assets has greater leverage to obtain secured loans (Kumah, 2013). Furthermore, companies with high ratio of tangible assets are able to raise debt at low costs (Ting & Lean, 2011). Most empirical studies evidenced a positive influence of asset tangibility on leverage.

However, the relationship between tangible assets and short term debt is found to be negative for government-linked companies in Malaysia (Ting & Lean, 2011). Margaritis and Psillaki (2010) showed that firms with tangible assets, incur less debt in their capital structure. For example, if a firm retains large investments in land, equipment and other tangible assets, it would normally face low funding costs compared to a firm that relies on intangible assets. As SMEs with low asset structure have much difficulty accessing long term debt, their option is to use short term debt finance (Abor and Biekpe, 2009).

Therefore, there is an expectation of a hypothesis between firm’s tangible assets and leverage as below:

\[ H3: \text{There is a positive relationship between firm's tangible assets and internal and external financing.} \]

**Liquidity**

TOT suggested positive relationship between liquidation of the firm and its leverage. According to Saarani and Shahadan (2013), high liquidity companies use less debt and this indicates that they finance their own business operations, as suggested by the POT. Erriotis (2007) also mentioned that liquidity of a firm is negatively related to its financial leverage. A firm with a higher liquidity (with higher cash flow), they are able to use the cash flows for operating activities purpose. Thus, they would less likely depend on debt financing as indicated by the POT. There is a negative correlation between liquidity and leverage ratios (Paydar and Bardai, 2012).

Therefore, there is an expectation of a hypothesis between firm’s liquidity and leverage as below:

\[ H4: \text{There is a negative relationship between firm's liquidity and internal and external financing.} \]

**Firm’s growth**

Firms that experience rapid growth sales often need to expand their fixed assets. Thus, high growth firms have a greater future need for funds for their business expansion (Pandey, 2001). According to POT, growth opportunities are positively related to debt ratios (Ting and Lean, 2011). Several studies such as by Al-Najjar & Taylor (2008), Omran & Pointon (2009), Baharuddin et al. (2011), Borgia and Newman (2012) and Akinyomi and Olagunju (2013) found a positive relationship between firm growth and leverage. Companies with potential growth opportunities have greater capacity for using long term debt.

Saarani and Shahadan (2013) also indicated that growing companies rely more on internally generated funds. That is, companies with high growth rates focus on accumulated retained earnings than debt to finance their growth. These findings are consistent with Buferna et al., (2005) that growing companies prefer to incur less debt because their companies tend to
be more risky. Hewa and Locke (2014) also agreed that firms with strong growth rely less on external funding sources. Eliotis (2007) found a negative relationship between growth of firms and their capital structure showing that firms with high growth potential employ less debt in their capital structure. High growth means large variations in earnings which could be interpreted as high risk.

Therefore, there is an expectation hypothesis between firm’s growth and leverage as below:

**H5: There is a positive relationship between firm’s growth and internal and external financing.**

**Impact of Capital Structure on technology Improvement**

There are some researchers did their research on the relationship between loan approval and technology adopted in Malaysian SMEs. Dube (2013) studied the impact debt financing on the productivity of SMEs in Masvingo Urban. His findings showed that debt finance had a positive impact on productivity of SMEs that received adequate funding from banks. Chong and Mahmoud (2013) concluded that new products attract more investors to invest. Chiang, Albert and Eddie (2002) also mentioned that better access to finance enable companies to upgrade their technology and managerial capacity. Bakar and Ahmad (2010) concluded that most SMEs are reputable and have tremendous opportunities to obtain loans and financial assistance for their product innovation. The internationalization of SMEs has expanded due to technological development that reduced costs and risks (Hashim, 2012).

**H6: Internal and external financing mediates the association between determinants of capital structure and the firm’s technology improvement.**

**THEORECTICAL MODEL**

Several theories of capital structure explain the relationship of capital structure choices, such as Pecking order theory and trade off theory. Pecking order theory (POT) argues that firms prioritize their sources of financing and usually prefer internal financing. If external financing is needed, then debt is chosen and equity would be the last resort. While Trade off theory (TOT) indicated a company pays a lower tax when it incurs more debt as interest payment of debt is tax-deductible.

Figure 1: Theoretical Model
METHODOLOGY

Data collection in this study using structured questionnaire survey. The developed questionnaire have been separated into two sections. Section one captured the demographics of the company such as legal status, company location, company main activities, number of employees, annual gross profit, annual sales turnover and year of establishment. In section two, respondents were asked to indicate their preferences of capital structure, sources of funding and their technology performance. Census method is the best method to collect data from SMEs listed in SMEs Corp as it incorporates all companies in the manufacturing sector from FMM directory 2018. Out of the 1365 survey questionnaires distributed, 235 sample responses were returned. However, only a total of 225 questionnaires were usable. 10 questionnaires were not included in the data analysis due to incompleteness. A total of 225 respondents represent approximately 15.6 percent covering a broad range in the Malaysian manufacturing sector. This response rate of 15.6 percent is a common response rate within the context of research in Malaysian manufacturing companies (Olusegun, Hashullah & Nordin, 2014). However, there were 6 sets of questionnaires that fell out of the range and consider as outliers. Henceforth, the data set in this study was 219 after removing the undesirable outliers.

RESULT

Descriptive Analysis

This study employed the sample size of 219 respondents with the following descriptive characteristics. As shown in Table 1, the majority of the respondents were come from a limited liability company (77.6 percent), whilst the rest are limited liability partnership (9.6 percent), partnership (6.8 percent) and sole proprietorship (5.9 percent). In terms of company main activities, electrical and electronic products (53 firms) and chemicals, chemical products and petroleum products (64 firms) are the main contribution to the manufacturing sector. Followed by wood and wood products (48 firms), 19 firms come from textiles, apparels and footwear, 13 firms, each from construction and related materials and transport equipment and only 9 firms come from food products, beverage and tobacco products.

Most of the respondents come from Selangor (27.4 percent), followed by Pulau Pinang (25.1 percent), Johor (17.4 percent), Perak (17.4 percent), Negeri Sembilan (3.7 percent), WP Kuala Lumpur (3.2 percent), Melaka (1.8 percent), and Pahang (1.4 percent). However, no response received from Kelantan, Perlis, Terengganu, Sabah and Sarawak within the time frame given. Respondents were given categorical groups of full-time employee to determine their firm size (less than 5 employees categorized as micro, 5 employees to 75 employees categorized as small firm and 75 employees to 200 employees categorized as medium-sized enterprises). The majority of firms in this study are medium enterprise which is 156 firms, 47 firms are small enterprise and only 16 firms are microenterprise. Based on the information of annual sales turnover, 6 firms having an annual sales turnover of less than RM300,000. Another 55 firms had an annual sales turnover of RM300,000 to less than RM15 million. The rest of the respondents having sales annual turnover are more than RM15 million to RM25 million. Finally, around 172 firms (78.5 percent) of company respondents have 5 to 10 years in the year of establishment.

Table 1 Demographic profile of company

| Legal Status                | Frequency | Percentage (%) |
|-----------------------------|-----------|----------------|
| Sole Proprietors            | 13        | 5.9            |
| Partnership                 | 15        | 6.8            |
| Limited Liability Partnership| 21        | 9.6            |
| Limited Liability Company   | 170       | 77.6           |

| Company Location            |          |                |
|-----------------------------|----------|----------------|
| Johor                       | 38       | 17.4           |
| Kedah                       | 6        | 2.7            |
| Kelantan                    | 0        | 0.0            |
| Melaka                      | 4        | 1.8            |
| Negeri Sembilan             | 8        | 3.7            |
| Pahang                      | 3        | 1.4            |
Once of one formative indicator that would be that profitable companies will continue to sustain their company own the potential levels when their firm size enlarges. They face problems in their financing activities. Further to that, profitability was found positively insignificant. When companies grow, more external financing is needed. Both variables that have a positive relationship with firm growth are significant.

Discussion

The findings from Table 2 show that the formative indicators are below the threshold of internal and external financing. The variance inflation factor (VIF) of the indicators is 5 and higher showing no collinearity problem. Table 2 summarizes the results of the formative measures, variance inflation factor (VIF), and hypothesis testing.

Company's main activities

| Activity                                      | Value |
|----------------------------------------------|-------|
| Electrical and Electronic Products           | 53    |
| Chemicals, Chemical Products and Petroleum   | 64    |
| Wood and Wood Products                       | 48    |
| Textiles, Apparels and Footwear              | 19    |
| Construction and Related Materials           | 13    |
| Transport Equipment                          | 13    |
| Food Products, Beverage and Tobacco Products | 9     |

Number of fulltime employees

| Employees       | Value |
|-----------------|-------|
| Less than 5     | 16    |
| 5 to less than 75 | 47    |
| 75 to less than 200 | 156   |

Annual sales turnover

| Turnover         | Value |
|------------------|-------|
| Less than RM300,000 | 6     |
| RM300,000 to less than RM15 million | 55    |
| RM15 million to less than RM50 million | 158   |

Annual gross profit

| Profit           | Value |
|------------------|-------|
| Less than RM300,000 | 23    |
| RM300,000 to less than RM15 million | 92    |
| RM15 million to less than RM50 million | 105   |

Year of Establishment

| Establishment   | Value |
|-----------------|-------|
| Below 1 year    | 9     |
| More than 1 year to less than 3 years | 16    |
| More than 3 years to less than 5 years | 22    |
| More than 5 years to less than 10 years | 172   |
| More than 10 years | 0     |

Source: Developed for research

Findings
The structural model was analyzed using SmartPLS 3.2 to perform PLS-SEM to test the hypothesized relationships between independent variables (firm size, profitability, liquidity, tangible assets and firm growth) toward dependent variable as leverage in Malaysian Manufacturing companies. There are several steps for formative measurement. First step is to conduct the collinearity by computing the tolerance which represents the amount of variance of one formative indicator that is not explained by other indicators in the same block. Variance inflation factor (VIF) is 5 and higher shown the potential presence of collinearity problem in PLS-SEM (Hair, Ringle & Sarstedt, 2011). Table 2 shown all the VIF of the indicators are below the threshold 5, suggesting no collinearity problem exist. The next step is carried out the bootstrapping procedure to assess the significance and relevance of the formative indicators. Table 2 summarizes the results of the formative measure of internal and external financing by showing the original outer weight estimates, t-values, and significance level.

Table 2: Formative Measure, Variance Inflation Factor (VIF) and Outer Weight Significance Testing Results

| Dependent Variable | Independent Variable | VIF | Outer Weight | T Statistics | Significance |
|--------------------|----------------------|-----|--------------|--------------|--------------|
| Internal and External Financing | Firm Size | 1 | 1 | 1.516** | Yes |
| | Liquidity | 1 | 1 | 0.703 | No |
| | Profitability | 1 | 1 | 0.131 | No |
| | Tangible assets | 1 | 1 | 0.426 | No |
| | Firm Growth | 1 | 1 | 1.736** | Yes |

Notes: *** Significant at 1 percent, ** significant at 5 percent, * significant at 10 percent

Discussion

The findings from Table 2 shows that firm size and firm growth are significant with internal and external financing. Large companies tend to increase debt levels when their firm size enlarges. They face lower bankruptcy costs due to diversification of their business (Uyar & Guzelyurt, 2015) and lower costs of issuing debt or equity (Pandey, 2001). Another variable that found to have a positive relationship in explaining the external financing is the firm growth. This reveals that more external financing needed when the companies grow. Both variables are supported by Trade off Theory. Additionally, tangible assets were positively associated with internal and external financing, but statistically insignificant (supported by Bogdana, 2009; Margaritis and Psillaki, 2010; Ting & Lean, 2011; Jahanzeb and Bajuri, 2014). One possible explanation is that Malaysian manufacturing SMEs with high total tangible assets do not have the tendency to use personal saving and debt in their financing activities. Further to that, profitability was found positively significant on external financing in this study (supported by Ting & Lean, 2011; Jahanzeb & Bajuri, 2014; Saarani and Shahadan, 2013; Iqbal, Ahmad & Ali, 2019). The possible reason could be that profitable companies will continue used their profit margin to sustain their company growth. When come to insignificant positive relationship between liquidity and leverage, it could be showed that manufacturing companies does not involved in liquidity by using leverage. Lastly, internal and external also showed a positive relationship in 1% significance level to improve the manufacturing’s technology performance in Table 3. It is obvious to prove that all financing distributions will improve SME’s manufacturing technology in future.

Table 3: Relationship of Internal and External Financing on Technology Improvement

| Dependent Variable | T Statistics | Independent Variable |
|--------------------|--------------|----------------------|
| Technology Improvement | 2.197*** | Internal and External Financing |

Notes: *** Significant at 1 percent, ** significant at 5 percent, * significant at 10 percent

CONCLUSION

Small and medium enterprises (SMEs) is a important contribution to boost the economies overall the world. In fact, SMEs always struggle to access the financing compared list company. An understanding the factors influence the capital structure is essential to improve sustainability and contribution to the Malaysian economy. This study focuses on manufacturing
SMEs companies and examines the influence of firm characteristics (firm size, tangible asset, liquidity, profitability and firm growth) on capital structure towards technology improvement. A total of 219 survey responses was collected from Malaysian SMEs manufacturing sector. Based on PLS SEM bootstrapping results, two firms' characteristics (firm size and firm growth) were found significant affect internal and external financing. However, liquidity, profitability and tangible assets were rejected and not significant influencing the external financing decision. It proven that internal or external debt demanding is regardless the liquidity increases, changes in profitability and improvement of tangible assets. Thus, different firm characteristics have different leverage privileges which trying to attain optimal capital structure. The variations in the capital structures affect the costs of equity or debt and cost of capital. The choice of debt in the capital structure is important for all companies especially corporate manager in SME manufacturing.

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