

BREAK-EVEN ANALYSIS IN BUSINESS FOR SMALL AND MEDIUM-SIZED ENTERPRISES: STUDY IN GIA LAI PROVINCE – VIETNAM

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Abstract

Breakeven analysis is a useful tool to support businesses in identifying business scenarios and help managers to issue business decisions in the short term and long term in the various ranges. In addition, Gia Lai is a mountainous province in the Central Highlands area but its geographical position is very important in view of geo-politics and geo-economics. Enterprises are operating in Gia Lai mostly small and medium-sized enterprises (SMEs). Thus, the growth of these businesses will contribute significantly and create favourable conditions for sustainable development of Gia Lai Province in the Central Highlands and in the field of security - political and social. However, nearly 75% of surveyed small and medium-sized businesses have not used Break-even analysis tool to sustain their effective decision making. And we conducted this study to find out how these enterprises applying this tool. As the result, the article showed an overview of the characteristics and the actual situation of SMEs in the application of break-even point analysis in making of business decisions as well as suggested appropriate recommendations to improve the quality of performance in these enterprises.

Key words: break-even analysis, C-V-P analysis, cost accounting, SMEs competency

JEL Code: M11, M41

Introduction

Gia Lai is a Vietnam's Central Highlands province with a decisive role for the strategic economic development as well as ensuring national security of the Central Highlands provinces. Gia Lai comprises 1 city, 2 towns, 14 districts (including 03 border districts). Currently, Gia Lai has 3,320 businesses, 128 cooperatives and 17,656 individual. Most of businesses in the Gia Lai province are mainly small and medium-sized enterprises. Therefore, state budget of Gia Lai province depends largely on the stability and development of small and medium-sized enterprises.

In this context, the trend of globalization has been a strong impact to operations, strategies and responds of small and medium-sized enterprises (Knight, 2000). The competition for these businesses become more acute due to a shortage of capital, technique, technology and management experience (Eikebrokk et al., 2007). Thus, overcoming the difficulties of the business is very important to help businesses survive and grow as well as contribute to the stable turnover source of the Gia Lai and ensuring the stability economic development, politics of the province.

An effective tool used in business decision making is the break-even point (BEP) analysis. With its strength, this tool provides the easy understand, detailed, clear and simple information, profit of various products as well as the decision whether to continue business or not, change of variable cost and fixed cost, control and measure of cost, a key role in the analysis between the amount, profit and costs, and especially the forecast, up the long-term plans, the stability and development in the future (Robert, E. & J. Royce, 2002; Noreen et al., 2011)

Therefore, as learning about the characteristics of the analysis of BEP as well as its role for small and medium-sized enterprises, we focus on using BEP tool of the business so that we can make appropriate recommendations to help improving the competitiveness and efficiency of the enterprise. Thereby, helping to maintain sustainable growth for businesses and contribute to a stable state budget for the Gia Lai province.

Our article clarified a number of issues including the views of small and medium-sized enterprises of the world and Vietnam, a number of issues related to break-even analysis and application of this tool in the small and medium-sized enterprises of the Gia Lai province.

1 Literature review

1.1 Definition of small and medium-sized enterprises (SMEs)

So far, no unified definition of small and medium-sized enterprises among worldwide researchers. A report published in 2014 by independent evaluation group (IEG) of the World Bank entitled "The Big Business of Small Enterprises" showed no united concepts to best understand about small and medium-sized enterprises. The definition of small and medium-sized enterprises depend on the analysis of the cost and operational benefits of the approach adopted by organizations.

According to the trade organization of Europe, small and medium-sized enterprises was defined in the recommendation 2003/361 EU as follows (table 1):

- Medium-sized enterprises are enterprises having fewer than 250 employees and annual turnover less than or equal to EUR 50 million; or total assets less than EUR 43 million;
- Small enterprises are enterprises having fewer than 50 employees and annual turnover as well as total assets less than or equal to EUR 10 million;
- Microenterprise is defined as having fewer than 10 employees and annual turnover or total assets less than or equal to EUR 2 million.

Tab. 1: Classification according to European trade organizations

Company category	Staff No.	Turnover or total asset	
		Turnover/year	Total asset
Medium-sized	<250	<= EUR 50 Million	<= EUR 43 Million
Small	<50	<= EUR 10 Million	<= EUR 10 Million
Micro	<10	<= EUR 2 Million	<= EUR 2 Million

Source: Own

According to international trade agreements, the small and medium-sized enterprises of the United States of America are classified by turnover and number of employees based on the guidelines of the US government committees including the Ministry of Commerce, the small business administration Commission and the Ministry of Agriculture (table 2).

Tab. 2: Classification in the United States of America

	Service and production Business	Export service business		Agriculture
		Others	Information technology	
Staff No.	< 500	< 500	< 500	< 500
Turnover/year	No regulated	<= USD 7 million	<= USD 25 million	<= USD 250.000

Source: United States International Trade Commission, 2010

In Vietnam, based on Article 3 of the Decree 56/2009, small and medium-sized enterprises are divided into three levels: micro, small, medium according of total capital (total equity equal the total assets is defined in the balance sheet of the business) or the number of employees per year (table 3).

Tab. 3: Classification in Viet Nam

Industry	Micro	Small		Medium-sized	
	Staff No.	Capital	Staff No.	Capital	Staff No.
Agriculture, forestry and fishery	<= 10	<= VND 20 billion	10< and <=200	20< and <= VND 100 billion	200< and <=300
Industry and construction	<= 10	<= VND 20 billion	10< and <=200	20< and <= VND 100 billion	200< and <=300
Service and business	<= 10	<= VND 10 billion	10< and <=50	20< and <= VND 500 billion	50< and <=100

Source: Own

In general, there are many different definitions of small and medium-sized enterprises. However, the definitions have a common regard to the number of employees and turnover of the business. The level of these two indicators (number of staff and turnover) is different in each country. But generally, the maximum limit of 250 employees is the European Union (EU), some other countries including Vietnam are limited to 200 workers, while in the US is less than 500 workers.

1.2 Break-even point

The break-even point in economics, business, and specifically cost accounting, is the point at which total cost and total turnover are equal: there is no net loss or gain, and one has "broken even." A profit or a loss has not been made, although opportunity costs have been "paid", and capital has received the risk-adjusted, expected return. In short, all costs that needs to be paid are paid by the firm but the profit is equal to zero.

To calculate the break-even point, we have to know the total fixed cost of a period, the selling price of that time as well as cost per unit of product sold (Anderson et al., 1993; Zimmerer et al., 2005).

The difference between the cost and selling price of the product known as contribution margin. The contribution margin was used to compensate for the total fixed costs in operation period. The contribution margin of number of consumed products compensate for total fixed costs called break-even point. Once achieved break-even point, the marginal turnover per unit of product sold is the profit (Potkany, et al., 2015).

Variable cost is the cost that changes proportionally to the level of activity. Variable cost is only incurred when the operation occurred. Total variable cost will increase (or decrease) corresponding to the increase (or decrease) the level of activity, but the variable cost per unit of activity level has not changed (Correia et al., 2014).

Total fixed costs is understood as part of the costs which is not impacted by production - business activities of the business, including the sale of products. Total fixed costs must be paid even the business does not sell products. These costs include costs such as outsourcing, insurance, other facilities, salary of management, security costs, asset impairment. However, these costs may not be the same at the time of operation, such as the cost of electricity and water which depend on the weather (Anderson et al., 1993, Zimmerer et al., 2005).

Some costs are difficult to classify because they contain elements both fixed and variable such as advertising costs. This cost can be assumed to increase as sales increase, but it is difficult to establish the exact relationship between costs and turnovers. These expenses are called mixed cost.

Some costs vary in each step, they are fixed in this size, but will increase the other size. For example, the renting cost may fixed with a thousand employees, if you want to rise to a thousand and two hundred employees, this cost must be changed. When calculating the break-even point, then these costs are considered fixed costs (Anderson et al., 1993).

BEP analysis is also a planning tool. Investors and business owners always calculate BEP when investing in the establishment of new businesses or business expansion. It is also useful for determining the prices of products (Greenfield, 1989; Horngren et al, 1993).

When analyzing the BEP, it need to satisfy the following assumptions: all costs are correctly classified into the variable cost and fixed cost (i); the cost will not change in corresponding to the scale of the production or sales (ii); and all the products will be sold at the same price or the amount of consumption (iii). The accuracy of calculating BEP depends on the satisfaction of these assumptions. However, the reliability of this formula is accepted even when all the assumptions were not met (Anderson et al., 1993; Hatten, 1997; Zimmerer et al., 2005).

Besides usability, the application of break-even analysis also contains certain limitations such as the lack experience of the managers in the classification of fixed costs and variable costs, the lack of determined for the retail business with multiple products and have many different prices as well as limited by the assumptions to be analyzed break-even point (Greenfiel, 1989; Hatten, 1997; Zimmerer et al., 2005).

In general, break-even analysis have certain advantages especially for small and medium-sized enterprises in determining the price and number of products in order to achieve the best business performance, especially in the enterprise policy of structured products, selling a variety of goods. They help businesses get desired profit and contribute to stabilizing the state budget, maintaining the stability and development of the national economy.

2 Research method

Aim to learn about the break-even point analysis as well as the status applying this tool in the SMEs in the Gia Lai province, we used the following methodology:

We used archival method to learn about the role of break-even analysis, the used method and the limits of this tool. Besides, we also use methods such as analysis and synthesis of data from different sources.

We used the survey with self-filled questionnaire to conduct an investigation on the application break-even analysis in SMEs in the Gia Lai province.

Survey questionnaire was designed including general and specific information section with different answers format. To determine the sample size, we used the formula (Sue, 2008):

$$n = \frac{N}{1 + N(e)^2}$$

n: sample

N: Population

e: error allowed with confidence level k ($e = 100\% - k$)

Based on the data of Gia Lai province, it has 3,320 businesses by the end of 2015 including 3,188 small and medium-sized enterprises (accounting for 96%).

With the number of SMEs are 3,188 businesses, 95% confidence level, the minimum number of samples required for the study would be 356 samples.

The data collected from the survey will be processed by SPSS 20 software.

3 Result and discussion

Survey results were collected from respondents are business owners; director; chief accountant; Sales manager and other key positions of the business. There were 500 surveys spread out, 464 surveys were collected, accounting for 92.8%. While, there were 402 enterprises have one respondent, 50 enterprises have from 2 to 3 respondents taking the survey. Therefore, the number of collected samples ensure the credibility of the study.

In 464 respondents, 315 respondents are male (67.9%) greater than the 149 female gender (32.1%). In terms of the respondent's qualifications, 322 people have a university degree (69.4%); 83 people have college degree (17.9%), the remaining amount has intermediate education is 44 persons (9.5%) and only 5 people have master degree (3.2%). Besides, 292 people is the director (62.9%); 83 people are chief accountants or sales manager (17.9%) and 89 people are at other key positions (19.2%) (table 4).

Tab. 4: Statistical Result by gender of respondent

		Level				Position			Total
		Inter.	College	Bachelor	Master	Other	Chief	Director	
Gender	Female	12	38	95	4	38	41	70	149
	Male	32	45	227	11	51	42	222	315
Total		44	83	322	15	89	83	292	464

Source: Own

195 respondents have worked at company from 3 to 5 years (42.0%), 146 respondents have from 5 to 10 years (31, 5%), under 3 years is 62 respondents (13.4%) and above 10 years is 61 candidates (13.1%). Meanwhile, 222 respondents have worked experience over 10 years (47.8%), 160 respondents have from 5 to 10 years (34.5%), 66 respondents have from 3 to 5 years (14.2%) and less than 3 years with 3.4% is 16 respondents (Table 5).

Tab. 5: Statistical Result by duration at work of respondent

Year	At enterprise		Experience	
	No.	Percent	No.	Percent
<3	62	13.4	16	3.4
3<Y=<5	195	42	66	14.2
5<Y=<10	146	31.5	160	34.5
>10	61	13.1	222	47.8
Total	464	100	464	100

Source: Own

There are 188 enterprises in the field of trade (41.6%), 143 enterprises in service sector (31.6%), 68 enterprises in construction sector (15.0%), 36 enterprises in production sector (8.0%) and 17 enterprises in multi-sector (3.8%). Moreover, 310 enterprises have labor less than 11 people (68.6%), 124 enterprises between 11 and 50 labors (27.4%), the rest have from 50 to 300 people (4.0%). On the other hand, the registered capital of enterprises are mostly under 10 billion with 389 enterprises (86.1%), from 10 to 20 billion are 38 businesses (8.4%), 25 enterprises with total capital of over 20 billion (5.5%) (table 6).

Tab. 6: Statistical Result by labor and capital in industry

Industry	Labor			Capital (VND Billion)				Total
	<11	11=<L<50	50=<L<300	<10	10=<C<20	20=<C<50	>50	
Service	98	37	8	125	5	8	5	147
Trade	151	33	4	172	12	2	2	192
Production	17	16	3	24	8	4	0	38
Mix	11	3	3	15	2	0	0	19
Construction	33	35	0	53	11	2	2	68
Total	310	124	18	389	38	16	9	452

Source: Own

In 452 enterprises, only 334 enterprises have not apply break-even analysis (73.9%), 118 businesses have applied (26.1%) . In 118 enterprises, there were 44 enterprises in the field of trade, 28 in the field of construction, 27 of the service sector and 16 in the fields of manufacturing, as well as only 3 multiple-sector enterprises (table 7).

Tab. 7: Statistical Result by application BEP analysis in industry

Industry	Application				Total
	Yes	Percent	No	Percent	
Service	27	6.0%	116	25.7%	143
Trade	44	9.7%	144	31.9%	188
Production	16	3.5%	20	4.4%	36
Mix	3	0.7%	14	3.1%	17
Construction	28	6.2%	40	8.8%	68
Total	118	26.1%	334	73.9%	452

Source: Own

For those businesses do not break-even analysis, the 178 respondents give the reason from no human resource (53.3%), 92 of respondents said that was not necessary (27.5%), 57 respondents said that inconsistent with his industry (17.1%), 7 respondents give different reason (2.1%). Meanwhile, 118 businesses have applied analysis, 54 respondents give the reason from no human resource (45.8%), 48 respondents said that other causes (40.7%), 16 respondents said that unnecessary or inappropriate to industry.

In 118 enterprises applied break-even analysis, 47 respondents use this tool to manage costs effectively, 20 respondents used to effectively manage costs and determine the output or price, 23 respondents used for many purposes over, only 6 respondents used to build a reasonable price and 6 other respondents used to determine consumption output. However, there are 8 respondents did not know calculating the break-even point compared to the remaining 110 respondents. There are 22 per 110 respondents can using 3 methods to

calculate break-even point, 14 people can use two methods, the rest just know how to use one method (table 8).

Tab. 8: Statistical Result by purpose of enterprises

Purpose	No.	Percent
Determining the price	6	5.1%
Determining quantity	6	5.1%
Cost efficiency	47	39.8%
Business efficiency	20	16.9%
Multiple	39	33.1%
Total	118	100.0%

Source: Own

Moreover, in 118 applied enterprises, 95 respondents said that break-even analysis is important and critical, 23 respondents said that it is normal or not important. There are 98 respondents regularly perform analysis break-even point while 20 respondents occasionally performed. And 57 respondents said that break-even analysis is very suitable for small and medium-sized enterprises, while the rest said that break-even analysis is consistent with larger firms.

To measure the willingness to improve knowledge and understanding of respondents about break-even analysis, we conducted a survey of willingness to participate in a training conference on this knowledge. There were only 379 respondents desire to participate and 85 respondents will not participate. However, when we asked about the BEP analysis application in enterprises after attending the training, there were only 149 per 379 respondents will apply in enterprises, 223 respondents were reluctant and 7 respondents thought that they will not apply it in enterprises.

Conclusion

Gia Lai province has a very critical geo-politics and geo-economics location. The development of the SMEs will contribute significantly and create favorable conditions for the sustainable development of Gia Lai Province and the Central Highlands as well as ensure national security and efficient exploitation of regional resources. With such an important role, the SMEs in the Gia Lai province should effort and breakthrough further in business activities in order to escalate in size and profit, ensuring turnover for the state budget, contributing to economic – political – social stability.

To achieve these goals, one of the effective support tools for the improvement of production and business activity is break-even analysis. This is an extreme critical tool/method help administrators making business decision.

Based on the survey results and analysis of the current status of the implementation of break-even analysis of SMEs in Gia Lai province, there are some comments as follows:

- Most are not aware of the importance of the analysis of break-even point;
- Some businesses are made, but not often and not to fulfill the effectiveness of this tool;
- Most businesses want to be equipped, learn, understood and apply this tool in the future.

Some recommendations:

- For state management agencies of Gia Lai province: creating favorable conditions for businesses in the province improving their knowledge in business administration: regularly opening training-courses; preferential policies to support enterprises to enhance management knowledge of their employees.
- For businesses: having more favourable policies to attract high-quality human resources and encouragement for employees in raising the level of business administration.

References

- Anderson, R. L., & Dunkelberg, J. S. (1993). *Managing small businesses*. West Group.
- Correia, I., & Saldanha-da-Gama, F. (2014). The impact of fixed and variable costs in a multi-skill project scheduling problem: An empirical study. *Computers & Industrial Engineering*, 72, 230-238.
- Eikebrokk, T. R., & Olsen, D. H. (2007). An empirical investigation of competency factors affecting e-business success in European SMEs. *Information & Management*, 44(4), 364-383.
- Greenfield, W. M. (1989). *Developing new ventures*. Harpercollins College Division.
- Hatten, T. S. (1997). *Small Business*.
- Horngren, C. T., & Harrison, W. T. (1993). *Accounting*. Prentice hall.
- http://ec.europa.eu/growth/smes/business-friendly-environment/sme-definition_is
- http://ieg.worldbank.org/Data/reports/sme_eval1_0.pdf
- <https://stats.oecd.org/glossary/detail.asp?ID=3123>

- Knight, G. (2000). Entrepreneurship and marketing strategy: The SME under globalization. *Journal of international marketing*, 8(2), 12-32.
- Kuehl, C. R., & Lambing, P. A. (1990). *Small business: planning and management*. Dryden Press.
- Noreen, E. W., Brewer, P. C., & Garrison, R. H. (2011). *Managerial accounting for managers*. McGraw-Hill Irwin.
- Potkany, M., & Krajcirova, L. (2015). Quantification of the Volume of Products to Achieve the Break-Even Point and Desired Profit in Non-Homogeneous Production. *Procedia Economics and Finance*, 26, 194-201.
- Sue, G. (2008). Business research method. *ventures publication ApS, Swedish institute, ISBN*, 978-87.
- Zimmerer, T., Scarborough, N. M., & Wilson, D. (2005). *Essentials of entrepreneurship and small business management*. Pearson/Prentice Hall.

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