APPLICATION OF CAPITAL BUDGETING METHODS IN SMALL AND MEDIUM-SIZED ENTERPRISES
– case studies of SMEs in Vietnam
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Case studies of SMEs in Vietnam

Many researches in the past studied capital budgeting in Small and medium-sized enterprises (SMEs), showing that unlike large corporates, small businesses apply different methods in their capital budgeting decision. Previous research’s findings results that Discounted cash flow method is not commonly favoured by SME’s owner and manager. Based on the past findings, this thesis expands its researching to study how SMEs apply methods to determine a capital budgeting decision in a developing country. The paper is a qualitative research to be implemented in Vietnam, a developing economy. The thesis aims at finding out the reality of applying appropriate methods in making capital budgeting decisions in SMEs in Vietnam.

From the interviews with CEOs of three SMEs in different industries, the thesis is finally able to collect qualitative data and draw a picture of how SMEs in Vietnam apply capital budgeting methods to determine a project investment. The major findings of research show that (1) under a context of developing economy, SMEs express the positive attitude towards opportunities from the economy as well as illustrate their business activities with both successful growth and future development; (2) when appraising a project investment, SMEs do not have an unprofessional capital budgeting process and only calculate critically necessary steps and evaluate the feasibility of project investment; and (3) SMEs give no exact name for methods and techniques in capital budgeting and they apply a various combination of calculation from different techniques such as NPV, PB, PI to forecast revenue and expenditure of project, not fully focus on a specific technique or method.

KEYWORDS:

Capital budgeting, Discounted cash flow, Net present value, Small- and Medium-sized Enterprises (SME)
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<th>Description</th>
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<tbody>
<tr>
<td>ARR</td>
<td>Accounting Rate of Return</td>
</tr>
<tr>
<td>DCF</td>
<td>Discounted Cash Flow</td>
</tr>
<tr>
<td>DPB</td>
<td>Discounted Payback</td>
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<tr>
<td>FCF</td>
<td>Free Cash Flow</td>
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<tr>
<td>IRR</td>
<td>Internal Rate of Return</td>
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<tr>
<td>NPV</td>
<td>Net Present Value</td>
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<tr>
<td>PBL</td>
<td>Project Balance</td>
</tr>
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<td>PI</td>
<td>Profitability Index</td>
</tr>
<tr>
<td>PV</td>
<td>Present Value</td>
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<tr>
<td>ROI</td>
<td>Return on Investment</td>
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<tr>
<td>SME</td>
<td>Small- and Medium-sized Enterprises</td>
</tr>
<tr>
<td>TOPSIS</td>
<td>Technique for Order of Preference by Similarity to Ideal Solution</td>
</tr>
<tr>
<td>WACC</td>
<td>Weight Average Cost of Capital</td>
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</tbody>
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1 INTRODUCTION

1.1 Background information

Capital budget, which refers to investment activities, belongs to financial management area. According to Berk et al. (2015, 290), a capital budget is composed of all projects as well as investments that are planned to implement in the next period. So, before spending money on those projects on which bear huge expenditure, capital budgeting has a role as a filter before pulling huge money out of the pocket of business. Capital budgeting is defined as a "process of analyzing projects and investment opportunities and deciding which ones to accept" (Berk and Hardford 2015, 290). In other word, capital budgeting analyzes and appraises proposed projects to be invested in or not.

Studying deeper into capital budgeting, this topic has earned concerns from a large number of scholars in research field since 1959 with an article "On the problem of capital budgeting" (Diran 1959). Various aspects of capital budgeting have been studied, including an issue of capital budgeting method. A number of recent researches on capital budgeting methods can be listed such as "Capital budgeting decisions using the discounted cash flow method" by David R.Sinclair (2010) to indicate a comparison between using ROI and NPV in evaluating capital investment for long-term projects in the practice of anesthesiology; "Factors affecting biasing of capital budgeting cash flow forecasts: Evidence from the hotel industry" by Michael J.Turner and Chris Guilding (2012) to find out the factors affecting the biasing when making a forecast on cash flow in capital budgeting process, observed in hotel industry. Hence, it can be seen that capital budgeting method becomes an attractive topic not only in business field, but also in other ones such as health or hotel industry. Moreover, when studying capital budgeting method, a large number of researches are almost observed in developed countries such as in Sweden (Daunfeldt and Hartwig 2014), in Nordic countries (Brunzell and Vaihekoski 2013), in the UK (Glen and Panos 2000), in Australia (Giang and Maurice 2008), and so on. The researchers observe their studies mostly in large companies which commonly utilize DCF techniques in capital budgeting analysis.

In a different aspect, many researches in the past have been conducted to study deeper on capital budgeting method in small business. Relied on the findings of previous studies, it is inferred that many SMEs prefer payback period method to DCF (Morris and Jonathan
2006) and do not fully apply capital budgeting method which is favored in large firms (Uddin and Chowdhury 2009). Reasons why SMEs do not favor of DCF techniques vary from “limited education background of some business owners and staff sizes” as studied by Danielson and Scott; to a limitation in knowledge of capital budgeting or high cost for SMEs to hire an expert in this field, resulted from the study of Uddin and Chowdhury.

By extension on discovering new territory in the topic, this research positions itself in a different aspect of studying capital budgeting method which is used in small business. The thesis would target at SMEs in Vietnam- a developing economy in which SMEs take its large proportion of 98.1% in total number of companies in Vietnam, according to report from General Statistics Office of Vietnam in 2017. Vietnam has been experiencing well-performed economic growth as reported by World Bank (2018), thus economic activities are vibrant and abundant opportunities for business activities.

Derived from the findings of previous researches, this study is carried out under assumption that capital budgeting method differs in SMEs and in large companies; and SMEs prefer other method in evaluating investment rather than DCF. Since researches on topic of capital budgeting method in Vietnam remain pretty thin, this paper would concentrate on studying the reality how SMEs in Vietnam implement capital budgeting using different methods when making a decision in a project investment.

1.2 Research problem

Despite the fact that many CFOs favor DCF as a technique when evaluating an investment or a project (Graham and Harvey 2002), the capital budgeting techniques of NPV and IRR, belonging to DCF, have gained little attraction from owners or managers in SMEs. This research attempts to find out the reasons why DCF is not commonly used meanwhile non-DCF attracts more attention in SMEs. Moreover, in Vietnam, a developing country, business activities are vibrant with participation of SMEs. This paper target SMEs in Vietnam to observe that under a context of developing economy how those companies are conscious about applying various methods when making a decision on a project investment. In short, this study focuses on the reality of how SMEs apply capital budgeting methods as well as how they they evaluate a project investment by applying DCF and non-DCF methods.
1.3. **Research question, purpose and outline**

In order to study the research problem, a major research question is generated to orient the thesis towards solving the above problem:

*How do SMEs apply methods in their capital budgeting decision?*

To facilitate finding the answer to the above major research question, a number of sub-questions would be supportive:

Sub-question 1: How do SMEs grow and develop in a developing country?

Sub-question 2: How do SMEs’ managers implement capital budgeting in appraising a project?

Sub-question 3: How do SME’s managers apply methods in their capital budgeting decision? Applicability of DCF and non-DCF methods in capital budgeting?

The research purposes to discover the reality how SMEs implement methods in capital budgeting decision when they consider investing in a proposed project. This study aims at SMEs making an investment decision based on methods and techniques which are appropriate and effective in those SMEs. Furthermore, this study attempts to study applicability of common techniques belonging to DCF and non-DCF methods in capital budgeting decision of the SMEs.

In this research, the outline starts off with the part 1 Introduction to describe a number of previous researches on topic of capital budgeting, both non-DCF and DCF methods in SMEs. In addition, part 1 narrows the research issue focusing on some previous findings to present a number of reasons for not applying DCF method in SMEs in several countries. Also, the first part states the research question as well as the aims of this study. In part 2, the study presents a theory background of capital budgeting method, relevant theories and concepts of non-DCF and DCF method as well as discussions on these capital budgeting techniques. Importantly, part 3 deals with empirical data which is collected from sample SMEs in Vietnam. This part describes a research methodology for this study and present as well as analyze collected data to find out answer to the research questions. Finally, part 4 concludes the result of the research which relies on the data analysis in part 3 and make some recommendations for further research.
1.4. Contribution of research

To researchers, this research is inspired from previous studies on capital budgeting method in SMEs. Approaching from several findings that SMEs do not favor DCF method in evaluating project investment, the study targets SMEs and their capital budgeting decision by using different methods which are appropriate to scope of small businesses. This thesis expands to a new aspect in studying capital budgeting decision in SMEs of developing country, Vietnam to access the reality of the way SMEs in a developing market manage their financial resources through investment on project. This reality might be interestingly different from how capital budgeting is implemented in developed countries or other developing countries with different culture.

To financial managers, this research observes how financial managers in a number of SMEs determine an investment by applying various methods and techniques in practice. Sharings from those managers in sample companies hopefully contribute valuable experiences. The sharings hopefully are both positive and negative somehow for financial managers of other SMEs or of large corporations.
2 CAPITAL BUDGETING BACKGROUND

This second part of the research purposes to provide a theoretical framework for studying further on non-DCF and DCF methods. Relevant concepts, theories and other knowledge are presented to contribute to an easier understanding of various issues in capital budgeting methods.

2.1 Capital budgeting and financial management

We live in the world of scarcity which means that production resources surrounding us are limited to produce goods and services meeting our indefinite needs; for example, the shortage of natural resources, of human (or labor), of finance to supply tools and equipments. Due to such scared resources, society is in need of managing its resources effectively belonging to the scope of economics study (N.Gregory 2015, 4). In another word, a society needs to effectively manage its factors of production which are involved of labor, land and capital to produce goods and services meeting people's wishes and needs.

In a smaller scope of business world in which goods and service are produced and sold to customers for the purpose of profit seeking, a company deals with managing 4 major types of scared resources including material, human, financial and informational resources (Pride et al, 2017, 10). Meanwhile material and human resources are key to implementing business production, financial resource- refered to money, serves as a basis to keep business running. Financial management, also meaning to the management of money, in a company is of great importance for survival of company because in the worst management, the company is unable to pay invoices and debts resulting in the bankruptcy eventually (Pride et al, 2017, 468).

A good financial management starts off with a well-prepared financial plan. Initially, financial plan defines the goals and objectives of the company or organization specifically and measurably. The second step in financial planning deals with budgeting which projects all of the income and expenses of the company to achieve its goals and objectives. Once the budgeting step is completed, financial manager identifies the sources of funds to meet both the short-term and long-term financing needs (Pride et al, 2017, 473).
In budgeting step, besides cash budget prepared by departments of the company, capital budget is used as an effective tool to estimate expenditure for long-term assets as well as to aid in forecasting long-term financing needs (Pride et al, 2017, 474). The capital budget of a company, therefore, comprises all of the projects and investments that are planned to implement in next period. Furthermore, capital budgeting is a process which analyzes and appraises all of the proposed projects and investments to determine if the company will invest in them or not (Berk et al, 2015, 290). Therefore, capital budgeting can be seen as a filter before pulling huge money out of pocket.

2.2 Small and Medium-sized Enterprises

2.2.1 Definition and characteristics of SMEs

The term Small- and Medium-sized Enterprises (SMEs) spreads all over the world and its popularity is increasing very fast. In terms of definition, SMEs meaning varies country by country with different scope.

In the US, published by the Small Business Administration (SBA), a small business refers to “one which is independently owned and operated for profit and is not dominant in its field” (Pride and Kapoor 2017, 133). The definition of SME is defined in terms of number of employees and revenue of company. The US International Trade Commission (ITC) summarizes into a table on definitions of SME by different organizations.
In overall, the size of SMEs in the U.S is less than 500 employees in almost industry with a small amount of revenue.

In EU, the term SME is defined on basis of two main criteria which are staff headcount and turnover (or balance sheet total) (European Commission). It clarifies more category of size of micro, small and medium-sized enterprises in the following table.

<table>
<thead>
<tr>
<th>Company category</th>
<th>Staff headcount</th>
<th>Turnover</th>
<th>Balance sheet total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium-sized</td>
<td>&lt; 250</td>
<td>≤ € 50 m</td>
<td>≤ € 43 m</td>
</tr>
<tr>
<td>Small</td>
<td>&lt; 50</td>
<td>≤ € 10 m</td>
<td>≤ € 10 m</td>
</tr>
<tr>
<td>Micro</td>
<td>&lt; 10</td>
<td>≤ € 2 m</td>
<td>≤ € 2 m</td>
</tr>
</tbody>
</table>

Table 1: Category of enterprises (European Commission).

The definition of SME in the UK is pretty similar to the one in EU. Generally, SMEs in the UK are any business with the number of employees less than 250 people. It also specifies small business into more details of Micro company (0-9 employees), Small
company (10-49 employees) and Medium company (50-249 employees) (Rhodes 2018, 5)

Despite the fact that SME definition varies in different country, the SME shares a number of characteristics. Pride and Kapoor (2017, 143) describe a number of advantage of small business, also of SME such as close relationship of business owner with his or her customers and employees; quick adaptability to change of business environment and market; simple accounting system and independence. In contrast with those advantages, SMEs deal with a number of disadvantages such as high risk of failure which potentially comes from limited resources of human, management skills and particularly of financial resource with a limited ability to raise capital for growth and development.

SMEs are considered the backbone in economy due to their large contribution to economic activities. For example, in the U.S, SMEs represent 99.7% of all businesses and generate 63% of net new jobs for the society; SMEs contribute to 97.5% of all identified exporters and create 33% of export value (Pride et al. 2017,134). In EU, SMEs account for 99% of all businesses and create approximately 85% of new jobs (European Commission).

2.2.2 SMEs in developing countries

Similarly, SMEs make a large contribution to the growth and development of economies in developing countries. In Asia region, SMEs represent over 97% of all businesses in high, middle and low income countries (Asian Development Bank institute 2016, 6).

In addition to common characteristics of SME mentioned above, SMEs in developing countries struggle with a number of challenges. For example, OECD’s evidence (2017, 11) shows that indirect exports from developing country SMEs are probably lower than that in developed country SMEs. Furthermore, due to the problem of their size, SMEs experience market failures with difficulties in accessing technology and innovation, source of financing, skilled workers and market (Asian Development Bank Institute 2016,10). Specifically, SMEs in developing countries emphasize their obstacle in accessing financing sources (Wang 2016) and this constraint finance makes an impact on the adjustment speed of SMEs to their cash holdings (Cristina et al. 2018)

Regardless of factors of region and development level, lessons for SME development are suggested (OECD 2004,14), including:
- Peace and stable environment are key requirement to SMEs as well as foreign investment attraction.

- Governmental macroeconomic policies integrate development strategy of SMEs

- Mutual interaction between the stakeholders is essential

- Investment in infrastructure and services at local level facilitate SME's integration for further development

- Women's participation in SME development should be enhanced.

In short, SMEs play an important role in a developing economy and make great contribution to economic activities. Unfortunately, SMEs in developing face a number of difficulties which are associated with financial problems. Capital budgeting in SMEs; therefore would become a challenge for them to overcome for a good financial management.

### 2.3 Capital budgeting process

Since capital budgeting refers to investment decision in long-term assets, capital budgeting process requires different steps which are considered carefully to make a good decision on which kind of capital assets to be invested in. According to Van Horne and Wachowicsz (2008, 308), capital budgeting process is composed of five steps:

1) Listing projects proposals which are consistent with the strategic objectives of the firm
2) Forecasting “after-tax incremental operating cash flows for investment projects”
3) Calculating and considering the incremental cash flows of the investment project
4) Determining which projects would be invested in applying investment decision criteria
5) Reevaluating implemented investment projects in period and conducting postaudits to completed projects

Another process of capital budgeting also appears in “Capital budgeting valuation” by Baker and English (2011, 2). The process, which involves six steps, is originally presented by Baker and Powell (2005) and it is almost familiar with the ones by Van Horne and Wachowicsz. The 6-step process of capital budgeting involves: (1) identify
project proposals, (2) estimate cash flows of project, (3) evaluate projects, (4) select projects, (5) implement projects and (6) perform a postcompletion audit. In their research report on capital budgeting in corporate, Schönbohm and Zahn (2012, 5) also present a five-stage process in capital budgeting which is composed of (1) identification and filtering, (2) selection, (3) authorization, (4) implementation and (5) performance measurement and control. From those researches, there can be seen that no standard is applied for defining a capital budgeting process and almost all of the stages are similar.

In the first stage of identifying proposed projects, five categories of investment projects are suggested by Van Horne and Wachowicsz (2008, 308), including:

- project for new products or expansion of existing products
- project for replacement of equipment or buildings
- project for research and development
- project for exploration
- project for other purposes

All of those types of projects are consistent with objectives of the firm to aim at value maximization, agency problem solving and corporate social responsibility (Van Horne and Wachowicsz 2008, 3). The final stage of performing audit after the project finishes belongs to management. Among the suggested steps in capital budgeting process, evaluating cash flow of projects and selecting projects using various methods receive major concerns from managers of company, rather than other stages. Particularly, meanwhile CFOs of corporate rank financial analysis and project selection as the most important stage in capital budgeting process; identifying proposed projects and forecasting cash flow are more favored by managers in SMEs, according to Batra and Verma (2014, 358).

Despite the fact that capital budgeting process varies in financial management, the efficiency of the process and management of the firm have proved a mutual impact on each other. Harris and Raviv (1996, 1160) explores that a manager’s selection for a proposed project would be affected by a capital budgeting process; on the other hand, “the manager’s ability to manipulate the project technology and information cost will affect the capital budgeting process”. Furthermore, capital decision process creates both benefits and costs in a relation with agency and information problem. Marino and Matsusaka (2005) indicates that in corporations, when receiving delegate rights of decision, the agent tends to approve “too many projects”; meanwhile a process which
results in the agent to mindly mislead the information about project quality retains the right of project rejection on the principal.

There are a number of further concerns in appraising a project investment. Applying investment rules in selecting a single independent project becomes pretty simple by merely calculating necessary indicators corresponding to appropriate methods. The problem of project selection potentials more complicated when determining an investment among several possible projects. In his works, Van Horn and Wachowicsz (2008, 330) present a number of difficulties when making a decision among several possible projects. The first difficulty calls dependency and mutual exclusion. In case of dependent project, selection is associated with considering additionally probable approval of one or more other projects. Due to their dependency, that kind of proposal may bear potential for new project of expansion and so on. On the other hand, projects are sometimes mutually exclusive in a way that only one among several proposed projects would be chosen meanwhile the other would be rejected. Since the other possibly rejected projects sound beneficial to company, appraising projects demand further analysis to choose which project would be the best one among the several potential candidates. The second difficulty in project selection deals with ranking problems. Projects themselves differ in terms of several points, majorily scale of investment, cash flow pattern and lifetime of project. In order to select one among those proposals, ranking them based on such criteria challenges managers because of “the contradictory result” of NPV, IRR and PI.

In addition, other difficulties include sensitivity analysis and capital rationing. In the same research, it is studied that any changed of parameters of cash flow would helps to measure the sensitivity of project’s value specifically when cash flow increases or decreases unexpectedly. Additionally, difficulty in capital reasoning refers to a condition of constraint capital expenditure. Setting a budget ceiling for investment capital would be a factor affecting the investment decision for a project Van Horn and Wachowicsz (2008, 336)

Capital budgeting process, after all, purposes to serve a good financial management in a company. Designing an effective process indeed aids managers in their decision in financial issues.
3 METHODS IN CAPITAL BUDGETING DECISION

In this section, the research would provide a theoretical background on two most popular methods in capital budgeting decision. They are Non-discounted Cash Flow (non-DCF) and Discounted Cash Flow (DCF). The flow of relevant theory is shown as below.

![Diagram on flow of relevant theories](image)

Figure 2: Diagram on flow of relevant theories

3.1 Application of non-DCF methods in capital budgeting decision

Non-DCF method is one way to be applied in appraising a proposed project when making a decision on a project investment. This technique is composed of Payback and Accounting rate of return in which Payback period is frequently considered as the
essential method. Two other variations of Payback period name Discounted payback and Project balance which all conduct on a basis of time value of money ignorance.

3.1.1 Background on non-DCF methods

Non-DCF, referred to Payback method, does not discount the estimated cash flow to evaluate a project. Called by its name, Payback method relies on a criterion of required period for the “cumulative expected cash flows from an investment project to equal the initial cash outflow” (Van Horne and Wachowicz 2008, 324). The required period is the needed time for the proposed project to return the expected cash flow equal to the initial cash for investment.

The Payback period has two other variations which are Discounted Pay Back (DPB) and Project Balance (PBL) methods. Specifically, both DPB and PBL are used to calculate to required time to recover the initial investment of project accompanied with “discounting all cash flows” (Baker and English 2011, 83).

Van Horn and Wachowicz (2008, 325) present specific steps to reach the final number of period in PB method after determining the initial cash outflow, shown as following

<table>
<thead>
<tr>
<th>Year</th>
<th>Cash flows</th>
<th>Cummulative inflows</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Initial investment</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>CF₁</td>
<td>CF₁</td>
</tr>
<tr>
<td>2</td>
<td>CF₂</td>
<td>CF₁ + CF₂</td>
</tr>
<tr>
<td>3</td>
<td>CF₃</td>
<td>CF₁ + CF₂ + CF₃</td>
</tr>
<tr>
<td>4</td>
<td>CF₄</td>
<td>CF₁ + CF₂ + CF₃ + CF₄</td>
</tr>
<tr>
<td>.....</td>
<td>.....</td>
<td>.....</td>
</tr>
</tbody>
</table>

Table 2: Steps to determine the payback period (Van Horn and Wachowicz 2008, 325).

Step 1: Accumulate the expected inflows of cash for incoming years from year 1 onwards;

Step 2: Observe the cumulative inflows to address the last year in which the cumulative total of last year does not exceed or equal to initial investment;

Step 3: If the cumulative total of last year is less than the initial investment, calculate the required time needed to pay the difference amount back by formula: (initial investment –
cumulative total of last year) / cash inflow of the next year (right after the last year in step 2)

Step 4: Adding the result from step 2 and step 3 to reach the final required years to cover the initial investment capital.

The other non-DCF method names Accounting rate of return, which is also called Return on Investment and Return on capital employed. ARR is formulated (Drury 2012, 316) as

\[ \text{Accounting rate of return} = \frac{\text{Average annual profits}}{\text{Average investment}} \]

In stead of using cash flow, ARR measures the accounting profit to appraise the capital investment. In details, Drury (2012, 316) specifies that the average annual profits cover only incremental revenues and costs brought by the proposed project. It is calculated by decreasing incremental costs from incremental revenues to obtain the additional profit, and then dividing that additional profit number by the estimated project lifetime. Depreciation amount and method would be taken into consideration when calculating additional costs and average investment.

3.1.2 Evaluating and selecting project using non-DCF method

Evaluating project using non-DCF method
The stage of evaluating projects recognizes several methods of non-discounted cash flow which are Payback and ARR.

Payback period would be a good option to utilize in capital budgeting decision if managers concentrate on the length of period to repay the initial capital investment. Furthermore, this method would be appropriate with the project which is required to quick recovery of capital investment, accompanied with a condition of liquidity constraints. In addition, under a circumstance of risky environment, this method would aid on the decision of project investment effectively due to difficulty in predicting cash flow under high risky condition (Drury 2012, 315)

Unlike Payback, ARR is calculated on accounting profit which concerns about depreciation of assets. This method displays the difference in life time of invested assets belonging to different projects through consideration of depreciation. Moreover, ARR is favored by manager because this method measures the management performance among units or departments of a company. Through this method, a manager is able to
observe the contribution of proposed project to different units of company through overall accounting rate of return (Drury 2012, 317)

**Selecting project using non-DCF method**

Payback period and ARR are two common methods to be applied determining the investment project. As defined, PB refers to the required period of time for the investment project to recover its initial investment. Under this rule, a project would be chosen if it meets the preset length of time. Aforementioned also, one variation of PB is DPB which only accepts the investment “where the sum of discounted cash flows within the payback period is greater than or equal to the initial investment” (Baker and Harford 2015, 259).

Based on ARR investment rule, the average profit of each project over its whole lifetime would be calculated and ranked so that the project with highest earnings would be selected. (Drury 2012, 317)

In summary, non-DCF methods are pretty simple in their technique as well as their decision rules depending on various objectives for the project. In spite of their theoretical limitations, Payback and ARR remain favored by many managers in practice when making a decision in a project investment, especially in small businesses (Drury 2012, 316)

**3.2 Application of DCF methods in capital budgeting decision**

DCF is majorly composed of three methods that are NPV, IRR and Payback. All of these methods are analogous in terms of calculation of cash flow and discount rate. DCF is implemented by initially forecasting incremental FCF and then selecting a discount rate for the project. Based on those two inputs, NPV comes as the result of calculation and serves as an important criterion in later stage of evaluating and determining the investment project.

**3.2.1 Background on three DCF methods**

DCF method is conducted by forecasting incremental FCF and then discounting the FCF at a certain rate, which also the cost of capital, to receive the present value of proposed project. In this technique, NPV plays an important role to evaluate the value of project.
Calculating NPV indicator derives from calculating present value (PV) of the proposed project, formulated (Berk and Harford 2015, 300) as:

$$PV \left( FCF_t \right) = \frac{FCF_t}{(1+r)^t} = FCF_t \times \frac{1}{(1+r)^t}$$

Equation 1: Present value of project.

In which, t: the year of FCF  
    r: cost of capital  

From those calculation, NPV equals Present Value to substract the capital expenditure, or initial investment, expressed as

$$NPV = PV \left( FCF_t \right) - \text{capital expenditure}.$$  

Equation 2: Net present value.

As stated previously, DCF technique is composed of three major methods, namely NPV, IRR and PI. All of these methods are connected with the NPV certainly.  

**Net Present Value (NPV)**  
Berk and Harford (2015, 252) simplifies the definition of a project’s NPV as “the difference between the present value of its benefits and the present value of its costs”.  
In form of a formula, NPV is expressed as

$$NPV = PV \left( FCF_t \right) - \text{capital expenditure}$$  

On the other hand, the formula of NPV expands (Van Horn and Wachowicsz 2008, 327) as

$$NPV = \frac{CF_1}{(1+k)^1} + \frac{CF_2}{(1+k)^2} + \ldots + \frac{CF_n}{(1+k)^n} - ICO$$

Equation 3: Expansion of Net Present Value.

In which, CF: Net cash flow, also incremental FCF;  
    K: required rate of return;  
    ICO: initial cash outlow.  

After evaluating the value of proposed project based on NPV indicator, managers and analysts rely on the investment rule of NPV to make a decision. According to Van Horn and Wachowicsz (2008, 328), the NPV rule states to accept a project with its NPV equal to or greater than zero (0), and to reject a project with its NPV less than zero (0). Especially, among potential projects, Berk and Harford (2015, 253) suggest to choose
the project with its highest NPV because selecting this project refers to receiving the largest amount of cash at present, rather than other alternatives. At the point that NPV equals zero (0), those authors suppose that an NPV of zero (0) neither brings nor reduce the value of project. At that point, the project value is neutral.

NPV is considered the golden rule in making a decision in capital budgeting. Graham and Harvey (2002, 11) display that almost 75% of CFO respondents use NPV frequently for their investment decision. Bennouna and Marchant (2010) show that NPV is one of two favored method by a large number of large firms in Canada who apply DCF. Although its popularity and benefits, NPV remains drawback. A research by Berkovitch and Israel (2004) shows that NPV performs poorly in the stage of project selection because the method is unable to maximize the value of firm. Particularly, NPV rule is unreliable under a circumstance of market imperfection.

**Internal Rate of Return (IRR)**

According to Van Horn and Wachowicsz (2008, 326), IRR is defined as the discount rate at which the present value of FCF equals to initial investment. The formula for IRR calculation is presented:

\[
ICO = \frac{CF_1}{(1+IRR)^1} + \frac{CF_2}{(1+IRR)^2} + \ldots + \frac{CF_n}{(1+IRR)^n}
\]

Equation 4: Internal Rate of Return.

In which, CF: net cash flow, also free cash flow;

ICO: initial cash outflow, also initial investment;

IRR: internal rate of return.

In order to make a decision based on IRR rule, companies need to set a hurdle rate which is the minimum rate of return for a project approval. The IRR rule then will be compared to the hurdle rate, stating that if the IRR exceeds the hurdle rate, then the project is accepted. Otherwise, the project is rejected (Van Horn and Wachowicsz 2008, 327).

Accompanied with NPV, IRR becomes the other most favored method to use in making a decision in capital budgeting, nearly 76% by CFO respondents (Graham and Harvey 2001, 11). Unfortunately, IRR exhibits failure in several circumstances. In delayed investment, IRR guarantees that it is greater than the hurdle rate, leading the project is accepted. Nevertheless, the NPV of project is negative, meaning that the NPV is less than zero (0). In this situation, NPV and IRR bear conflict to each other and a further consideration should be taken on IRR rule. Furthermore, IRR fails to be reliable that
several values of IRR might exist in its calculation. The problem turns into which would be chosen to apply the IRR rule (Berk and Harford 2015, 260). Dr. Balaram Bora (2015) also recognizes the failure of IRR when the project is under “varying cost of capital condition”. This investment rule is untrustworthy for evaluation of mutually exclusive projects in terms of investment scale and project life span.

**Profitability Index (PI)**

The definition of PI is shortly described as the measurement of NPV per unit of resource consumed (Berk and Harford 2015, 276). The PI investment rule states that a proposed project is accepted if the PI equals or exceeds 1.00 (Van Horn and Wachowicz 2008, 330).

The formula for PI calculation, exhibited by Berk and Harford, is expressed as

$$PI = \frac{NPV}{Resource\ consumed}$$

Equation 5: Profitability Index.

All of the three methods, NPV, IRR and PI categorize the DCF technique, which applying a rate to discount the forecasted incremental FCF to receive the present value of cash flow holdings. Although each of the three methods has its own advantages as well as disadvantages, their applicability retain favor from CFOs, managers or analysts in project appraisal. Graham and Harvey (2001) illustrate the popularity of those methods in the following figure, in which NPV and IRR seem to overcome PI in term of common use.

![Survey evidence on the popularity of different capital budgeting methods](image)

Figure 3: Survey evidence on the popularity of different capital budgeting methods (Graham and Harvey 2001).
3.2.2 Estimating incremental free cash flow

The first step in implementing DCF technique starts off by forecasting incremental free cash flow of the project. This estimation is involved of two steps which are forecasting incremental earnings and determining the incremental FCF of the project. The rule of incremental cash flow is emphasized because capital budgeting analyzes only the change of cash flow caused by the project (Berk and Harford 2015, 292).

The first step deals with forecasting incremental earnings of the project. It’s emphasized that earnings differ from accounting cash flow and earnings are calculated on a basis of two major components of incremental revenue and incremental costs (Berk and Harford 2015, 291). In addition to operating costs for project’s implementation, cost estimates concern about depreciation which accompanies always with long-term asset of the project to evaluate the true market value of asset and tax issues. In the end, incremental earnings are forecasted based on such components. The estimates for incremental earnings is summarized in short by the following table with which formulas attach to illustrate the calculation process (Berk and Harford 2015, 293).

<table>
<thead>
<tr>
<th>1. Incremental revenue</th>
<th>Forecasted based on reports from departments</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Incremental costs</td>
<td>Forecasted based on reports from departments</td>
</tr>
<tr>
<td>3. Depreciation</td>
<td>Based on depreciation method that company is applying</td>
</tr>
<tr>
<td>4. Incremental Earnings Before Interest and Taxes (EBIT)</td>
<td>= Incremental revenue – incremental costs - Depreciation</td>
</tr>
<tr>
<td>5. Income tax (rate %)</td>
<td>= EBIT x marginal tax rate</td>
</tr>
<tr>
<td>6. Incremental earnings</td>
<td>= (Incremental revenue – Incremental cost – Depreciation) x (1- tax rate)</td>
</tr>
</tbody>
</table>

Table 3: Calculation process for incremental earnings.
Proceeding from the first step of incremental earnings calculation, it now turns to forecasting incremental FCF. According to Berk and the co-authors (2015, 296), FCF is defined as “the incremental effect of a project on a firm’s available cash”. In another word, FCF exhibits the changes of available cash in the company’s pocket in a case of project implementation. To convert the incremental earnings into incremental FCF of the project, it would be concerned with three more variables that might affect the cash flow. Firstly, the conversion adjusts the cash flow by putting capital expenditure, also known as the initial investment cost of asset, as an expense for calculation. Secondly, depreciation should be cared about by taking it back to the calculation of free FCF. In this scope, since depreciation only purposes for tax reporting, this variable needs being added back to the estimation of FCF. Berk and Harford (2015, 296) shows that depreciation affects taxable incomes of the company because the depreciation amount is considered as an expense in accounting. However, depreciation is truly not a cash flow, but a method to exhibit an expense from value change of long-term asset. Thus, in terms of accounting, depreciation indicates an expense for taxable income and affects tax calculation. According to those authors, when conducting the incremental FCF calculation, a cash flow from depreciation would be taken into account by technically adding the depreciation amount back into calculation of FCF, showing that cash flow caused by depreciation still appears in the pocket of company. The third variables names Net working capital to be another important consideration when converting from incremental earnings into incremental FCF. Net Working Capital (NWC) is calculated by subtracting current assets and current liabilities to see the difference of working capital. Its calculation is formulated (Berk and Harford 2015, 297) as

\[
NWC = \text{Current assets} - \text{Current liabilities}
= \text{Cash} + \text{Inventory} + \text{Account receivables} - \text{Account payables}.
\]

And changes of NWC year by years equals:

\[
\text{Change in NWC in year } t = NWC_t - NWC_{t-1}
\]

The incremental FCF finally results from a conversion of incremental earnings after adjustment of the three variables: initial investment expenditure, depreciation and NWC. Berk and Harford (2015, 299-300) present the formula to calculate incremental FCF following:
Free Cash Flow = (Revenue – Costs - Depreciation ) x (1 tax rate) + Depreciation – Capital expenditure – change in NWC

= (Revenue – Costs) x (1 - tax rate) – Capital expenditure – change in NWC + Depreciation x tax rate

Equation 6: Free cash flow.

When forecasting the incremental FCF, a number of factors, suggested by Berk and the co-authors (2015, 302), should be taken into consideration, listing opportunity cost, project externalities and sunk costs. All of those factors might modify the FCF calculation, resulting in an incorrect NPV value later. Van Horn and Wachowicsz (2008, 310) present a check list of cash flow and insist on principles in estimating the incremental FCF which include also the impact of inflation on FCF.

![Figure 4: Cash-flow check list (Van Horn and Wachowicsz 2008, 310).](image)

Adjusting a FCF might occur at the stage of project termination. The changes to cash flow when the project is completed are involved in the liquidation or salvage value of sold or disposed assets of the project; increase or decrease in tax of those sold or disposed assets and the change in NWC due to the termination of project Van Horn and Wachowicsz 2008, 314). Such kind of adjustment to a FCF benefits the incremental FCF forecast when a manager is able to cover various scenario to analyze a proposed project.

Forecasting FCF potentials risks due to uncertainty in the estimation of cash flow of the future project. Thus, adjusting FCF is necessary in dealing with risk. Mulford and others
(2005) recognize a relationship between initial investment and growth of adjusted FCF in S&P 100. Their study indicate that the level of FCF adjustment results from the change in capital expenditure. In another word, the more reduction in capital expenditure, the more growth in FCF adjustment. The negative relationship between FCF and initial investment is again confirmed by Sigeng Du in 2016. Furthermore, FCF causes agency cost, leading to a cash flow sensitivity in investment evaluation (Pawlina and Renneboog 2005). From those kind of researches, it can be seen that FCF plays a certain role in capital budgeting and FCF forecasting definitely bears relationship with other variables in investment consideration.

### 3.2.3 Selecting a discount rate

The key factor in applying DCF technique for project appraisal lies in NPV method. As aforementioned, NPV calculation is composed of two steps which are forecasting incremental FCF and selecting a discount rate, which also called a cost of capital. Choosing an appropriate cost of capital definitely demands much more challenges than estimating incremental FCF because this rate is associated with risks.

According to Baker and English (2011, 339), a discount rate is primarily based on a cost of capital with adjustment due to project’s risk. It indicates different proportion of using various sources for financing a project of a firm and refers to costs for using those financial resources. Berk and Harford (2015, 429) defines a cost of capital as “the average of a firm’s equity and debt costs of capital, weighted by the fractions of the firm’s value that correspond to equity and debt, respectively”. It’s clarified that a project is levered by a variety of fundings of which composed majorly equity, debt or stocks. In case of no debt and totally funded by equity, the project’s cost of capital equals to expected return from shareholders. In a different situation that a project is levered by both equity and debts, the cost of capital equals to expected return by weight of using equity and debt at a certain proportion from shareholders and lenders (Cao Chuc, 2017, 18). Therefore, the cost of capital also refers to the weight average cost of capital in a certain situation (WACC).

In order to calculate the WACC, it requires a determination for the cost of each type of capital and its corresponding weight. A common formula (Baker and English 2011, 341) is stated following:

\[
WACC = k_eW_e + k_dW_d(1-t) + k_pW_p
\]
Equation 7: Weight Average Cost of Capital.

\[ k_e: \text{component cost of equity; } \]
\[ k_d: \text{component cost of debt; } \]
\[ k_p: \text{component cost of preferred stock; } \]
\[ t: \text{marginal tax rate of firm; } \]
\[ W_e: \text{target proportion of equity in the capital structure; } \]
\[ W_d: \text{target proportion of debt in the capital structure; } \]
\[ W_p: \text{target proportion of preferred stock in the capital structure. } \]

One notable point in estimating cost of capital from debt is associated with tax issue. Since a firm borrows debt from lenders and creditors, it must pay an amount of interest back to the suppliers of the debt. The expense for interest repayment is deductible (Berk and Harford 2015, 432) and results in difference of interest rate or cost of capital from debt before tax and after tax.

Under the circumstance of levered project, selecting a discount rate is similar to estimating WACC of the project. Since WACC is mainly composed of equity, debt and preferred stock, the cost of using equity, debt and preferred stock would be calculated for WACC estimation.

**Calculation for cost of equity**

Cost of equity in WACC estimation refers to the rate of return expected by the shareholders of equity. In order to estimate the cost of equity, the capital asset pricing model (CAPM) emerges as the most common tool (Gitman and Vandenberg 2000, Baker and English 2011). The result from survey by Bancel and Mittoo (2004, 106) shows that 60% of the sample companies applies CAPM in cost of equity estimation.

The formula for calculating cost of equity by CAPM (Baker and English 2011, 345) comes as

\[ E(R_i) = R_f + \beta_i[E(R_m) - R_f] \]

Equation 8: Cost of equity by CAPM.

In which, \(E(R_i)\): Expected return on the firm’s common equity ignoring flotation costs;
\(R_f\): Risk-free rate;
\(\beta_i\): Beta coefficient estimate between the stock (i) and a market index;
E(R_m): Expected return on the market.

Although it has been commonly used in cost of equity estimation, CAPM bears certain drawbacks in calculating the project’s expected return. Based on “cross section of stock returns”, CAPM continues to be applied despite the practical evidences against it (Da and Jagannathan 2012). Among those drawbacks of CAPM names a biased estimate for expected return when relying almost on some potential indexes to estimate for β and market risk premium (Bartholdy and Peare 2003). In his research in 2012, Mike Dempsey states the failure of CAPM that “our findings imply that in adhering to the CAPM we are choosing to encounter the market on our own terms of rationality, rather than the market’s”. The failure of CAPM in terms of β estimate is repeated by Bornholt (2012) that the value of β is far relevant to the cost of equity of industry, based on an emphasis of industry returns since 1993 onwards the time point of research.

Observing from drawbacks of CAPM in estimate for β and market risk premium, Leon and John (2016) suggest that measures based on market predict better than estimates of stock returns based on CAPM, “both at the individual-firm and aggregate market levels”. A different approach to estimate the cost of equity names the Constant Dividend Growth Model (CDGM), expressed by:

\[
\text{Cost of equity} = \frac{\text{Dividend (in one year)}}{\text{Current price}} + \text{Dividend growth rate}
\]

According to Berk and Harford (2015, 434), this model requires the current price of stock, expectedly paid dividend in one year and an estimated growth rate of dividend.

**Calculation for cost of debt**

Cost of debt in WACC estimates refers to expected return required from the suppliers of debts. The common tool for estimating cost of debt recognizes the yield to maturity (YTM) on the debt which is adjusted to taxes (Baker and English 2011, 350). The formula is similar to the on of bond price valuing.

\[
\text{Price of bond} = \frac{CP_1}{(1+YTM)^1} + \frac{CP_2}{(1+YTM)^2} + \ldots + \frac{CP_n}{(1+YTM)^n} + \frac{Par}{(1+YTM)^n}
\]

Equation 9: Price of bond.

In which: CP: Coupon payment
Par: Face value of the bond.

Recalling the formula of WACC aforementioned, the cost of debt component displays $k_d \times (1-t)$, adjusted to tax factor. Corresponding to price of bond, $k_d$ equals to YTM while $t$ expresses the marginal tax of the firm.

**Calculation for preferred stock**

Cost of preferred stock in WACC estimates refers to expected return required from the shareholders of preferred stocks. Its formula (Baker and English 2011, 353) for calculation follows as

$$K_p = \frac{D_p}{P_p}$$

Equation 10: Cost of capital for preferred stock.

In which, $K_p$: cost component of preferred stock;

$D_p$: Dividend paid on the preferred stock;

$P_p$: Price of the preferred stock.

Berk and Harford (2015, 440) present a number of assumptions to implement WACC estimation. Firstly, a project’s market risk is equal to the average market risk of different investments of the firm. So, a tight relationship bears between a project’s WACC and a firm’s risk of investments. Baker and English (2011, 359) also clarify that the proposed project’s WACC corresponds to its cost of capital when risk of the proposed project equals to risk of the firm’s average project. When those risks differ, the discount rate should be adjusted to “reflect the project’s riskiness”. Secondly, a debt-equity ratio is mentioned to assume that the ratio between debt and equity will remain itself even any causal demand for increasing or decreasing the leverage amount of the project. Thirdly, it limits the interest tax deduction as the only factor to affect leverage, excluding other factors.

In summary, selecting a discount rate for the proposed project is similar to calculating its cost of capital. Functioning as the core of WACC estimate, the cost of capital correspond to WACC adjusted to the risks of company. The discount rate or cost of capital, in a certain aspect, shows a connection with risks through calculation of WACC.
3.2.4 Evaluating and selecting projects using three DCF methods

**Evaluating projects using three DCF methods**

Among the stages of capital budgeting process which is mentioned above, project evaluation becomes an emphasis with the selection stage because project evaluation refers to consideration of incremental after-tax cash flow of the project (Baker and English 2011, 2).

In the proposed capital budgeting process above by Van Horne and Wachowicsz, after estimating the incremental cash flow after tax, evaluation for the cash flow is conducted to consider the value of the proposed projects. In the beginning of estimating the project’s free cash flow which is also the operating cash flow, analysts initially forecast incremental earnings which is composed of incremental revenue and cost estimates. The incremental earnings, according to Berk and Harford (2015, 292), displays how the investment would change the cash flow of the firm when evaluating the project. The incremental earnings figures out the additional sales and costs of the proposed project. Based on that, incremental earnings would be converted into incremental free cash flow. Evaluating projects, eventually, analyzes the incremental free cash flow which is “the incremental effect of a project on the firm’s available cash” (Berk and Harford 2015, 296).

The DCF techniques involves Net Present Value (NPV), Internal Rate of Return (IRR) and Profitability Index (PI). All of these three methods “adjust cash flows over time for the time value of money”, which is called the DCF techniques generally (Van Horne and Wachowicsz 2008, 324). In another word, when applying these methods, the incremental FCF of project varying at different time in future would be discounted in a single point of present respectively, at a certain rate which is calculated from business risk (Van Horne and Wachowicsz 2008, 325).

**Selecting projects using three DCF methods**

Along with stage of evaluation, selecting a project from the proposed list also becomes an emphasis in capital budgeting process because this stage aims at making a decision to invest in a project or not. Selecting a project relies on a certain of criterion on a basis of value maximization (Van Horne and Wachowicsz 2008, 308).

Based on different methods which are used at the previous stage, various rules for investment choice would be applied correspondingly to evaluation method. Using DCF
with discounting cash flow, NPV, IRR and PI rules indicate different choice to determine the project. Particularly, Baker and his colleagues (2015, 278) describe several investment decision rules:

- **NPV**: which is the most common rule as well as the “golden rule” when making a financial decision. This rule calculates the benefits and costs of the investment project and discount them both at present value to compare the difference between those two indicators. Under this rule, an investment project would be chosen at its highest NPV.

- **IRR**: applies discounted the incremental FCF into determining an investment. IRR refers to the rate at which the NPV equals to zero. In another word, IRR displays the case when NPV becomes zero and exhibits the average return of the investment. Under this rule, an investment would be chosen at the point where IRR “exceeds the opportunity cost of capital”.

- **PI**: calculates the NPV to initial investment. PI is applied in case of constrained resource and uses NPV as the major input for calculation. Under this rule, the proposed projects are ranked in terms of PI initially, then chosen orderly from the highest index to the place where all of resources are consumed entirely. More than one project can be selected under this rule.

Different methods of DCF technique have been presented in overall to brief a picture of major process and tools to apply for project appraisal. Under a certain circumstance of the company, when a conflict occurs among investment criteria, always rely on the NPV (Berk and Harford 2015, 254).

In order to implement capital budgeting decision, further process should be considered to make the project analysis better. In step of forecasting incremental FCF, project analysis is highly important to deal with uncertainty of FCF estimation. Due to causal risks from likely subjective prediction of FCF, the NPV would be affected as a result. The project analysis is conducted to observe how value of NPV changes caused by changes in FCF. One among tools for dealing with uncertainty in FCF forecast names sensitivity analysis. According to Berk and other co-authors (2015, 307), sensitivity analysis observes how the value of NPV varies in a condition that each of individual component of NPV changes separately. In another word, incremental FCF and discount rate change individually, the NPV changes respectively. Through sensitivity analysis, analysts are able to address which assumed components in NPV calculation might affect the value of NPV most. In fact, sensitivity analysis of project breaks FCF forecasting into more
detailed sub-components such as sale price, unit solds in best case and worst case (for forecasting incremental revenue), or NWC component in best case and worst case (for converting incremental earnings to incremental FCF). Accompanied with sensitivity analysis of project, break-even analysis reveals that NPV equals to zero (0) at what level of each parameter. For example, break-even analysis shows price or amount of unit sold for the NPV to each value of zero (0). The other important tool for project analysis calls scenario analysis which exhibits varied value of the NPV when each of parameters of NPV changes simultaneously. A series of changes such as both concurrent increase and decrease in sale price, or in unit sold combined with other components present impact on the value of NPV (Berk and Harford 2015, 311).

Consideration for the cost of capital, also WACC, selecting an appropriate rate would be challenging due to its direct association with business risks. Mian and Velez-Pareja (2008) highlight the pitfalls behind the misuse of WACC and display the interdependence between WACC and types of cash flow pattern of project for a purpose of better applicability of WACC concept in practice.

After all, effective application of DCF depends on capacity of managers, according to Connor (2006). Errors in making a investment decision are caused by inadequate qualifications of managers, not by the tool of NPV itself.

### 3.3 Further discussion on capital budgeting methods in SMEs

Both DCF and non-DCF techniques possess their individual characteristics which are appropriate to each of different objectives of CFOs and managers in investment decision. These DCF and non-DCF methods are favored at different degree. It has been already shown above that large companies prefer DCF in their decision on investment projects; meanwhile small businesses tend to apply Payback period rather than DCF techniques. Despite the fact that the DCF differs from non-DCF distinguish on a basis of cash flow, they keep interrelated to each other in a certain way which is by the channel of DPB. In DCF, particularly NPV method, it distinguishes from PB and DPB in terms of cash flow calculation, even discounting cash flows continues after reaching the required period. Arnold and Nixon (2006, 83) studies that NPV and DPB connects to each other in a way that when NPV equals zero, the required time calculated from DPB is similar to the lifetime of the project. Also, when NPV is greater than zero, the lifetime of project correspondingly is greater than the needed time in PDB. In this research, it's mentioned...
that DPB bears problem when not considering all of the cash flow into its calculation method. Anyway, through the measure of project’s lifetime, NPV and PBD somehow indicate that they connect altogether. In another word, DCF and non-DCF techniques are distinguishing but keep interrelated to each other.

Baker and Harford (2015, 251) call the NPV “the golden rule of financial decision” for surely a reason. NPV represents other methods in DCF to be more advanced than the non-DCF because the PB displays several drawbacks. Firstly, the NPV discounts the cash flow at present value which concerns about the timing value of money. Secondly, while the NPV continues with discounting the incremental FCF until the end of project lifetime; PB neglects it when the required period has been reached. And finally, setting a needed time for recovering initial investment is decided by company subjectively, not on a basis of a reasonable economic criterion. However, PB remains a favored method for managers to make a decision on a small investment due to its certain appropriateness (Baker and Harford 2015, 259).

In more details in capital budgeting decision, despite the existence of a number of difficulties in selecting an investment project, another method of real option would be supplementary to investment decision, besides non-DCF and DCF techniques. Berk and Harford (2015, 313) defines that real options is a right that a company can utilize to make a business decision. Since it’s not an obligation, managers are able to consider additionally various contexts of the proposed projects and can be aid by real options to make a better decision on investment. A number of options includes an option to delay a project, an option to expand when successful products, and an option to walk away—also abandonment option. The researchers conclude that real options would increase the NPV due to the more flexibility they create for the project. According to Rigopoulos 2014, real options are now trendy for adoption in capital budgeting (Rigopoulos 2014). Real option model is confirmed to be meaningful descriptor for observing investment behavior (Fleten et al. 2016)

Further development of project selection, a number of researches have studied different methods for a better decision at this stage. Mahmoodzadeh and the co-authors (2007) review the common investment criteria such as NPV, IRR, PB and so on to serve as inputs for testing Analytical Hierarchy Process (AHP) and TOPSIS techniques in project selection. Based on the Fuzzy set theory, the authors weigh each investment criterion by using AHP and then apply TOPSIS algorithm to complete the project selection. With the same research topic, a group of authors from Romania (2019) recently study a fuzzy
logic algorithm to improve the investment decision in capital budgeting. They conclude based on the two tested scenarios of asset acquisition that the acquisition cost of assets and its economic performance are considered both in the fuzzy logic algorithm as a tool to support manager’s decision. Furthermore, a method of multi-criteria analysis has been applied to generate a model for determining an investment. M.Dolores and others (2014) emphasize the importance of multi-criteria analysis in process of project appraisal and suggest that this method is applicable in solving problems of corporate finance. This method again is confirmed by Puska and other co-authors (2018) that multi-criteria analysis enables better ranking potential projects and facilitate a better selection of project in investment decision. From those researches, it can be seen that methods for project decision vary and have been developed furthermore recently.

After the stage of project evaluation, selecting project, also a capital selection is almost the final activity in the series of project appraisal. Project selection aims at conclusion for investing the analyzed project as an outcome of this stage. Various techniques and methods have been developed in addition to traditional ones of DCF and non-DCF in the field of project selection.
4 RESEARCH METHODOLOGY

4.1 Research method

Based on the objective of this study, the author determined to choose the qualitative method to conduct the research. Since it aims at finding out the way that SMEs in Vietnam implement appropriate methods and techniques in their capital budgeting decision, the qualitative research method, which “emphasizes words rather than quantification in the collection and analysis of data” (Bryman and Bell 2015, 38), is appropriate in the scope of this thesis.

The study collects data through interviews with a number of SMEs in Vietnam and then conducts analyzing facts and shared experiences from managers of those companies to get insights of reality of capital budgeting decision in Vietnam, in terms of capital budgeting method application. In addition, a hypothesis is not established from the beginning of study because testing a hypothesis does not belong to the scope of the study. Literature review functions as a theoretical framework to present the relevant theories and concepts, but not structured to generate a hypothesis (Bryman and Bell 2015, 395). Findings from interviews emphasize on the facts, not on the number given by managers; therefore, selecting the qualitative method is more effective to reach the purpose of this thesis.

4.2 Research design

The objective of this research is to discover how SMEs in Vietnam make a capital budgeting decision by applying various methods and techniques which are appropriate with their scope of business. Therefore, SMEs in Vietnam are targeted in sampling process.

In stage of sample selection of the research, sampling in qualitative method tends to be purposive with a number of criteria to be appropriate to purpose of research Bryman and Bell 2015, 430). Among three types of sampling in the qualitative research, the author determines generic purposive sampling to implement the data collection part. Unlike the theoretical sampling which results primarily in developing or generating a theoretical references, the generic purpose sampling does not consider generating a theory or
theoretical categories as a mandatory outcome of the research Bryman and Bell 2015, 433). Therefore, the generic purpose sampling is determined to ordinarily discover the reality of SMEs in Vietnam when appraising a project investment. As by its name, samples belonging to generic purposive sampling entail a certain number of criteria for the research purpose. In this study, the author targets at SMEs in Vietnam which implement capital budgeting when making project decision. Sample SMEs are chosen randomly under an assumption derived from previous researches in other countries that SMEs do not favor NPV, IRR of DCF technique. Furthermore, based on practical observation of the author, not many SMEs in developing country such as Vietnam are familiar with those techniques when appraising project investment; so selecting any SME in Vietnam is highly potential to meet the abovementioned assumption. After all, sample SMEs are chosen randomly and they do not apply professional methods in capital budgeting decision.

To collect data from sample SMEs, the author decided to make an interview with managers of those company and use recorder as a tool to support data collection.

Three sample SMEs, which are chosen to make an interview with, belong to three different major industries: service, manufacturing and marketing intermediaries (Pride and Kapoor 2017, 10). The purpose for diversified selection is that the author purposes to further study the managers’ decision making behavior when determining a project under various context of business environment. Projects from those three different types of business would reveal their typical characteristics in cash flow and risk degree depending on the industry. Therefore, the author would have a good opportunity to observe more on attitude how capital budgeting decision in various industry reacts to DCF method through two inputs of cash flow and cost of capital as well as to non-DCF method through input of repayment period. Data collected from three SMEs in three different industry would be beneficial to make a comparison among them in term of non-DCF and DCF applicability in practice.

Three chosen companies name: Amica Travel (in service industry), Aristino men fashion (in manufacturing industry), and EVD Equipment Co., Ltd. (in distribution industry).

In company Amica Travel, an interview is carried out with the CEO of company, namely Mr. Ha Duc Manh.

In company Aristino men fashion, an interview is carried out with the founder and CEO of company, namely Mr. Tang Van Khanh.
In company EVD Equipment Co., Ltd., an interview is carried out with the CEO of company, namely Mr. Nguyen Minh Giap.

### 4.3 Reliability of research findings

There are two criteria to be applied when evaluating the quality of a qualitative research: credibility and validity.

#### 4.3.1 Credibility of research

Credibility is the first criterion to evaluate the quality of a qualitative research. This criterion is interpreted into two other components which are external reliability and internal reliability. Externality reliability refers to “the degree to which a study can be replicated; on the other hand, internal reliability measures the probable number of observer or member of research team who share the same agreement with what the research author observes (Bryman and Bell 2015, 400).

In the scope of this thesis, the research topic remains pretty new in Vietnam, specifically the application of non-DCF and DCF techniques in SMEs in developing country. It might attract other studies to the same topic but it does not guarantee that this study is completely replicated by other researcher. Thus, externality reliability of this research is not totally ensured, but portionally in a way that the research findings serves as evidence to open a space to discover more on this topic. About the internal reliability, this thesis is conducted by one author; thus it is difficult to identify other members or observers who agree with the author’s observation. However, the research topic and sample selection are derived from personal observation of reality of SMEs in Vietnam when they determine a project investment. The author retrieved this observation from ordinary communications with friends on this topic. Summarized from those normal observation and personal interest in capital budgeting area, the author reached the research topic after studying on the past scientific articles. In spite of not being agreed by more than one observer or member of research team, the author relied on discussions with real people and the past researchers who share their similar opinions on the research topic.
4.3.2 Validity of research

Validity is the second criterion to evaluate the quality of a qualitative research. This criterion is assessed by two forms: internal validity and external validity. Meanwhile internal validity measure the matching between a researcher's observation with the theory developed; external validity displays the degree at which research findings potential to be generalized “across a social settings”. (Bryman and Bell 2015, 400).

In the scope of this thesis, findings from data analysis serves as a reasonable answer to the research question in the Introduction part. Results follow to answer the flow of three sub-questions and conclude the research findings as official conclusion. The results show a consistent matching with the research questions to reach the objectives of research; thus ensuring the criterion of internal validity of research.

In terms of external validity criterion, it would bear difficulty in making a generalization based on found findings about the reality of applying various capital budgeting method across the whole SMEs in Vietnam. However, this research attempts to collect data from various industry instead of focusing on only one SME as a typical case study for the thesis topic. The data collection from three different SMEs attempts to obtain a wide range of data to draw a broader picture of reality of capital budgeting decision in SMEs in Vietnam in terms of applicability of different methods and techniques.
5 RESULTS OF RESEARCH

In this section, empirical data collection are presented. The author interviewed three CEOs of the three companies via audio calls and email. The two audio calls were made to CEOs of Amica Travel and Aristino, using recorders to support data collection. The audio-call interviews lasted 30-40 minutes. Unlike those two interviews, the interview with CEO of EVD Equipment Co., Lt., took a form of written answer due to the CEO’s request. It took about 3-5 days to receive the reply from him. Results are presented following the order of interview questions respectively.

5.1 Results from Amica Travel company

5.1.1 Introduction about the company

Amica Travel company specializes in tourism service. The company provides customers with high-end quality tours which majorly aim at destinations: Vietnam, Lao, Cambodia and Burma (Myanmar).

Amica Travel distinguishes itself from other competitors in tourism industry in Vietnam by designing and organizing tailor-made tours which are customized with traveler’s personal favor and interest. Customers have various activities to experience in the Indochina and Myanmar, including homestay; cultural activities; lodges of charm; local activities; the remote corners and culinary activities.

In 2007 (VCCI 2016), Amica Travel was founded by Mr.Tran Quang Hieu who was inspired by the love for France and by his father, to create Amica Travel. Mr. Ha Duc Manh and Mrs.Nguyen Thu Huong, who are 2 close French-speaking partners, are always by Mr-Hieu’s side on the way of company’s development. At present, Amica Travel opens 4 operating offices which locate in Hanoi and Ho Chi Minh city (Vietnam), Siemriep (Cambodia) and Luang Prabang (Laos). The company has nearly 100 employees coming from different countries, being considered the wealth of company to contribute to great success of Amica travel today (Amica Travel).
Amica Travel’s value is asserted by its appearance on famous news and magazines both inside and outside Vietnam, such as Vietnam Business Forum, VTC10, Paris Match, the Michelin guide in Vietnam, etc. (Amica Travel)

5.1.2 Result presentation

Question group 1: How SMEs look like in developing economy.

Amica Travel is working in tourism industry and targets at foreign travelers from mostly Europe, the US. Those travelers are interested in visiting Vietnam, Lao, Cambodia and Myanmar.

In terms of business growth, Amica Travel is growing at stable stage and experiencing a slowdown because the company has achieved high revenue at its scope. The company is unable to grow at as high rate as it was in the past. In terms of business development, Amica Travel aims at providing its tailor-made tours to customers through additional channels, including direct customers who are travelling in Vietnam and demand for the company’s service at the same time; online customers who are able to buy online tours through internet; and B2B who are partners in demand for buying its tour service. Moreover, Amica Travel succeeds in hotel and ship services which are now being invested as the 2 large projects of company. In general, on the way of growth and development, the company has defined a clearer direction to go instead of disorientation in its beginning period of business. Positive growth and development in both figures and quality have become great success of Amica Travel after its 12-year operation.

Amica Travel addresses their 4 values to become outstanding in its industry. They are composed of highly differentiated service; excellent customer service; highly self-disciplined and self-responsible organizational culture and high-end services.

In a context of Vietnam which is also a developing economy, the company is aware of impact caused by the business environment. A list of difficulties might influence them in future, including changes in the infrastructure in Vietnam; changes in governmental policies in employee’s salary and wage as well as in social insurance. Regardless of such difficult circumstance, the CEO of company asserts to be ready for facing and overcoming those challenges thanks to their core values. He considers those difficulties from external environment as good opportunities for the company to succeed more in the future.
Question group 2: Investment activity through project investment in SMEs

Unlike other companies in Vietnam which follow a trend of investing in completely new field rather than upgrading their products and service, Amica Travel largely invests in improving its internal organization to create better service, as a result. The CEO has pointed that different point in investment activity of company.

Presently, the company is investing in a long-term project which is about providing hotel and resort services. It is a dependent project and the company has never invested in mutually exclusive projects. Furthermore on the present project, Amica Travel implements it in Ninh Binh province after they observe and recognize demands of their customers in accommodation as well as the favor of those customers to hotel service.

Question group 3: Capital budgeting process

In capital budgeting process, the CEO of company shares that he starts his first step in capital budgeting by understanding and evaluating demand of customers. He attempts to communicate with various persons and collect news from various sources of information. Next, he analyzes and forecasts the project’s costs and sales, source of customer and competitive advantage. Those steps are not written down in a professional display. He keeps those thought in mind and think deeply about those necessary information. He adds that the company does not hire a consultancy service providing a professional process in capital budgeting.

Furthermore, he emphasizes the unnecessity of standardizing a capital budgeting process in his company and other small business. A number of reasons are listed to support his statement. The first reason is that small business is unable to pay for high cost consultancy fee from professional service in standardizing the process. Secondly, owners of small businesses do not truly understand what capital budgeting is used for. Thirdly, small businesses are too small customers which are inappropriate for big companies to provide a professional service in capital budgeting process. Finally, in case of hiring small consultancy company, the unprofessional consultancy from the small company might not be reliable to follow and waste money. He concludes that the company finally deals with analysis for a project investment by itself.

There is no step which is considered the most important among the steps of capital budgeting in the company. The CEO confirms that all of those mentioned factors are needed to be equally analyzed because they are inter-influencing and inter-related.
Question group 4: Methods in capital budgeting

Specific criteria are not name as a basis to determine a project investment in the company. Instead, the interviewee defines several critical question to drive the analysis and decision on a project. Those questions include: Do customers accept their service? How much can they sell the service? How much potential costs and revenue of the project? And what is the break-even point of project? The CEO concludes that answering those basic questions supports his determination for a project.

When evaluating the true value of project in reality compared to the initial analysis, the interviewee concludes that there is no matching between the project’s true value in reality and its estimated value through initial analysis.

In conclusion, the CEO of Amica Travel shares that owners of small business and start-up entrepreneurs rarely apply a certain method for capital budgeting in their company because they take a risk to make a project done in reality with a general calculation and analysis for project investment. They take action with their entrepreneurship sometimes without too much professional analysis.

Question group 5: Applicability of methods in capital budgeting

Studying the popularity of DCF and non-DCF methods in capital budgeting in Amica Travel company, the interviewee shares that he has never heard of the names of those 2 methods. After that, a list of techniques belonging those 2 methods is given. The CEO replies that he actually uses Payback period technique; meanwhile he has no knowledge about other remaining techniques which include NPV, IRR, PI and ARR.

In more details, steps of every technique are given to test the applicability of techniques, also the 2 methods, in the company for capital budgeting decision.

For the 2 techniques of non-DCF method, in practice, the CEO uses Payback period technique in making a decision on a project investment. He in fact forecasts the cash flow of project and calculates the needed period for the project to repay its initial investment capital. He indeed does not set a certain period to compare it with the calculated period. There is no defined period as a requirement in implementing the PB technique. The ARR technique is skipped because the CEO asserts no knowledge of it.

For the 3 techniques of DCF method, the CEO shares that they are too complicated for him and he has never known about them. Specifically, to NPV technique, he measures
the profitability of a project by its revenue to investment capital and by its payback period. Since the company is not familiar to NPV, not every step in this technique have been asked. Some key notes are taken, listing that the incremental free cash flow of project is difficult to forecast, and that rates of return from shareholders and debt providers are not defined because of their complexity. However, the company approaches equity and loans as the 2 major sources of project financing. About IRR technique, the company never applies that technique in reality but calculate the expected rate of return in which the NPV of project equals to its initial investment capital. Finally, to PI technique, he only estimate the profitability of project, cannot make an accurate calculation.

In sum, he concludes that those calculation are not carried out from the beginning of project analysis. The company can only make calculation after the implementation of project.

**Question group 6: Characteristics of business industry and size of company on capital budgeting decision**

Several characteristics of small business are given to demonstrate impact of those characteristics on capital budgeting decision in Amica Travel. At first, the success of project depends a lot on the capacity of owner of small business. If the owner is qualified in this field, he is able to apply various knowledge and evaluate different aspects in analyzing a project. Secondly, he rarely hires service from external consulting firm because the owner of small business has limited knowledge in capital budgeting, and the company has limited resource to afford that service fee. In general, capital budgeting in small business mostly depends on subjective analysis of the owner of company.

In tourism industry, the interviewee realizes that there survive invisible knowledge of this industry which is beyond his capacity to know further. Thus, it will be very difficult for persons from non-tourism industry to make an analysis for a project if he or she does not understand the characteristics of this field.

**Other results**

In terms of capital budgeting process, the CEO of Amica Travel shares that most of small businesses in Vietnam have no background on knowledge of valuation and professional calculation when determining a project. Sometimes, project investors decide by themselves and business owner follow the decision. In addition, calculation in project appraisal is not made professionally. In a project by Amica Travel, when analyzing a
project, the investment capital was forecasted at 1 unit. Unfortunately, the true value of investment amount reached to 4 times higher than it was calculated.

The interviewee is aware of the benefit of valuing a project in capital budgeting. However, he has a different perspective on this issue. As a SME, Amica Travel is not interested in a professional capital budgeting process due to several reasons. At first, the business owner has poor knowledge of theory or techniques to implement in valuing a project. Secondly, the company can not hire an external consultancy service due to its high cost. Thirdly, since the owner of company has no knowledge on capital budgeting, he is unable to evaluate the quality of the consultancy service. Lastly, many factors remain unclear and unmeasurable when analyzing a project. If the company can hire foreign consultant to analyze a project, the foreign consult probably does not understand the essence and characteristic of the company to address unmeasurable factors because he or she only concentrates on calculation.

In evaluating the correspondence of project’s true value with its initially estimated value, the interviewee concludes that the initial investment capital is not correctly calculated. In a project invested by Amica Travel, the expenditure in reality exceeds the estimated expenditure 4 times. The poor experience in operating the project in reality contributed to the failure. Some of other projects shared the same failure due to inaccurate calculation in analysis step.

In terms of techniques to be used in project appraisal, in fact, the CEO of Amica Travel does not know the exact name of the techniques. He simply follows several calculation such as forecasting revenue, sales and expenditure of the project. After that, the project would be run in a trial period to observe its feasibility. In making a decision on a project investment, based on a principle of the earned profit to the initial investment capital, he follows it while taking some of following factors into consideration: the amount of investment capital, funding sources for project; potential revenue and profit; possibility of profit and ratio of profit to investment capital and feasibility of project.
5.2 Results from Aristino men fashion company

5.2.1 Introduction about the company

Aristino is a fashion brand for men. The company is doing in business type of manufacturing, particularly in the textile and garment industry. Aristino manufactures and provides a range of products, including shirts, trousers, lingers, suits and accessorizes for men. Since its establishment in 2013, the company has achieved great success on the way of growth and development. 4 years later, Aristino brand has appeared in more than 1000 shops (Baomoi 2017) and the company has opened 70 showroom in Vietnam (Vietnamnet 2018). The company’s revenue reached a growth rate at 200% annually. The company’s the founder and CEO is Mr. Tang Van Khanh. In the beginning days, Aristino started with a very basic range of product such as underwear, socks and tanktop for men. The number of human resource, at that moment, was 18 persons in total to cover all tasks from design, R&D, Marketing and sales. With its consecutive attempt in innovation for products, Aristino has now developing further and expanding its way to global market.

5.2.2 Result presentation

Question group 1: How SMEs look like in developing economy.

Presenting Aristino, the CEO shares that the company is growing now but facing a big problem of inventory management which is also the most head-aching problem in the textile and garment industry generally. In terms of development, Aristino is expanding in Vietnam and planning to enter foreign markets. At present, the company is recognized as the market leader on men fashion in Vietnam.

In the context of Vietnam which is also a developing economy, Aristino’s CEO makes a SWOT analysis, following:

- **Opportunities**: Many advantageous policies are offered and everything is changing in positive way
- **Threats**: Competition intensity is increasing when Vietnam is integrating with the world economy. Other difficulties are involved with entrepreneurship spirit, and prompt increase of domestic and foreign competition.
• Strengths: The strengths of company are composed of R&D; distribution system, branding and brand development. Aristino is advanced at distribution and branding, in short.

• Weakness: Production and design are 2 weaknesses of the company.

The interviewee attempts to enhance collaboration with the institutes in design field and connection with foreign designers for dealing with the weakness in design of company. In Vietnam, the company attempts to meet current demand of domestic customers; meanwhile, it coordinates with foreign designers to create distinct products.

Aristino’s CEO insists that although the threats and difficulties exist from external environment, the market economy is quickly purifying too small and unqualified businesses, he considers them as good opportunities to reinforce the company’s survival and value ahead of other competitors.

Question group 2: Investment activity through project investment in SMEs

Aristino spends highest investment in developing its retail chain. The company spends money mostly on short-term and mid-term investments, and does not have long-term investment.

In terms of project investment, Aristino is investing in two pretty long-term projects which are both building a garment factory in two different provinces in Vietnam. One garment factory is located in Hoa Binh, and the other on in Hai Duong. The scope of a factory reaches 2000 workers. Those 2 projects belong to the company’s strategy to boost the garment of company to a new level. In the past, the company invested in a factory of toothbrush manufacture. Moreover, other annual activities are also concerned, such as collaboration with Vietnam textile research institute and London college for design and fashion in order to enhance programs for training and development. According to the CEO, he shares that those collaboration actually belongs to annual activities of company. Calling them “projects” sounds to be exaggerated in Vietnamese language.

In addition, the project of building garment factory in Hoa Binh and Hai Duong is dependent one. About mutually exclusive projects, a project of producing women’s lingerie has been proposed among other ones. However, that proposed project has been stopped.

Question group 3: Capital budgeting process
There is no clear capital budgeting process in capital budgeting of company. In fact, it simply calculates the efficiency cost of project, called profit and loss (P&L) cost and then evaluates every factor influencing on project. The CEO shares that he does not follow a specific capital budgeting process, mainly stick close to realistic situation in analyzing a project. He lists a series of steps to be done, which includes identifying strategic goals, next building up action plans according to phases, then evaluating the project’s feasibility on a basis of critical factors, and finally making a decision on project investment on a basis of the critical factors if they are met.

The interviewee mentions the project of building a garment factory in Hoa Binh to demonstrate the steps in capital budgeting in Aristino. At first, he has to define what strategic goals are, and then evaluates how to invest in phase 1, 2, 3 of the project. Next, the feasibility of project will be analyzed based on indicators such as production capacity, production costs and productivity potentials. Moreover, depending on realistic situation of project, he analyzes other factors such as environment, and labor force including availability of labor source and their qualification, competition in labor salary.

The interviewee asserts that information collection is the most important in project appraisal because presently necessary information for capital budgeting might be inaccurate and is difficult to be collected in Vietnam.

Another point to take note, the company implements different steps in appraising a dependent project from appraising mutually exclusive projects. To a dependent project, the company will surely invest in it and the appraisal steps are mentioned above. On the other hand, to mutually exclusive projects, the company makes comparisons and analysis on advantage of each project as well as its “gain and loss”, and prioritizes longer term project. If a project meet the requirement of creating long term value to company, it will be selected. Otherwise, a project will be rejected.

**Question group 4: Methods in capital budgeting**

The CEO says that he does not use any method in capital budgeting at Aristino. Instead, he follows objectives of the company as decision criteria for project investment after completing all of the steps of analysis and numerical calculation.

Taking the project of garment factory in Hung Yen as an example, he addresses a competition in labor cost as a difficulty when analyzing the project. However, the location, which is near Hanoi (the capital), is beneficial to meet the goals of company. Firstly,
Aristino is able to transfer its whole logistic system to Hung Yen. Secondly, high technology production with a small number of employee are potentially applied there. In Hung Yen, the company mainly focuses its resource on simplified production which operates with a majority of machines compared to a small number of labor. Therefore, the CEO makes a decision to invest in Hung Yen by following strictly with the goals of meeting requirements about the image of company and about easy transportation. In conclusion, he affirms to rely on the company’s goal as basic criteria to make a decision on a project. Despite not using any method in capital budgeting, The accuracy of the project analysis probably reaches approximately 90% in reality.

**Question group 5: Applicability of methods in capital budgeting**

In studying applicability of DCF and non-DCF in capital budgeting, the interviewees shares that he is calculating payback period and has never heard of DCF method as well as its techniques.

More details about techniques in non-DCF, the CEO is practically applying the PB technique and never uses the ARR. Discussed this technique, he shares that PB cannot cover every single aspect of investment analysis because it misses specifying the cash flow of project in numbers.

More details about DCF methods with three different techniques, NPV is tested firstly. In fact, the interviewee does forecast the additional cash flow of project as the profit of project. He confirms to forecast the incremental expenditure of project as well. Those estimates are two major inputs in NPV calculation of a project. The CEO agrees with the interviewer that he turns out to somehow apply NPV technique in reality of capital budgeting in company. To forecast incremental cost, it is pretty simple to make a list of activities of investment project and rely on those activities. To forecast incremental revenue, he relies on business plan that potentials risk of failure. He deeper analyzes that in the worst case, how much the incremental free cash flow is and how much it is in the most advantageous case. The interviewee often relies on the worst case to make a decision. Additionally, the net change in working capital is also taken into consideration. Finally, about the NPV technique, the CEO adds that company’s projects have two sources of funding which are from equity and from debts. In fact, he find it easy to determine two rate of return from shareholders (to equity financing) and from loan providers (to debt financing). Since, the interviewee does not know the name for NPV
technique as well as theoretical background of this technique, he never evaluates the pros and cons of NPV:

In studying IRR technique, the CEO calculates the interest rate of return at break-even point as an expenditure when analyzing a project.

About the last technique to calculate PI, he in fact does compare the NPV with the initial investment capital of the project in capital budgeting.

**Question group 6: Characteristics of business industry and size of company on capital budgeting decision**

Although it is a small business, Aristino has a stable cash flow. The CEO shares that it is pretty easy for him to calculate the incremental free cash flow of project after forecasting the project’s incremental revenue and expenditure. He adds that despite the big or small size, companies must rely on cash flow created by a project to make a decision.

Regarding to characteristic of textile and garment industry, the CEO has to make various assumptions, listing weather, macro-economic policies. Those assumptions of this industry make a large impact on project investment of company.

### 5.3 Results from EVD Equipment Co., Ltd. Company

#### 5.3.1 Introduction about the company

EVD Equipment Co., Ltd., is doing business in distribution industry as a marketing intermediary in Vietnam. EVD Equipment becomes the representative supplier of industrial machine and equipment of famous brands such as ESAB, Yaskawa, Tokinarc and Danfoss. In addition, the company provides its customers with guarantee service. EVD Equipment was partially divided from EVD group in 2011 corresponding to demand of customer. Mr. Nguyen Minh Giap is presently the CEO of company. The company has achieved much success and earned its customers’ credibility for many years.
5.3.2 Result presentation

Collecting result of interview from EVD Equipment is pretty special. As requested by the CEO, he would like to receive the interview questions via email and he felt to be more confident in written communication. Therefore, following the sent interview question, the CEO answered all of the question that he is able to do. To the questions left blank, he could not answer them.

**Question group 1: How SMEs look like in developing economy.**

In his sharing of the company’s growth and development, the CEO states that EVD Equipment is developing and growing at 15-20% per year. In terms of future development, the company plans to expand variety of new products to meet demand customer and to be appropriate with resource of company.

EVD Equipment is addressed to belong to top 5 in Hanoi in the industry of distributing industrial machines and equipments.

In the context of Vietnam which is also a developing economy, business activities of the company are affected a lot. The CEO emphasizes on continuous adaptation of company to business environment of the world, especially in manufacture industry. In particular, in Vietnam, high growth rate belongs to FDI sector such as Samsung, LG; meanwhile most of EVD’s customers are our companies coming from the public sector.

Under such circumstance, the CEO recognizes opportunities and affirms to grow and increase the scope thanks to strong conversion in business activities and commitment from the board of director of company.

**Question group 2: Investment activity through project investment in SMEs**

On the way of growth and development, our company focus investment on sales, marketing and R&D. Investment on R&D is involved with solving energy savings for air compressor in ship building industry and manufacturing special ligh bulbs uses which saves our customer a value of 500.000.000 VND per year in the same industry. Furthermore, investment in long-term project takes about 15% in total investment. Several of project investments include researching and analyzing demand of customers to provide new product. Besides, R&D project is doing research on the field of System Integration (SI), and research on intelligence measurement.
The interviewee shares that in the past, EVD Equipment invested in expansion of existing product line including industrial robot distribution and transfer. This project was successful.

**Question group 3: Capital budgeting process**

The CEO does not mention about any process in capital budgeting in his company. Instead, when appraising a new project, he analyzes new product and considers other relevant factors as basis, including demand of customers, competition, company’s capacities such as qualification of human resource, management, finance and implementation of project. The interviewee considers the analysis for demand of customers and capacity of company as most important steps in project appraisal.

**Question group 4: Methods in capital budgeting**

In his answer related to popularity of methods in capital budgeting, the CEO concisely states that he uses DCF method in capital budgeting. The non-DCF is not mentioned. He gives no answer to that method.

**Question group 5: Applicability of methods in capital budgeting**

In studying the applicability of DCF and non-DCF methods as well as their inclusive techniques, the CEO states that he only uses DCF method. Specifically, the company mainly applies NPV technique in capital budgeting decision. The interviewee does implement the following steps of NPV technique:

- Measure profit of project by its revenue and expenditure
- Forecast additional revenue created yearly by the project
- Forecast additional expenditure spent yearly by the project
- Consider the initial investment capital of project

He confirms to find it difficult to forecast additional revenue and expenditure created by the proposed project.

Furthermore, in applying NPV technique, he does not calculate the net change in working capital such as inventory, account receivables and account payables. In addition, project of company is majorly funded by equity source and not financed by loans from banks or credit organizations. Thus, he does not determine the rate of return on project from debt provider. He realizes the difficulty in determining the rate of return on project from shareholders.

No answer is given to other remaining techniques.
Question group 6: Characteristics of business industry and size of company on capital budgeting decision

Since EVD Equipment belongs to EVD group, it is under management of the board of director. Despite the size of company as a SME, the CEO shares that capital budgeting in EVD Equipment is difficult because it needs consensus from the board of director when making a decision on a project investment. Besides, the interviewee finds capital budgeting difficult because he almost never hears about this issue, or even has poor knowledge on it.

Due to no statistics and official evaluation about general business industries in Vietnam, the CEO has no reliable information to apply in capital budgeting decision. Therefore, it is difficult for him to share the effect of industry in distributing industrial machines and equipments on capital budgeting decision of company.
6 ANALYSIS ON THE RESEARCH RESULTS

Based on the collected data and results from the interviews with three CEOs of sample SMEs in Vietnam, a number of analysis are discussed to comprehend about capital budgeting methods in those companies. Comparisons among the three companies would be presented to illustrate capital budgeting in different industry at SMEs.

6.1 Similarities among three SMEs

It can be observed that all of three SMEs are growing and developing in a positive way. They all achieve certain successes on their business. Particularly, Aristino is recognized as the market leader in men fashion in Vietnam and EVD Equipment belongs to top 5 companies in Hanoi in its industry and grows at 15-20% per year. Although it is now experiencing a slowdown after a period of consecutive high growth rate, Amica Travel is able to draw a clearer direction for future.

Additionally, three SMEs are planning further development in future by specific actions. Amica Travel plans to expand its market by targeting direct customers, online customers and foreign partners. Aristino, on the other hand, plans to enter the global market, positioning its brand as international brand in future. Finally, EVD Equipment is expanding the variety of product to meet demands of customer.

In the context of Vietnam which is a developing economy, three SMEs are aware of opportunities as well as threats from the external business environment, such as advantageous macro policies or high domestic and foreign competition. However, they all express a positive viewpoint to consider those threats and difficulties as good opportunity to reinforce the survival of value of company by continuous adapting to business environment. Addressing core strengths as competitive advantages of companies helps each of CEO to be positive in their adaptation to changes in the Vietnamese developing economy.

Dealing with the requirement of adapting to external business environment and further development in future, three SMEs define important investments in their companies and the important activities that would receive the highest investment. Amica Travel focuses on improving its internal organization; meanwhile, Aristino invests highest in developing
retail chain nationwide. EVD Equipment expends its money mostly sales, marketing and R&D. In addition, three SMEs implement investment through long-term projects depending on the current situation and characteristics of each company. To Amica, besides tour service, the company is investing in providing hotel and resort services. Aristino is investing two big projects in building garment factory in two different locations; meanwhile, EVD Equipment focuses highly on project investment of supplying new industrial machines and equipments to its customers.

About capital budgeting process in company, the three SMEs do not implement any clear and professional process for project appraisal. Three CEOs simply make necessary calculation and follow a series of step in analyzing factors which impact on the proposed project. They all stick to realistic condition of project for analyzing basic variables such as revenue, costs of project, demand of customer to product of project and competition. Furthermore, the CEOs of Amica Travel and Aristino both value information collection related to project in their analysis. In EVD Equipment, the information collection comes as a step in analyzing demand of customer in appraising project.

In terms of applicability of DCF and non-DCF methods in capital budgeting, three SMEs do not know every techniques in both methods. The CEOs even hear of techniques and name of methods for the first time. Despite applying NPV technique in the capital budgeting in EVD Equipment, the CEO cannot answer other techniques belonging to DCF and non-DCF methods.

However, in the three SMEs, steps in analyzing a project are applied and calculated to support calculation of the CEOs. Especially, revenue and cost of project are two commonly concerned factors when the CEOs analyze project.

Finally, the interviewees admit that characteristics of each industry and business type make an impact on their analysis and decision on a project. Since the analysis is based on considering demand of customer to product of project as well as competition, Amica Travel and Aristino both stick close to realistic condition of project to evaluate the project. Each of industry has its own characteristics that force the CEOs to comprehend the product and those characteristics to better analyze and decide a project. On the other hand, the CEO of EVD Equipment finds it difficult to share the relationship between characteristics of distribution industry and capital budgeting due to insufficient and unreliable source of statistic on this industry in Vietnam.
6.2 Distinct points among three SMEs and other findings

It is observed that all of the three SMEs do not implement a clear and professional process in capital budgeting. The CEOs only evaluate the realistic situation of project depending on various factors and make some necessary calculations. They, in fact, take steps in appraising project instead of making it a capital budgeting process. Since analyzing step relies on product and kind of project that a SME is considering, each of company has their own series of steps in project appraisal.

To project of expanding to hotel and resort services of Amica Travel, the CEO starts his first step by communicating with different people and collecting various sources of information analyzes. In the second step, he forecasts the project’s costs and sales, source of customer and competitive advantage. Those steps are not written down in a professional display. He keeps those thought in mind and think deeply about the necessary information.

To project of building two garment factories in two different locations, the CEO of Aristino firstly defines what strategic goals of company are, and then evaluates how to invest in different phases of the project. In second step, the feasibility of project is analyzed based on indicators such as production capacity, production costs and productivity potentials. In next step, depending on realistic situation of project, other factors are taken into consideration, such as environment, and labor force including availability of labor source and their qualification, competition in labor salary.

To project of EVD Equipment, steps in capital budgeting are simply composed of analyzing new product and considering other relevant factors as basis, including demand of customers, competition, company’s capacities such as qualification of human resource, management, finance and implementation of project.

Concerning steps for project appraisal, three CEOs share different points in considering which step is the most important in capital budgeting. The CEO of Amica Travel finds no step the most important because each of step has its own value and should be taken equally into consideration. The CEO of Aristino values a preliminary step of collecting information as the most important because in Vietnam, it is difficult to collect sufficient and reliable information to aid analysis for project. Especially, demographic data of locals where Aristino is investing in is hard to approach. The CEO of EVD Equipment considers
step of analyzing demand of customers as well as capacity of company as most important steps in project appraisal.

In terms of analysis for dependent project and mutually exclusive projects, there survive difference among three SMEs sharings. At Amica Travel, only analysis for dependent project is mentioned because the company has not ever implemented mutually exclusive projects. Steps in dependent project remains constant with the aforementioned sharings. Meanwhile, at Aristino, dependent project is guaranteed to surely take action and the steps in analyzing project keep unchanged as the above sharing. To mutually exclusive projects, the CEO of Aristino makes further comparisons and analysis on advantage of each project as well as its “gain and loss”. If a project meets the requirement of creating long term value to company, it will be selected. Otherwise, a project will be rejected. At EVD Equipment, no information is given on this issue; thus, the author is unable to point out the difference between analysis for dependent project and analysis for mutually exclusive projects.

A notable concern is given to EVD Equipment. Since EVD Equipment is partially divided from the EVD group, this company is under management from the group. The CEO emphasizes the role of the board of director on decisions of EVD Equipment, including capital budgeting decision. While collecting data for the thesis, answers from the CEO of EVD Equipment are not fully collected because he only answers the questions that he is able to. As a company in distribution industry, EVD Equipment is not familiar with the issue of capital budgeting which is questioned in the interview. Thus, evaluating methods as well as their applicabilities in capital budgeting at EVD Equipment is not based on sufficient information so that the author finds it difficult to draw a picture of capital budgeting methods in EVD Equipment.

An additional point is raised by the CEOs of Amica Travel and EVD Equipment. They concern about the qualification of business owner in evaluating a project. The CEO of SMEs sometimes has never heard of issues in capital budgeting or has poor knowledge of theory or techniques to implement valuing a project.

No external consultancy in capital budgeting is needed because of its high cost and inefficiency in small business. As a small business, Amica Travel is unable to afford high cost consultancy for a professional service of project analysis. Due to the scope of business, professional consultancy is inappropriate to be hired because professionals
sometimes do not comprehend the characteristics of industry to give consultancy, instead they more value numbers and statistics.
7 ANSWERING RESEARCH QUESTION AND LIMITATIONS OF RESEARCH

The research question is stated in the Introduction part of thesis: How do SMEs apply methods in their capital budgeting decision?

By developing a list of interview questions derived from the content of the sub-questions, the author is able to answer the primary question research after collecting data.

In general, under the context of a developing country, SMEs achieve success on their growth and prepare themselves for future development. They are aware of opportunities and threats from external business environment which is changing a lot; meanwhile, they are able to define their strengths as value to overcome difficulties from the environment and prepare plans to solve their weaknesses. They all consider difficulties from external business environment as good opportunities for them to reinforce the value of company and to develop ahead of their competitors. These findings answer the sub-question 1: How do SMEs grow and develop in a developing country?

SMEs do not have a clear and professional capital budgeting process to follow when appraising a project investment. Instead, they carry out a number of steps focusing on overall necessary calculation and evaluation for the project based on critical factors which impact on the project. Critical factors depend on the type of project and characteristics of product of project. These findings answer the sub-question 2: How do SMEs’ managers implement capital budgeting in appraising a project?

SMEs do not give exact name for methods and techniques they use in capital budgeting decision. They implement analyzing a project and making a decision on a project investment simply and easily through necessary estimation and calculation such as revenue and expenditure of project and through evaluation of project feasibility. In accessing the applicability of DCF and non-DCF methods and their techniques in capital budgeting, SMEs overall implement different calculations relating to those techniques, but not concentrate on implementing fully a technique. These findings answer the sub-question 3: How do SME’s managers apply methods in their capital budgeting decision? Applicability of DCF and non-DCF methods in capital budgeting?
It is inevitable that the research is conducted with a number of limitations. At first, since the sample SMEs are selected randomly under the assumption that they do not truly concern about the DCF technique in capital budgeting decision, there might be a probability that in reality, few of SME applies NPV and IRR effectively and frequently to make a decision in project investment. Thus, the research is unable to cover every case of SME.

Secondly, despite the fact that three SMEs are selected from three different industry, only each of SME belongs to one industry. Only one company cannot become representative of its whole industry in Vietnam; therefore, it would be challenging to make a generalization of decision behavior of SMEs on a wide population.

Thirdly, since this research is carried out based on personal observation of the author and under assumption of previous researches, the following phenomenon is observed: SMEs in Vietnam apply methods in capital budgeting differently from large companies in Vietnam do. This personally observed phenomenon is not as persuasive as the information obtained from official reports or statistics from authority. Due to its difficulty in collecting such reports in Vietnam, the research is implemented under the assumption and personal observation.

During the interview to collect data, technical problem happens in the interview with the CEO of Amica Travel. Due to poor network connection, the audio call is interrupted and sometimes make the CEO difficult to hear the interview question. This might affect the transmission of the content of the interview between the author and the interviewee.

Since the interview is originally carried out in Vietnamese, there might be an error to understand terms and concepts when they are translated from English to Vietnamese.
8 CONCLUSION OF RESEARCH AND RECOMMENDATIONS FOR FUTURE STUDY

From studying the researches in the past in capital budgeting, and capital budgeting methods which are applied in SMEs in developed economy and other developing countries, this thesis expands to study further on capital budgeting methods in Vietnam. Particularly, the thesis purposes to understand the reality that in a developing economy like Vietnam, how SMEs apply appropriate methods when making a decision on a project investment.

In the beginning of thesis, the research topic is defined to orient the researching in later process. The main research question is stated: How do SMEs apply methods in their capital budgeting decision? With support from the sub-questions, the author clarifies the issues about which are needed to collect information to answer the main topic question.

Based on the literature review part which follows the content of three sub-questions, presented concepts and relevant theories become a reference for the author to develop her interview question for data collection. The findings of research include (1) the positive attitude of SMEs under a context of developing economy with both their successful growth and future development; (2) an unprofessional capital budgeting process of SMEs when appraising a project investment and only critically necessary steps for calculation and evaluation of the feasibility of project investment in SMEs; and (3) no exact name for methods and techniques in capital budgeting in SMEs and a various combination of calculation from different techniques such as NPV, PB, PI to forecast revenue and expenditure of project, not a full focus on a specific technique or method. Those findings draws a pretty clear picture of SMEs in Vietnam when they apply various appropriate methods and techniques in their capital budgeting decision.

Besides, other findings of the research are also mentioned. In SMEs or small businesses in general, the success of a project depends much on qualifications and capacity of business owners and managers. The study also indicates that when a manager has poor knowledge on capital budgeting, he or she is unable to evaluate the quality of external advices from hiring external consultancy firm. Additionally, in SMEs, hiring consultancy service in capital budgeting costs so high that those companies cannot afford that fee.
This set of findings from the thesis somehow corresponds to findings from the past researches studying capital budgeting in SMEs.

Due to limitations of the research, they can imply recommendation for future researches on this field of capital budgeting in SMEs. The sample SMEs are chosen randomly to take interview with and one SME is doing its business in different industry and business type. Thus, future study can broaden the scale of study to carry out research on more SMEs in one industry. In addition, the findings of thesis possibly become criteria if conducting a quantitative research.
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APPENDICES

Appendix 1-Interview questions

Topic: Applicability of capital budgeting methods in project investment in SMEs in Vietnam

Question group 1: How SMEs look like in developing economy

1. Could you please share a little bit about your company's current situation such as current growth and development policy/plans in future?

2. Can you address your company in the industry and business type you are working in?

3. In the context of Vietnam which is also a developing economy, is your company affected? Please share strengths, weaknesses of, and opportunities and threats to your company. (SWOT analysis)

4. Is it potential for your company to grow and scale up in the current context?

Question group 2: Investment activity through project investment in SMEs

5. On the way of growth and development of company, in which activity does your company invest? Such as in manufacturing or marketing, etc.

Are there many long-term investment through project? How many percentage?

(***More explanation: Long-term investments are planned from the beginning of business year. Projects can be categorized into:

- New products or expansion of existing products;
- Replacement of equipment and buildings;
- R&D
- Exploration
- Others (for example: purchasing equipments for operating office- irrelevant to production and marketing of business)

6. What project does your company invest in? Please shortly introduce some projects which are invested in the past, being invested at present, and planned to invest in future.
7. Among the investment projects, which one is dependent project? Which one are mutually exclusive projects?

(***More explanation: A dependent project refers to decision on whether to invest in this project or not; meanwhile mutually exclusive projects refer to selection for the most potential project from a list of possible proposed projects by analyzing and making comparison to choose the most potential one)

**Question group 3: Capital budgeting process**

8. When appraising a project, what steps do you implement analysis and make a decision? In detail: is there any capital budgeting process in your company, or please share general steps in appraising a project in your company? (For example, firstly making a list of proposed investment projects; next forecasting cash flow of project; analyzing incremental revenue and expenditure created by projects; making a decision on a project, etc.)

9. Which step is the most important in making a decision on a project investment?

10. When making a decision on project investment, is it different in appraising a dependent project (whether to invest in this project or not) from appraising mutually exclusive projects (select the best project among other possible proposed projects). Please share your experiences.

**Question group 4: Methods in capital budgeting**

11. Could you please name several methods for evaluating and deciding an investment project in capital budgeting of your company? There are 2 possible answer: NO means having no method and YES means having a method.

11.1. **NO**

- On which criteria do you rely on to make a decision on a project?
- Is there difference in appraising a dependent project and appraising mutually exclusive projects? Please share your experience.

11.2. **YES**

- Could you please give a name and briefly introduce about the method you use?
To a dependent project, which method do you use? To mutually exclusive projects, which method do you use?

12. Does the true value of project in reality differ from your initial analysis for project?

**Question group 5: Applicability of methods in capital budgeting**

Studying further about methods in capital budgeting, there are 2 popular methods: Discounted Cash Flow (DCF) and non-Discounted Cash Flow (non-DCF).

(***More explanation:** DCF is the method which forecasts the incremental free cash flow of project and use the discount rate to calculate the NPV of project. DCF includes the techniques: Net Present Value (NPV), Internal Rate of Return (IRR) and Profitability Index (PI).

Non-DCF is the method which uses incremental cash flow created by the project, but does not discount the cash flow to preset value. Non-DCF includes the techniques: Payback period (PB) and Accounting rate of return (ARR).

13. Please share the popularity of those 2 methods or aforementioned techniques in your company.

- Have never heard of those methods;
- Used to hear of them, but do not know how to use;
- Used to apply, but find it ineffective.
  And so on...

14. Applicability of techniques with current demand of company in capital budgeting
(Write “X” in the square that states activity your company does)

**Non-DCF:**

*Introduction of Payback:* Payback period is the required period in which the cash flow of project repays the initial investment capital.

Technique/Steps needed to be done

[ ] Forecast cash flow created by the project?

[ ] Calculate the accumulative cash flow for year 1, 2, 3… of the project?
Calculate the repayment period of the project?

Determine the required period that the project must recover its initial investment capital?

Compare the calculated payback period with the required period?

Introduction of ARR: Average Accounting Rate is calculated by dividing annual net profit to annual investment capital. Net profit only counts additional revenue and expenditure created by the project.

Technique/Steps needed to be done

Forecast additional revenue created by the project?

Forecast additional expenditure spent by the project?

Forecast net profit of project?

Determine annual investment capital (book value of investment capital)?

Apply any depreciation method in calculation?

DCF

Introduction of NPV: NPV is calculated by determining incremental free cash flow of the project and selecting a discount rate. Based on those 2 inputs, NPV is calculated by the formula:

\[ NPV = \frac{Cash\ flow\ year\ 1}{(1+IRR)^1} + \frac{Cash\ flow\ year\ 2}{(1+IRR)^2} + \ldots + \frac{Cash\ flow\ year\ n}{(1+IRR)^n} - \text{initial investment capital} \]

Technique/Steps needed to be done

Measure profit of project by its revenue and expenditure?
☐ Forecast additional revenue created yearly by the project?

☐ Forecast additional expenditure spent yearly by the project?

☐ Difficulty to forecast additional revenue and expenditure created by the proposed project?

☐ Consider the initial investment capital of project?

☐ Calculate the net change in working capital such as inventory, account receivables and account payables?

☐ Source of funding for project comes from equity?

☐ Source of funding for project comes from loans from credit institutions or banks?

☐ Difficulty to determine the rate of return on project from shareholders (with equity financing)?

☐ Difficulty to determine the rate of return on project from debt provider (with debt financing)?

*Introduction of IRR:* Internal rate of return is the interest rate at which future cash flow of project equals present value of investment capital

Technique/Steps needed to be done

☐ Forecast annual future cash flow of the project?

☐ Determine present value of investment capital in every year of project life?

☐ Calculate the discount rate at which future cash flow of project equals to present value of investment capital?
Introduction of PI: Profitability Index of a project is calculated by dividing NPV of project to its initial investment capital, formulated as the following:

\[ PI = \frac{NPV}{Initial\ investment\ capital} \]

Technique/Steps needed to be done

☐ Calculate the NPV of project?

☐ Determine initial investment capital?

☐ Difficulty to calculate PI ratio?

15. To the company which answers YES to using capital budgeting methods: Among the used methods in your company, have you ever used any techniques belonging to those aforementioned 2 methods in capital budgeting decision?

Group question 5: characteristics of business industry and size of company on capital budgeting decision

16. Could you please share a bit about characteristics of capital budgeting in SMEs?

17. Could you please share if your business industry affects the capital budgeting of your company (If any)?

Thank you so much for spending your valuable time on the interview!
Appendix 2-Transcript of interview (Amica Travel)

Interviewee: Mr. Ha Duc Manh (CEO)

Duration: 30 minutes

Time: April 4th 2019

Method and Tool: audio call and recorder.

Dung (D): I would like to shortly introduce about this interview. As discussed via email, it is my thesis studying on applicability of capital budgeting methods in your company. I target at SMEs in Vietnam. I would like to start off by the first question. Could you please share a bit about the current situation of your company? Such as the current growth or development plan in future.

Mr: Ha Duc Manh (M): Ok. In brief speaking, our company work in tourism industry. Our main activity is to organize tours for foreign tourists, most of whom come from Europe and US and visit Vietnam, Lao or Cambodia. Our company was established in 2007, and have been in this business type for 12 years. We grow our business continuously. At present, our business comes into stable stage which experiences a slowdown and does not remain progressive growth because revenue of company is pretty high and is unable to increase as much as it was in the past.

About development of company, specifically, we at first aim at providing tour service to direct customers. For example, tourists, who come from Finland and set a foot on Vietnam, demand for our service. That is one piece of our market. Furthermore, foreign tourists from countries such as Finland, US or France buy our service through the internet. This adds to another piece of our market. After reaching more growth and development, we plan to provide our service to partners. It’s called B2B which Finnish partners, for example, buy our service directly. We expect it a next movement of development.

We also succeed in investment in hotel and ship service. Those 2 projects are pretty large in our company. In general, we have gone through a positive growth and development both in numbers and operation. In terms of quality, after many years, we are able to define our direction more clearly. In the beginning, we did not know how to orient our company toward which direction. Time by time, we are able to recognize our
clearer pathway. I am unsure whether the current direction is completely true or not, at least I feel like it correct at this moment. More importantly, I realize that in business knowing which way to go is more important than earning how much profit.

D: Yes. Could you address your company in the industry and business type that you are working in?

M: Yes, I could. Firstly about our product, we focus on highly differentiated services such as competitive tours. It means that customers usually are suggested to visit Helsinki which is a quite popular place when they visit Finland. In contrast, we create tours to strange places in Finland. That’s the way we provide our service. Secondly about our customer service, we customize programs and tours to favor of individual customer. Our service differs from the other common tours. Thirdly about organizational culture on a basis of freedom. We aim at creating an organizational model in which our employees are highly self-disciplined, self-responsible instead are urged, usually evaluated and inspected. Finally about competition of price, we target becoming a high-end service provider. In general, all of them are core points to address our company.

D: I see. Can I ask: In the context of Vietnam which is also a developing economy, is your company affected a lot? Could you please share brief analysis?

M: I need more clarification.

D: Yes, I would like to ask: In the context of Vietnam which is also a developing economy, does it make an impact on your company? For example, opportunities, threats, challenges, and so on.

M: Uhm, I think there are too much influences. At first, infrastructure in Vietnam is changing at fast speed. For example, in the past when its infrastructure was not developed, Ha Long bay used to be very attractive to foreign tourists due to the beauty of wild nature. After 1-2 years, Ha Long bay has been destroyed because of human’s construction, affecting our customers as a result. Da Nang and Hoi An share the same story. Hoi An used to be a peaceful small city, but it is now massively developing. That makes an impact on our customer, too. Secondly, the development of Vietnam causes changes in policy of employee’s salary and wage. 5-7 years later, for example, employee’s salary and wage would increase much higher than they are now, making a large impact on our company. In addition, policies of social insurance have been
changed very fast; as a result, they increase more labor costs of the company than the market grows. I call them difficulties.

D: I see. Under such difficult circumstance, do you recognize any opportunity for your business development? For example, development based on your strengths and weaknesses.

M: Yes, absolutely. Under such difficult condition, it is said that “necessity is the mother of invention”. It means that difficulty comes to everyone, including us. However, if we are brave enough to overcome, difficulties turn to be opportunities for us to step further by leaving other competitors behind or reducing quantity of competitors in this industry. If we are able to adapt to changes in business environment, more opportunities are open to us. In the past, the game was pretty easy for everyone to participate. Now, the game is changing more difficultly and it becomes our opportunity to succeed.

D: So you rely on your company’s strengths such as differentiated product, excellent customer service and high value tour to overcome difficulties from business environment, don’t you?

M: Uhm, in short, in the past, the game is very easy for everyone to take part in. The game is changing now, and it turns to be good change for highly qualified players. I think that is a great opportunity.

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D: Yes, I see. I would like to move on the next question group which is about investment activities of your company through project investment. Which business activities does your company’s investment spend most on?

M: We mostly invest in internal improvement in the company. We highly value investment in the company’s internal organization and it is the largest investment. In Vietnam, it is pretty trendy that companies invest in additional industry, or they prefer investing in totally new product instead of continuing to upgrade their existing products to make them higher value. Nevertheless, we concentrate on developing further our product and service which are also our strengths, instead of following the trend of market or of society. That’s different point in our investment activity.

D: I would like to ask: do you spend resource much in long-term project investment?
I would like to clarify more that long-term investment is usually planned in the beginning of business year and projects can be project of new products, of R&D or even of replacement of equipment in the office. Does your company implement such kind of project?

M: Yes, we do.

D: Yes, could you please share briefly about several projects that you invested in the past, or....

M: Uhm, as I told you earlier, we invest in a project of building hotel and resort.

D: Could you introduce some information about the project such as location of resort, etc.?

M: Our project is conducted in Ninh Binh province. I want to share that our company is in tourism industry and time by time we recognize our customers’ demand for accommodation service. Furthermore, we understand our customers’ favor that which kind of hotel would be comfortable for them. Based on those information, we decide to invest in the field of hotel service. That is the investment into a new field and we choose Ninh Binh as the destination.

Back to your question, you can imagine that in Vietnam, the companies similar to us have no background on knowledge of valuation or professional calculation. Sometimes, investors decide by themselves and we follow them if any good opportunity. For example, in the beginning, we forecast the investment capital at 1 unit; however, we cost the investment capital at 4 times in reality. The result in fact shows an unprofessional process.

Although we do not use any professional valuation method, our perspective on the problem is pretty different. In terms of method, valuation is very beneficial; however, we are not truly interested in valuation method as a small business. Furthermore, we sometimes cannot apply the method due to our poor knowledge of theory or techniques of the method. On the other hand, we cannot afford a consultancy service on valuation because of its high cost. Last but not least, when we have no background on the valuation method, how we can evaluate the quality of the consultancy service. In general, we only make preliminary calculation. We calculate the value of project generally, then we rely on our intuition and attempt to make it done. That is the usual way we do, without any professional method in capital budgeting. In my opinion, larger companies prefer
professional methods, meanwhile small companies do it seldomly. It is also noted that project analysis sometimes make errors because evaluating project only takes a number of measurable factors into account. Many other factors which are not measured by a certain unit remain uncovered or unclear for analysis. In a case that we were able to hire foreign consultant to appraise a project, they in fact would highly concentrate on numbers and they would not understand the essence of business activity in our industry, leading inaccurate analysis.

D: I understand. Could you share that among the project that your company used to invest in the past, or is investing in now, or planning to invest in future, which one is dependent project and which one belongs to mutually exclusive projects?

I would like to explain a bit about the definitions. When you analyze a dependent project, you only consider whether to spend money on it or not at a certain point of time. On the other hand, when you analyze mutually exclusive projects, you in fact have a list of proposed possible projects in the beginning of business year, for example. You will compare proposed possible projects and select the best one to invest in.

M: I don't quite catch your idea.

D: Yes, for example, you have just told me about a project of building hotel and resort in Ninh Binh. If you merely evaluate this project to invest in or not, we consider it a dependent project. If you are evaluating this project among other projects in your company....

M: Uhm, I understand. In this situation, that project is dependent one. At that time, we analyzed only that one project, did not have a list of proposed projects to make a comparison.

D: I see. So, among all of the invested projects in your company, have you ever analyzed and compared mutually exclusive projects to each other?

M: No, we have never been in that situation.

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D: Yes, I understand. I would like to continue with the second question group which is about capital budgeting process. Through capital budgeting, you can decide to whether
invest in a project or not, or you can select the most potential project for investment. So, during project appraisal, how do you proceed the analysis?

M: Uhm, we mainly analyze project investment in this way. At first, we have to understand and evaluate demand of customer by communicating with various persons and collecting news from different sources. Then, we analyze and make an estimate of costs, sales, source of customer, and our competition ability.

In sum, investors of a small business analyze a project based on those thoughts. We also figure out questions related to those information and it takes us very long time to think of them deeply. It is a difference that we do not write it down to make a professional version because sometimes writing cannot display every thought in our mind. Besides, the companies similar to us do not hire a consultancy service only for a professionally written process.

D: I see. So you don't need to standardize capital budgeting process in your company. You only follow your thought for an analysis, don't you?

M: No need for standardization of capital budgeting process. Or standardization of process is possible but small businesses are unable to apply it due to several reasons. Firstly, small business cannot afford high cost consultancy on that service. Secondly, more importantly, business owners do not truly understand the purpose of capital budgeting. Thirdly, in case of small scope project investment, we are a small company which is also a too small customer to hire a capital budgeting service from a very professional team. Otherwise, hiring a capital budgeting service from small and unprofessional companies probably results in meaningless consultancy. We lost money for nothing. In sum, we have to deal with the analysis by ourselves.

D: Yes. Which step is the most important when you appraise a project?

M: I don't understand the question.

D: Well, it means that you have just mentioned above a series of activity needed to do when analyzing a project, including information collection, evaluation, analysis of factors on project, calculation for revenue and costs of project. In your opinion, which activity is the most important among of them?
M: I do not see any difference in the importance of those activities because all of them needed to be answered. All of facto is important equally. I do not consider a specific factor as the most important because all of them are inter-influencing and inter-related.

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D: I see. So, I would like to move on the next question group which asks about capital budgeting methods.

I am aware that in a reality of SME, your company do not carry out a specific method in capital budgeting. I would like to ask further that, among the aforementioned activities such as analyzing a project or forecasting project’s expenditure, etc. on which criterion are you based to determine a project?

M: Uhm, as businessmen, when analyzing or appraising a project, we after all have to evaluate the following questions: what are we doing? Is our product accepted by customers? What are advantages of our product? Can we subdue our customers and will they support us? Is there any differentiation of our product from other competitors’ one? In sum, in my opinion, the most critical question needed to answer is: Is our product accepted by customers? Next question is: how much can we sell? After that, we rely on those information to calculate potential revenue and cost, resulting in identification of break-even point of project. I think those are basic steps in capital budgeting.

D: Yes, so I can see that you have a set of criteria for your decision on a project investment. Could you share a little bit about the true value of project in reality compared to the value from your initial analysis. Does the project’s value in reality differ much from it is in your calculation?

M: Very very different, I would say. As I shared with you, the initial investment capital is not calculated correctly. The estimated expenditure is 1 unit; meanwhile the expenditure reaches 4 times higher in reality. It is explainable because the highly unexpected expenditure is calculated based on our poor experiences when operating the project in reality. In terms of result, the invested projects bring in good results and are successful to us. In contrast, there are several unsuccessful projects such as investment in boat and ship service. To those failed projects, we calculated specific numbers but revenues from them were not as much as we expected.
D: I see. In general, your initial estimation of project’s value does not correspond to its true value in reality, doesn't it?

M: It is not totally matching to each other. I can share that in companies in Vietnam, or in Finland and even in the US, the company’s owners are starting up their business as new entrepreneurs, meaning that they do a business for the first time in life. When entering a new field, they sometimes work with start-up entrepreneurship, thus they do not make accurate calculation when determining an investment. In spite of making general calculation, they accept to take risk to make it real. Possibly their decision is either correct or wrong. In my opinion, small business or start-up entrepreneurs rarely follow professional methods in capital budgeting.

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D: Yes, I understand. I would like to continue with the next question group which studies about the applicability of commonly used methods in capital budgeting. I would like to explain further. In theory, there are now 2 popular methods in capital budgeting. They are Discounted cash flow (DCF) and non-discounted cash flow (non-DCF) methods. Have you ever heard of such methods?

M: No, can you repeat those methods?

D: They are DCF and non-DCF.

M: I have no idea about those methods. Normally, when evaluating a project, we do not know the accurate name of techniques. In reality, we only forecast revenue and sales, and expenditure of project. After that, we run the project for a certain trial timing to observe the situation of project after a period of time. That's the way we implement.

D: Yes, I would like to add more information. DCF is composed of techniques such as NPV, IRR and PI. Have you ever heard of those techniques?

M: Not yet. I do not quite understand about those techniques.

D: Yes.

M: I can understand them at a very basic level that those methods follows principle: how much profit we can earn compared to the initial investment capital. We follow that principle, too. For example, we analyze a series of factors such as amount of investment
capital; funding sources for project; potential revenue and profit; possibility of profit and ratio of profit to investment capital and feasibility of project.

D: Yes, I understand. About non-DCF, there are 2 main techniques, including PB and ARR. Have you ever heard of them?

M: We do calculate the PB period. I have no idea about the latter one.

D: I see. Next questions will be asked in forms of Yes/No questions in order to observe the applicability of each above technique in capital budgeting in your company. I will start with the first method, non-DCF.

M: Since I have no idea about these knowledge, I do not know how to answer you.

D: Do not worry. If you do not know, just say No. The first technique in non-DCF method is PB which is, as you told, applied in your company. Do you forecast the cash flow of project?

M: Yes, we do.

D: So, you do forecast the cash flow of project. After cash flow estimation, do you set an accurate year for the project to recover its initial investment capital?

M: Yes, we do.

D: Yes. Next, do you compare your PB calculation with the required year....

M: We do not make a comparison. Generally speaking, we do our business simply, not make any comparison.

D: I understand. So that’s the first technique. The second one is ARR. Do you rely on accounting information to calculate the annual average net profit....

M: No, I have no idea about that technique.

D: Yes, so I will skip it. Next techniques belong to DCF method. In the project appraisal which possibly calculates the net value of project, which indicators do you use to measure profitability of project? For example, the profit of project equals deducting costs from....

M: Measuring by revenue on investment capital and by PB.
Calling again due to poor network

D: I would like to ask several remaining questions of the interview. Is it difficult for you to forecast incremental free cash flow of project?

M: Yes, very difficult.

D: I would like to ask about project financing. Where do you get funding for project?

M: From equity and loans

D: I see. With such 2 sources of funding, can you identify rate of return from debt provider? Or from equity financing, do you estimate rate of return on project as required from shareholder? Can you estimate the rate in percentage?

M: No, I do not. They are too complicated to me.

D: Do not worry. So it might be the first time you have heard of them. I would like to move to final technique which is IRR. Haven't you used it, have you?

M: We never use it.

D: How about the break-even point of project?

M: What does it mean? Is it the value of revenue?

D: It is actually a step in this technique. It means that you calculate the expected rate of return on project so that NPV equals initial capital investment.

M: Yes, we do calculate.

D: About PI of project, do you calculate the NPV on initial investment capital?

M: We cannot calculate, only estimate relatively.

D: I see, only relative calculation.

M: In sum, before implementing a project, we cannot calculate. After its implementation, we are able to know those indicators. We cannot figure out all of those numbers from the beginning of analysis.

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D: I understand. I would like to move to the last question group. Could you share about several characteristics of a SME in analyzing and determining a project?

M: As I have just told you earlier, at first the capital budgeting process depends a lot on business owner as well as on project’s owner. They make various calculations, evaluate different aspects of project by applying various knowledge. Project’s success depends so much on its owner. Secondly, as a small business with limited resource, business owner have a limited knowledge in using external consultancy service in capital budgeting. Therefore, small business like our company rarely hires service from consulting company in capital budgeting. On the other hand, if we hire the external service, we do not obtain much benefit. In my opinion, capital budgeting is mainly based on subjective analysis of business owner. We ourselves determine a project acceptably, not ask for external help.

D: Yes, I understand. Could you please share if characteristics of the industry and business type in tourism influences the project appraisal?

M: Yes, it affects a lot. Every industry has its special characteristics. For example in tourism, there survive invisible knowledge beyond our capability to know and to do. Perhaps it is easier for other industries and business types; however, in tourism it is very difficult to make analysis without understanding characteristics of this field.

D: Yes, I understand. So that is the final question of the interview. Thank you so much for spending your time sharing with me.

M: Uhm, thank you, too. It is truly difficult to communicate via audio calling because it causes ear-ache and I sometimes cannot hear you well. If you need more information, do not hesitate to email me so I can answer you more.

D: Yes, I apologize and thank you so much for your support.


D: Goodbye.
Appendix 3- Transcript of interview (Aristino)

Interviewee: Mr. Tang Van Khanh (CEO)

Duration: 40 minutes

Time: April 3rd 2019

Method and Tool: audio call and recorder.

D: Yesterday, I sent you a paper of interview questions so that you can understand the topic of this interview.

K: I haven’t read it but you can ask, I will answer them right now.

D: Yes. I would like to briefly introduce you about this topic. About this topic, in fact I want to study the applicability of capital budgeting methods when you make a decision on project investment in your company. I focus on SMEs in Vietnam. The research is merely qualitative, not quantitative. I would like to start the interview with the first question.

K: Uhm, you can start now.

D: Could you please share a bit about your company’s situation? Such as the current growth of company or even development plans of your company in future.

K: At present, our company is doing fine. There is only one problem we are facing with namely problem of inventory management. In textile and garment industry, inventory management is the most headache problem. About our goals, we are planning to expand in Vietnam and promoting ourselves to foreign markets.

D: Yes, that sounds flourishing. In the second question, I would like to ask: under current situation, could you address your company’s position in the field and industry you are working in?

K: In Vietnam market, particularly in men fashion market, I can identify that we are a market leader.

D: Yes, that is particularly in fashion for men, isn’t that?

AK: Yes, correctly. We only focus on men fashion.
D: Yes, I would like to ask: in the context of Vietnamese economy which is also a developing economy, is your company-as a SME-affected much? Could you please share your strengths, in another word, using SWOT analysis to share it?

K: It is a truth that I am also interested in studying business models. Obviously, as a business, when an economy, like Vietnamese one, is offering much advantages such as advantageous policies and everything is going in positive direction, we are absolutely receiving many benefits, not threats.

D: Yes.

K: The difficulty we are thinking of relates to an increase of competition intensity when Vietnam is integrating with the world economy. It is unavoidable and we must deal with it. Only can we survive at any time, at any period of the economy when our company possesses a sufficiently strong immunity. Our company can be small or small, or anything but this context of economy is a good opportunity for businesses in spite of many difficulties to us such as entrepreneurship spirit, and prompt increase of domestic and foreign competition. In my opinion, those difficulties would motivate us to further develop. If we can not resist to them, there is no reason for our survival.

In sum, although opportunities accompany with threats, we still realize more opportunities in them. In my opinion, this mechanism of market economy is quickly purifying and removing companies which are too small and unqualified from the market. At that moment, if we continue surviving, our market will become larger.

D: Yes, that context would definitely become an opportunity to assert the value of your company.

K: I agree. Speaking about our company's strengths, it is a fact that we have newly entered into the textile and garment industry in Vietnam, and we do not specialize in garment field, but in fast moving consumer goods (FMCG) field. In creating value chain, we highly concentrate on the followings which are also our advantages: R&D; distribution system, branding and brand development. Production is not our strength. We only focus on those three mentioned activities.

D: Yes, I see.

K: In terms of designing, I would like to share that Vietnam is not a good place for educating fashion designers. Thus, we find a solution to problem of fashion designing by
collaborating with institutes in design field and by connecting with foreign designers more than with local ones. In domestic market, we attempt to meet current demand of the market. However, aiming for distinction, we would coordinate with foreigners.

After all, in terms of strengths, we are advanced at distribution and branding.

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D: Yes, so I understand that they are indeed the competition advantages of your company. I would like to move on the second question group which focuses on activities of your company through project investment.

On the way of growth and development of your company, which kind of activities do you spend most of your investment in? As you mentioned earlier, those three strengths of your company are R&D, distribution system and branding. Does your investment concentrate on three of them?

K: Presently, the largest investment amount belongs to retail chain. We invest highest in retail and all of resource of company converge in it.

D: Yes, I see. How about long-term investment in your company? Does it take high proportion in the total of investment?

K: Mostly we do not have long-term investment. We more spend money in short-term and mid-term investment.

D: Yes. Can I ask a question: the project of your company can be categorized into project of new product and expansion of existing products; or project of replacement of equipment or buildings and so on. Does your company have such kind of project?

K: At the moment, we are investing in two pretty longer-term projects. We invest in a garment factory with a scope of 2000 workers. We have finished the preparation of location and now are in ground-filling to build a factory. One factory is located in Hung Yen province, the other is situated in Hoa Binh province. Those two projects belong to the company’s strategy to boost the garment of company to a new level.

D: Yes, I understand.

K: Uhm, they are two projects that we are implementing step by step and are levered by mid-term and long-term finance.
D: Could you name and briefly introduce several projects you used to invest in? For example, you have just present shortly about the on-going project of building garment factory. How about projects in the past and in future?

K: It feels to be pretty too substantial importance when we call them projects. In fact, they belong to business activities of our company. For example, in the past, we invested in 1 factory of toothbrush manufacture.

D: Yes, I agree that the meaning of term "project" might sound to be exaggerated in Vietnamese.

K: Yes, that's true. Besides, we have also made several investment in collaboration with Vietnam textile research institute. In addition, we used to cooperate with London college for design and fashion in order to enhance programs for training and development. Those investment are pretty small and belong to our annual activities of our company. Calling them “projects” seems to be exaggerated.

D: Yes, perhaps we call them investment instead of projects. Can I ask: among the projects in the past, at present or in future, which one is dependent project and which one are mutually exclusive?

(I would like to clarify that at one point of time, you evaluate the project of building a toothbrush factory and decide whether this project should be invested or not at that moment. You concentrate only on one project dependently. In terms of mutually exclusive projects, you have a list of potentially proposed projects such as project of toothbrush production, project of research on new materials and project of product development. Given those 3 proposed projects at the same time, you will choose the most potential one. That is so called the meaning of “mutually exclusive”)

So, among the projects in the past, at present and in future, which project is either dependent one or mutually exclusive?

K: Uhm, The dependent project is indeed the one of building garment factory I have just told you. About mutually exclusive projects, I have just recently proposed a project to invest in producing women’s lingerie. However, we stopped that proposed project.

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D: Yes, I understand. Now, I would like to turn to questions on capital budgeting process. In the field of financial management in a business, a project is in fact a bigger investment amount in spite of the name of project. I would like to clarify that capital budgeting purposes to evaluate a project to be invested in or not, or to select a project investment in case of mutually exclusive. So, when appraising a project, how do you implement the process of capital budgeting?

K: I honestly share that we have not ever organized a clear capital budgeting process as you mention. In fact, we will calculate the efficiency cost of project, called profit and loss (P&L) cost and then evaluate every factor influencing on project.

Let’s take the project of building garment factory in Hoa Binh as an example. At first, we have to define what strategic goals are, then we evaluate how to invest in phase 1, 2, 3 of the project. Next, the feasibility of project will be taken into consideration based on, for example, production capacity, production costs and productivity potentials. Going more details, we analyze other factors such as environment, possibility to attract local labors as well as their qualifications. In short, we rely on such detailed analysis despite the fact that only a number of steps are theoretically conducted.

We only rely on such basic analysis and focus on feasibility of project. In terms of labor attraction, since the core element of garment industry is labor force, we have to take into local demographic factor into consideration, for example what kind of business activity, how much those companies pay to local labor. If we implement a project in that province, how much salary do we have to compete with other businesses? Paid at that salary, how do we set pricing to our product? Can we survive in the market at such competitive price? Or in future, do local employees move out of their province? Do local employees meet our requirements in qualification if we bring in our technology into production? We only aim at analyzing those critical issues which affect business activity of company.

D: So, I can summarize steps of capital budgeting in your company that the first thing is to identify strategic goals, next action plans are built up according to phases, then evaluating the project’s feasibility is based on critical factors which affect the success of project, finally making a decision on project investment on a basis of P&L….

K: …Making a decision on project investment on a basis of critical factors if they are met.

D: I see. So, capital budgeting in your company follows nature of situation, doesn’t it?
K: Uh, we mainly stick tight to real situation to implement capital budgeting, not to any process.

D: Yes, I understand. In your opinion, which step is the most important when you implement a capital budgeting?

K: It is true that information collection is the most important because presently necessary information for capital budgeting might be inaccurate and is difficult to be collected in Vietnam. Particularly to the project we are implementing, it is very hard to collect information on demography in local province. In my opinion, that is the most critical step.

D: Yes, information collection is the most important step. I want to recall that among aforementioned projects, we talk about dependent and mutually exclusive projects. Do you analyze them in different way? For example, you analyze a dependent project in a certain way; meanwhile you consider several additional criteria to evaluate mutually exclusive projects.

K: Honestly, evaluating a dependent project means that investment on that project is guaranteed. To such project, we concentrate on those steps I told you earlier. To mutually exclusive projects, we will make more comparisons and analysis on advantage of each project as well as its “gain and loss”, and we prioritize longer term project. If a project meet the requirement of creating long term value to company, we will select it. Otherwise, a project will be rejected if it does not meet that requirement.

D: So you will consider opportunity costs that are created by project. I have just finished the question group on capital budgeting process. Now, we continue with several questions on capital budgeting methods. Could you name some of methods that you use when evaluating and determining a project?

K: We do not use any of method in capital budgeting

D: I see. Do you rely on any kind of criterion for project evaluation?

K: We will only rely on certain criteria after we complete steps of analysis as well as numerical data analysis. If it is feasible and meets our goals, the project will be selected. The project must meet our goals. For example, to the project investment in garment factory in Hung Yen province, we are working on ground-filling. Since Hung Yen is very close to Hanoi (the capital), we struggle with competition in terms of labor cost. Despite the difficulty, we would reach many of our goals if we built a garment factory there. Firstly, our company is able to transfer our whole logistic system to Hung Yen. Secondly, high
technology production with a small number of employees are potentially applied there. Therefore, we have to follow strictly with our goals of meeting requirements about the image of the company and about easy transportation. In Hung Yen, we mainly focus our resource on simplified production which operates with a majority of machines compared to a small number of labor. That's our goal. In order to systemize steps into a particular method, we do not, but we have to guarantee our final goals to be met. We only make a final decision when our goals are met.

D: Yes, I understand. Do those investment criteria or investment basis change when you evaluate dependent project and mutually exclusive projects? Do you still rely on the basis of initially defined goals?

K: That's correct, we keep relying on our goals as a basis for investment decision.

D: Does the true benefit and practical value of project far differ from your initial analysis in project appraisal? Can you share that?

K: I think it's pretty accurate. The accuracy of the analysis probably reaches approximately 90%.

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D: I would like to ask the final question group which is applicability of several commonly used methods in capital budgeting in company. In theory, there are 2 major methods which are discounted cash flow and non-discounted cash flow.

I would like to explain more a bit. DCF method uses a technique of discounting incremental free cash flow of project and then apply a discount rate to calculate the future value of project to its present value. This method includes techniques such as Net Present Value (NPV), Internal Rate of Return (IRR) and Profitability Index (PI). That's called DCF method. On the other hand, non-DCF is pretty simple and is involved of Payback period (PB) and Average Accounting Rate (ARR) calculation.

I would like to ask: have you ever heard of, ever known or ever used any kind of those techniques?

K: In reality, the second method, you have just told, is the one we are using.

D: So you are using non-DCF method, aren't you?
K: Yes, that’s correct.

D: Do you calculate payback period?

K: Yes, of course.

D: How about ARR? It means that we collect net profit information of project which is also accounting information and then we compare the net profit of project with the initial capital investment. Based on those information, we calculate the ratio of rate of return. Have you ever heard of, or ever used this technique?

K: We have never used that technique.

D: I would like to summarize that your company do not calculate NPV but focus on Payback calculation of the project.

K: It’s correct.

D: Yes, so this technique is used for capital budgeting in your company. Could you share pros and cons of using the technique in your company?

K: In fact the methods we are now using cannot cover every single aspect in terms of investment analysis. After all, it would be more effective and accurate when we are able to specify details of cash flow which are measurable in numbers. About our currently used method such as break-even point calculation, etc., this method is pretty overall and not as accurate as other methods. Although we have never applied the other method (DCF), I think PB is less advantageous than the other one.

D: Yes, so the current method you use is missing value of cash flow calculation. I would like to ask further about DCF method. The first question is about NPV technique. While appraising a project, what indicators do you use to measure benefits and profit of the project? For example, profit of project can be measured by its incremental revenue or by its low cost.

K: Honestly, I do not quite understand your question.

D: For example, when evaluating a project, a project is evaluated based on its benefits and costs. To determine costs of project, DCF method relies on forecasted cash flow of cost in future. Do you consider forecasted additional cash flow of project as a calculation for profit of project?
K: Surely we have to forecast the cash flow brought in by the project.

D: Yes, it turns out you forecast incremental cash flow of project in reality.

K: Yes, we do.

D: Yes, so you in fact forecast the incremental cash flow of project. Do you also forecast incremental expenditure of project?

K: Yes, we definitely do.

D: Yes. They are indeed 2 inputs to calculate NPV of project. In my opinion, you somehow apply DCF method in practice, not “never heard of it” like you said earlier.

K: Uhm, I agree with you.

D: On which information do you rely to forecast incremental revenue and cost of project?

K: To forecast incremental cost, we have to make a list of activities of investment project and it is quite simple. To forecast incremental revenue, we rely on business plan.

D: I see. How do you evaluate the difficulty of forecasting incremental free cash flow?

K: There is one risk that our business plan is not feasible, the forecasting will be affected, as a result. For example, we always anticipate how the worst case happens. In the worst case, how much the incremental free cash flow is and how much it is in the most advantageous case. We usually rely on the worst case to make a decision.

D: When you calculate profit of project, do you consider the changes in working capital such as value of inventory, amount of account receivables and account payables because these changes will affect free cash flow?

K: Yes, we surely do.

D: I would like to ask about sources of financial funding for project. When you consider investing in a project, where does source of financing come from?

K: We utilize 2 sources: equity financing and mid-term and long-term loans from banks.

D: Yes, so the first source is from equity, and the other one comes from debts. With equity financing, can you identify rate of return from shareholders? For example, as far
as I understand, your company’s owner will invest in a project with his/her own money. He or she will expect a rate of return from the project. Can you define this rate on project?

K: We have to calculate the rate of return.

D: Yes, how about mid-term and long-term debt financing from banks? Can you easily approach the rate of return from debt holders or banks?

K: It is easy for us to define it. Since we have a stable cash flow, banks offer us a good interest rate with large amount of debt.

D: Yes, I understand. So, both of 2 rates of return can be easily defined to your company. It is the fact that all of above questions from free cash flow forecast to rate of return are associated with NPV technique. In my opinion, your company practically applies some certain parts of this technique, not unknown as you thought.

I want to ask: how do you evaluate pros and cons of NPV technique?

K: It is true that we have never created a theoretical background as you describe. Thus, we do not evaluate pros and cons of the technique, either. However, I think DCF method would be more advantageous because this method forces me to think deeper, to analyze further cash flow of revenue and cost of project. In addition, when applying the DCF method, risk anticipation would be better than using non-DCF method.

D: I see. I would like to ask another question related to IRR. As you mentioned, you will calculate the break-even point of project when analyzing a project. Do you calculate the rate of return you have to pay back to funding providers at break-even point?

K: Yes, we definitely have to cover all of costs including interest rate for project.

D: I see. The last technique is PI based on NPV calculation. In this technique, after you forecast incremental revenue and cost of project, you can calculate the NPV of project with consideration of initial investment capital. Do you compare the NPV with the initial investment capital of the project?

K: Yes, we surely do.

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D: I see. So, we have just finished question group on applicability of several commonly used methods in capital budgeting in your company. I would like to move on to final questions. Could you please share special points when you appraise a project in a SME?

K: Pardon?

D: For example, when you determine a project, you rely on the aforementioned techniques such as PB, incremental revenue and cost forecasting of the project. Assuming that cash flow of your company is not stable or cash flow is very small or even small initial investment capital, do you consider those factors when making a decision on project investment as a small business?

K: Uhm, our decision is based on that root which is involved of incremental revenue and cost of project. Despite the small or large size of company, we must rely on cash flow.

D: Yes. According to observation, in a small business, is its cash flow stable? Or is it risky to forecast cash flow?

K: Our cash flow remains pretty stable.

D: Yes, so your company are faced with not much difficulty. I would like to ask the final question on characteristics of your industry or business type. Could you share if the business type you are working in affects your decision in project investment?

K: Yes, it does. We specialize in textile and garment industry which does business on a basis of various assumptions, listing weather, macro-economic policies. When we assume our business to go in this direction, it drives to another way in reality. Those assumptions in our industry make a large impact on project investment of our company. For example, it is now an advantage for our company when market transliteration is trendy from China to Vietnam. However, it would become a different story for us to adapt to when the transliteration moves to Africa or Bangladesh, etc. That is the threaten to increase our opportunity cost.

D: Yes, I understand. I would like to thank you for the final question of the interview and I apologize for taking your time a lot.

K: Uhm, I am not sure if I can provide any kind of information you need. I only share my practical experiences.

D: Yes, my goal is to aim at studying shared experiences from you.
K: Uhm, I merely share my personal experiences because I do not receive any kind of professional training.

D: Do not worry about that. I only target at the companies that are associated with those abovementioned methods at very basic level. I do not aim at large companies with professional knowledge.

K: Uhm that is great.

D: Yes, thank you so much.

K: Uhm ok, no problem. Contact me if you need further information

D: Yes, thank you so much for your help again. Goodbye.
Appendix 4- Transcript of interview (EVD Equipment)

Interviewee: Mr. Nguyen Minh Giap (CEO)

Duration: 1 day

Sent date: April 9th 2019

Received date: April 10th 2019

Method and Tool: email of interview question.

INTERVIEW QUESTIONS

Topic: Applicability of capital budgeting methods in project investment in SMEs in Vietnam

Question group 1: How SMEs look like in developing economy

1. Could you please share a little bit about your company’s current situation such as current growth and development policy/plans in future?

   Answer: Our company is developing and growing at 15-20% per year. In future, our company plans to expand variety of new products which are corresponding to our customer and resource of company for further development.

2. Can you address your company in the industry and business type you are working in?

   Answer: our company belongs to top 5 in Hanoi in this industry

3. In the context of Vietnam which is also a developing economy, is your company affected? Please share strengths, weaknesses of, and opportunities and threats to your company. (SWOT analysis)

   Answer: Our business activity is affected a lot. We have to adapt continuously to business environment of the world, especially in manufacture industry. Particularly, in Vietnam, high growth rate belongs to FDI sector such as Samsung, LG; meanwhile our company’s set of customer mostly includes companies from public sector.

4. Is it potential for your company to grow and scale up in the current context?
Answer: Yes, we have opportunities to grow and increase the scope thanks to strong conversion in our business activities and commitment from the board of director.

**Group question 2: Investment activity through project investment in SMEs**

5. On the way of growth and development of company, in which activity does your company invest? Such as in manufacturing or marketing, etc.

Answer: On the way of growth and development, our company focus on sales, marketing (newly established) and R&D (such as solving energy savings for air compressor in ship building industry or manufacturing special ligh bulbs uses which saves our customer a value of 500.000.000 VND per year in the same industry)

Are ther many long-term investment through project? How many percentage?

Answer: Investment in long-term project takes about 15% in total investment

 (**More explanation**: Long-term investments are planned from the beginning of business year. Projects can be categorized into:

- New products or expansion of existing products;
  Answer: We are researching and analyzing demand of our customers to provide new product.
- Replacement of equipment and buildings;
- R&D
  Answer: We are doing research on the field of System Integration (SI), and research on intelligence measurement.
- Exploration
- Others (for example: purchasing equipments for operating office-irrelevant to production and marketing of business)

6. What project does your company invest in? Please shortly introduce some projects which are invested in the past, being invested at present, and planned to invest in future.

Answer: We invested in expansion of existing product line including industrial robot distribution and transfer. This project is successful.

7. Among the investment projects, which one is dependent project? Which one are mutually exclusive projects?

 (**More explanation**: A dependent project refers to decision on whether to invest into his project or not; meanwhile mutually exclusive projects refer to selection for
the most potential project from a list of possible proposed projects by analyzing and making comparison to choose the most potential one)

**Question group 3: Capital budgeting process**

8. When appraising a project, what steps do you implement analysis and make a decision? In detail: is there any capital budgeting process in your company, or please share general steps in appraising a project in your company? (For example, firstly making a list of proposed investment projects; next forecasting cash flow of project; analyzing incremental revenue and expenditure created by projects; making a decision on a project, etc.)

*Answer: When appraising a new project, we must analyze new product based on demand of customers, competition, capacity of company (including qualification of human resource, management, finance and implementation of project)*

9. Which step is the most important in making a decision on a project investment?

*Answer: Analyzing demand of customers and capacity of company.*

10. When making a decision on project investment, is it different in appraising a dependent project (whether to invest in this project or not) from appraising mutually exclusive projects (select the best project among other possible proposed projects). Please share your experiences.

**Question group 4: Methods in capital budgeting**

11. Could you please name several methods for evaluating and deciding an investment project in capital budgeting of your company? There are 2 possible answer: NO means having no method and YES means having a method.

*Answer: Yes, we use DCF method.*

11.1. **NO**
- On which criteria do you rely on to make a decision on a project?
- Is there difference in appraising a dependent project and appraising mutually exclusive projects? Please share your experience.

11.2. **YES**
- Could you please give a name and briefly introduce about the method you use?
- To a dependent project, which method do you use? To mutually exclusive projects, which method do you use?

12. Does the true value of project in reality differ from your initial analysis for project?

**Question group 5: Applicability of methods in capital budgeting**
Studying further about methods in capital budgeting, there are 2 popular methods: Discounted Cash Flow (DCF) and non-Discounted Cash Flow (non-DCF).

(*more explanation:) DCF is the method which forecasts the incremental free cash flow of project and use the discount rate to calculate the NPV of project. DCF includes the techniques: Net Present Value (NPV), Internal Rate of Return (IRR) and Profitability Index (PI).

Non-DCF is the method which uses incremental cash flow created by the project, but does not discount the cash flow to preset value. Non-DCF includes the techniques: Payback period (PB) and Accounting rate of return (ARR).

14. Please share the popularity of those 2 methods or aforementioned techniques in your company.

Answer: We only use DCF method.

• Have never heard of those methods;
• Used to hear of them, but do not know how to use;
• Used to apply, but find it ineffective.
• And so on.

15. Applicability of techniques with current demand of company in capital budgeting (Write “X” in the square that states activity your company does)

• Non-DCF:

  Introduction of Payback: Payback period is the required period in which the cash flow of project repays the initial investment capital.

  Technique/Steps needed to be done

  □ Forecast cash flow created by the project?

  □ Calculate the accumulative cash flow for year 1, 2, 3.. of the project?

  □ Calculate the repayment period of the project?

  □ Determine the required period that the project must recover its initial investment capital?

  □ Compare the calculated payback period with the required period?
Introduction of ARR: Average Accounting Rate is calculated by dividing annual net profit to annual investment capital. Net profit only counts additional revenue and expenditure created by the project.

Technique/Steps needed to be done

☐ Forecast additional revenue created by the project?

☐ Forecast additional expenditure spent by the project?

☐ Forecast net profit of project?

☐ Determine annual investment capital (book value of investment capital)?

☐ Apply any depreciation method in calculation?

- DCF

Introduction of NPV: NPV is calculated by determining incremental free cash flow of the project and selecting a discount rate. Based on those 2 inputs, NPV is calculated by the formula:

$$NPV = \frac{Cash\ flow\ year\ 1}{(1+IRR)^1} + \frac{Cash\ flow\ year\ 2}{(1+IRR)^2} + \ldots + \frac{Cash\ flow\ year\ n}{(1+IRR)^n} - initial\ investment\ capital$$

Technique/Steps needed to be done

☒ Measure profit of project by its revenue and expenditure?

☒ Forecast additional revenue created yearly by the project?

☒ Forecast additional expenditure spent yearly by the project?

☒ Difficulty to forecast additional revenue and expenditure created by the proposed project?

☒ Consider the initial investment capital of project?

☐ Calculate the net change in working capital such as inventory, account receivables and account payables?

☒ Source of funding for project comes from equity?

☐ Source of funding for project comes from loans from creditors or banks?
☐ Difficulty to determine the rate of return on project from shareholders (with equity financing)?
☐ Difficulty to determine the rate of return on project from debt provider (with debt financing)?

Introduction of IRR: Internal rate of return is the interest rate at which future cash flow of project equals present value of investment capital

Technique/Steps needed to be done
☐ Forecast annual future cash flow of the project?
☐ Determine present value of investment capital in every year of project life?
☐ Calculate the discount rate at which future cash flow of project equals to present value of investment capital?

Introduction of PI: Profitability Index of a project is calculated by dividing NPV of project to its initial investment capital, formulated as the following:

\[ PI = \frac{NPV}{Initial \text{ investment capital}} \]

Technique/Steps needed to be done
☐ Calculate the NPV of project?
☐ Determine initial investment capital?
☐ Difficulty to calculate PI ratio?

16. To the company which answers YES to using capital budgeting methods: Among the used methods in your company, have you ever used any techniques belonging to those aforementioned 2 methods in capital budgeting decision?

Answer: We are using DCF method.

Group question 5: characteristics of business industry and size of company on capital budgeting decision

17. Could you please share a bit about characteristics of capital budgeting in SMEs?
Answer: It is difficult because of limited knowledge (almost never hear about, or poor knowledge about this issue) as well as consensus from the board of directors.

18. Could you please share if your business industry affects the capital budgeting of your company (if any)?

Answer: It is difficult to share because in Vietnam, there is no statistics and official evaluation about business industries. We have no reliable information to apply in capital budgeting decision.

Thank you so much for spending your valuable time on the interview!