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ANALYSIS AND DECISION-MAKING IN CORPORATE FINANCING FOR CONTINUOUS OPERATIONS

Ph.D. Thesis

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1. Introduction

Analysis and decision-making of corporate finance is a challenging task of the management of an organization. Gallinger and Healey (1991) suggested that resource allocation decisions are very important to liquidity management if insolvency risk is to be contained. Decisions of allocating resource must be made on economic bases whether it is short or long-term investment, because both investments consume scarce resources of the given firm.

If the going on concern principle did not exist, there would be no more questions and discussions about continuous operation, because the liquidated value of the firm is that amount which can be realized if all assets of a firm were immediately sold for cash. Unfortunately, the above principle exists and any business organization operates with unsynchronized transactions and uncertain future so the financial managers must be aware of the liabilities when they are due. The failure to maintain liquidity, as driving a car with little oil for long distance, may result in an interrupted operation of the business organizations in the given accounting period.

Nowadays, the most popular question of the firm is "why go broke when a firm makes profit?" If a firm is broke, can it meet its obligations? Does it follow the going on concern principle? Does the economic indicator supported by accounting information give fair information for creditors and investors? These questions support the management to examine working capital of the given firm.

Short-term asset policy involves two basic questions: what is the appropriate amount of current assets for the firm to carry, both in total and for each specific account, and how should current assets be financed.

Robert (1995) suggested that once the investment decision has been made, strategies for financing current assets must be addressed. These strategies involve choosing the term structure of liabilities appropriate to a given term structure of assets. This is supported by budget and percentage of sales.

Since percentage of sales method is relatively used forecasting short-term changes in financing needs, a financial analysis and planning is also introduced for long term financial changes.

Under the main topic I introduce working capital management in general directly or indirectly. So the cash flow is also investigated in order to examine the product of the investment in current assets and fixed assets as well as their financing at the given period of time.

The advantage of a cash flow statement corresponds to the shortcomings of the income statement. One of the shortcomings is raised by the trade credit policy of the given firm. If a business entity applies the flexible, or relax policy, the firm may show positive profit, but may not have enough cash at hand to satisfy its obligations when they are due, because it grants credit and credit sales may not present cash at hand at once. Credit sales show a large balance of account receivable.

This huge balance of account receivables in turn results in the accumulation of inventories. This also needs a large investment on inventory to grant credit for customers in order to reduce shortage costs or not to loose customers.

All these situations and related problems and solutions are discussed in six main chapters.

2. The objective of the dissertation

Operation of a manufacturing enterprise is very complex. As a result, the analysis and decision-making need a careful attention and evaluation. It is assumed that the necessary preliminary process and conditions to produce their required amount of sales are satisfied during the given year.

It can be observed that most firms use the data obtained from the balance sheet and income statement as resources for analyzing and decision-making of their operation in the given period of time. This accounting information may not always give the necessary information when applying them directly for analyzing and decision-making in terms of liquidity or continuous operation.

Obviously, most of the firms face financial problems at the end of the year to continue their operation for the coming period when the availability of resources is scarce. So the dissertation focuses on investigating working capital elements and their consequence effect on financing and investing in them, because these elements are considered to facilitate the cash inflow and outflow of the organization.

The dissertation attempts to examine why current ratio and quick asset ratios have the weakness in determining liquidity of the firm. The investigation of these ratios determines that managers have to survey the efficiency of these ratios deeply as well as the cash cycle, because these ratios and the cash cycle play an important role in the operation of a business. As a result, working capital elements are surveyed and discussed to the improvement of the continuous operation.

The main objective of the dissertation is to identify problems and causes as well as to present methods to solve those problems and causes in a firm's financial analysis and decision-making for continuous operation in scope of financial accounting.

3. The research methodology

I wished to examine concrete manufacturing entity if I could have accessed the necessary data and the internal policy of a firm.

As a result, I devoted all my time to reading the articles and books written by famous researchers and authors in the finance and accounting literature. After understanding the theory in both literatures, I also read related literature in statistics, econometrics, operation research and methods of optimization in order to write my dissertation.

Having read all the necessary literature, I reached the conclusion that the information from accounting needs an in-depth investigation to use it for the purpose of analyzing and decision-making in corporate financing.

The dissertation is presented in a certain optimum sequence to satisfy the necessary requirement in developing methods of analysis and decision-making for corporate financing.

It is clear that the net present value is used in the investment decisions, but it is applied to examine the economic value added, residual income of the firm in a given period of time. This is done to show the real economic profit of the business entity or the return of a project.

The application of departmental budget is used to estimate the required amount of external finance as well as the percentage of sales method, and the application of statistical methods such as regression analysis are used to analyze ratios within the same industry.

The application of cash flow from different point of view is examined in terms of its financial position and operation.

The practice of an international firm shows that the ratio of debtors to total asset ranges 20% to 25%, and the average manufacturing company accounts for about 37% of current assets during the operation period in many countries. This represents a considerable investment of funds, and so the management of this asset may have a significant effect on the cash flow of the companies.

The present and future values are used to investigate the cost of taking trade credit to develop the annual implicit cost rate. The implicit cost rate provides information for customers how much they have to pay as interest if they did not pay on the given discount period.

The balance of accounting receivable should be analyzed and surveyed before any credit decision is given. Therefore, present and net present values are applied to investigate whether to grant credit for the customers or not.

In order to analyze credits five approaches are examined:

- Credit evaluation and scoring
- Simple NPV model
- Linear discriminant model
- NPV without inflation and
- NPV with inflation

Finally, in evaluating the conventional inventory process, the throughput time and manufacturing cycle efficiency are applied.

Most of these applications are supported by statistics, linear algebra and mathematical methods.

4. The examined area in summary

It is obvious that the topic of the dissertation is very broad, but it attempts to investigate the most important aspects from the point of view of the continuous operation of the firm.

The first investigated area is the liquidity of the firm. The conventional measures of liquidity ratio of the firm have been recognized as current ratio and quick ratio; however, it is proven that by many researchers these ratios are static. After discussing the critiques of traditional ratios in terms of liquidity I suggest that the defensive interval ratio should be applied, which can predict the time span during which a firm can present liquid assets without resorting to revenues from the next year's income sources. This ratio is considered dynamic because it is derived from the balance sheet, income statement and cash flow statements.

The difference between accounting profit, cash flow and economic profit is also studied. Here the main idea is to determine that the economic profit is the combination of cash flow and opportunity costs. This type of profit is reduced as being a maximization of residual income. The residual income is logically compatible with a wealth maximization objective. The net present value model is one of the models for calculating investment decisions. The NPV model is as follows:

$$NPV = -I_0 + \sum_{t=1}^{n} F_t \frac{(1-T)}{(1+r)^t} \geq 0, \qquad (4.1)$$

where I_o = incremental investment at time zero,

F_t = incremental pre-tax cash flow from operation occurring in period t,

T = the corporate tax rate,

r = the appropriate risk-adjusted discount rate[1].

[1] The firm's weighted average cost of capital can be used.

As far as the decision is concerned the management should accept when NPV is equal or greater than zero that the marginal revenue must be equal to or greater than the marginal cost. The NPV model can be deduced into the residual income model by taking the assumption that the F_t is constant and n approaches infinity.

If this is the case the NPV model can be rewritten as

$$NPV = -I_0 + F\frac{(1-T)}{r}. \qquad (4.2)$$

If both Equations are multiplied by r, residual income, RI, will be as follows:

$$RI = r(NPV) = F(1-T) - rI_0. \qquad (4.3)$$

The managers should accept decisions to fulfill the objective of wealth maximization in the investments when the cash flows after tax from the operations $F\ (1\text{-}T)$ exceed or are equal to the opportunity costs of investments (rI_0) or when the residual income is not less than zero.

In analysis and decision-making of corporate financing for continuous operation, liquidity analysis plays a great role. The liquidity analysis should be the starting point for the corporate financing.

The second examined area is the short-term financial planning. The aspect of short-term financial policy is surveyed in terms of the size of the investment in current assets and their financing. As a result, the application of flexible and aggressive policies in determining minimum level of current assets, and financing them is investigated.

In addition to focusing on these policies the preparation of departmental budget is discussed to arrive at the required amount receipts and disbursement for the total manufacturing activities as well as the percentage method of sales to calculate the required amount of money to look for from external financing.

The third topic is financial analysis and planning. It emphasize on the critique of accounting information, methods for improvement, static determination of financial ratios, dynamic analysis of financial ratios and important concept of linear algebra.

The fourth part of the dissertation is the analysis and management of cash flow. It investigates the fund flow statements, the importance of cash flow statements, the preparation of cash flow and analysis of cash flow. It includes four subheadings, which contribute a new way of applying cash flow in the analysis the firm's financial position.

The fifth examined area is some problems in trade credit. The present and future values which are studied under the time value of money are applied to drive the implicit cost rate. This implicit cost rate helps the customers to decide whether to pay on the discount period or not. If the customers did not pay the amount of money at the given discount period, then they have to considered as interest for the amount of discount given when it is due.

Granting credit is investing money for customers. This could be a twofold, that is, the firm could give credit for existing customers with out increasing its sales and with increasing its sales. In case of increasing sales of the firm, the cash flow can be estimated for each additional amount invested in current assets. The NPV can be applied to determine the optimal level in current assets.

Beside all these situations in order to analyze the customers' ability to pay it liabilities when they are due credit and evaluation and scoring and linear discriminant methods are on depth examined.

The last examined area is developing manufacturing techniques and accounting. It discusses the causes of excessive inventory, what are the main features of JIT, TQC and CIM? The application of throughput time and manufacturing cycle efficiency and RIP, raw material in process are introduced to show the important JIT in manufacturing process.

5. The achieved results

In the third part of the dissertation, the variability in fixed and total assets over time is developed in one diagram instead three diagrams shown at one time for interpreting the aggressive, moderate and relax policies during financing current assets. It is discussed with more constraints and conditions to present the possible financing strategies. The costs and risk of each financing policy can be reduced by comparing curve 3 and 4, which illustrate the risk-return relationship.

In the fifth part of the dissertation, a new way of application of cash flow is presented to examine the financial position of the firm. The application of cash flow analysis is discussed briefly presenting as:

- Applying cash flow analysis in leverage buyout firms,
- The analyzing of the firms' life cycle using cash flow, and
- Financial flexibility analysis applying free cash flow.

The maneuvering margin a corporation has to change the amounts and timing of its cash flow so that it will able to respond to unexpected needs or opportunities depends on its financial flexibility.

The concept of cash low is particularly necessary for financial managers, because business entities have different requirement and activities. Early identification of these requirements and activities applying cash flow analysis helps the mangers to do better decisions at the given period of time in terms smooth operations.

In the sixth topic of the dissertation, the discriminant analysis is introduced in order to evaluate the customers' ability to pay their liabilities when they come due. This evaluation process is also found in many finance literatures. The application of this model is more different in its contents than usually read. In the dissertation, dummy variables are neglected, and the mean, error sum of the squares and the product of the error sum of the two ratios for good and bad customers are calculated separately to reach at the parameters b_1 and b_2.

In the seventh part of the dissertation, it is clear that the traditional manufacturing inventory consists of raw materials, working in process and finished goods inventory and they are presented in the balance sheet under the current asset items. The application of throughput time and manufacturing cycle efficiency prove that these inventories contain non-value added to the customers, which increases the price of the product. If the JIT is achieved, these inventories are minimized at least to zero inventory level theoretically. If any how a firm could not minimize these inventories at all, because of economic obstacles, they should be handled as raw material in process, which presents the raw material and working in process as single account.

6. Publications

1. Tewolde Melles Hagos, „Kereskedelmi hitel néhány problémája" Vezetési Tudomány XXXII Évfolyam 2000, 3. szám: 27-40.

2. Tewolde Melles Hagos, „A vállalati kockázat megoszlása és értelmezése," Bank Szemle Negyvenötödik Évfolyam 2001/6 117-129.

3. Tewolde Melles Hagos, „Decisions and analysis of receivables" Journal of High Studies January 2002. 29-45.

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