

A STUDY OF COGNITIVE MANAGEMENT ISSUES AT THE BUSINESS VENTURES TARGETING THE BUSINESS IN THE NEW FIELD, USING A CAUSAL LOOP DIAGRAM

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ABSTRACT

Business ventures have the characteristics of conducting business focusing on a specific growth market using their new technology or services. To facilitate funding for small and medium enterprises, “The New Small and Medium Enterprise Basic Law” exists in Japan. Ito et al. (2001) stated that still whether a venture possesses new technology /services is a crucial factor to be authorized as an applicable enterprise for funding by the law. This indicates the importance of managing new product development and new service introduction for the business ventures. In the growth process, several issues emerge that are inherent to business ventures, namely, additional requirements for new product development and / or new service introduction. These issues arise from the needs to maintain a sustainable competitive advantage. For those business ventures, developing additional business in the new field impacts the sustainability of the enterprise. Therefore, prior to developing these businesses, those business ventures need specific characteristics to achieve this sustainability. Those characteristics seem to vary according to the competitive condition of the market. For the start-up ventures characteristics, the studies in the past tended to focus on the characteristics of entrepreneurs and /or organizations (Takase, 2003 1990; Gregorie, Dery & Bechard, 2002). This paper identifies business characteristics of those business ventures targeting the new business opportunities, based on the transformation of finance and cognitive management issues. To identify those cognitive management issues, questionnaires were sent to business ventures. Comparison and analysis primarily based on the questionnaire results are performed from the perspective of importance of each management issue. Causal loop diagrams, that were developed through these findings, were used to identify the underlying major factors which influence the sustainability of the business. The causal diagrams illustrate how some combinations of cognitive management issues may have the function of controlling the company’s working capital management. The analysis also shows other problems and the associated countermeasures, such as the unintended negative feedback loops that may evolve through the combination of cognitive management issues in less competitive market.

Keywords: causal loop diagram, business ventures, cognitive management issues, mental model, working capital management, new product development, new service introduction

TRANSFORMATION OF FINANCE AND COGNITIVE MANAGEMENT ISSUES FOR BUSINESS VENTURES WITH SIGNIFICANT EMPHASIS ON ADDITIONAL NEW BUSINESS DEVELOPMENT

The entrepreneur takes a dominant role in the management decision making process of his / her business venture. Thus the performance of business ventures heavily tends to vary according to the intention of entrepreneurs (Yasuda, 2004). Developing additional new business including new product development and / or new service introduction impacts the sustainability of the enterprise. Prior to developing these businesses, entrepreneurial recognition of important management issues becomes a principal factor to achieve sustainability of the company. Also, different methods financing, such as equity financing and

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debt financing, influence the management efficiency of the general enterprise (Hirota, 1996). Through the comparison and analysis on the transformation of finance and cognitive management issues primarily based on the Nikkei's 2003 Annual Corporation Reports of Venture Business¹ and the questionnaire results², it is possible to observe the following characteristics for business ventures directing toward additional new product development and / or new service introduction (Fukunaga, 2004, 2005).

1. Sales revenues efficiency, profit efficiency, and debt ratio that show the specifics of the funding influence the consideration for the additional new business. Also, degrees of these influences vary by the market competitiveness.
2. In less competitive markets, new business is considered more favorable when the debt ratio declines. In that case, consideration becomes more active when accompanied by the positive financial status indicated by the rise in the sales revenues efficiency, the profit efficiency.
3. In competitive markets, the influences of the debt ratio and the profit efficiency become weak. However, the improvement of the sales revenues efficiency becomes a tentative influencing factor in considering additional new business.

And, concerning the cognitive management issues, following changes occur in taking the new business into consideration when competition environment in the market is different.

1. In less competitive markets, the issue of "promotion of the additional new business" is considered to be an important decision making item by many entrepreneurs. The degree of importance increases as the markets become more competitive.
2. The importance of "expansion and strengthen the domestic sales network", "securing manpower of the technology, research field" and "cost reduction, increase in efficiency of the production section" increases in the enterprise group which attaches importance to additional new business development. The importance of " expansion and strengthen the domestic sales network " becomes especially strong.
3. The importance of, "promotion of IT (information technology)" and "promotion of restructuring" increases in the enterprise group which takes additional new business development seriously in the competitive market. And the importance of "cost reduction, increase in efficiency of the production section" and "the fund-raising" becomes especially strong.

These points affect significantly the factors for the smooth promotion of additional new business development. This paper identifies the underlying major factors which influence the sustainability of those business ventures using the causal loop diagrams. The analysis also shows problems of the combination of cognitive management issues and the associated countermeasures.

MENTAL MODEL FOR THE BUSINESS VENTURES WITH SIGNIFICANT EMPHASIS ON ADDITIONAL NEW BUSINESS DEVELOPMENT

¹Business ventures (unlisted stock) which Nikkei Inc has ever featured in the newspaper, the magazine, and the books appear. Those enterprises are selected mainly based on the following. 1. Possessions of individual technology, know-how. 2. High growth rates for the recent years. 3. Comparatively young enterprise after the establishment. 4. Changed a type of industry recently, even if the history of a company is long.

²Joint research group on Entrepreneurs and the Growth of Venture Business in Commerce, Distribution and Service industries of Nakamura Gakuen University conducted investigation of the venture business manager using questionnaires during November, 2004 to February, 2005. Questionnaire forms were sent to 1,692 companies of random sampled from the Nikkei's 2003 Annual Corporation Reports of Venture Business and the economic organization in Fukuoka area. The 165 companies have answered. The number of unreachable companies was 52. This is due to unknown new address etc. The answer rate toward 1,640 companies except for the 52 companies was 10.1%.

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The enterprise group which attaches importance to additional business development recognizes the significance of "expansion and strengthen the domestic sales network", "securing manpower of the technology, research field" and "cost reduction, increase in efficiency of the production section" in the ascending order of importance. The importance of "expansion and strengthen the domestic sales network " becomes especially strong. Furthermore, in the less competitive environment, the decline in debt ratio and the rise in both the sales revenues efficiency and the profit efficiency become dominant. In the more intensive competitive environment, only the rising trend of sales efficiency become predominant and the decline of debt ratio becomes minimal.

In order to grow through a promotion of additional new business, it is necessary to increase expenditure for new product development and / or new service introduction and to introduce those products and services in the market. "Securing manpower of the technology, research field" becomes more important to realize the promotion. Flows of funds to be put into the promotion depend on the size of free cash flow (i.e., cash that companies can use freely). A current income increase will cause higher operational cash flows and higher free cash flows. Introducing the new products/services to the market will give rise to higher purchasing cost for prime goods and services and the increase of the cost of goods sold. Such an increase may cause the higher degree of importance placed upon the issue of "cost reduction and increase in efficiency of the production section. And the importance of "expansion and strengthen the domestic sales network" increases significantly since introduction activities of new products/services besides the existent ones are required as well.

In the less competitive markets, additional new business is often taken into consideration when the debt ratio declines. In that case, consideration becomes more active when accompanied by the rise in the sales revenues efficiency and the profit efficiency. Free cash flow increase is likely to increase cash and deposit holdings which decrease current interest cost. Such a decrease allows current financial cost reduction and may give rise to an increase in the current income. These are the business characteristics of the enterprises taking additional new business development into consideration in the less competitive markets.

Figure 1 shows the structure of these management activities by the causal loop diagram. The sales revenues efficiency, the profit efficiency, the debt ratio and the management issues are indicated in italics together with the related variables. Concerning the sales revenues efficiency, the profit efficiency and the debt ratio, the feedback loop including the related variable tends to be more strengthened as the thickness of the enclosure frame of the variable increases. Concerning each management issue, reinforcing the loop is taken more seriously as the thickness of the enclosure frame of the related variable increases.

Three feedback loops exist in the Figure 1. The first positive feedback loop (Loop R1) generates a growth pattern. Actively increasing expenditure for new product development and / or new service introduction, and for introducing those products and services, is likely to cause - after a delay - an increase in the number of customers and /or in average sales revenues per customer. If expenditure increase is offset by sales volumes increase, such aggressive new business development will give rise to higher sales revenues and to a current income increase. A current income increase will cause higher flows of funds and higher free cash flows. This loop explains why a promotion of additional new business might be transformed into an improvement of the quality and maintenance of not only the new

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business based on cognitive management issues

MENTAL MODEL FOR THE BUSINESS VENTURES WITH SIGNIFICANT EMPHASIS ON ADDITIONAL NEW BUSINESS DEVELOPMENT IN COMPETITIVE MARKETS

In the case of highly competitive markets, only the upward trend of sales revenues efficiency was observed and the downward trend of debt ratio weakened. No improvement was observed in profit efficiency. If free cash flow grows, borrowings will diminish and it is highly likely that cash and deposit holdings will increase. As a result, the debt ratio will decrease, leading to increased profits for the accounting period. This means improvement of profit efficiency. In addition to improvement of sales revenues efficiency, “cost reduction, increase in efficiency of the production section”, “fund-raising”, and “promotion of IT” use are important management issues for companies that attach importance to additional new business development in highly competitive markets. Of the three issues, “cost reduction, increase in efficiency of the production section”, in particular, is of paramount importance. The fact that only sales revenues efficiency improved suggests that companies that attach importance to additional business development in competitive markets may have a characteristic contributing to increased sales. However, despite the sales improvement effect, the effect of period profit improvement may be dampened by increased cost of sales, which includes costs related to the purchases of goods and the provision of services. In other words, as a new product or service penetrates the market, costs related to the purchases of goods or the provision of services increase, forcing up the cost of sales. In this regard, the issue of “cost reduction, increase in efficiency of the production section” plays an important role in directly reducing these costs. An increase in the costs related to the purchases of goods or the provision of services means an increase in the amount that the company has to pay by the due date to the supplier of the goods or services. To ensure smooth funds management for such payments, “fund-raising” is regarded as an increasingly important management issue. To continue producing and providing new products or services in highly competitive markets, companies need to pursue the “promotion of IT” use and other measures so that they can purchase raw materials or services and manufacture products in a timely manner. It is also important to achieve optimum inventory and shorter delivery periods by promoting the use of IT.

“Fund-raising” is a priority issue in competitive markets. Since it is somewhat difficult for venture companies to issue corporate bonds or the like (direct financing), they generally resort to indirect financing by borrowing funds through financial institutions (Tanaka, 1997). To ensure more smooth borrowings from financial institutions, companies must satisfy the following requirements in management activities:

- ① Reporting profits;
- ② Balancing accounts receivable and accounts payable; and
- ③ Making new investments within the amount of cash flow from operating activities.

In the group of enterprises that attach importance to additional new business development in highly competitive markets, no improvement in the profit efficiency was observed. As a result, they have difficulty reporting profits (①). It is therefore important to ensure that they balance accounts receivable and accounts payable (②). How accounts payable arise depends on the conditions of suppliers who provide the raw materials for new products or services,

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whereas how accounts receivable arise depends on the conditions of customers who purchase products or services in the new field. Increases and decreases in accounts payable and in accounts receivable will be heavily affected by the current and future conditions of suppliers and customers associated with the companies opening up new additional business in highly competitive markets.

Regarding suppliers, a company that is going to manufacture a new product or provide a new service will purchase raw materials or services from a new supplier in many cases. At the stage of introducing a new product or service into the market, therefore, the company is likely to be required by the supplier to pay its debt or charges in cash and/or in a shorter period of time. This means that the launch of a new product or service leads to an increase in the costs related to the purchases of goods or the provision of services, particularly debts that should be paid off in shorter periods of time.

Regarding customers, because a company promotes sales and marketing of its new product or service, the company's customer segments will expand and become more diverse. While sales by existing customers account for a smaller percentage of the company's total sales than before, new customers increase their share. This means that the company deals with more customers who have paying capacity and settlement methods different from those of existing customers. As a result, there will be higher risk of extended collection periods or even nonpayment of accounts and notes receivable. Eventually, accounts receivable will increase, resulting in a shortage of working capital. In such a case, cash flow from operating activities may decrease, which in turn can reduce free cash flow.

Figure 2 shows a causal loop diagram of these relations. In Figure 2, three new feedback loops are added to the three loops shown in Figure 1. The first negative feedback loop (Loop B2) includes accounts payable, necessary working capital and free cash flow. To manufacture or provide a new product or service, companies often need new suppliers of raw materials. As a result, at the new product/service introduction stage, the company may be required to pay its debt or charges in cash and/or in a shorter period of time. This situation causes an increase in short-term accounts payable and a decrease in long-term accounts payable. As a result, the company will need more working capital, leading to declining free cash flow.

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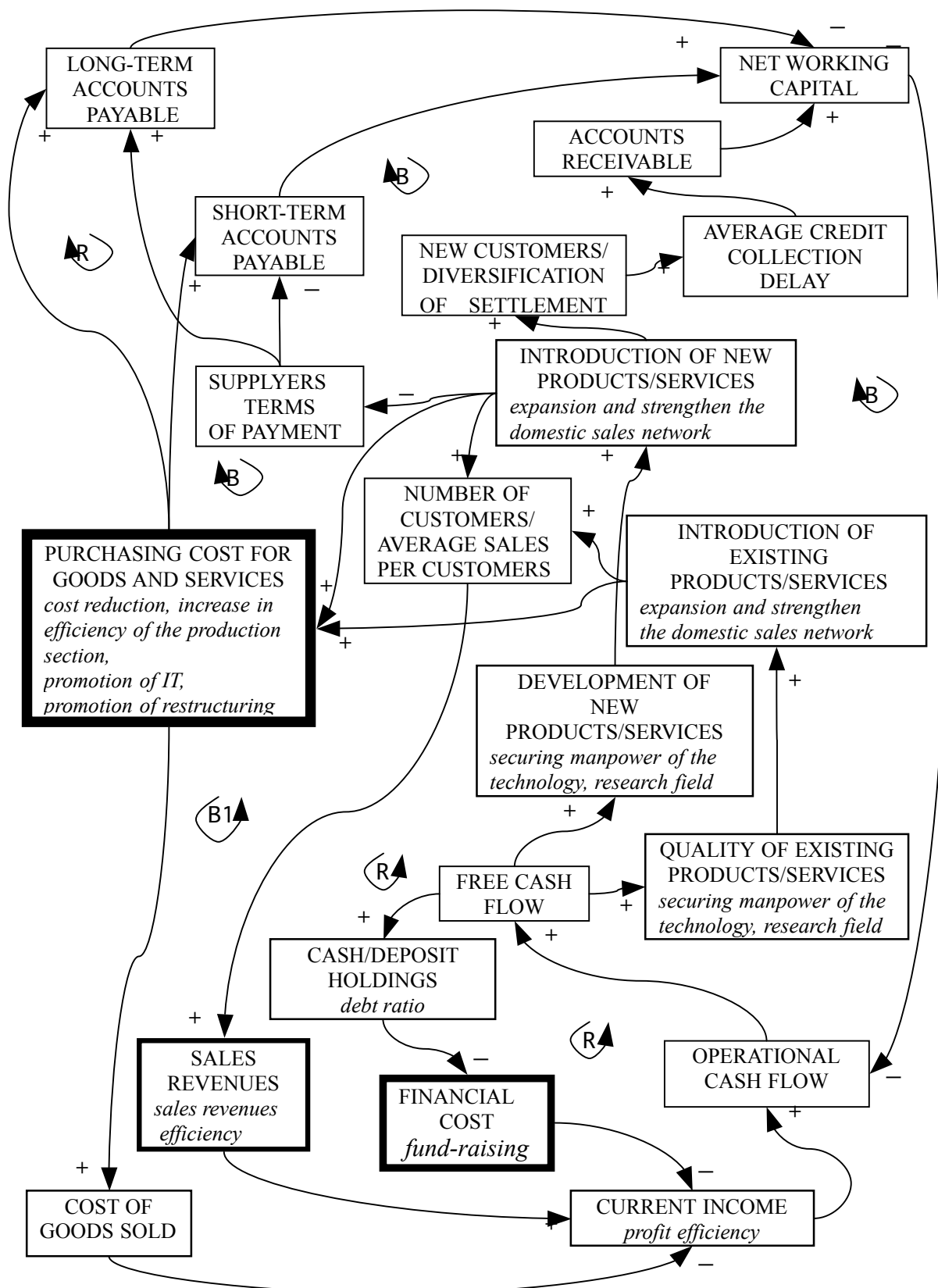


Figure 2 Causal loops which can be fostered through promotion of additional new business based on cognitive management issues in competitive market
 “Working capital” here means “accounts receivable + inventories _ accounts payable”. In other words, working capital is the amount of funds that a company needs to have in order to promote sales of a new product or service in its existing or new field. Another feedback loop

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(Loop B3/R3) represents how the penetration of a new product or service in the market will cause an increase in the costs related to the purchases of goods and the provision of services, increasing accounts payable as a whole. Since this loop works to increase both long-term and short-term accounts payable, it has both positive and negative effects. The third negative feedback loop (Loop B4) relates to accounts receivable, necessary working capital, free cash flow and customers' payment periods. With expansion and diversification of customer segments in the wake of additional new business, the company will deal with more customers who have paying capacity and settlement methods different from those of its existing customers. As a result, accounts receivable may increase due to extended collection periods or nonpayment of receivables, resulting in a shortage of working capital. Then cash flow from operating activities may decrease, leading to declining free cash flow.

MEASURES FOR INHIBITING NEGATIVE FEEDBACK LOOPS

In promoting additional new business in highly competitive markets, along with positive feedback loops, negative feedback loops work in terms of funds management. The former is believed to encourage corporate growth, while the latter to inhibit growth. Over time, negative feedback loops work to increase the amount of working capital used for maintaining existing businesses, resulting in declining free cash flow. Then, growing fund-raising costs accelerate a profit slide, which can cause an unexpected shortage of funds for the current or following accounting period. To inhibit these negative feedback loops, the following measures can be developed from the causal loop diagram in Figure 2.

The first measure is to weaken the effect of Loop B2. To achieve this, it is important to bring the reduction of accounts payable under control by setting the longest possible payment periods for purchases. In addition to selection of suppliers, concrete actions to be taken include: finding new suppliers mainly from among the companies affiliated with suppliers of existing goods and services; demanding price discounts and/or extended payment dates for accounts payable in exchange for increased purchases; and restraining increases in purchases through efficient investment in plant and equipment. Through these actions, companies must ensure that payment terms for accounts payable for a new product or service are similar to those for existing goods and services.

The second measure is to make the collection periods of accounts receivable as short as possible in order to weaken the effect of Loop B4. This can be achieved if the company acquires more customers who have excellent paying capacity or who accept shorter collection periods. "Expansion and strengthen the domestic sales network" is a management issue that both companies in highly competitive markets and companies in less competitive markets attach importance to. However, if a company aggressively pursues expansion of domestic sales networks and enhancement of marketing ability alone, the effect of Loop B4 will increase, which can easily end up with declining free cash flow. As a result, the cycle of "declining free cash flow → need for shorter collection periods from customers → decreases in the number of customers and average sales per customer" may be accelerated. For the above reasons, it is necessary to establish some guidelines, such as individual selection of customers and selling on credit within the credit limit, before promoting any expansion of domestic sales networks or enhancement of marketing ability. These rules may temporarily narrow the list of potential customers of the new product or service to be launched. Even so, companies should pursue corporate activities in line with these rules when they are going to expand their domestic sales networks or enhance their marketing ability. To sustain the

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growth achieved by opening up additional new business, it is important to incorporate such activities to the maximum extent possible.

The third measure is to curb increases in labor, administrative and other expenses to eliminate the shortage of funds arising in Loop B1. By doing so, the company can mitigate a decrease in period profit. Regarding another important issue, of “promotion of IT”, when selecting and introducing software systems, companies must take into consideration the compatibility of inventory control, accounting and other systems to ensure that these systems will facilitate accurate control of costs and proper inventory.

The fourth measure is to strengthen Loop R2. Increases in cash and deposit holdings work to reduce fund-raising costs. It is therefore important to retain earnings, when turning a profit from sales of existing products or services, and hold down cash outlays. This will lead to eliminating the shortage of funds and increased equity capital, which in turn will help keep the debt ratio at optimal levels. As a result, fund-raising costs can be reduced.

It was found that companies considering promotion of additional new business development in highly competitive markets tended to attach importance to “cost reduction, increase in efficiency of the production section”, “fund-raising”, and “promotion of IT”. On the other hand, companies aiming to open up additional new business in less competitive markets have a strong tendency to give greater importance to “expansion and strengthen the domestic sales network” and enhancement of marketing ability. Therefore, companies aiming to open up additional new business in less competitive markets do not strongly recognize Loops R2, B1 and B2 in Figure 2. However, the effect of the negative feedback in Loop B2 will increase as suppliers involved in the company’s products or services become more diversified. This is more likely when the new product or service is very different from existing products or services the company has been dealing with. Since the company has a relatively weak relationship with the new supplier in the initial stages of introduction of a new product or service, Loop B2 works more strongly. The effect of Loop B2 can be alleviated, if a company addresses “cost reduction, increase in efficiency of the production section”, “fund-raising”, and “promotion of IT” as priority issues. For the above reasons, in opening up additional new business even in less competitive markets, companies should attach importance to these management issues.

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