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Low Cost Product Development Framework for Micro Sized Enterprises: Some Indonesian Evidence

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ABSTRACT

As one of the key success of a business, improving new product development process is very important. Many studies discussed the product development process, but few focusing on how to develop a low cost product. In a high competition market where price is sensitive, like for micro businesses, low cost is essential. This study aims to propose a new framework of successful low cost new product development process for micro sized enterprises. The factors to be considered are product strategy in the plan/design phase, sourcing, supply, production, and distribution strategy. To give an in-depth and comprehensive overview about the process, this study uses multiple case study.

Keywords: low cost, micro sized enterprise, multiple case study, product development.

INTRODUCTION

A product can be a successful one depends mostly on its process (Kumar *et al*., 2009). New product development process is vital to gain profit and survive in the global competition, rapid technology change, and in the world market (Owens, 2007; Schilling and Hill, 1998). The right strategic new product decisions can give advantages in cost, quality, flexibility, and response time (Finch, 2007). Product development requires contributions from nearly all the functions of a company (Ulrich and Eppinger, 2003).

The performance of new product development varies from organization to others as a result of variety in socio-cultural and organizational factors (Laguecir, 2003; Ledwith, 2000). Therefore, the study of new product development process needs to be conducted specifically in certain type of business. This study focuses on designing new product development process framework in micro enterprises.

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Micro, small, and medium enterprises have an important role in industrial development. They encourage diversification of the market, promote innovation, and provide many job opportunities (Barth *et al*., 2011). On the other hand, the failure to develop the small and medium enterprise may increase the volume of unemployment, early retirement, crowd-out investment and other employment creating expenditures (McIntyre, 2001). According to Ministry of Cooperatives and Small and Medium Enterprises of Indonesia in the First National Work Meeting in 2005, micro, small, and medium sized enterprises in Indonesia are major players in economic activity in various sectors, the largest provider of employment, significant players in development of local economic activities and empowerment, and also the creator of new markets and source of innovation. Small business recovered faster than medium or big businesses when facing national economic crisis in 1998, which indicates that small sized enterprises could act as safety valve and stabilizers of Indonesian economy. According to Act Number 20 in 2008 about Micro, Small and Medium Enterprises, the classification criteria of micro, small, and medium sized enterprises are assets and turnover. This classification is shown in Table I.

Table 1 Classification of micro, small, and medium sized enterprise

Classification	Assets	Turnover/year
Micro	< 50 million IDR	< below 300 million IDR
Small	between 50 and 500 million IDR	between 300 and 2.5 billion IDR
Medium	between 500 million and 10 billion IDR	between 2.5 and 50 billion IDR

In order to compete, the outcomes of new product development process could be product features, product variety, time to market, first mover status, and cost position (Loch and Kavadias, 2008). This study focuses on cost position. The purpose of this study is to explore new product development process in micro sized enterprises, in terms of low cost. The research question of this study is: "How do micro enterprises develop low cost new products?". The scope of this study is the new product development process or success factors in micro enterprises, whether it is in project level or company level, in particularly regarding the low cost process.

NEW PRODUCT DEVELOPMENT PROCESS

Although the model of new product development process can be described differently, the processes are generally classified into four main stages: ideas, design/concept, development and testing, and production. Most concept of new product development process discuss only from idea generation to production

phase, although actually the development chain and supply chain are inseparable. The development chain is highly related with the supply chain (Simchi-Levi, 2007) due to its important impact on reducing cost and improving customer satisfaction (Lockamy and Smith, 2000; Mentzer *et al*., 2001). In proposing a framework of low cost new product development process, this paper uses the development and supply chain model from Simchi-Levi *et al*. (2007) as the guideline (shown in Fig. 1).

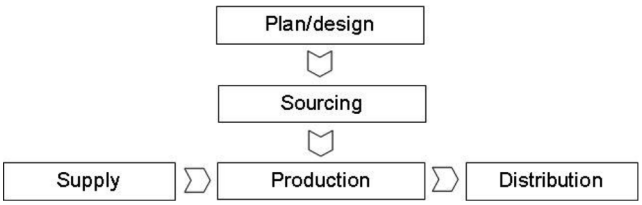

Figure 1 Development and supply chain (Simchi-Levi *et al*., 2007)

Cost advantage can be acquired by performing particular activities more efficiently than competitors, and the differentiation are both from the choice of activities and how they are performed (Porter, 1996). Total cost of the new product development process can be lowered by performing some activities differently.

In the design stage, the firm must decide the new product strategy that it will use, whether to innovate or imitate the product, or to mix them. Both have advantages, and the effectiveness of each strategy may depend on external factors, such as market environments, as well as internal factors, such as firm resources (Zhou, 2006). Innovation strategy benefits in scale and experience economies, acquisition of scarce resources, sustained technology leadership, market share, etc. (Zhou, 2006; Lieberman and Montgomery, 1998). Companies with an innovative culture, can analyze the competitors well, develop a good chain of cooperation and partnership, and flexible enough to be able to response quickly to the market, are the ones that are most likely will be succeed using this strategy (Motvani *et al*., 1999). Imitation strategy can be in the form of completely imitate the products or imitate creatively by adding some improvement on the original products (Zhou, 2006). The advantages are that they can identify a more superior product position (Shankar *et al*., 1998), lower R&D investment, etc. In terms of low cost, Harabi (1991) found that imitation cost is lower than innovation cost.

Sourcing is defined as "the set of business processes required to purchase goods and services" (Chopra and Meindl, 2010). The most significant sourcing decision for a company is to perform in-house or to outsource a task (Chopra and Meindl, 2010). Outsourcing means procuring services or products which are usually part of the company production process from external suppliers (Heizer and Render,

2008). Outsourcing can reduce cost by delegating non-core competence activities of a company to more specialized company (Helms *et al*., 2005). Almost all part of business process can be outsourced, such as purchasing, logistics, research and development, production, etc. (Heizer and Render, 2008). The advantages of outsourcing are cost reduction, gaining outside expertise and/or technology, improvement in operations and service, focusing on core competencies, etc. (Heizer and Render, 2008). But outsourcing is also has several disadvantages, such as the cost of controlling and monitoring the providers, transportation cost, and risk of future competitors (Heizer and Render, 2008; Helms *et al*., 2005). The challenge is then in choosing the activities to outsource, provider selection, and preparing an exit strategy (Helms *et al*., 2005).

To meet the supply, target costing has proven to have significant impact on a competitive price that meets the quality and customer needs (Lockamy and Smith, 2000; Heizer and Render, 2008; Helms *et al*., 2005). Target costing focuses on customers' requirements as the main constraints, and lower cost as the result of the process (Lockamy and Smith, 2000). The processes of target costing are as follows (Helms *et al*., 2005). First, the company needs to find out what the customer want from the product, and how much they are willing to pay for the product. After setting up the selling price, the entire supply chain will determine the cost of end product, as well as the cost each the components of that product, and all the costs incurred in the entire product life cycle (Feil and Kim, 2004). The aim of target costing is to reach the targeted cost for the entire supply chain, by selecting the suitable technology, eliminating unnecessary cost, limiting design problems, etc. (Helms *et al*., 2005). To implement this strategy, the supplier selection and strategy should be taken into consideration. Several important factors are reliability, cooperation, quality, and reputation (Helms *et al*., 2005). There are four common strategies for supply decisions, which are strategic relationships with suppliers (partnerships, strategic alliances, joint ventures), strategic supplier selection (having some key suppliers), alternative suppliers (having more than one supplier), and traditional procurement process (large inventories, with long life cycle products) (Borella and Padula, 2010). According to the survey, the appropriate supply strategies for low cost advantage are alternative suppliers and traditional purchasing process.

In accordance to manufacturing, Borella and Padula (2010) differentiate the strategies into constant capacity, specialist facilities, flexible high technology, and vertically integrated production The core of constant capacity is capacity utilization, in order to get higher return on investment (Borella and Padula, 2010). Specialist facility is used to target a particular market segment, so all the production process is directed to fulfil the certain market needs (Borella and Padula, 2010). Flexible high technology is the combination of high technology and process flexibility, so

that various products can be made (Borella and Padula, 2010). Vertically integrated production is using resource based view and transaction cost economics to gain profit or reduce cost (Borella and Padula, 2010). They found constant capacity and vertically integrated production are the most appropriate strategy for low cost advantage.

Technical related common strategies for distribution to the customer are centralized distribution or prioritize the responsiveness to the customer by having several distributors (Borella and Padula, 2010). With several distributors, the responsiveness level is higher because of the distribution choices for the customers. While as by having centralized distributor center, the internal support structures such as facility management, order entry, customer service and data processing are usually more centralized as well (Sreenivas and Srinivas, 2008). It makes the lead time more reliable and shorter, therefore the inventory cost and even the total cost is lower (Borella and Padula, 2010; Sreenivas and Srinivas, 2008).

METHODOLOGY

Selection of the appropriate method for a study is usually based on its form of research questions and research characteristics (Yin, 2003). If the research questions are trying to answer how or why a phenomena occurred, the methods that can be used are experiment, historical research, or case study; and if the research questions are started with who, what, where, how many, or how much, then the appropriate method is survey or archival analysis (Yin, 2003).

Case study is an investigation of real life phenomena with many variables of interest and resulted from a multiple source of evident (Yin, 2003; Thomas, 2004). The data for case study can be in the form of quantitative or qualitative evidences, or the mix of both (Yin, 2003). Single case study is usually used to test a theory that is applied only for a certain situation, rare case, an exclusive case that previously inaccessible, or a case at different moment (Yin, 2003). While if the case is replicable, usually multiple case study is used, because it is considered more robust and persuasive (Yin, 2003).

In this study, the sources of data collected are:

- Documents of company profile to see the company's vision and whether the strategy is in line with the vision and mission, the minutes of meeting which discussing the strategy and progress of new product development process, review of each product development stage, etc. (if available)
- Interviews with the owner or manager who is in charge with the new product development process, asking the procedure of product development in the

company; with the employees who do the marketing, research and development research (if any), and production process to find out whether the procedure is implemented completely and correctly, and whether there is any opportunity for them to suggest improvement for the process, etc.

- Archival records of product sales, cost, and profit, as well as its position comparing to its competitors (if any) as the measurement whether the product is successful.
- Direct observation of the discussion and meetings about new product development process, progress, and evaluation, production process, marketing programs, negotiation process with the supplier and distributors, etc.
- Physical artefact of the product prototype to see the improvement process.

After the data are collected, next process is to conduct an analytic generalization. There are two strategies that can be used in general analysis, which are using theoretical propositions as the guideline to make a more focus study or describing the attribute and association of the event observed (Yin, 2003). Either way, the study must show that all the evidences and previous research findings are the basis of the analysis (Yin, 2003).

Several tests to ensure that the empirical findings can be generalized analytically are the case validity (construct, internal, and external) and reliability (Yin, 2003). Yin (2003) suggests several techniques to do the construct validity, such as using as many sources of evidence as possible so that the data can be triangulated, examining the relationship and context of evidence, and having the report draft being confirmed by the key informant. For assessing the internal validity, Yin (2003) suggested four techniques, which are the "pattern matching, explanation-building, rival explanations, and logic models". In multiple case study, if similar case produce similar expected result, and opposite case produce opposite expected result, the case can be said to have fulfil the external validity (Yin, 2003). To make sure the case study is reliable, research protocol in collecting data and organization and documentation of the data collected is necessary (Yin, 2003).

CASE STUDIES

Case 1: Swimsuit Company

This swimsuit company started as a made to order business; producing muslim swimsuit based on its customer's preference. But right after the first production run, the company decided to also have its own design. In designing their new product, the manager browsed the internet to find out new trends and models of muslim swimsuit,

or sometimes look at the swimsuit store. The trend doesn't change much, so there are not much different in the general design. The difference is mostly only in the type of the cloth, whether it is plain, stripe, flower, polka dot, etc. Besides having its own model, sometimes its customers provide the company with the design they like (make to order). The company doesn't have any particular competitor label to look for, it only browse other products in general. After having about ten different models for each category (women, men, and children), the company stops launching new models. This is meant so that there are not too many product varieties. The company will launch a new model if there is a discontinued pattern of clothing to be exchange by a new one. Although the company only has several models to be sold, but it still accept custom models provided by the customers.

For new pattern or major changes in design, before producing in large number, the company made a prototype first. For example, once before making the swimsuit for the children, the manager's children will try swimming wearing the product. From it, the reviews were made about the comfort, size, aesthetic, etc. For particular order, the prototype is photographed, and the picture is sent to the customer to be reviewed. If the customer agreed, the product is then produced in larger number according to the order. If the customer disagreed, the prototype is then sold to another customer. So, basically this prototyping process does not give significant extra cost to the company. This process of trial and error is not well documented; but the company keeps all the pictures.

First six months since the company established, the company still didn't subscribe to certain supplier for raw materials (fabric, zippers, thread, and rubber). After about six times selecting the cheapest supplier, now the company has subscribe the supplies it needs to several particular suppliers. The company can simply make phone calls to ask for supplies and the supplier will deliver them. When new types of fabric come, this company is prioritized to be informed so that the company can come and take a look before making a purchase. The manager then comes and sees the pattern and the thickness of the fabric before making purchase decision. Although the suppliers don't have direct influence on the production process, but their cooperation in giving a low price is very important. Whenever the prices are about to rise, the suppliers inform the company a few months earlier. Since this company is continuously making purchase, the suppliers give lower price comparing to their other customers. There is no minimum volume per order, because delivery cost is borne by the buyer. Usually the company buys 5 rolls per order. Each rolls consist of 11-15 kg of fabric, which can be used to make more than 50 swimsuits.

Most of the production processes are conducted in-house, only delivery and some reselling are outsourced. Most of its customers are reseller, which usually make periodic purchase. End user customers come from many places from Indonesia

as well from foreign countries such as Singapore, Malaysia, USA, Netherland, and Japan.

Selling price is decided in the beginning. The company made sure the price is kept lower than the competitors. The competitor's price is the highest selling price of this company's products. Calculation of production cost is made, consists of the cost of electricity, raw materials, lunch and snack for the employees, plastic bag, and employee cost for cutting, sewing, and finishing. The company takes profit about 10% to 40% from this production cost, using simple software as Microsoft Excel to ease the calculation. It resulted in relatively low selling price. The selling price for female child swimsuit is ranging from 110,000-150,000 IDR; male child swimsuit from 90,000-120,000 IDR; female adult swimsuit 180,000-230,000 IDR; and male adult swimsuit 150,000-180,000 IDR. These prices are more or less 20,000 IDR lower than selling price of the competitors. For reseller of its products, the company gives discount price up to 35% of the selling price. For subscriber in large number, the company takes profit even only 5,000 IDR per pieces of swimsuit. This low price is one of the factors that make the customers loyal to this company, apart from the stable quality of course.

This company has total 10 employees, consists of 4 sewers, 1 cutter, 1 finisher/packager, 1 administrator, 1 marketer, and 1 manager. Production runs every Monday to Saturday, from 8 a.m. to 5 p.m. Scheduling is made every week. Usually the manager makes the schedule based on available stock, sometimes based on customer's order. Every day the manager will ask the cutter to make pattern for several size and model of swimsuit based on the schedule. The sewer can then just sew based on those cut fabric. Production capacity is ranging from 12 to 40 pieces per day. A swimsuit takes two days maximum from cutting to packaging. These production employees are paid weekly (every Saturday) based on the number of products they produced each week.

The company markets its products online. It has several website (blog) which shows new designs of swimsuits and how to order them. The blogs are updated, usually only when there is new model of swimsuit or there is a discontinued product (due to discontinued material with particular pattern). Other media used to promote the products are facebook and blackberry messenger. The products then go viral, from mouth to mouth marketing.

Case 2: Bag Company

Product design in this bag company is by imitating an existing product, with adjustment in the materials used. Every time a new series of products is about to be launched, the owner/manager goes to trade centres, looking up for the trend

in women handbags. She would buy an imitation product of a branded handbag, depending on her own preferences of style and suggestion from the seller. After the manager bought several handbags, she shops for the appropriate materials to imitate those handbags. After that, just by looking and measuring, without having to disassemble the bag, the pattern maker of the company can make the patterns for those handbags. Right after the patterns are made, the 'original' handbags are sold.

One imitation product is made from each original handbag. Total 10 prototypes are made each year. Those samples are shown to the first client. This client then chose about 3-5 models to be put on the catalogue. Prototypes that are not selected are shown to another client, who then chose also about 3-5 models. The other prototypes products (if any) are sometimes be kept for the next year, or just be given away.

Before focusing on only orders from the two clients, the company received several orders from out of town. There were times when the production capacity was not sufficient. This problem was overcome by outsourcing the production process. In this case, outsourcing was even more costly than the in-house production, especially because most of the outcome products did not meet the quality standard. Since the second year, although the production is based on order from two clients only, but the production capacity are relatively stable in around 5 dozen per week.

For this production rate (about 5 dozen per week), this company has 8 employees exclude its manager. Among those 8 employees, 1 is responsible for the pattern making but also do cutting and sewing, 4 are responsible for cutting and sewing, and 3 are responsible for finishing (adding ornament, bond joints, inspect sewing, packaging, etc.). The official production time is every Monday to Saturday from 8 a.m. to 4 p.m. But in reality, since all of the employees can live in the workshop, they have flexible time to do their work. However, except for the pattern maker, all the other employees are paid on output basis without any fixed salary. The manager only gives them target per week, the quantity of products on which model that needs to be done that week.

Raw materials are bought by the manager to be used for up to one month production. But because the stocks are not well documented, every day she has to go shopping, whether it is to buy button, zipper, inner fabric, foam, etc. All of the materials are bought cash with regular price. There is no specific cooperation with the supplier in terms of lower price, only in terms of availability for the whole year, especially the fabric. It is because the products are put on the catalogue for a year, so the company should be ready to produce the similar products any time of the year.

Almost all the processes are conducted in-house, including the delivery of raw material to the workshop and the delivery from workshop to the clients. The

only thing that this company does not manage is marketing. It is because its clients are big reseller so the selling process to end customers is managed by the clients.

In deciding the selling price, the cost of each item are broken down, including the cost of materials, sewing cost, employees' meal cost, and miscellaneous cost per dozen of products. Then the profit are added, about 30-40 thousand rupiahs per dozen. This would be the price from this company to its clients. While the price that the clients set to their customers are usually three times higher than that.

Case 3: Tempe Company

This company is making tempe, a local food made of soybean. The making of tempe in this company was firstly following the recipe found from the internet. But in the making, the company found that different time in each process, different number of holes on the packaging, and types of the packaging, are affecting the quality (fungi development and hardness) and expiry date of tempe (durability). Therefore, this company does frequent trial and error experiment to find out the better way of tempe making.

Currently, there is no limit for research and development budget. This process is considered very important so that the company does research continuously. For example, to decide the number of holes in the plastic package of a tempe that can result in longer expiry time, the company conducted almost 3 months experiments. It took 3 samples for each formula that are left for days (usually one week) to see how long those tempe took to become decay and how the development of the fungi was. All of this experiment processes are documented in the forms of notes, pictures, and some videos. The documentations are kept secret and only accessible by the owner/CEO and manager, to prevent knowledge stealing by the competitors. The same process goes to decide cooking temperature, cooking time, etc. Before producing in larger scale, the products are sold to some close friends of the owner. From them, the owner received inputs and can improve the product. After that, the products can be produced in larger scale. But the research process is still looping to always find a better and improved product.

The factory of this company is located at the central of processed food made of soy. There are many distributors of soy located here. It makes the supply of soybean to make tempe easier. The raw materials used are imported soy, because the price is lower than local soy. The company tried several brand of soy (more than 5 brands) in the first month before decide which one to be used as the main supplier. The considerations are quality and availability.

Almost all processes are conducted in-house. These include research, production, marketing, and even delivery to end customers. Only raw materials (soy, plastic packaging, etc.) are bought and not produced by the company.

In deciding selling price, the company first benchmark the price of other competitors in the supermarkets. For example, if other tempe brands with similar quality set price 3,000 IDR, the company sets its price around 2,500 IDR, lower than the competitors, as long as the company can still have profit at least 50%. If with the target 50% profit, the maximum price (competitor's price) is not accomplished, then the company tried to negotiate with the suppliers, calculate the economies of scale, or do more research to make the process more efficient. At this moment, there is no particular contract with any soy suppliers whether regarding price or regular distribution.

The making of tempe does not need high technology machines. There are only several simple machines in this company, such as one machine for smashing the soy, two packaging machines, one stove for making raw tempe, and one stove for making processed tempe.

Official production time is from 7 a.m. to 5 p.m. But in the reality, the workers can work at anytime they want as long as the daily targets are achieved. This company employees work more like a team, because all employees act as shareholders in this company. Their salary is not fixed every month, but more based on the company profit.

Currently the distribution is selling using cart located in crowded area, in front of a mini market. This way, the company expects that the customers who were going to the mini market, would stop by its selling cart and buy its products. The CEO plans that in the future, the company would have partnerships with other seller to distribute its products in the partners' shops.

ANALYSIS

Those three cases of new product development process in micro enterprises showed that in design phase, imitation strategy gave a significant influence on low cost product. By imitating existing products, in short time, the companies can launch their product and gain advantage of the products that are already proven to be accepted by the market. Companies who want to differentiate their product as well as improve their product quality, will not stop in purely imitate the product, but will add some improvement.

In sourcing phase, those cases showed that in-house production gives better impact on low cost. Mostly the issue is in the control of quality. Outsourcing is apparently resulting in negligence of the quality, which followed by rejected products and cost more to the company.

In the cases, setting up the maximum selling price in a similar way as target costing is conducted to assure that the selling price will not be higher than the

market price. The more detailed cost calculation is used to determine the selling price. Similar with the findings from Borella and Padula (2010), having many alternatives suppliers and traditional purchasing (buying in large quantity) are resulting in lower cost.

Production in these cases are constant capacity, which means using constant number of workers and machines, while the number of products produces may be different depending on the demand or variants of the products.

Distribution of the products is centralized to keep the cost minimum. By doing this way, less space and span of control are needed. Fortunately, internet shopping is getting more and more common nowadays. Internet is used by the companies to market the products without having to have a lot of distributors under their control. The products can then be delivered to the customers through third party logistic, or directly by the companies, depending on the company's strategy.

Based on these findings, we propose a framework for low cost product development process in micro enterprises as in *Figure 2*.

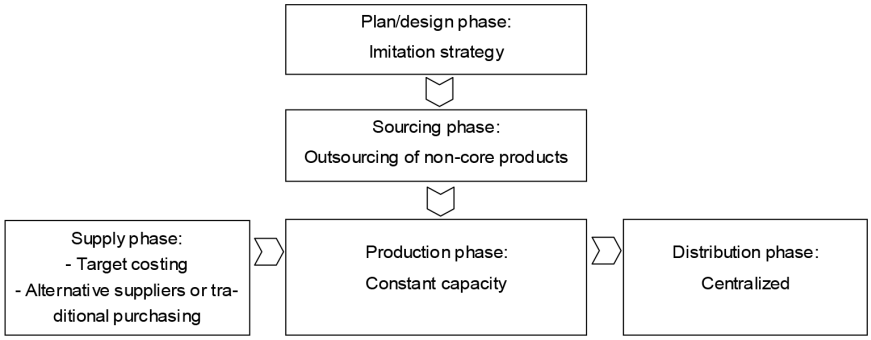

Figure 2 Framework for low cost new product development in micro enterprises

The three cases share some similarities and differences in the contextual factors. One of the similarities is the absence of a clear organizational structure. The manager controls and manages everything from strategies to daily operational, there is no authority sharing to the employees. It makes the dependency of the company to the manager is very high. In all of the cases, the employees are from nearby community, which means they share similar social and cultural characteristics. The educational background of the managers of first and third cases are higher education (master degree), while in the second case the manager is from a lower educational background. It makes the goal and strategies of the companies differ. While the first and third cases are planning to expand, the second case is satisfied

with the current status and is not planning to change anything. In the second case, the owner is forced by condition to become an entrepreneur, while in the other cases the owner/manager chose to become entrepreneurs.

FURTHER RESEARCH AND RECOMMENDATION

This research is important in order to improve the competitiveness of micro enterprises which wish to have lower cost. Further research can be conducted in testing the framework using surveys to micro enterprises in Indonesia. In this paper, the three cases are not running in the similar type of industry. This might have influence in the differences of the product development process framework. Further research might be conducted in a similar type of industry to eliminate this possible influence. Since a different company size might also influence the chosen low cost strategy, next research can also be conducted in bigger size businesses to see whether this pattern can also be applied.

REFERENCES

Barth, J.R., Lin, D., and Yost, K. (2011) Small and Medium Enterprise Financing in Transition Economies, *International Atlantic Economic Society*, No. 39, pp. 19-38.

Borella, M. R. de C., Padula, A. D. (2010) Alignment Between The Supply, Manufacturing And Distribution Strategies And The Business Strategy, *Journal of Operations and Supply Chain Management*, Vol. 3 No. 2, pp. 44–60.

Chopra, Sunil and Meindl, Peter (2010) *Supply chain management: strategy, planning, and operation*, 4th ed., Pearson.

Feil, P., Yook, K. H., and Kim, I. W. (2004) Japanese Target Costing: A Historical Perspective, *International Journal of Strategic Cost Management*, Spring 2004, pp. 10-19.

Finch, Byron (2007) *Operations Now: Supply Chain Profitability and Performance*, 3rd Ed., McGrawHill.

Harabi, Najib (1991) *Innovation versus Imitation: Empirical Evidence from Swiss Firms*, WWW-Arbeitspapiere, No. 15, 1991, pp. 1-26.

Heizer, Jay and Render, Barry (2008) *Operations Management*, 9th ed., Pearson.

Helms, M. M., Ettkin, L. P., Baxter, J. T., and Gordon,M. W. (2005) Managerial Implications of Target Costing, *Competitiveness Review*, Vol. 15, No. 1, pp. 50-56.

Kumar, P.S.Senthil, Balasubramanian, S., and Suresh, R.K (2009) Optimization of Lean New Product Development process using Advanced Dual Stage Performance Phase method, *International Journal of Recent Trends in Engineering*, Vol. 1 No. 5, pp. 71-76.

Laguecir, Aziza (2003) *Pratices Of Cost Planning And Management Tools In NPD Process: A Quali-Comparative Approach*, Druid Winter Conference.

Ledwith, A., (2000) Management of new product development in small electronic firms, *Journal of European Industrial Training*, Vol. 24 No.2/3/4, pp. 137-148.

Lieberman, M. B., & Montgomery, D. B. (1998) First-mover (dis)advantages: Retrospective and link with the resource-based view, *Strategic Management Journal*, Vol. 19, pp. 1111−1125.

Loch, Christoph H. and Kavadias, S. (2008) *Handbook of New Product Development Management*, 1st ed., Elsevier.

Lockamy III, Archie and Smith, W. I. (2000) Target costing for supply chain management: criteria and selection, *Industrial Management and Data Systems*, Vol. 100, No. 5, pp. 210-218.

McIntyre, Robert (2001) *The Role of Small and Medium Enterprises in Transition: Growth and Entrepreneurship*, UNU World Institute for Development Economics Research (UNU/WIDER).

Mentzer, J. T., DeWitt, W. J., Keebler, J. S., Min, S., Nix, N. W., Smith, C. D. and Zacharia, Z. G. (2001) Defining supply chain management, *Journal of Business Logistics*, Vol. 22 No. 2, pp. 1-25.

Motvani, J., Dandridge, T., Jiang, J., and Soderquist, K. (1999) Managing Innovation in French Small and Medium-Sized Enterprises, *Journal of small business management*, Vol. 37 No. 2, pp. 106-114.

Owens, Jonathan D. (2007) Why do some UK SMEs still find the implementation of a new product development process problematical?: An exploratory investigation, *Management Decision*, Vol. 45 No. 2, pp. 235 – 251.

Porter, M.E., (1996) What is Strategy, *Harvard Business Review*, Nov/Dec 1996.

Schilling, Melissa A. and Hill, Charles W. L. (1998) Managing the new product development process: Strategic imperatives, *The Academy of Management Executive* (1993-2005), Vol. 12 No. 3, pp. 67-81.

Shankar, V., Carpenter, G. S., & Krishnamurthi, L. (1998) Late mover advantage: How innovative late entrants outsell pioneers, *Journal of Marketing Research*, Vol. 35 No. 1, pp. 54−70.

Simchi-Levi, D., P. Kaminsky and E. Simchi-Levi (2007) *Designing and Managing the Supply Chain: Concepts, Strategies and Case Studies*, 3rd ed., McGraw-Hill.

Sreenivas, M. and Srinivas T. (2008) Effectiveness of Distribution Network, *International Journal of Information Systems and Supply Chain Management*, Vol. 1, Issue 1.

Thomas, A. B. (2004) *Research Skills for Management Studies*, Routledge.

Ulrich, Karl T. and Eppinger, Steven D. (2003) *Product Design and Development*, 3rd Edition, McGrawHill.

Yin, R. K. (2003) *Case study research: Design and methods*. 3rd ed., Newbury Park, CA: Sage.

Zhou, Kevin Zheng, (2006) Innovation, imitation, and new product performance: The Case of Cina, *Industrial Marketing Management*, Vol. 35, pp. 394-402.