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Strategic Flexibility in Exploiting Economies of Scope on 70-30 Principle – A Case Study of Japanese Electronics Industry

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Abstract

The tripod consisting of the United States, EU and Japan has advanced to the matured market economy from the growing market economy. In the growing market economy, the economies of scale prevail. In contrast, in the matured market economy, consumers are interested in acquiring goods and services to fit their particular needs, demanding a variety of products and services in small quantities. Accordingly, the advantage of the economies of scale tends to diminish. In order to overcome this difficulty, the authors claim that the 70-30 principle becomes extremely important, where products and services for separate segmented submarkets are designed 70% in common with remaining 30% for customization. The purpose of this paper is to identify the emerging trend of the 70-30 principle in Japan and to examine its effectiveness for strategic flexibility and business agility.

Keywords: *Customer segmentation, Customization, Loss of economies of scale, Matured market economy, the 70-30 principle*

Introduction

In the midst of the global mega-competition, the most competitive battle field is often referred to as the tripod consisting of the United States, EU and Japan. The common characteristics of the three markets can be found in that they have advanced to the matured market economy from the growing market economy.

In the growing market economy, consumers share the sense of lacking goods and services for consumption and are eager to possess what others have. In this situation, a typical R&D strategy from the manufacturers' side would be the market-out strategy, where the economies of scale prevail and products of good quality with reasonable price are introduced into the market in large volume. In contrast, in the matured market economy, consumers tend to pursue individual tastes in consumption so as to maximize their own utility functions. In other words, consumers are interested in acquiring goods and services that others may not have but fit their particular needs. Naturally, this trend results in a variety of products and services in small

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quantities and the market segmentation becomes extremely important. A typical successful R&D strategy in this stage would be the market-in strategy, where a variety of products are introduced into the market in small quantities in respond to particular needs in particular market segments.

In order to identify the advancement of the market economy from the growing stage into the matured stage in a quantifiable manner, one may consider the necessary consumption against the selective consumption. The necessary consumption is to maintain the current level of life, whereas the selective consumption is purely to enhance individuals' utility functions, including the cost for children to inherit the desirable life standard. The former is represented by consumptions for food and non-alcoholic beverages, clothing and footwear, housing, water, electricity, gas and other fuels. The latter includes consumptions for alcoholic beverages, tobacco and narcotics, furnishings, household equipment, communications, recreation and culture, education, restaurants and hotels, and the like. We define that a market has advanced to the matured market economy if the selective consumption supersedes the necessary consumption. Otherwise, the market is still in the stage of the growing economy.

In Figure 1, the portion of the necessary consumption in the total consumption is plotted for the period 1980-2009 for the United States, France and Japan. One sees that both the United States and France have reached the stage of the matured market economy by 1980, whereas Japan has reached it in 1989. While consumers in the United States continue to shift to the selective consumption more or less steadily, consumers in France and Japan are more modest in that this shift is quite slow. Similarly in Figure 2, the total consumption, the necessary consumption and the selective consumption are depicted with the 1980 data as a base of 100. Table 1 provides actual numbers for 1980 and 2009. During this period, the total consumption has increased by 5.6 times in the United States, where this increase for the selective consumption is 6.3 times and that for the necessary consumption is 4.6 times. These figures are 4.3, 4.4 and 4.2 for France and 2.1, 2.4 and 1.9 in Japan respectively. Again, the modesty of consumers in France and Japan can be observed against consumers in the United States.

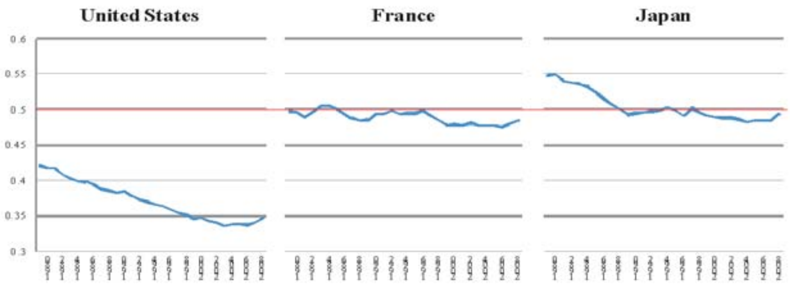

Figure 1: Portion of Necessary Consumption in Total Consumption (Data Source: OECD.Stat Extracts)

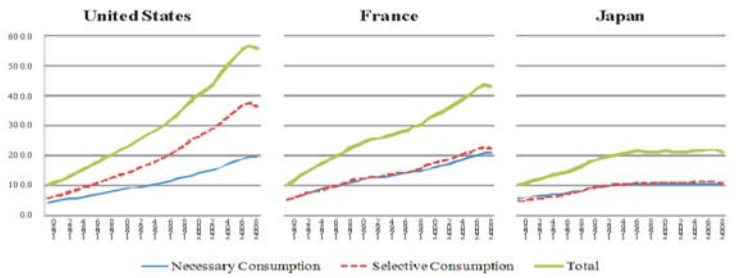

Figure 2: Necessary Consumption vs. Selective Consumption (1980 Data = 100) (Data Source: OECD.Stat Extracts)

Table 1: Necessary Consumption vs. Selective Consumption (1980 Data = 100)

Country	United States		France		Japan	
Year	1980	2009	1980	2009	1980	2009
Necessary Consumption	42.0	193.8	49.7	209.5	54.8	103.5
Selective Consumption	58.0	364.2	50.3	223.2	45.2	106.4
Total	100.0	557.9	100.0	432.7	100.0	209.9

(Data Source: OECD.Stat Extracts)

As long as the real economy is concerned, the economies of scale are always present. Since the matured market economy requires more detailed marketing strategies for individual segmented submarkets, the efficiency resulting from the economies of scale tends to diminish. In other words, if corporations have to deal with separate segmented submarkets in a one-on-one manner, the profit margins would inevitably decrease. In order to overcome this difficulty, the authors claim that the 70-30 principle becomes extremely important, where products and services for separate segmented submarkets are designed 70% in common with remaining 30% for customization so as to cater for peculiarities of individual submarkets. In R&D, for example, the market-in approach is no longer effective, where one core technology produces one product in response to a particular need of one submarket. Instead, if a core technology is newly developed, it should be combined with different peripheral technologies, yielding multiple products to be sold in totally separate submarkets based on the 70-30 principle.

The purpose of this paper is to identify the emerging trend of the 70-30 principle in Japan and to examine its effectiveness for strategic flexibility and business agility in the following areas.

1) Hollowing out production bases outside Japan: SI (Skelton Import) approach
2) Business model expansion: smart card from IC ticket to e-Money and credit card
3) R&D: Emaki for producing static connected photos from digital movies
4) Preventive maintenance in semi-conductor manufacturing: Profile vectors and Cockpit System
5) e-Marketing: Dynamic customer segmentation for enhancing CRM

70-30 Principle in Hollowing Out Production Bases outside Japan: Skelton Import Approach

In the matured market economy, manufacturers have to deal with segmented submarkets separately by incorporating a variety of products in small quantities. Naturally, this new competitive environment demands more sophisticated inventory and other operations management, potentially increasing the associated costs. In order to respond to this challenge, by taking advantage of the Internet, the manufacturing industry in Japan has been shifting rapidly from “production based on demand estimates” to “production based on confirmed orders,” thereby enabling one to reduce the inventory costs and other operational costs significantly. The order-based production is now one of the key factors to be competitive in manufacturing.

In printer business in Japan, for example, the confirmed orders of a day would be sent to a domestic manufacturing plant from the sales offices across Japan through the company’s intranet. During the night, the production plan of the next day would be established based on these confirmed orders. A typical production lead time for printers is one day, and the ordered products would be produced by the end of the next day, and packaged and shipped out on the following day. Accordingly, the market lead time from the generation of an order to the delivery of the products would be within three days. In organizing the value chain in this scheme, it is not necessary to estimate daily demands and the inventory of the final products are completely eliminated. Only the inventories of parts and materials, typically worth of a few days, would be reserved.

Another pressure facing the manufacturing industry in Japan is to reduce the production costs further. In this regard, many Japanese manufacturing companies have moved their production facilities partially or completely to China and other Asian countries. In the literature, many different factors are discussed for motivating outward FDI (Foreign Direct Investment), including heterogeneity in productivity among domestic firms (Helpman *et al*, 2003), (Helpman *et al*, 2004), networks to sell products to buyers from the same country (Greaney, 2003), rapid demand growth in the FDI host country (Rob and Nikolaos, 2003), and cheaper costs for labor and others (Horstmann and Markusen, 1992), (Yomogida, 2004). For the case of Japan, the last two factors seem to be most important. Other references concerning FDI and the hollowing out effects include (Matsubara, 2004), (Cowling and Tomlinson, 2000) and (Gaston and Nelson, 2004).

While moving the production facilities abroad may reduce the production costs significantly, it also inevitably incurs additional logistics costs at the same time. Furthermore, the market lead time would be prolonged and the order-based production becomes impossible because of the transportation time over several days. This means that it is necessary to estimate daily demands of the final products and to keep the safety stocks at domestic distribution centers in order to sustain the same level of the customer satisfaction achieved by the order-based domestic production.

In order to compensate these negative effects, certain Japanese companies have been implementing the SI (Skeleton Imports) strategy, where a variety of products of one type in small quantities would be designed in such a way that a common frame (called Skeleton) can be used for all the products and various product specifications can be mounted onto the common frame. While Skeletons are produced abroad and imported to Japan, manufacturing operations to meet a variety of product specifications are done at logistics centers in Japan.

The major advantage of the SI strategy can be found in the following manner. If the production facility is moved abroad for K different products of one type without the skeleton design, it is necessary to estimate daily demands of the K products separately. In contrast, if the skeleton design is present, it is only necessary to estimate the total demand of the K different products, since only Skeletons common for all the K products are produced abroad. In order to observe this major advantage of the SI strategy more explicitly, let $D_i(t)$ be the demand of the i-th product for day t. The total demand $D(t)$ of the K products for day t is then given by

$$D(t) = \sum_{i=1}^{K} D_i(t) \; . \qquad (2.1)$$

It can be seen that

$$Var[D(t)] = \sum_{i=1}^{K} Var[D_i(t)] + 2\sum_{i<j} Cov[D_i(t), D_j(t)] \; . \qquad (2.2)$$

Since the K different products are variations of one product type, they are substitutable in that the demand increase of product i would be likely to result in the demand decrease of any other product. Accordingly, one has $Cov[D_i(t), D_j(t)] < 0$ so that $Var[D(t)] < \sum_{i=1}^{K} Var[D_i(t)]$. This

means that the estimate of the total demand can be more accurate than the sum of the individually estimated demands. Because of this, the safety stock of the Skeletons at a distribution center may be reduced in comparison with the sum of the safety stocks of the *K* final products, resulting in significant reduction of the inventory costs.
In summary, the SI approach would produce only Skeletons abroad which are common for all *K* products. The Skeletons would then be shipped to distribution centers in Japan where the final processing for meeting the specifications of the individual products would take place. The confirmed orders of day *t*

ÿ1 would be sent to distribution centers from the sales offices across Japan through the company's intranet. During day *t*, the ordered products would be processed by incorporating necessary specifications onto Skeletons. By the end of day *t*+1, they would be packaged and shipped out, resulting in the market lead time of three days, provided that the inventory stock of Skeletons is large enough. Such a combination of production of Skeletons abroad and value-added logistics within Japan enables one to take advantage of the cost reduction by producing abroad and to maintain the almost-order-based production with the minimum market lead time at the same time. The reader is referred to (Sumita and Isogai, 2007) for further details.

70-30 Principle in Business Model Expansion: Smart Card from IC Ticket to e-Money and Credit Card

In Japan, an automated ticket gate system was first installed in 1969 at a station of Kinki Japan Railway on an experimental basis, where a passenger placed a magnetized ticket into the system and its validity would be confirmed by the system after reading the ticket. The gate was then opened and the passenger walked through the gate, picking up the ticket which would emerge at the end of the gate system. Since then, the system spread rapidly in Kansai area and almost all of private railway companies in Kinki and Kansai areas installed the system at all stations by the middle of 1980's. Japan railway, then owned by the Japanese government, and other private railway companies in Kanto area were rather reluctant to introduce the system, and one had to wait until the late 1990's to enjoy the system in Kanto area. The technological difficulty of the automated ticket gate system is centered on how to synchronize the speed of reading and processing a ticket and the average walking speed of passengers. This technological achievement was recognized by IEEE as "IEEE Milestone" in November 2007. As of March 2012, only 6 prefectures of Japan (Ishikawa, Fukui, Tottori, Shimane, Tokushima and Miyazaki) have not introduced the system yet.

Commuters of railways often use a monthly pass, a three month pass, or even an annual pass. When a ticket gate was attended by a station clerk, a commuter would pull out a transparent pass holder and show it to the clerk to go through the gate. As the automated ticket gate system became widely spread, such passes were also magnetized. A commuter had to pull out a pass holder, take the pass out of the pass holder, run it through the automated ticket gate system, recollect it after passing through the gate, put it back to the pass holder, and then put the pass holder into a pocket or a bag. While the automated ticket gate system would provide both the cost reduction and the better convenience to ordinary ticket passengers, it actually degraded the service to pass users who were apparently important for railway companies. In order to overcome this problem, a group of researchers at Railway Technical Research Institute, led by Dr. Shigeo Miki, started to hatch an idea of using an IC (Integrated Circuit) card to replace a magnetized ticket as early as the middle of 1970's. However, at that time, many railway companies were overwhelmed by the huge investment needed to install the automated ticket gate system, and could not afford to pursue an alternative technological development simultaneously. However, the research group of Railway Technical Research Institute, with help from Sony researchers, never gave up the idea, despite the fact that they failed to gain support from the top management.

The persistence of the research group resulted in successful development of a rechargeable contactless smart card named Suica standing for Super Urban Intelligent Card. Launched in November 2001 by JR East, which had been privatized in 1987, the card was originally used as a fare card for transportation services. The card is used in the following manner. A passenger passes over a card reader, where the technology allows the card to be read at some distance from the reader and the direct contact is not required. Typically, people keep the card in their wallet and just pass the wallet over the reader as they go through the ticket gate. The balance on the card is displayed at the ticket gate and a travel record is stored. The minimum fare is required to enter the train system. Upon exit, the card is again passed over the card reader and the fare is deducted from the balance with the resulting new balance displayed at the ticket gate. Should the remaining balance be not enough to cover the necessary fare, the card is recharged automatically by transferring a pre-specified amount from the bank account of the passenger.

As of March 2011, more than 35 million Suica cards have been issued. Many other railway companies followed this new development by issuing their own smart cards, including Setao by Tokyu in 2002, ICOCA by JR West in 2003, PiTaPa by railway companies other than JR in Kansai area in 2004, TOICA by JR Tokai in 2006, and PASMO by railway companies other than JR in Kanto area in 2007. Such systems were introduced separately and independently, and were incompatible against each other. For the sake of the convenience of customers, however, many of them have been integrated by now. For example, the two most popular smart cards, Suica and PASMO, are now completely interchangeable.

Originally, these smart cards were developed as a fare card for transportation services, providing the cost reduction for railway companies and the enhanced convenience for passengers. In order to recover the huge investment needed, however, the business model has been expanded rapidly. This expansion began with using the smart card for e-Money within railway stations. Most vending machines, KIOSKs, and coin-operated lockers within railway stations can now be paid by the card. In addition to payment, the card also functions as an electronic key to open the locker occupied by the card holder. The e-Money function of the card was soon expanded to stores outside railway stations. Many retail chain stores, including 7-Eleven, Family Mart, Circle K Sunkus, Yodobashi Camera and Bic Camera, now support transactions with some of such smart cards.

In order to expand the potential of the smart card further, it can now also function as an ordinary credit card through collaboration with VISA or Master Card. Many transportation services other than railway, such as bus and taxi, can be paid by the card. Some corporations use the smart card as the company ID card as well. Recently, the smart card functions described above have been transferred to smart phones, providing a mobile smart card. In place of the smart card, the smart phone with these functions can now be used. As we discussed above, the original business model of automating the ticket processing at railway stations has been expanded into many different directions, where the core model is common and built upon the contactless radio frequency identification technology. Subsequent developments have been made by providing limited software-hardware alterations specific to individual developments, demonstrating the effectiveness of the 70-30 principle in business model expansion as depicted in Figure 4.

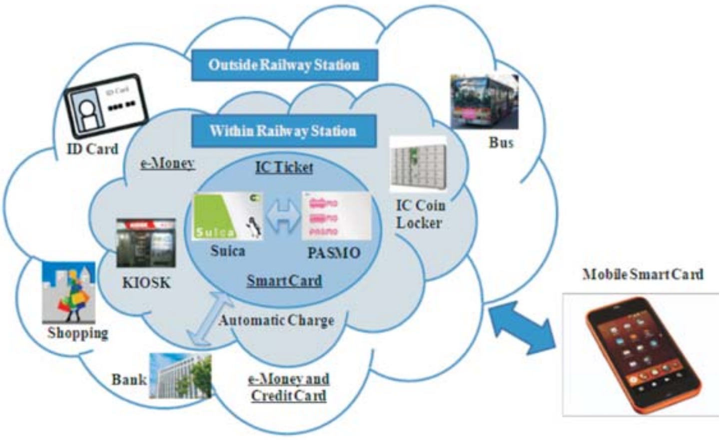

Figure 4: Business Model Expansion of Railway Smart Cards

70-30 Principle in R&D: Emaki for Producing Static Connected Photos from Digital Movies

In R&D, it is quite difficult to overcome the inefficiency resulting from the efforts to respond to various market needs spread across different segmented submarkets. Typically, R&D involves huge investments. If corporations deal with such small submarkets by providing a variety of products in small quantities in a one-on-one manner, the advantage of the economies of scale is doomed to disappear and it becomes extremely difficult to recover the huge investments promptly. This observation suggests that the 70-30 principle is most important and effective in R&D.

The basic scheme for implementing the 70-30 principle in R&D management is depicted in Figure 5. Here, upon finding a new scientific phenomenon, a core technology is first established. By combining the core technology with different peripheral technologies, the value creation engine should be designed which could function as solution tools for providing multiple products in totally separate markets. Naturally, the core technology is the key for the competitive edge of the company and may be developed internally. For developing the peripheral technologies, however, the company may work with other companies which have necessary fundamental technologies. So as to provide different products in different markets, the company may also collaborate with other companies having the marketing expertise in those markets. The development costs for the peripheral technologies are typically much less than the development cost of the core technology. By providing multiple products developed through the common core technology combined with different peripheral technologies, it becomes possible to gain profits from the separate markets simultaneously, thereby enabling one to recover the development costs efficiently.

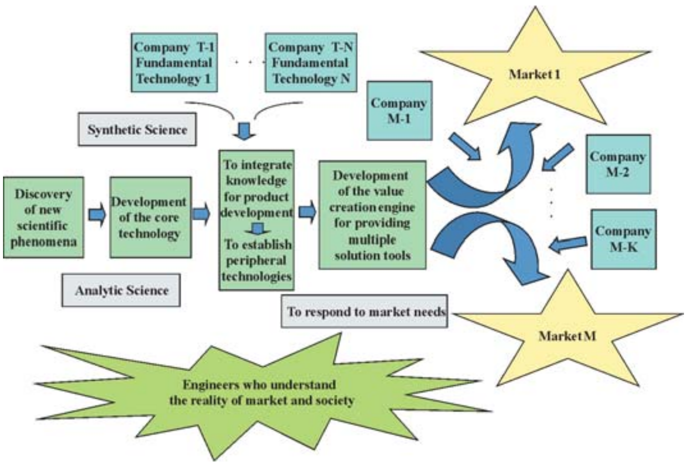

Figure 5: R&D Management Based on the 70-30 Principle

As an example of exercising the 70-30 principle in R&D management, we discuss a case of a company named Emaki. Emaki, meaning a picture scroll in Japanese, is established in 2000 in the city of Aizu in Fukushima prefecture as a subsidiary of Aizu Construction Company (ACC). At that time, ACC was involved in the project to rebuild the areas along Abukuma River after the flood which had occurred in 1998. To the astonishment of ACC, the company could not find the data necessary to recover from the damages and understood the need to capture the state of the damages along the river over a quite long distance. The president of ACC, Mr. Tadahiro Kanke, came up with an idea to shoot a digital movie of the river by flying a helicopter above it and then to construct a picture scroll of the river by patching the digital static photos obtained from the movie. Wisely, he assumed that the necessary technologies should have been already available and explored the market, finding that the fundamental technology existed in relation with the military technologies led by NASA, MIT and Hebrew University. He immediately flew to Israel and signed the exclusive license agreement for the fundamental technology with Hebrew University.

He hired several PhD students from Aizu University and established Emaki. By combining peripheral software interfaces with the fundamental technology, the company successfully developed many application packages, including the road state assessment system, the dam and river assessment system, and the avalanche state assessment system. Emaki also applied the basic idea of constructing a picture scroll of a subject over a quite long distance by patching the static digital photos extracted from the digital movie to the tunnel maintenance. In order to prevent the tunnel surface from detaching and falling, JR companies used to slowly run an open-deck car in the tunnel after midnight where several maintenance engineers on the deck would closely observe the tunnel surface within the assigned angular sectors and find cracks if any. Emaki developed a system with three digital cameras fixed to a high speed open-deck car so that digital movies of one side of the tunnel surface, the other side of the tunnel surface and the upper side of the tunnel surface could be shot simultaneously. By patching the digital photos generated from the three digital movies not only along the time axis but also along the three angular sectors, a flat picture scroll of the tunnel surface over a quite long distance can be constructed, thereby enabling one to detect even subtle cracks which may be missed in the previous approach. Furthermore, in collaboration with the medical school of Chiba University, a similar idea was applied to develop a system for detecting polyps and cancers in the large intestine. This example demonstrates the effectiveness of the 70-30 principle in R&D.

70-30 Principle in Semi-Conductor Manufacturing: Preventive Maintenance via Profile Vectors and Cockpit System

In semi-conductor manufacturing, a sequence of sophisticated manufacturing processes is involved, often exceeding several hundred production steps. These production processes are quite unique in that they possess both aspects of continuous and discrete operations. On one hand, many production steps are related to chemical diffusion for etching layers of circuits and such steps ought to be controlled continuously. On the other hand, the final products are semi-conductor chips which are clearly discrete in nature. Combined with necessary ultra-precision technologies, these factors make semiconductor manufacturing extremely difficult to control and force one to rely upon quite expensive automated production machines. Accordingly, the cost of machine downtimes in semi-conductor manufacturing is quite huge. When a major failure of a production machine occurs, vender engineers have to be often called in and the repair may sometimes take more than a few days.

Apart from such major failures, the machine downtimes due to minor-stoppages would also amount to the huge loss. A minor-stoppage is defined to be a machine failure which requires the direct involvement of an operator for repair but the repair time is quite short once the problem is addressed by the operator. Typically, an operator is responsible for multiple production machines. Since frequency of minor-stoppages is quite high and it is not rare to have multiple minor-stoppages occurring simultaneously, a machine with a minor-stoppage may have to wait until it is attended by the operator. Because of such waiting times, the machine downtimes due to minor-stoppages often exceed 40% of the working hours of a day. Accordingly, it is extremely important to develop effective ways for controlling such minor-stoppages.

In the literature, the issue of enhancing the yield and reducing the machine downtime in manufacturing has been addressed largely from the point of view of detecting root-causes of the product defects based on some data mining techniques. (Gardner and Bieker, 2000), for example, employ a combination of self-organizing map neural networks and rule induction to identify the critical poor yield factors in the wafer manufacturing process. In (Chen *et al*, 2005), correlations between combinations of machines and the defective products are first analyzed. The technique of association rule mining is then used to establish the root-cause machine identifier efficiently. (Chien *et al*, 2007) focus on the wafer fabrication process and challenge the problem of detecting root-causes based on a Kruscal-Wallis test, K means clustering and the variance reduction approach.

While these contributions may enable one to identify the correlation structure between combinations of machines and the defective products, and detect root-causes of the defections, they do not provide preventive maintenance policies automatically. In particular, in semi-conductor manufacturing, effective methodological tools for preventing the minor-stoppages are hard to come by. Part of the reason for this difficulty may be found in that there are many different potential sources of minor-stoppages. Certain minor-stoppages may be attributed to factors related to products, including shape, size, weight, pins, and the like. In addition, deterioration of machine conditions may cause minor-stoppages. HR (Human Resource) related factors such as work-shifts, skills of workers and training programs would also affect minor-stoppages.

In order to control both major failures and minor-stoppages in semi-conductor manufacturing, it is important to monitor the state of the manufacturing processes continuously and prepare preventive maintenance strategies in a proactive manner. With this objective in mind, the authors have been working with a semi-conductor manufacturing company to develop an information infrastructure named Cockpit System, as depicted in Figure 6. Here, all production machines are connected to a LAN (Local Area Network) and monitored continuously through the LAN. Massive data are collected at a server and fed into a DB (DataBase), enabling one to trace status changes of production machines with time stamps and causes. Two analytical engines are developed to extract the management information from the DB in a timely manner. One engine is called Monitoring System, which automatically evaluates a variety of performance measures once in each fixed time interval, whereas the second engine named Tracking System allows one to explore potential causes of a problem detected through Monitoring System by tracing back the historical data. Like the cockpit

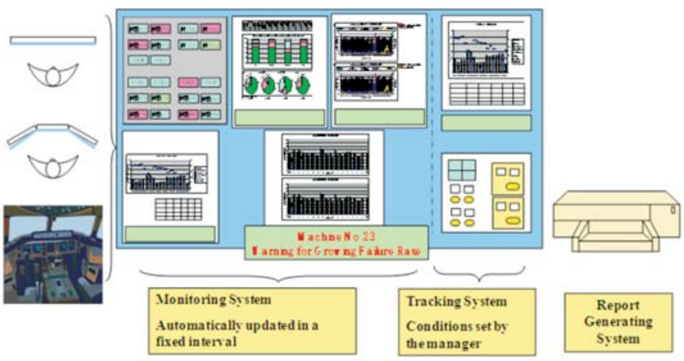

Figure 6: Conceptual Scheme of Cockpit System

in an airplane, a large display provides the user interface by exhibiting and extracting multiple graphs and tables in a user friendly manner.

In order to sustain Cockpit System, the huge amount of data has to be analyzed repeatedly for evaluating necessary performance measures. If each computation is conducted by extracting the necessary information directly from the DB, the processing burden becomes too much to make the system efficient. In order to overcome this processing difficulty, a variety of profile vectors are constructed and updated automatically for key entities, including Machine Profile Vector, Product Profile Vector, Team Profile Vector and the like. For Monitoring System and Tracking System, the majority of necessary information can be extracted from such profile vectors without going back to the DB, achieving the necessary speed. This example demonstrates the effectiveness of the 70-30 principle in the area of massive information processing.

70-30 Principle in e-Marketing: Dynamic Customer Segmentation for Enhancing CRM

Since the beginning of this century, the Internet has been penetrating into many aspects of business practices, changing the basic business model in almost every industry. In the retail chain business, for example, it is now possible to collect and accumulate massive data from the market via a POS (Point of Sales) system and utilize them so as to develop effective marketing strategies for enhancing sales of products. An extensive literature exists for analyzing consumer purchasing behaviors based on POS data, represented by (Taguchi, 2010), (Eugene, 1997), (Fader and Lattin, 1993), (Ishigaki *et al*, 2011), (Yada *et al*, 2006) to name only a few.

As for the case of development of Cockpit System for implementing preventive maintenance policies in semi-conductor manufacturing discussed in Section 5, we face here the same problem of the excessive computational burden, where the tremendous amount of POS data collected from the market has to be analyzed repeatedly in a timely manner. Accordingly, the concept of profile vectors as an intermediary information base between various analytical engines and the DB (DataBase) of POS data would be again valid. Figure 7 depicts the basic framework for implementing dynamic customer segmentation for enhancing CRM (Customer Relationship Management) based on the profile vector approach.

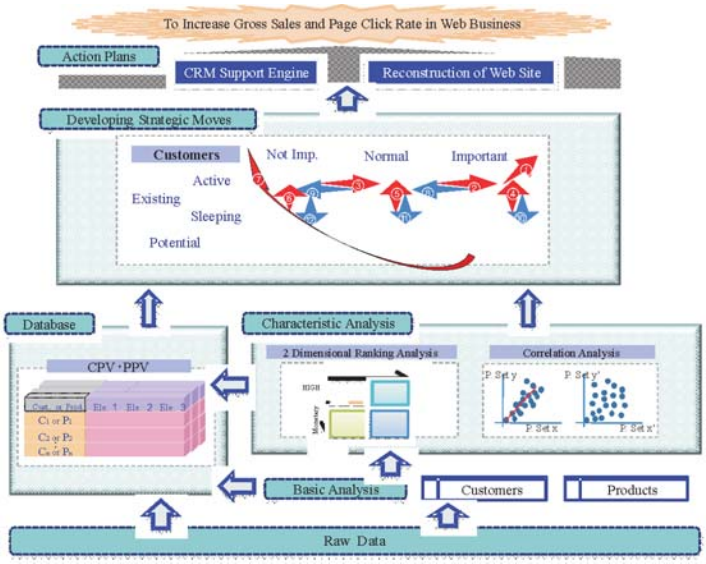

Figure 7: Dynamic Customer Segmentation for Enhancing CRM

Here, a variety of profile vectors, such as CPV (Customer Profile Vector), PPV (Product Profile Vector) and SPV (Store Profile Vector), are automatically constructed and updated periodically from the DB. These profile vectors are then used by different analytical engines, producing the standard reports from the basic analysis as well as some ad hock reports derived from characteristic analyses specified by the user through the graphic interface. Furthermore, these results are used to update customer segments dynamically so as to yield different marketing strategies applied to different customer segments.

CRM typically means that the lifetime value of a customer is to be maximized by maintaining two way communications between the customer and the company through the Internet. This concept is limited in that the potential customers are not addressed explicitly. By combining POS data with transaction data on the Internet, not necessarily linked to purchasing, it is now possible to capture the entire market as depicted in Figure 7, where the market is decomposed into 9 segments: (Existing-Active, Existing-Sleeping, Potential)×(Not Important, Normal, Important). The arrows ‘$ through f$ indicate the desirable changes of the market for the company, whereas the arrows g$ through k$ represent the changes of the market to be avoided. The new marketing approach for enhancing CRM would then be to devise strategic moves so as to promote the moves along favorable arrows and prevent the moves along unfavorable arrows. Since such customer segments have to be updated dynamically, the profile vector approach becomes again crucial for containing the underlying computational burden. This example demonstrates the importance of the 70-30 principle in e-Marketing.

Conclusions

In this paper, we consider the necessary consumption against the selective consumption to identify the advancement of the market economy from the growing stage into the matured stage in a quantifiable manner. The necessary consumption is to maintain the current level of life, whereas the selective consumption is purely to enhance individuals’ utility functions, including the cost for children to inherit the desirable life standard. A market is defined to be in the matured market economy if the selective consumption supersedes the necessary consumption. Otherwise, the market is still in the stage of the growing economy. According to this definition, both the United States and France have reached the stage of the matured market economy by 1980, whereas Japan has reached it in 1989.

In the growing market economy, consumers share the sense of lacking goods and services for consumption and are eager to possess what others have. In contrast, in the matured market economy, consumers tend to pursue individual tastes in consumption so as to maximize their own utility functions. Naturally, this trend results in a variety of products and services in small quantities to be distributed into segmented submarkets, requiring more detailed marketing strategies for the segmented submarkets. In this context, the efficiency resulting from the economies of scale tends to diminish.

In order to overcome this difficulty, the concept of the 70-30 principle is introduced, where products and services for separate segmented submarkets are designed 70% in common with remaining 30% for customization so as to cater for peculiarities of individual submarkets. The paper examined the emerging trend of the 70-30 principle in Japan in the following areas.

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It is expected that the 70-30 principle provides a general guidance to enhance the strategic flexibility and the business agility in other areas to be competitive in the midst of the global mega-competition in the 21st century.

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