
**THE PRIORITY OF FIRM COMPETENCE BUILDING FROM
TAIWANESE FLAT PANEL DISPLAY: BASED ON RBT**

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Abstract

There are two perspectives referring to how firm build its competence: technology competence and market competence. Under the perspective of technology-oriented market, manufacturers need to build “technology competence”. Werner felt (1984:176) suggests to develop the resource in one market and then to enter another markets from a position of strength. However, in practice, we observe contradiction that the Taiwanese flat panel display manufacturers, facing the huge manufacturing cost, choose the perspective of market-orientation rather than Werner felt’s technology-orientation so as to first respond to market demand for income, and then put the technology competence development in the second place. In order to solve the gap between theoretical and practical difference, we try to extend the view of “customer competence” (Danneels, 2002) by adding market factors to conceptualize “market competence”. Moreover, we explore the differences in firm’s competence building by asking the research questions: How to upgrade the “technology competence and market competence” by competence leveraging? This article found that technology competence tends to emphasis more on manufacturing and design, quality control, R & D and innovation, and integration and learning, in order to enhance the competence, thus to create the foundation of competence. On the other hand, market competence emphasizes much on linking, reputation, communication, and service innovation.

Keywords: Technology Competence, Market Competence, Resources-Based Theory, Competence Building

INTRODUCTION

Firms need to continuously renew themselves if they are to survive and prosper in dynamic environments. And that requires a simultaneous thinking of from intra-firm to external-firm (inside-out route) and from external-firm to intra-firm (outside-in route), that is to say, firm competence building should integration of technology-oriented resource and market-oriented resource, the former bases on resources-based theory and the later focuses on marketing think, cannot be understood as one or the other separately. Thus, it is necessary to address the impact of both on firm competence building simultaneously, rather than considering each separately. This renewal challenge is even more pronounced in the current business environment characterized by fast changes in market, technology, and so on. Therefore, it is necessary to first constitute technology competence or market competence and ‘really new’ competence is crucial to firm survival in the current fast-changing business environment. Particularly in Taiwanese flat panel display industry.

Resources and competence: two sides of the same coin

For the firm, resources and competence are two sides of the same coin. Most competence building requires the services of several resources and most resources can be used in several competence building. In sum, it is a central insight that competence building stems from the linkages among resources. The critical point is that different types of resources and linkages among resources constitute firm distinct competence. Specifically, we argue that resources may be useful for building technology competence and market competence. Moreover, by specifying the priority of the firm's competence building, it is possible to infer the minimum necessary competence leveraging in the allocation and transformation of firm's resources. Competence building is one of the mechanisms by which firms create, integrate, recombine, and shed resources.

Technology-orientation market.

The resource-based theory (RBT) is a major theoretical framework that addresses the source of inter-firm performance differences (Penrose, 1959; Wernerfelt, 1984; Barney, 1991; Peteraf, 1993; Makadok, 2001; Hoopes, Madsen, and Walker, 2003) and influences competence building differences. RBT clarifies understanding about why some firms continue to outperform others in their industry. Because of firms create competitive advantage and competence upgrade when managers develop resources that are valuable, rare, inimitable, and non-substitutable (VRIN) in a given market (Barney, 1991; Peteraf, 1993) and exploit them in additional markets (Wernerfelt, 1984; Barney, 1986; Amit and Schoemaker, 1993).

Although the general idea is to expand your position in a single strong technology, it is not always optimal to go full force for diversification in several markets simultaneously (Andrews, 1971). Wernerfelt modelled a resource-product matrix as a useful strategic tool for developing the fit between the firm's resources and product. The dynamic entry into new markets relies on the development of new technology competence and then sequential enter other markets, from a position of strength (Wernerfelt, 1984:176). This is technology-orientation market.

Market-oriented technology

Flat panel display manufacturers facing the huge manufacturing cost, in particular, to enter the era of large-size panels, manufacturing equipment more greater, more weight, and higher cost (For example: 10-generation Sputtering, it needs six billion NT dollars, 40 meters length, 10 meters wide, weighs 200 tons), choose the perspective of market-orientation rather than Wernerfelt's technology-orientation so as to first respond to market demand for income, and then to build technology competence, which is market-oriented technology perspective.

RBT is a major theoretical framework that addresses the source of inter-firm performance differences (Penrose, 1959; Wernerfelt, 1984; Barney, 1991; Peteraf, 1993; Makadok, 2001; Hoopes et al., 2003) and especially on developing core resources that are valuable, rare, inimitable, and non-substitutable (VRIN) in a given market (Barney, 1991; Peteraf, 1993) and exploit them in additional markets (Wernerfelt, 1984; Barney, 1986; Amit and Schoemaker, 1993). However, most papers focused on *what* kind resources bring inter-firm performance

differences (Grant, 1996), very little on *how* firm to allocation and transformation resources, *how to apply* in the firm competence building.

Whether there is an obvious difference about the strategy thinking of technology-oriented market and market-oriented technology? What's the difference in both competence building? Let us motive to research the route of the two different manufacturers conduct.

The purpose of this paper is to disentangle the differences of technology competence and market competence, the linking role of competence leveraging, and the decision factors of technology competence or market competence priority.

THEORETICAL BACKGROUND

Resource-based theory: neglect of markets

The priority of firm competence building requires both from intra-firm to have competences relating to technology, and external-firm relating to market and each of these competences is constituted by a set of resources. In sum, the firm key resources needed to accomplish them can be classified as technology-related and market-related (e.g., Danneels and Kleinschmidt, 2001; Mitchell, 1992; Moorman and Slotegraaf, 1999). From the resource-based theory, firm competence building depends upon the deployment of resources or combinations of resources that are valuable in the context of a given market, rare, inimitable, and non-substitutable (Barney, 1991).

However, the resource-based perspective suffers from its neglect of markets, which in turn explains the absence of any explicit view of the market (Knudsen and Madsen, 2002). This is to say, firm must have competences from external-firm relating to market.

Resources as firm assets

Scholars of resource-based theory suggested resources as firm assets. Some scholars define resources as organizational strengths and weaknesses that are tied to firms (Wernerfelt, 1984). Others define them as all assets, attributes, and knowledge controlled by a firm that help improve efficiency and effectiveness (Barney, 1991) and a firm's resources at a given time could be defined as those tangible and intangible assets which are tied semi-permanently to the firm (Caves, 1980). Consistent with these definitions, we define resources as the tangible assets, intangible assets, and organizational processes from which managers can develop value-creating activities. Given this definition, resources include tangible resources such as the fabrication facilities, plant, equipment and the store locations, and intangible resources such as brands, patents, animation skills, know-how of technologies and technical knowledge. They also include organizational processes by which firm allocation, transformation, reconfigure or exit resources such as acquisition process, alliance partnering process, product development process and routes (Bingham and Eisenhardt, 2008).

Necessary for competence building

The term of competence is used to refer to an ability to accomplish something by using a set of material and immaterial resources (Danneels, 2002). By using firm resources to create superior performance is leverage (Prahalad and Hamel, 1990). When core resources are combined with complementary resources, firms can produce products faster, better, and/or more cheaply than the competition (Collis and Montgomery, 1995; 2005). A related point is that the complementary resources that enable value creation from core resources may vary across markets. Thus, leveraging core resources into a new market or adding core resources to an existing market may also require leveraging existing complementary resources or building new complementary ones (Bingham and Eisenhardt, 2008).

This article makes advances in applying resource-based theory to the priority of firm competence building in several ways. First, it explicates which resources are necessary for firm competence building. At this point by upgrading firm competence and escaping from the trap laid by their current competences. Second, the article shows how competence building can serve as a vehicle for the renewal and accumulation of firm competence. The insight into the reciprocity of the resources–competence relation extends resource-based theory by examining not only how competence is used in upgrading, but how they are built as well, and by examining how one competence can be used to build another. The findings of this study show that building and upgrading new competences are activities that can expand the competence base of the firm, which in turn enables further new technologies and markets competence.

The above literature streams are used in this article to develop a framework “Competence Leveraging Model” that depicts competence leveraging as a vehicle of allocation and transformation among firm resources and upgrading firm competences. After a description of the methodological procedure, the foundation of the framework is laid by describing the reciprocal linkages between firm resources and competences. Drawing on resources-based theory, competence building is depicted as serving to further develop technology and market competence. Then the framework developed in this article is evaluated in terms of its theoretical and managerial implications. The article concludes with noting the limitations of the present research, and makes suggestions for further research.

METHODS

My conceptual framework is based on field research and an integration of the scholarly literature regarding leveraging, organizational resources and competences, and RBT. I conducted a field study using interviews, observations, and documents as data sources from two high-tech firms that produce flat panel display manufacturing equipment (Danneels, 2002; 2007). The research sites are briefly described in Table 1. Research sites were selected to achieve a diverse sample that provides many possibilities for comparison, which enables richer theory development (Glaser and Strauss, 1967; Strauss and Corbin, 1990). I intended to contrast firms that were different in terms of their variety of resources and products, competence building and upgrading. Rouse and Daellenbach (1999) called for a rich, detailed investigation of the nature of firm

resources through comparative case studies. A multi-site study allows for cross-site comparison and allows the researcher to see idiosyncratic aspects of any one site in perspective (Miles, 1979).

Table 1 Research sites

Firm pseudonym	Areas of activity	Age	Size: # employees/annual sales in \$ billion	Number of interviews/ observations conducted
ARET	Automation equipment, micro-drill the entire factory equipment, micro-drill	Since 1982	489/2.25	5 interviews 2 interviewee
MPG	Robot design, Robot application, Automation skill, Moving system, Processing machinery, Clean room equipment design, Pack/unpack system, Control system application	Since 1978	475/3.1	5 interviews 3 interviewee

Triangulation of various types of data collected through different methods can overcome the limitations of one method by counter-balancing the weaknesses of one method with the strengths of another (Jick, 1979). I used various types and sources of data to provide a rich and solid foundation for the theory development. I conducted 15 interviews with organizational members involved in existing resources and competence development to assess their perspectives on and experiences with new resources and competence development. Interviewees were drawn from multiple functional areas (e.g., R&D, marketing, manufacturing, etc.), and from various organizational levels. Data about development processes and projects were compared and integrated across informants. Interviews commonly lasted from 45 minutes to two hours.

I used the extended case method (Burawoy, 1991) as a guide to data analysis. This methodological approach uses empirical data gathered through case study to reconceptualize and extend theory. This study helps to the integration of practical perspectives, concepts and theories by using the extended case method, which aims to integrate, synthesize and stretch existing practical perspectives, concepts and theories. The process involves the interplay of existing concepts, theories and analysis of empirical data. Data analysis points to relevant practical perspectives, concepts and theories in the literature, while simultaneously the literature provides

conceptual frameworks to aid in the interpretation of the data. This approach is highly similar to that of Rafaeli and Sutton (1991: 757), who developed their insights by ‘an iterative process of traveling back and forth between the data, pertinent literature, and emerging theory.’

To test the credibility of my interpretations of the data, I subjected my analysis to member checks (Hirschman, 1986; Lincoln and Guba, 1985). I checked my emerging insights on an ongoing basis with my informants, asking for their feedback, sometimes in a second interview. In addition, I made presentations of my findings to the participating firms. The member checks served to revise and hone the findings discussed below.

FIRM COMPETENCE BUILDING

To face on dynamic environments, firm competence building must integration intra-firm and external-firm resources, it is a necessary process of leveraging technology-oriented resource and market-oriented resource. On the demand side, customers’ needs motivate firm to seek certain benefits of products and markets. On the supply side, a firm’s technologies enable it to provide certain benefits through the attributes of its products. Therefore, firm competence building development requires bringing together two competences: technology competence and market competence. This idea is depicted in Competence Leveraging Model (Figure 1). Competence leveraging acts a linking role between technology competence and market competence. To make firm prosper and survival in fast change dynamic environments, we must upgrade these competences of technologies and markets, otherwise leads to the decline of firm outputs.

Competence leveraging model is posed of technology competence and market competence and that linked by organizational competence leveraging, analysis as follows:

Regardless of technology priority or market priority, both involved in the allocation and transformation of firm resources, directly related to the manufacture and sale of products, firms must to have the technology competence and market competence (e.g., Danneels and Kleinschmidt, 2001; Mitchell, 1992; Moorman and Slotegraaf, 1999), and then entered technology-oriented market or market-oriented technology. How do firm to allocation and transformation, which belong to operating within the organization processes (Priem and Butler, 2001), that is the role of organization's competence leveraging.

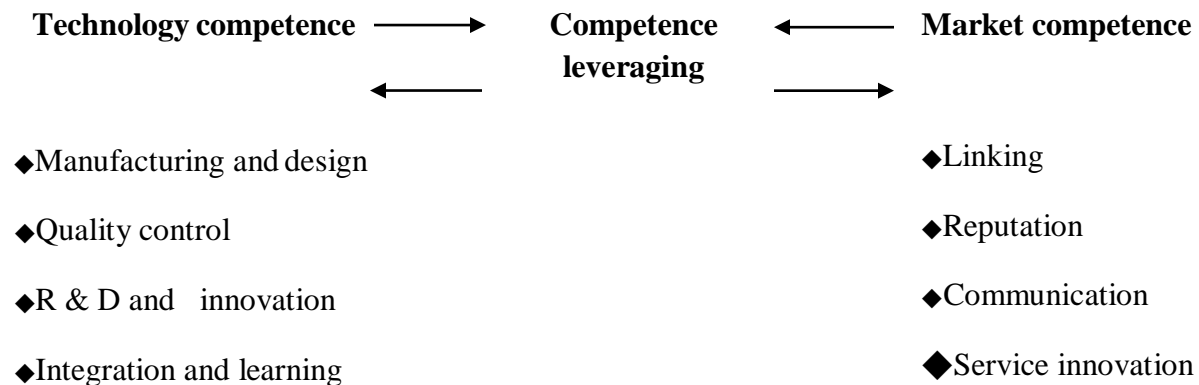


Figure 1 Competence Leveraging Model

TECHNOLOGY COMPETENCE

Werner felt (1984) suggests to develop the resource in one market and then to sequential enter another markets from a position of strength, this is technology-oriented market, firms must have technology competence; Danneels (2007) “De-linking and Re-linking” talked about recognize technology competence and serve new customers with technology competence, which will be applied to alternative applications and characterize of technology competence, the latter will build market competence to serve new types of customers, and develop products and intellectual property. In this study, extension of the two concepts (De-linking and Re-linking) to build a bigger, broader application of technology competence, trying to infer to other technology-oriented market industries.

From technology-oriented market view, firms have to develop new products and prompt to the market to do authentication, and gradually improve the shortcomings, the initial yield little stability until after the operation, the output will be gradually expanded. This is the case, it is difficult for firm to invest much budgets to improvement products quality in order to obtain large orders. Firm should first allow the currently available professional technology to exploit products, or to explore of the existing professional technology to enter new areas or applications.

ARET uses its existing detection technology to produce tensile testing machine, and to combine with automation competence to create full automated Tensile Testing machine (ARET Director).

Technology competence is constituted by tangible and intangible resources (Mitchell, 1992), and with the existing technology to exploit new applications and extend to the market or combine of existing technology and new technology to explore the market. It is known as the technology competence. Manufacturers should construct what kind of technology competence to enter other market, citing interviews with the following data analysis:

According to interviews, technology competence is constituted by such technology-related resources and competence as: Manufacturing and Design, Quality Control, R & D and Innovation, and Integration and Learning, analysis as follows:

To develop new products, prompt to the market and to do authentication and then continuing to improve its operation more stable, so that greater output (MPG Director).

Manufacture and Design

Technology competence gives the firm the competence to manufacture and design physical products (Danneels, 2002). Taiwanese flat panel display manufacturing industry is highly customized, manufacturers need to consider customer requirements, and then manufacture, design related manufacturing facilities that firms must have manufacturing and design competence, citing interviews with the following information:

It takes 50 seconds to produce a drill, trying to upgrade technology to 12 seconds, so that firm construction manufacturing competence (ARET Director).

Quality Control

Technology competence is constituted by such technology-related resources and competence as: know-how of manufacturing facilities and procedures for quality control (Danneels, 2002). In the Taiwanese flat panel display industry, it is very important for firm to have quality control. Because the manufacturing equipment is completed, the actual operation needs to see the status of the operation, if a circle is wrong, the loss will be very serious, and then requires continuous detection. It is also very important to avoid the breakdown of the glass panels resulting in loss of manufacturers, needs to test end product. Interview quoted as follows:

When there is a loss in manufacturing process, the customer will ask you to make some response in crucial analysis, to prevent these problems, and then firms entered the field of manufacturing equipment detection (ARET Director).

Research and Design, and Innovation

Flat panel displays industry needs to continue research and innovation, both MPG and ARET attaches great importance to R & D talent. For examples: ARET tries continuous R & D and innovation of micro-drill to significantly reduce manufacturing time and cost savings, but also increase revenue. Interview quoted as follows:

MGP will not decrease the investment cost of innovation that with the firm's income decline. The R & D manpower of the company exceeds 1 / 2 total staff number (MPG Director).

Integration and Learning

Resource can be leveraged so that a firm is able to apply the capabilities learned and resources earned in one situation to serve a different market (Miller, 2003). It is important for manufacturers to train and cultivation of learning competence, and help to enhance technology competence. Interview quoted as follows:

The company needs more people to help in transition, and uses continuous learning and R & D to exploit more products that makes company a power in transition (ARET Director).

MARKET COMPETENCE

Market competence gives the firm the competence to serve certain market and to executive certain customer demand that posed by the tangible and intangible resources, and then by the existing orders incomes to exploit new technology applications or combine with the existing and new orders to explore new technology competence. ‘Market’ denotes a broader concept, namely the exchanges of goods and services between customers and suppliers, and the effects on these exchanges of environmental factors such as technology, laws, culture, and competition.

Flat panel display manufacturers respond to large-size panels demand, to build 10-generation manufacturing plants take 60 billion NT dollars, it is difficult for manufacturers to input huge costs in production, due to the costs and risks too high. They can only first respond to market demand orders, and then build the technology competence, which is from the perspective of market-oriented technology, firms must priority have market competence; Danneels (2002) “Customers competence” means the competence serve to customers, the “market factors” did not into consideration, especially the flat panel display manufacturing equipment are large size, heavy weight, and high cost of delivery must be closer to market, as well as attention to customer service.

In this study, we extend “Customers competence” (Danneels, 2002) to construct market competence, which is a larger scope, wider application, and infer to other industries from the perspective of market-oriented technology.

Customer first identifies manufacturer reputation and competence, execute orders by the firms. Moreover, manufacturers choose to first respond to market orders, and then build technology competence. Citing an interview following data analysis:

According to interviews, market competence is constituted by such market-related resources and competences as: Linking with organizations, customer, supply chain and distribution, Communication with intra-firm and external-firm, Reputation of the firm, and Service Innovation.

Linking

Linking is very important, because the flat-panel display manufacturing equipment industry needs to combine with organizations, customers, manufacturers and distribution systems and

then completely finished. Flat panel display manufacturing equipment is larger size, heavy weight, high input costs, to save distribution costs, firm will link the customer side with distribution systems.

It is a high capital-intensive, high tech-intensive industry for the flat panel display, in particular, that must now still largest to cross the threshold and have to link with other manufacturers (ARET Director).

Reputation

Customers select manufacturers that focus great importance intangible knowledge assets on the company's organizational culture, business ethics, and its evaluation. As long as there is no problem with the company's reputation, they provide design drawings, engineers and together produce with manufacturers, which will be able to learn professional skills among which, with the company's existing professional technology competence, explore new skills.

Foreign manufacturer's technology has patent right protection, customers select your company basically to look at the company's culture, business ethics and its evaluation on your company. As long as business ethics is well, foreign manufacturer would help company technology upgrading (ARET Director).

Communication

It is very important for firms to communication with internal and external the firms, especially internal between technology personnel and employees need to still discussion and communication with the technology level and problem solving, and also need to maintain good interactions with external customers, which involves intra-organizational and inter-organizational coordination and communication, that has far-reaching and direct impact on the follow-up cooperation.

MPG develops a knowledge management platform to provide professional engineers and staff sharing, communication and problem-solving (MPG Director).

Service Innovation

Services will no longer be by telephone, internet to carry out customer service or advice, this kind of "oral to customers" services are no longer appropriate, should be paid "foot to customers" and "hand to customers " services, that is, direct visit the site to assist customers to solve the problem, and practical exercises operational processes, such as service quality and interactive way to solve customer problems, satisfy customer demands.

Technology staff and operational staff need together to serve customers to solve the problem that manufacturers first inquiry technology staff, which is Customer Service (ARET Director)

CONCLUSION

The goal of the paper is to integrate and extend existing theory by employing the empirical and practical data to fill in its gaps, reveal its flaws, elaborate its meaning, and extend its coverage.

The purpose of this paper is to disentangle the differences of technology competence and market competence, the linking role of competence leveraging, and the priority decision factors of technology or market competence building.

Costs and risks

The crucial priority factors in technology competence or market competence lies in costs and risks. The reason for manufacturer responds to demand for large-size panels is that Taiwanese flat panel display manufacturing equipment is expensive, large, heavy weight. For example: 10-generation Sputtering, it is posed by six billion NT dollars, 40 meters length, 10 meters wide, weighs 200 tons, the cost has not yet been included in hidden costs such as the trial, acceptance, distribution and services, sometimes takes one year to test, during which the costs and risks cannot bear for company.

In short, it is a high capital, high technology, high customization and high-risk industries for flat panel display that firms must also make any changes to match the requirements of customers tailor-made, and different generations panel have different specifications, size, and the process. Based on this phenomenon, manufacturers did not obtain orders premise and bears high risk on investing rashly the huge capital, technology, is extremely unlikely. Therefore, firms priority response to market demand orders, and then construct technology. It is worth follow-up tracking that this opinion is the contribution of the study and different from resource-based theory.

Compared with lower-cost equipments such as washing machine, manufacturers produce physical equipment by their own professional technology advantages, and extend to the market of strength, then testing by the market and customers. Manufacturers select technology priority, and then extended to the market, consistent with the resource-based theory.

Linking role

The key role of competence leveraging is in response to environmental changes, then coordination/ integration, learning/ upgrading, and reconstruction of the company internal and external resources, activities and competences, and to apply in technology competence and market competence building. This linking role is to help organizations decision-making of technology competence or market competence priority.

Differences in competence building

Technology competence and market competence is component of three hierarchies such as the basis competence, combination competence and architectural competence (Table 2).

Basic competence refers to enterprise bases on its existing general resources and develops the basic skills; combination competence is an enterprise with its existing resources and skills to develop new skills by learning and linking with network and combine both; architectural competence refers to enterprise in response to environmental change and organizational needs, to construct competence through innovative thinking.

Table 2. Hierarchy of TC and MC

Categories Component	Technology Competence	Market Competence
Basic Competences	<ul style="list-style-type: none"> ◆ Manufacturing and design ◆ Quality control 	<ul style="list-style-type: none"> ◆ Reputation
Combination Competences	<ul style="list-style-type: none"> ◆ Integration and learning ◆ R & D 	<ul style="list-style-type: none"> ◆ Linking ◆ Communication
Architectural Competences	<ul style="list-style-type: none"> ◆ Innovation 	<ul style="list-style-type: none"> ◆ Service Innovation

The thinking of technology-oriented market (technology competence priority), manufacturers focus on Manufacturing and Design, Quality Control, Integration and Learning, R & D, and Innovation; market-oriented technology (market competence priority), manufacturers focus on Linking relations with customers, distribution system, and Reputation, Communication, and Service Innovation.

The thinking of technology-oriented market gives priority to build tangible competence and then to construct intangible competence. The reason is that flat panel display manufacturers produce physical equipments by firm's technology and testing extend to the market of strength; customers measure manufacturer's technology competence such as production forces, design forces, R & D forces and integration forces, and then decided to orders demand. This is consistent with resource-based theory.

The thinking of market-oriented technology gives priority to build intangible competence and then to construct tangible competence. The reason is that flat panel display manufacturing equipment has higher cost, manufacturers respond to market demand orders to reduce the risk of cost; customers measure manufacturers market competence such as the reputation of manufacturers, evaluation, organizational culture, and business ethics, decide to demand orders, and customers have patent right to support manufacturers upgrading technology that consistent with manufacturers in response to market demand orders, and then upgrade technology.

It is particularly effective when intangible core competence is knowledge based. The reason is that knowledge-based competence may typically fungible across different markets and within the same market at different times. In contrast, tangible physical competence often has specific and limited use. Thus, intangible competence have high fungible are likely to be valuable in multiple markets and tangible competence have limit fungible are likely to be limited in one market.

Theoretical Implications

Flat panel display manufacturing equipment industry faces of much challenges such as the competition of major foreign manufacturers, technology-intensive, capital-intensive, by building technology competence and market competence will strengthen the localization manufacturing and increase the rate of self-made, to help manufacturers enter international markets and face of rapidly changing environment. More importantly, manufacturers will have industrial competitiveness and competitive advantage.

Resource-based scholars have started to focus much more on the dynamic nature of competence, asking how competences and resources evolve over time (Helfat, 2000). Resource-based view is from the angle of the firm that lacks the thinking of market (inside-out route), this paper is from the angle of external-firm (outside-in route) tries building market competence to make up, and to increase the concepts of dynamic learning competence and dynamic interactive competence will help firm respond to environmental changes.

Managerial Implications

Flat panel display manufacturing equipment needs huge manufacturing costs that manufacturers first invests on technology research will have concerns of orders and profitability. Even if the manufacturing technology can support, the lack of orders for commitment will greater financial burden on manufacturers, to choose first in response to market demand orders, and then to build technology competence is priority considered for enterprise survival.

Manufacturers execute the thinking of market-oriented technology should strengthen dynamic interaction competence to face the changing market, must have the competence of rapid response and communicate with customers, other manufacturers, competitors and distribution mechanisms, and then have competitive advantages of market that can attract customer orders and exploit new technologies.

Manufacturers execute the thinking of technology-oriented market should strengthen dynamic learning competence to face the changing technology, must have the competence of rapid absorption and learning on production forces, design forces, R & D forces, and integration forces, and then have competitive advantages of technology that can attract customer orders and explore new markets.

Further Research

In this study, there are two questions for future research. At first, competence leveraging acts as the linking role of technology competence and market competence, the connotation of the processes, should be more detailed analysis and discussion, including the past experience of organization, environmental changes, and organizational requirements etc.

Wernerfelt modelled a resource-product matrix as a useful strategic tool for developing the fit between the firm's resources and product (market). The dynamic entry into new market relies on the development of new technology competence and then sequential enter other markets, from a position of strength (Wernerfelt, 1984). This is from the perspective of technology-orientation market.

Second, flat panel display manufacturing equipment industries due to the considerations of cost and risk, priority choose to respond to market orders, and then construct technology competence. This is from the perspective of market-oriented technology, and that is obviously different with resource-based theory. It is a worthy deeper research that the cost factors how do interfere with resource-based theory?

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