

The “Value-competence” Dual Circle of Latecomers: A Process Based View

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Abstract

Nowadays, the level of latecomers' technical competence still falls behind Compared with the western successful multinational enterprises. This study developed a kind of “value transfer” and “ability to fill a vacancy”, the two-cycle process model, based on the latecomer firms absorptive capacity of the process to bring new contributions. “Value-capacity” double loop structure can clearly show the absorption capacity of latecomer firms during the following two characteristics.

Key words: Value-competence; Latecomers; A processed based view

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INTRODUCTION

More and more researchers have begun to focus on latecomers' technical gap, technological capacity and technology catching-up in developing regions (COU & SHENG, 2008). In fact, the level of latecomers' technical competence still falls behind Compared with the western successful multinational enterprises. First, latecomers are limited in the innovative talents and resource because of away from the world's science and technology center. Second, latecomers are difficult to obtain new

market needs, which have no chance to communicate with mainstream segment. Therefore, Double burden, such as technology dependence on foreign enterprises and customer dependence on domestic customers, lies in latecomers. In 1990 though, Kohli and Jaworski articulated a theory of market orientation that they describe as the implementation of the marketing concept. This research supports the conclusion of many experts on the innovation process that a market orientation is essential to success (Kohli & Jaworski, 1990).

1. METHODOLOGY AND RESEARCH DESIGN

A qualitative method was chosen as the best way to study latecomers' process model of innovation astray under the organizational change and market environment. Latecomers' process of innovation astray has a forty- to fifty-year time horizon, and a truly longitudinal study was thus beyond the available resources. Instead, a longitudinal procession approach was adopted. Meanwhile, a single case study helps to find and track the phenomena and problems that occur in the course of the actual operation of enterprises.

In fact, because of the exploratory nature of the study and the objective of generating a descriptive model of as yet incompletely documented phenomena, Glaser and Strauss's (1967) strategy for the discovery of “grounded theory” was adopted. This strategy requires the researcher “at first, literally to ignore the literature of theory and fact on the area under study, in order to assure that the emergence of categories will not be contaminated by concepts more suited to different areas (Poole, Van de Venn, Dooley, & Holmes, 2000). It also requires joint collection, coding, and analysis of the data. Data must be collected until patterns have clearly emerged and additional data no longer add to the refinement of the concepts.

1.1 Research Setting

The research is carried out in one large, Chinese, heavy equipment firm which I shall refer to as DEC. DEC is

a state-owned enterprise which mainly produces steam turbine manufacturing equipment. Table 1 illustrates the produce of DEC at the time of the study.

Table 1
The Produce of DEC

1	1966~1983	Start-up stage	50MW,200MW steam turbine
2	1984~1991	Independent innovation period	300MW steam turbine
3	1992~2000	Technology introduction period	600MW steam turbine
4	2001~2006	Multiple production period	Wind turbine/ Nuclear Turbine

1.2 Data Collection

Secondary data are obtained on “the company yearbook” and “chronicle of events” in the last forty years. Events about manufacture, quality, delivery of the product, customer relationship are studied. The text records of “events” are not only important nodes in the process of

technological innovation, but also affect the development trend of the enterprise technological innovation. We spent six years to track DEC and carry out a large number of field research, interview, experience, collecting second data.

Table 2
Illustrates the Tracking Study Stage of DEC

	Stage I 2005.10-2008.5	Stage II 2008.10-2009.8	Stage III 2010.8-2011.12
Collecting raw data	Interview the company management Interview the department heads(technology,management,service,marketing,manufacture) Project: research on technology innovation of dec Project: research on manufacturing service innovation	Interview CEO of all previous years Interview expatriates Interview witnesses of important technology events case study	Events classification discussion Stage division discussion Event trend discussion
Collecting second data	Events record in the propaganda department Archive Data of the planning department The enterprise website	Product information of the planning department Industry research report News The exchange of information	Production information Documentation News
Experience	Interview important customer Ceremony of successfully trial-produced Conference of technology innovation	New industrial base construction Interview important customers New employee orientation program	The dilemma of the wind power industry The development dilemma of power of the sun Negotiation of new technology

The interview is unstructured. And the interviewer usually began with an open-ended invitation to tell about work-related activities, then directed discussion toward three major aspects: (1) How to communicate with customers; (2) The process of value transfer; (3) How to improve ability.

The research also involved the study of documents. One key set of documents is "chronicle of events" which officially describe manufacturing and distribution of the enterprise between 1966 to 2006. We collect total sample against subjective grounds. Encoded contents of events include that: 1) Event ID when event occurred; 2) Classification of events; 3) Participant; 4) Relationship; 5) Event description. 1299 events between 1996 to 2006 are established database. According to Poole et al. (2000) the following works are also considered: 1) cross-checking data to avoid missing important event; 2) Repeating interview and multi-source data to achieve consistency; 3) The event data before the code is completed and entered

into the database, ensure team members repeat 3-4 times, differences of event description text can be controlled within five percent.

2. EVENT ANALYSIS

In qualitative research, the different classification and recognition will get different theoretical proposition. We used grounded theory (Glaser & Strauss, 1967; Suddaby, 2006). These events produced by the method of data classification. And process event data records are retained as managers of the target “in progress” observation, event logging process itself is seen as a particular aspect of business operations for the attention and concern. Repeat theoretical sampling (theoretic sampling) and stop comparing (constant comparison) throughout the course of the event data collection, collation, classification and identification and phasing. Pointing theoretical development process is repeated constantly revised and

determining the classification of dimensions, the acquired event data continuously converges to determine the suitability of the theory (Isabella, 1990), in particular, the interpretation of the trend of events extent.

2.1 Event Category

Strictly follow the above data acquisition and encoding process, we have obtained throughout the East steam four decades of history (1966-2006) of the production quality and marketing of the event data. Analysis has focused on how to generate these events unfolded classification. Generates an event always precedes the discussion of classified data collection process, we grouped the obtained event data to be read, and constantly refining unanimously approved the overall event clue: products from conception to production, to sales and delivery, as well as follow-up service and customer feedback so the whole process. First, a number of events focusing on product quality requirements, which is the product of the manufacturing

process input; Second, the product of the production process in-house, which is the realization of product manufacturing process; Third, the product is delivered to the user, the sale of installation and maintenance, which is the product quality and delivery processes; Finally, the product is user-friendly, the process of using the services and user demand for products or new feedback process.

In the data collection process, the description of the event, specific details, and many other pieces of information repeated key words, which the theory of the formation and evolution of classification have played to enhance the role (Van Maanen, 1983). We constantly revise the initial classification; delete obsolete, adding new evidence to explain the newly obtained. Eventually we got to cover all the event data classification: Demand input, internal implementation, quality, delivery and user feedback. Table 3 is that we get the final classification of the event description and typical events and quantity.

Table 3
Event Classify Describe the Typical Number of Incidents and Events

Event category	Category description	Typical events	Number of events
Requirements Input	External quality required input, and power generation business representatives, investment institutions, intermediate trader or related cooperation between enterprises of intent, signed contracts or orders, or the higher authorities of the manufacturing tasks.	HeBiWanHe Power Co., Ltd., general manager and his party of three people to plant on HeBiWanHe Power Generation Company Limited 2 300 000 units of contract performance access to the plant.	240
Internal implementation	Internal production, manufacture and their corresponding quality implementation process, the customer demand for information systems transformed into a detailed definition of product attributes and specifications, to ensure product quality goals to complete the process within the enterprise.	Factories in excess of the annual task honors victory into the 2004 production power station turbine 33 units, 8.62 million kilowatts, is planned 6.915 million kilowatts of 125%, a new record.	391
Delivering Quality	Target product delivery, transport and delivery to the customer in the process, to ensure that products can be at the customer installation, commissioning and normal operation, and successfully put into operation.	I plant the first generation of 600MW steam turbine power plant in Jiaxing, Zhejiang once it starts successfully, 15:54 pm success of the first full-load operation, the unit main indicators meet the design requirements, to meet the requirements of the bearing vibration.	132
Customer feedback	Acquisition, analysis and processing quality product realization process in customer feedback, including the discovery of quality problems and failures, constantly discovering new needs and access to customer information, driven by a quality cycle.	Party Secretary Li Huaibei Power Plant to plant his four visits to understand Huaibei Power Plant 210MW unit production, and to Huaibei Huaibei Mining Bureau joint investment in power plants and new 4 × 300MW coal-fired cogeneration project unit with the factory to exchange views on matters .	536

When data collection is over, all the systems and event data can be fully met our criteria for classification. We each put event data to go into the final classification, completed the 1299 data collation. In order to ensure the accuracy of the classification criteria, we chose an independent audit staff participation. He knew nothing about the purpose of our study, we let him to some event data is encoded. In advance, we give an independent audit each event staff representative examples of data

classification and to every one that he expounded the basic principle of representative classification place. From our database randomly selected out of 100 events, let him do the event classification. The results show that there are 95 independent auditors event classification and our classification is consistent. Therefore, we believe that this event classification and coding of rationality to be confirmed.

2.2 Event Classification Value Cycle

These events can be classified simply abstracted as “Quality requirements—Quality realization—quality feedback” process, and in quality ring implies a quality delivery process, which reflects the quality of being accepted by the customer and to realize the value of the process. Four processes end to end to form a closed loop value (Figure1). First, the business-to-customer demand information collected for analysis, the output quality of the products customers demand; Then, according to the needs of business execution quality product manufacturing process to ensure product quality and output to meet customer demand for products; Again, companies will achieve product mass transfer to the

customer, to strengthen the link between customers; Finally, companies as well as on the quality of the product realization process information generated after the delivery of feedback in order to tap new demand and obtain information, the quality of the next cycle. Among them, the internal implementation and quality of the delivery process is driven by technology, the quality of the implementation process by the internal to the external customer value realization; while customer feedback and demand input is driven by customer demand, the external quality requirements to become internal quality system input. In this quality loop, the requirements of internal and external quality loop interface

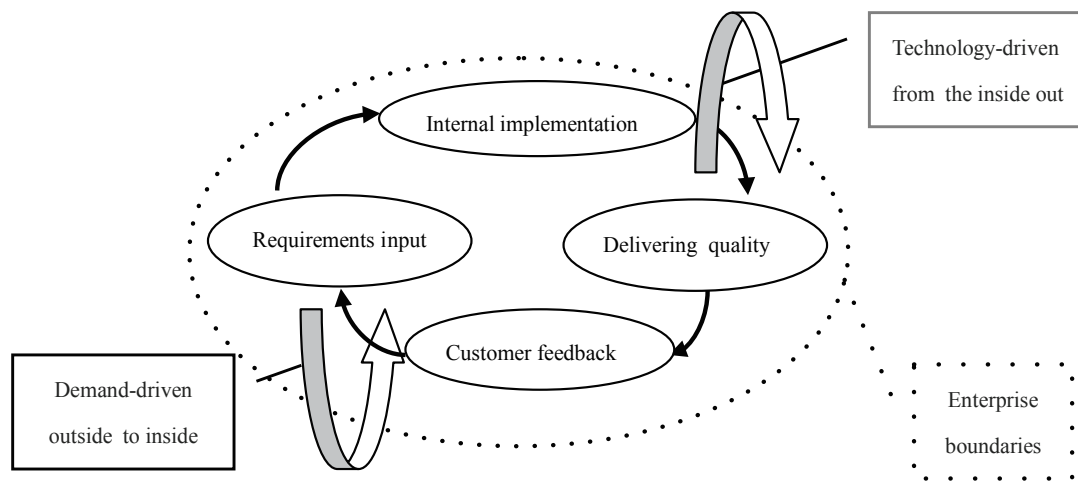


Figure 1
Events Classified Under the Value Cycle Model

2.3 Stages of Event Data

East steam evolution of the initial value cycle can be

divided into three stages: technology-oriented period, the conversion period and customer lock-in period (Table 4).

Table 4
East Steam Value Cycle Divided Into Three-Stage Model

	Phase one	Phase two	Phase three
Typical events stage name	Technology-oriented period	Introduction of technology transition period	Market outbreak period
Time range	1966~1991	1992~2000	2001~2006
Number of event points	227	420	652
Phased basis	Initial construction entrepreneurial process, an independent technology development 300,000 units, and successfully put the technology into the market.	Opened the era of technology transfer and the introduction of technology into products into the market.	Rapid market growth, and constantly re-introduction and multi-product introduction, a large focus on the customer interaction events.

First stage: technology-oriented period (1966-1991 founded). At this stage, East steam is mainly based entrepreneurship and independent research, 1982 Review

By 300MW units, marking the East steam turbine homegrown success. The stage, the basic business in a relatively closed environment, innovation drives the entire

value cycle technology to become the main driving force, the internal implementation of the event is the whole process of the mainstream events.

Second stage: the conversion period (1992 to 2000). As the market demand for new technologies, companies through independent research has been unable to meet the technology needs of enterprises, from the 1990s, East steam began introduction of technology. The stage is a transitional stage, companies from the technology and the market is relatively closed environment transition to an open market and technology stage.

Third Phase: Market outbreak period (from 2001 to 2006). Beginning in 2002, China’s power market was a blowout wildly growth, market and customer needs of rapid growth for the East steam brought tremendous development opportunities, East steam continued

introduction of technology, there has been a lot of focus on the customer interaction events.

3.4 Event Phased Feature Distribution

Classification based on the event, we acquired 1299 event points in the timeline, and event classification axis profiling, as Figure 2. In which the ordinate four were from the bottom to the internal implementation, quality delivery, customer feedback and demand input, the abscissa is the year. Classification from the bottom to the value of the order in accordance with the cycle of the “realization—delivery—feedback—demand” logic. We use the dotted oval concentrated area to identify the event point, indicated by the arrows around the time sequence of different event classes’ path more clearly in the analysis in order to grasp the trend of the evolution of the event points.

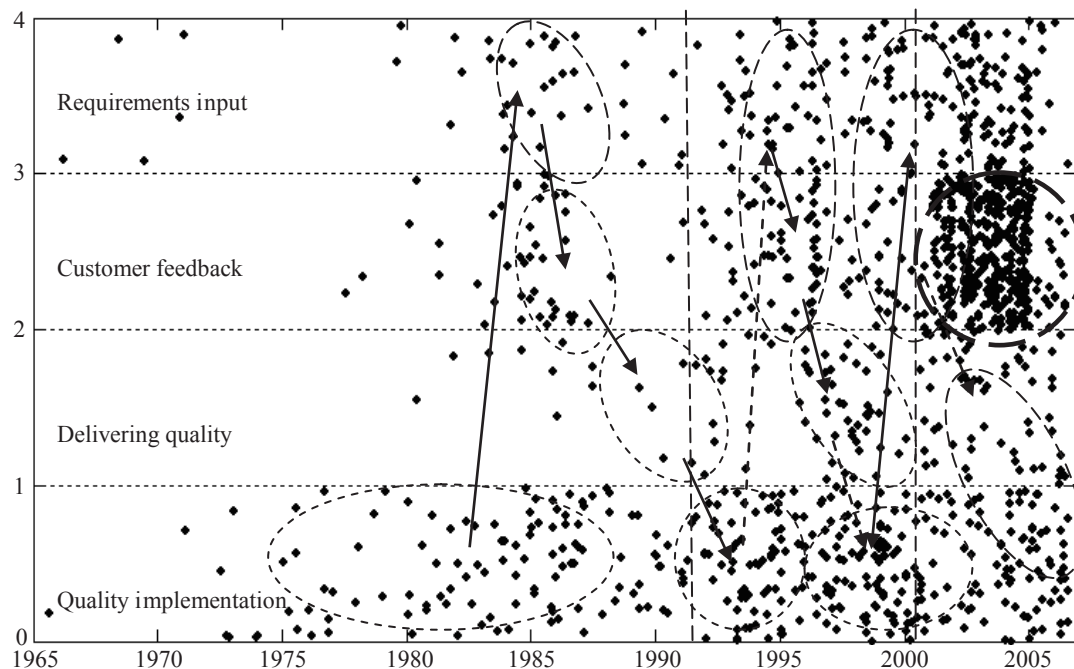


Figure 2
East Steam 1966-2006 Event Staged Feature Maps

3. PROCESS ANALYSIS

3.1 Technology-Oriented Periods

As a latecomer to the industry, the main technical East steam from Harbin Steam Turbine Plant of 75MW and 200MW unit technical crew position in the industry, competitors and unfavorable geographical environment prompted the first generation of leaders of the East steam in the mid-1970s began a self-develop 300MW units. Drive innovation become the main driver of the value of the circulatory system, at this stage from 1975 emerged after a large number of internal quality realization events.

From Figure 2, we found that the trend of events, from the beginning of 1983, there are more external corporate

marketing and communication activities. Continuous development of enterprises in the manufacturing capacity at the same time, the focus began to shift to the demand side, market-seeking, get more orders.

With the deepening of interaction with the market, companies began to focus on the quality of feedback, so as to provide customers with better products and services. From June 1984 began, one after another from Australia, the U.S., Germany and Hong Kong customers to our factory for visiting and inspection. Later, the companies began recording quality delivery of session events, such as October 20, 1985, “Xuzhou Power Plant Unit 5—13 units of 200MW Steam Turbine Factory first complete 72 hours of full load operation.”

From the above analysis we can see that during this phase is a relatively closed environment, enterprise independent innovation has become the biggest driving force value cycle. In this drive, the internal quality of implementation of the event to become the main event at this stage, concerns internal quality systems continue to adjust and improve. Meanwhile, the event itself was recorded at a certain point in time reflects the company's focus on the concerns from the perspective of capacity on behalf of the company at this point focus on the development of skills.

3.2 Introduction of Technology Transition Period

At this stage, the quality of enterprise technology-driven to achieve not only innovation, but also the introduction of technology. Rapid introduction of technology from outside the process technology, manufacturing capability with existing enterprise combined to quickly complete the production, delivery, and the formation of new demand and orders. Technology is the process of introducing a direct impact on the quality of the internal implementation class events, this stage is still the dominant events.

With the introduction of technology process, the value of the input cycle needs a change, there are some with direct external access to technology related needs input events. August 24, 1992, "Hitachi Power Division, line 3 to the factory auxiliary sub-project negotiations Shouyangshan matter", then there were with Japan, the United States and Germany signed a number of manufacturing companies subcontract manufacturing contract events. June 20, 1994 "with the German company Siemens Plant 2 × 600MW turbine on procurement matters for the first time to discuss" the same year on October 12, "the German Siemens company representatives to plant on the East—Siemens about 2 × 660MW steam turbine co-production of technical problems manufacturing division conducted a talk. "Introduction of technology driven so that enterprises can realize the demand for inputs greatly relaxed, some previous requirements can not be achieved through the introduction of technology "channel" to enter the value of the loop, which opened up the "demand input" to "internal implementation" of the new alternative channels. In this drive, this phase of "quality delivery" incident in 1995 significantly increased after (Figure 2).

3.3 Market Outbreak Period

This phase of communication between customers and business events rapidly increasing market demand for the product information is constantly get feedback. During this period there has been a significant change is to communicate with customers from the "customer feedback" incident substantial increase in product "quality delivered" event is also increased significantly, "demand type" event steady growth, and product quality, "the internal implementation of" incident significantly reduced (Figure 2).

During this period, the external market demand spurt outbreak, demand pressure does not directly promote the quality of the "internal achieve" rapid increase in the event (the worse), because the technology has greatly eased the process of introducing an internal pressure, such as the 2002 12 April 8, "Mitsubishi Gas Turbine Plant guests on technology transfer, control systems and other aspects of cooperation talks with my factory." while the firm's output has increased annually, such as January 1, 2004 recorded the incident, "the factory to excess the annual task honors victory into the 2004 production power station turbine 33 units, 8.62 million kilowatts, is planned 6.915 million kilowatts of 125%, a new record. "The quality of the internal implementation of events is difficult to pull" demand type capabilities, on the contrary, the pressure to push it to the "quality of delivery" of such an event, this phase product "quality delivered" event is also increased significantly. As August 19, 2004 "I plant manufacturing plant in Inner Mongolia Takeout Unit 4 (D600BN5) first fixed speed 3000RPM start a successful, stable turbine operation, each Wazhou excellent vibration."

From the above process analysis, at this stage from the sudden growth of external markets acting on two-way cycle, the "customer feedback" and "quality of delivery", "internal implementation" events and "demand type" linkages between events is cut off, direct led to the evolution of the market synergy locked. When external customers direct access to the enterprise, the enterprise is the most direct way to deal with direct reception, which can not be converted to demand the information entered, the feedback effect on the "customer feedback" ability to fill a vacancy. A lot of exchange of information is transformed into agreements, orders, demands together with the introduction of technology as an input into the process of the internal implementation of product quality, while the internal pressure to achieve this again transferred to the "quality delivery" process "quality delivery" Continue to this onto the customer's dependence, and the customer through the "customer feedback" class events direct role in the corporate response to "customer feedback" capability filled process. Thus, the evolution of cooperative enterprises to enter the latecomer plight tightly locked with the interaction between the customer: "delivering quality + customer feedback".

CONCLUSIONS

This study developed a kind of "value transfer" and "ability to fill a vacancy", the two-cycle process model, based on the latecomer firms absorptive capacity of the process to bring new contributions. "Value-capacity" double loop structure can clearly show the absorption capacity of latecomer firms during the following two characteristics.

First, technology use and value delivery pipeline. Latecomer firms use external technologies for transformation, and ultimately to deliver value, through the "demand for inputs, internal implementation, quality, delivery and customer feedback" process to form a closed loop value. That is a latecomer firm absorptive capacity dynamic feedback loop process (Lane, Koki, & Pathak, 2006), concerns the process of transformation of the "validity" (Lichterthaler, 2009), the value of the implementation process of the natural need latecomer companies continue to make up the capacity of the existing capacity weaknesses. Second, to explore the role and capacity of the search funnel reverse process to fill a vacancy. Breadth and width of the external knowledge absorptive capacity of enterprise development need to accurately predict the nature of future technologies (Todorova & Durisin, 2007; Zahra & George, 2002), in turn, "student" stronger capacity base can be found to be more extensive study of the "teacher" (Cohen & Levinthal, 1989), which is an extension of the spiral structure and logic (Cohen & Levinthal, 1994). Latecomer firms use external technical and market input, to achieve value delivery process driven by the ability of the enterprise to make up for deficiencies in the process backward, while the ability to develop enterprise search process more broadly external technical and market knowledge, to better promote the value of the transfer process.

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