An Exploratory Research of Business Model: Case Study on Taiwan Technological Industries

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Abstract--**Taiwan is currently facing the challenge of industry upgrading, transformation of high-tech industry and services internationalization. Business model innovation is the key issue for Taiwan's industry. This paper reviews the literature over the past years and proposes an integrated conceptual framework which defines business model as value proposition, value creation, value delivery, and value acquisition. We use case study method to analyze a synthetic rubber company and identify two types of business models, namely the "Best Product" model and "Total Solution" model. "Best Product" model is to provide the best products with competitive features whereas value creation and value delivery are separated and customers will not perceive the value of the transaction until they have access to the product. Thus, the value of products in the market is the major factor for company's profits. The latter is to solve the specific problems of customers. While engaging in the problem solution, company makes profits by co-creation , delivery and recognize value with customers. Finally, this paper analyzes the relationship on these interactions to explore the different characteristics of the operation of the business model. Thus, enterprises can follow the procedures of continuous improvement and innovation of their business model which can create hard-to-imitate competitive advantages.**

I. INTRODUCTION

The term 'business model', first used during the era of the Internet bubble, is an overused phrase. Even immature business plans over-emphasize their business models [14]. However, in the late 1990's, the business model had begun to attract the attention of corporate leaders and academics [7][10] when the rise of the Internet dramatically changed the corporate value creation and value delivery method [20]. Our modern globalized economy has dramatically changed the traditional equilibrium between the customer and the supplier as the rise of new communications technology provides cheaper technology and service solutions. This development trend requires enterprises tore-evaluate their value propositions and reconsider the supply side-driven logic of the industrial era which may no longer be viable. As the business environment changes companies not only need to more accurately acknowledge customer needs via new products and services but also to know how to capture value for themselves [18]. Thus Business Model Innovation (BMI) has become an important issue for strategic, organizational and innovation management and for business studies. For enterprises, BMI allows enterprises to develop sustainable performance advantages [5][7].

Historically, Taiwan's economic status has been between the developed and developing countries. Similar to other equivalent countries, Taiwan is facing the challenges of upgrading traditional industries, transforming high-tech industries, and internationalization service industries. Developing sustainable business models is crucial to assure long term competitive advantage. We use the Case Study method in this study to illustrate this concept. By reviewing the business model literature, we propose a systematic measurement framework for business models and we try to answer the following questions:

(1). What are the best business models for Taiwan's technology industry?
(2). What are the management implications of different business models?

This paper summarizes the different typologies of business models of the Taiwanese technology industry. We propose general principles and their theoretical implications and we explore the key functions of a good business model that can provide guidance to the development of Taiwan business model innovation.

II.LITERATURE REVIEW

The definition of business model is quite wide-ranged.The technological innovation approach considers business model as the idea that transforms technological innovation into market needs. In this vein, technology commercialization is the core of the business model, focusing on business process innovation as the key to converting their technology value into market value [4]. The opportunity exploitation approach argues that the business model is the value creation mechanism for business opportunity recognition and exploitation [23]. The value creation approach articulates the business model as the design or architecture of products, services and information flow, and it describes the participants and their roles in the value network [2][19]. So far there are many definitions of business model [10] [13] [15] [19]. However, the lack of clear definition and constructs in academic empirical research has resulted in divergence and difficulties in applying the results [10]. Thus, this study first reviews the business model literature to consolidate the content of the business model and then develops the construct of the business model.

Scholars believe that the underlining meaning of business model is a company's plan to make profits. It articulates the enterprise's description of how to make money. In essence, it is a market contestable theory [14]. Some scholars insist that business models must facilitate two functions, value creation and value acquisition; the detailed elements include providing goods/services to the customer, deciding which market segments to serve, articulating the value chain structure of creating and delivering value, monitoring revenue-generating

mechanisms, positioning in the value network, and deploying hard-to-imitate competitive strategies [5]. Other scholars posit business models which describe the enterprise value acquisition mode and value delivery methods; enterprises can examine six elements: define the target customers, explore the real needs of customers, refine the product/service portfolio , set customer accessibility, define organizational values, develop profit modes, and test potential business models [16]. Some scholars think business models are constituted from four interconnected elements: the customer value proposition , profit model, key resources, and key processes [13].

Teece [18] defines the business model as a logic set and provides data and evidence that demonstrate how a company creates and delivers value to customers. He also outlines the architecture of revenue, costs and profits associated with the company delivering that value. In other words, business models are the mechanism which convert creativity, with a reasonable cost, into value creation to make profits. Enterprises must deploy value activities related to the development and accumulation of resources, not only so that benefits outweigh the costs but also to be more efficient than their competitor [9]. Therefore, business models should include business systems, learning systems and a profit model. Business systems dominate the delivering of products and services; learning system enable the company to listen to customers and suppliers about the new demands of their operations so that cumulative long-term learning can sharpen their competitive advantage; the profit model refers to the profitable formula [12]. Business models are the value activities of an interdependent system, which enable companies to transcend regional vendors and expand their geographical reach which describe the interactions among companies and customers , partners and suppliers. Those value activities, therefore, can enable enterprises to create and share value benefits simultaneously [2] [24].

Accordingly, this study defines business model as a set of logic systems which are composed of constructs such as value propositions, value creation, value delivery, and value acquisition. This system should be contested and commercially viable to provide solutions to customers' perceived needs at a reasonable price. Meanwhile, enterprises will deliver a value proposition to the customer through proper design and operation. The company can transform revenues into profits through the architecture of revenues and costs. In other words, business models are executed under the following basic assumptions: the perceived needs of customers, how they want these needs to be filled, why they would be willing to pay for these filled needs, how the enterprise can organize to best meet those needs, get paid for doing so, and make profits.

The theoretical contribution of this paper attempts to identify the sub-constructs of a business model and the interaction among them. By articulating the corresponding operational business model definition through literature review and field study, one can further explore the essences of business model [3] [6]. Thus, enterprises can follow the procedures of continuous improvement and innovation of their business model which can create hard-to-imitate competitive advantages.

III. RESEARCH DESIGN

Case study method is a qualitative approach and is especially appropriate in exploring new research fields [8][21-22]. The field of business model research is still in its infancy within the academic community. Therefore, problem definition and construct validation are the foundations of the case-oriented process to enable reaching frame-breaking insights.

According to Yin [21-22], there are three reasons to use a single case study. First, this specific case provides for key field work to test the theoretical model. Secondly, this case represents an extreme or unique case. Third and finally, this case can be observed which could not be observed by previous quantitative research. Taiwan's business model theory is an unexplored phenomenon and this selected case can be used to reach meaningful conclusions in the field for Taiwan's industry. Therefore, we choose to use case study method.

To enhance the validity, Yin [21-22] proposes three methods, namely, using multiple sources of evidence, establishing a chain of evidence, and asking the critical data provider to review the seminal reports. This study used evidence from extensive sources, including interviews, internal documents, official data file records and conference records. This study also cross-validated the evidence and requested that vendors confirm the correctness of the contents of the case studied in order to improve construct validity. In addition, the study used the participatory action research method. This method fosters continuous learning for the researchers by the repeated verification of data collection and theoretical analysis. By doing so, researcher can engage in in-depth, detailed discussions and obtain important theoretical insights [11]. From the period between 2009 and 2011, the researchers continuously participated in company meetings including strategic planning meetings, more than 80 project development meetings and conducted approximately 20 interviews . Each interview last for 1 to 3 hours and were conducted by two researchers, one responsible for asking questions and the other for records and assistance. Interviews were intended to gather facts rather than the interpretation of the respondents. To increase the construct validity an operational measurement framework is required to avoid subjective judgment[21-22]. However, previous literature on the business model had not developed an effective operational framework to examine the nuanced differences between the old and new business models. This study develops each construct of the business model with reference to the literature review and the case of enterprises. Then, we conducted systematic measurement of the sub-construct (as shown in Table 1):

TABLE 1: OPERATIONAL MEASUREMENT FRAMEWORK OF BUSINESS MODEL

construct	Sub-construct	Operational definition	References
Value propositions	Segmented target market	The market segmented by varying needs and problems	2010) ; [13] ; [18]; [16];
	Value driver	The enabler which makes the customer feel valuable	New concept developed by this study
Value creation	Key value activity	The primary value activities for creating value propositions	[9]; Sinfied et al. (2012)
	Key resources	The key resources needed to support the core value activities	[13]
	Key processes	The key process to integrate the core value activities	[2] [13]
	Partnership network	The external key partners who influence the value creation	[14];[18]
Value delivery	Customer channel	The delivery of a value proposition to customers	[18] [16]
	Transaction relationship	The typology of relationships with main customers	New concept developed by this study
	Delivery vector	The vector to deliver value proposition	New concept developed by this study
Value acquisition	Profit formula	Recurring profit resulting from ongoing paying by delivering a value proposition to customers	[5] [9][12-13][18]
	Cost structure	The cost required to support the volume or activities of goods or services produced.	[7][13][18]

Some scholars place emphasis on the business model to illustrate how companies create value for customers. These studies advocate that a good business model will provide value to customers [5] [13] [18]. However, a successful transaction is not determined by how much value was created by companies, but how customers perceive the value of the transaction. Value driver, a sub-dimension of value proposition, is the value perceived by customers. The value driver reflects the company's dominant value creation logic [1] [17] which explores customers' feelings on valuable transactions. The correct value drivers help companies enforce the value to the customer. In addition, value drivers will guide the design of the core value activities [17] and the associated changes in the delivery of value.

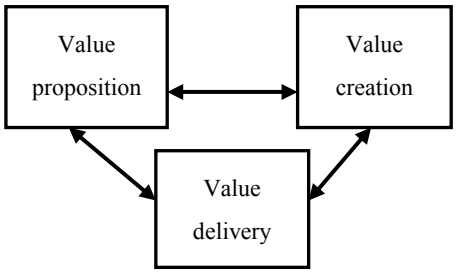

Figure 1: Preliminary theoretical framework

Based on the above-mentioned reasoning, this study further explores the possible relationships among value propositions, value creation and value delivery shown in Figure 1, in an attempt to discover whether there are different typologies of operating business models.

IV. CASE STUDY

A. Background of Case Company

Since its establishment in 1973, TSR Corp. (TSRC) has grown from being the sole synthetic rubber manufacturer in Taiwan to becoming an important leader in today's Asian rubber market. TSRC's strategic focus in 1998 was the acceleration of its market differentiation. In 2001, the company established a Synthetic Rubber Business division and an Applied Polymers Business division, to implement its strategic plan. Then in 2008, the basic strategy logic was formulated for the two divisions: Synthetic Rubber Business was redesigned to conform to a Cost Leadership model, whereas Applied Polymers Business adopted the Value Creation model. Revenue from the Synthetic Rubber Business was 120 million USD in 2012. Synthetic Rubber Business' target market is the commodity synthetic rubber markets in Asia. This market is characterized by unified product specifications and high product substitution, and the price of products is determined by market demand and competitive mechanisms. Customers in this market are mainly price-oriented: they seek to increase their bargaining power and reduce their purchase risks through price comparisons and volume purchases. This study deduced three value drivers: (1) Competitive pricing: products with competitive pricing tend to attract bulk purchases; (2) Consistent product quality: uniform products that reduce variation in end products for customers; and (3) On-time delivery.

Revenue for the Applied Polymers Business was approximately 362 million USD in 2012, representing 23% of TSRC's total revenue in 2012. The target market for the Applied Polymers Business is the global specialty rubber market. The market is characterized by diverse product specifications, small-scale production, and diversified, small order quantities; sales are technology-driven and it is critical that production and technical service capabilities be highly flexible, along with the ability to solve customers' technical problems. This study deduced three value drivers: (1) Solving customers' problems, which means understanding customers' real needs through customer visits and proposing specialty products and professional services to meet those needs; (2) Formula development, that is, jointly developing specialty products with customers; and (3) Technical services, or assisting customers in integrating specialty products and resolving any problems in the process.

B. Comparison and Analysis of Different Business Models

Table 3 summarizes the business model dimensions of the two divisions, including comparisons on value proposition, value creation, value delivery, and value appropriation. The

basic logic for commodity synthetic rubber products is the creation of value through economies of scale and cost effectiveness to provide cost competitive products with minimal quality variation. This study names this the "Best Product" model. Customers in the specialty synthetic rubber market, however, require specialty products and professional services that can resolve special problems. This study names this the "Total Solution" business model.

TABLE 3. COMPARISON OF DIFFERENT BUSINESS MODELS

		Best Product (Synthetic Rubber Business)	Total Solution(Applied Polymers Business)
Value Proposition	Segmented Target Market	Commodity synthetic rubber markets in Asia	Specialty synthetic rubber markets in developed countries such as Europe, the U.S., and Japan
	Value Driver	▪ Competitive market price ▪ Minimal variation in product quality ▪ On-time delivery	▪ Solving customers' problems ▪ Development of application-specific formula products ▪ Technical services
Value Creation	Key Value Activities	Seven key value activities including the following: ▪ Market demand forecast and planning ▪ Production of commodity synthetic rubber and investment in the construction of manufacturing facilities for SBR, BR, and SBS ▪ Industrial and competitiveness analysis for commodity synthetic rubber ▪ Product grade change for production process and quality control ▪ Industrial analysis and procurement for bulk raw materials ▪ Arrangements for production planning and capacity planning ▪ Customer visits, sales, and product distribution	Ten key value activities including the following: ▪ Technological innovation in specialty synthetic rubber such as SEBS and SIS ▪ Manufacturing and investing in the construction of manufacturing facilities ▪ Defining customer requirements in technical problems ▪ Joint determination of application specifications for products ▪ Development of application-specific formula products, formula product manufacturing in small quantities ▪ Joint trial, validation, feedback, and correction process with customers ▪ Mass production for formula products ▪ After-sales technical services
	Key Resources	▪ Seven manufacturing facilities with production capacity of over 300,000 tons ▪ Analytical capability in industrial and competitiveness analysis for commodity synthetic rubber ▪ Capability for category change in production process and quality control ▪ Procurement team for bulk raw materials, qualified supplier ▪ Outsourcing database for raw materials market and end product market ▪ Marketing database ▪ Outsourcing warehouse partnership ▪ International communication network ▪ Key customer relationship management ▪ Key customer communication channels/systems, etc.	▪ Technical services department ▪ Formula research and development team ▪ Innovative technology for polymer application ▪ Application research and development center ▪ Integrated management team for production, marketing, and research ▪ Technical sales team for Asia Pacific, Europe, and the U.S. ▪ Inter-departmental communication network ▪ 80,000 TPA synthetic rubber manufacturing facilities in Asia- Pacific region and 60 TPA in the Americas ▪ Communication channels/systems for raw material suppliers
	Key Processes	▪ Regional procurement system for bulk raw materials ▪ Analysis system for bulk raw material industry ▪ Material demand planning system ▪ Multinational manufacturing management and cost control systems ▪ ISO-9000/ 90001 quality systems ▪ Sales information management system ▪ Customer relationship management system ▪ Multinational sales management system, etc.	▪ Customer relationship management system ▪ Technological innovation and service platforms for polymer application ▪ Multinational management system for new product and technology development ▪ Intellectual property management system ▪ Project knowledge management system ▪ R&D management system ▪ Inter-departmental project organization methodology ▪ Management mechanism for production process adjustment ▪ Quality control management system ▪ Multinational sales management system ▪ After-sales service management system
	Partnership Network	Petrochemical raw materials suppliers	▪ External technical experts ▪ Joint-development technology providers ▪ Long-term petrochemical raw materials suppliers
Value Delivery	Customer channel	▪ Direct sales: 40% ▪ Agents and distributors: 60%	▪ Direct sales: 80% ▪ Technical agents: 20%
	Transaction Relationship	Product transactions performed on the basis of market price mechanisms	Mechanisms for transactions of technical services based on long-term credibility and mutual trust
	Delivery vector	Commodity synthetic rubber products	Interactive service platform and product solutions
Value Acquisition	Profit Formula	Profit = Revenue - Cost; Revenue = Unit Price x Quantity	
		Unit price is determined by market supply as well as demand and competition	Unit price is determined by the ability to solve customers' special problems
	Cost Structure	Average gross profit is approximately 8%–15%, raw materials constitute approximately 70% of total costs, while R&D constitutes approximately 0.5% of total revenue.	Average gross profit is approximately 30%–40%, raw materials constitute approximately 50% of total costs, while R&D constitutes approximately 3%–5% of total revenue

The theoretical implications of the two business models are illustrated as follows:.

1. Best Product Business Model

The Best Product model is a product-oriented business model. As products are standardized, price becomes the main attraction for customers who are likely to perform transactions with a company that offers the lowest price for such products. A company's value drivers are the provision of a competitive price in the market and products with minimal variation. The value driver of competitive product pricing is created by a company's greater efficiency in value creation activities than its competitors.

The key value activities can be broken down into several independent activities implemented by the company, while the key is for all activities to contribute to the price competitiveness of the product. Key resources refer to resources required to implement value activities, and that contribute to the cost or performance of implementing such activities, including low-capacity manufacturing facilities, product development capabilities, effective product distribution channels, as well as complementary resources from external partners that could improve supply chain efficiency or product development technology.

The objective of key processes is to create a highly efficient supply chain, which usually involves issues such as the timing of key resources usage, links between key value activities, and coordination of interdependent value activities. A company often introduces information systems and international management standards adopted by the industry, such as the ERP system, supply chain management system, and ISO mechanisms as a reference for the establishment of efficient production and supply chains.

Physical products are a company's main vector for delivering value, in that it embeds value into its products features, which include variation in a products quality, pricing, and so on, through key value activities. In other words, a products features will determine the type and strength of a company's delivered value; hence, a company should focus on how to effectively transfer the value to be delivered through a products features. On the other hand, the customer, as the recipient of the value, perceives the value of the transaction through the product features and, hence, a company should be concerned with whether customers interpretation of product features and the perceived value are the same as it intended, or whether there is any difference in the type and intensity of value perceived.

Due to delivery vector characteristics, a company would use multiple channels, including direct sales, agents, and distributors, to create a high-density customer access network. Such a variety of channels for interacting with the products would enable the customer to perceive the product value. A high-density customer access network enables a company to transfer large amounts of product to the markets where customers are located.

The transaction relationship between a company and its customers is based on market price mechanisms. The customer completes a transaction at the agreed price after negotiation; however, such transaction relationships are often one-off. On the other hand, since product information is publicly available, a customer would have access to relatively comprehensive product information, allowing the customer to evaluate the market value of the product prior to the transaction, and exchanging information with the transaction partner in a public and formal manner to arrive at a price matching his/her expectations.

A company' value acquisition is determined by the market value of its products; some influencing factors, such as market supply and demand, competition, and so on, are beyond the control of the company. Other influencing factors can be controlled, such as the timing of a product launch, whereby a new product launched ahead of others brings about stronger bargaining power, until competitors release similar products into the market. The key to company profitability lies in the control of factors that are controllable.

2. Total Solution Business Model

Total solution is a customer-oriented business model and its value driver is the provision of solutions to address a customer's special problems; such special problems often relate to the customer's value activities, and hence, solutions to such problems are often customized. The effectiveness of the solution offered is not evaluated solely on the basis of the resolution of the customer's special problems, but includes whether the solution could enhance the customer's profits.

A company's value creation is oriented by their customer's needs because the key value activities begin with understanding the customer's problems and requirements. The customer will participate in key value activities such as the identification of problems and the formulation and implementation of solutions to those problems. The company, on the other hand, will make the appropriate selection, arrangement, and allocation of the various key resources supporting the key value activities which are congruent with the problems' characteristics. Key resources usually include related issues and their resolutions, various resources such as human resources for implementing and introducing solutions, communication tools, applications equipment and after-sales services. Key resources may come from the company' internal resources or from relevant external experts; complementary scarce resources are sometimes provided by external partners.

Key resources are invested in relevant value activities to increase efficiency through integration with key processes. Some of the key processes take on the role of a cross-functional integration and coordination interface, allowing a customer to utilize various resources provided by the company in the most optimal way. On the other hand, key processes turn a customer's special problems into the customer's expected solutions, as a customer's problems are often linked to his/her value activities; hence, from the customer's perspective, the company' key value activities are

part of its value activities, and the key processes act as the interface for both parties' value activities. From the company's point of view, key processes act as the platform in leading a customer to participate in the company's value activities in a manner that consolidates the customer's value creation activities, as well as replacing part of the customer's activities.

Value delivery for a company is interdependent on the customer; a direct sales customer access channel allows the company to encounter the customer's real problems to obtain first-hand information. A company must have a certain level of understanding of the customer's value activities, grasping business operation knowledge such as the customer's profit-making methods, products, or the applicable market for the customer's services. This implies a necessity for the company to establish a knowledge management mechanism with regard to customers, so as to understand customers, sometimes even better than they do themselves.

Long-term cooperative relationships will promote successful transactions. Even where the company understands a customer's problems, it is still difficult for the customer to determine beforehand whether the company is capable of solving its problems; hence, a long-term cooperative relationship could help eliminate transaction uncertainties and mismatch of information between the transacting parties. A long-term cooperative relationship is built upon the company's credibility and a customer's trust in the company; such a relationship needs to be cultivated over time.

The delivery vector is the interactive service platform and product solution used by both transacting parties in the process of problem solving, delivering values jointly created by those parties. The value created has stickiness and is suited to the overall context of the problem-solving process. Joint value creation starts with the deployment of a delivery vector as the medium in leading a customer's participation in the company's value activities. The extent of that participation may be used as an indicator for evaluating the effectiveness of the delivery vector. The content of the value may differ at different stages of the problem-solving process; therefore, a company needs to deploy different delivery vectors to deliver different values accordingly.

Since delivery vectors possess memorizability, a knowledge management mechanism to record transaction processes would be feasible. A company may simulate this as a project management system used to store jointly developed information in the transaction process, such as value sources, value content, and vector information. A company may further modularize transaction processes to create problem-solving templates to promote more effective ways to co-create and deliver values that meet the expectations of both parties.

A company's value acquisition is determined by its capability to implement the value drivers. This implies that a company must develop a set of management mechanisms linking both value creation and value drivers, so as to enable a company to match the types of resources and processes with those value drivers to be implemented.

V. RESEARCH FINDINGS AND DISCUSSION: INTERACTION WITH CUSTOMERS

In the light of the above analysis, this study summarizes the general principles and theoretical implications for both business models.

A. Interaction relations of Best Product Business Model

The interaction relation for the "Best Product" business model is illustrated in Figure 2. It can be classified into customer side, interface, and company side. This business model is derived from a customer's need to acquire competitive standardized products to fulfill the performance requirements of value activities. This is also the main motivation for transactions between a company and its customer. The customer consumes the products via implementing his own value activities, which are not interacted with company's value activities.

In the interface, when a customer acquires the demand motivation for competitive standardized products, the ability to supply such products becomes a company's value driver. Standardized products are a type of commodity whereby price competition is the main feature for a customer to differentiate competing products. A customer will seek out products with a competitive price and minimal quality variation in the market. Physical products are an important vector for a company in value delivery, since the results of a company's value creation are embedded in the features of the physical products. A customer is able to perceive the product value as he/she acknowledges that the product features offered by the company is superior to its competitors. Transaction relationships refer to the transaction of products on the basis of market price mechanism. A high density customer access network is a company's main channel in delivering value propositions; it promotes product visibility and ease of access in the market, allowing a customer to gain access to the product more easily via diverse access networks, to perceive the value as delivered by the product features.

On the company's side, value creation is in the supply of products with price advantages and minimal quality variation. A company establishes a highly effective production and supply chain to produce physical products that satisfy value drivers, while investing in key resources such as economic scale production facilities, product development capability, effective product distribution channels, as well as complementary resources obtained from external partners to improve supply chain efficiency or product development technology.

The interface can be divided into three independent sub-interfaces: physical products of delivery vector, customer channels, and transaction relationships. Physical products are from the perspective of a company's supply chain, which is concerned with how to embed its value drivers into the products in a more efficient manner than its competitors. The

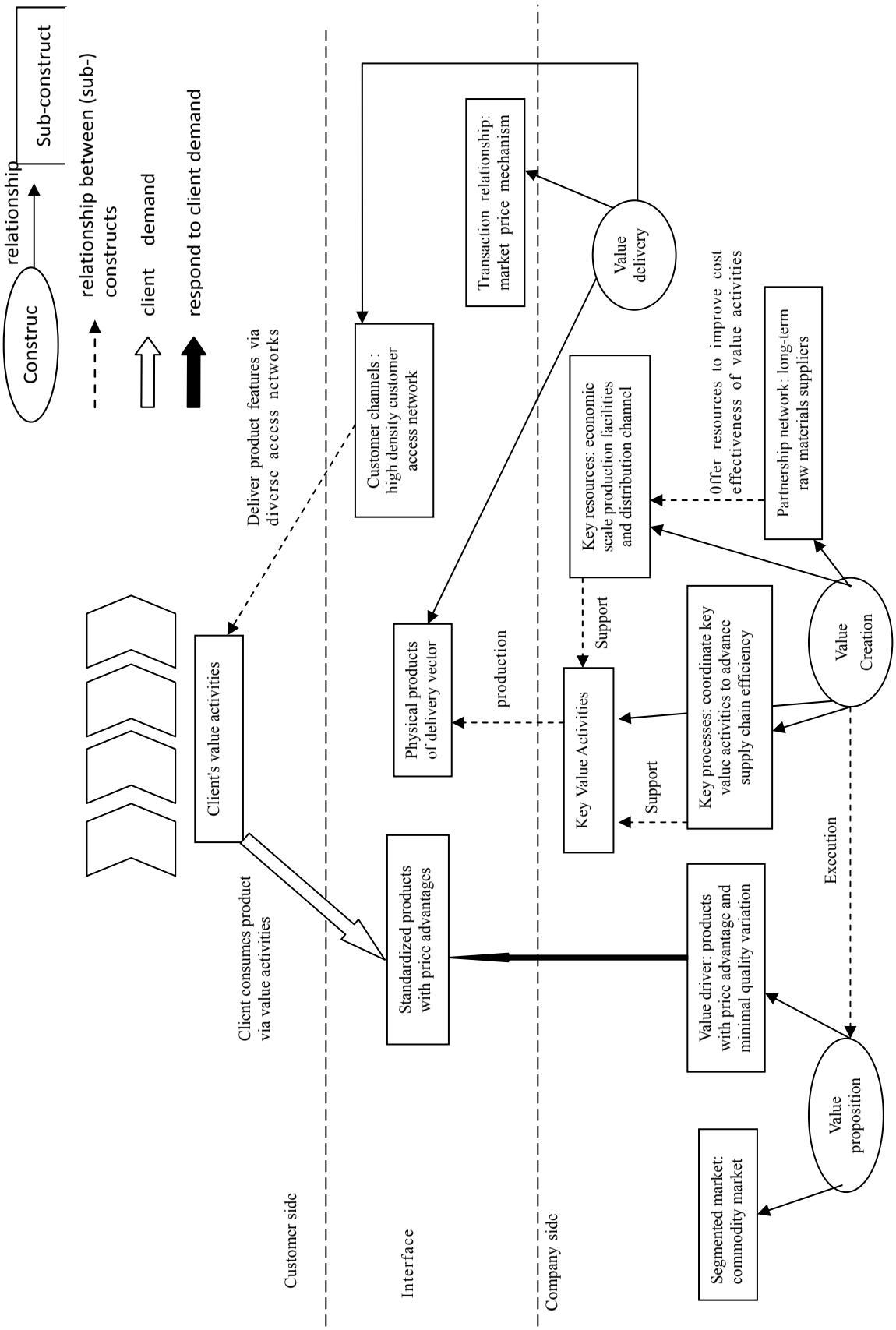

Fig 2: Interaction Relations of Best Product Business Model

focus is placed on the efficiency and effectiveness of a company's value creation activities. Customer channels with high density customer access networks are the customer's points of interaction, focusing on whether there are sufficient and diverse channels for a customer to gain access to the physical products. Transaction relationships are an independent interface made up of a set of public market price mechanism, which influence the profit distribution between a company and its customers. The management of the market price mechanism is the focal point of the development of a company's transaction relationships. A company that understands market price mechanisms and responds promptly to changes in market demand and product price will be able to generate more profits.

B. Interaction relations of Total Solution Business Model

The interaction relation for the "Total Solution" business model is illustrated in Figure 3. It can be classified into customer side, interface, and company side. This business model is aimed at solving special problems arising from value activities in the customer side which is also the main motivation for transactions between a company and its customer.

In the interface, when a customer encounters special problems, the ability to solve such special problems becomes a company's value driver, whereas the customer channels become the interface for a company to deal with customer's special problems. A company usually interacts with a customer via direct sales channels to obtain sufficient first-hand information on the problem. However, due to information asymmetry and uncertainties during the transaction process, it is difficult for a customer to determine the quality of the solution to the problems prior to the transaction. A customer may not be concerned with the product under such circumstances, but would be more concerned with the company's credibility or the relationship instead. Therefore, a long-term cooperative relationship by means of a company's long-term credibility and a customer's trust may lead to successful transactions between the two parties.

As a result of information asymmetry regarding customer's special problems, the parties will be required to interact repeatedly to achieve clarification and to gradually discuss and jointly create possible resolutions to the problems. A service interaction platform would make it more convenient for the two parties to jointly create and deliver values in the process and to ascertain that the solutions with physical products are able to solve a customer's special problems. The value delivery process by the delivery vector could be stored, recorded, and remembered, and may be used as reference for future transactions between the parties, or internalized as organizational knowledge. Hence, a relatively long-term relationship needs to be nurtured between the two parties and the establishment and exercise of such a relationship may become a critical success factor for transactions.

In the company side, a company's value creation lies in the implementation of solutions for problems where a company and its customer jointly implement key value activities, such as determining a customer's requirements and then developing and implementing solution proposals, as well as selecting and allocating physical and non-physical resources for the implementation of the solution suited to a customer's problems. The objective of the above is to ensure that the proposed solution is commensurate with the customer's problems. These key resources may be the company's internal resources or are complementary scarce resources provided by external partners to help the company in implementing solutions to the problems. The company should integrate these cross-functional key resources via the key processes and ensure that these key resources are utilized in the best way.

The interface is not separable, as each is an integral part of the solution to a customer's special problems. A customer's special problems are the transaction motivation for both parties, whereas customer channels are a company's channel for obtaining information about the problems. A customer acknowledges a company's problem-solving capabilities because of having had a long-term cooperative relationship, and both parties develop solution proposals via service interaction platform. They also deliver values they have jointly developed through the service interaction platform and through physical products in the process. The delivery vector's storability allows a company to internalize the interaction processes into organizational knowledge, which can be used as a reference for future transactions.

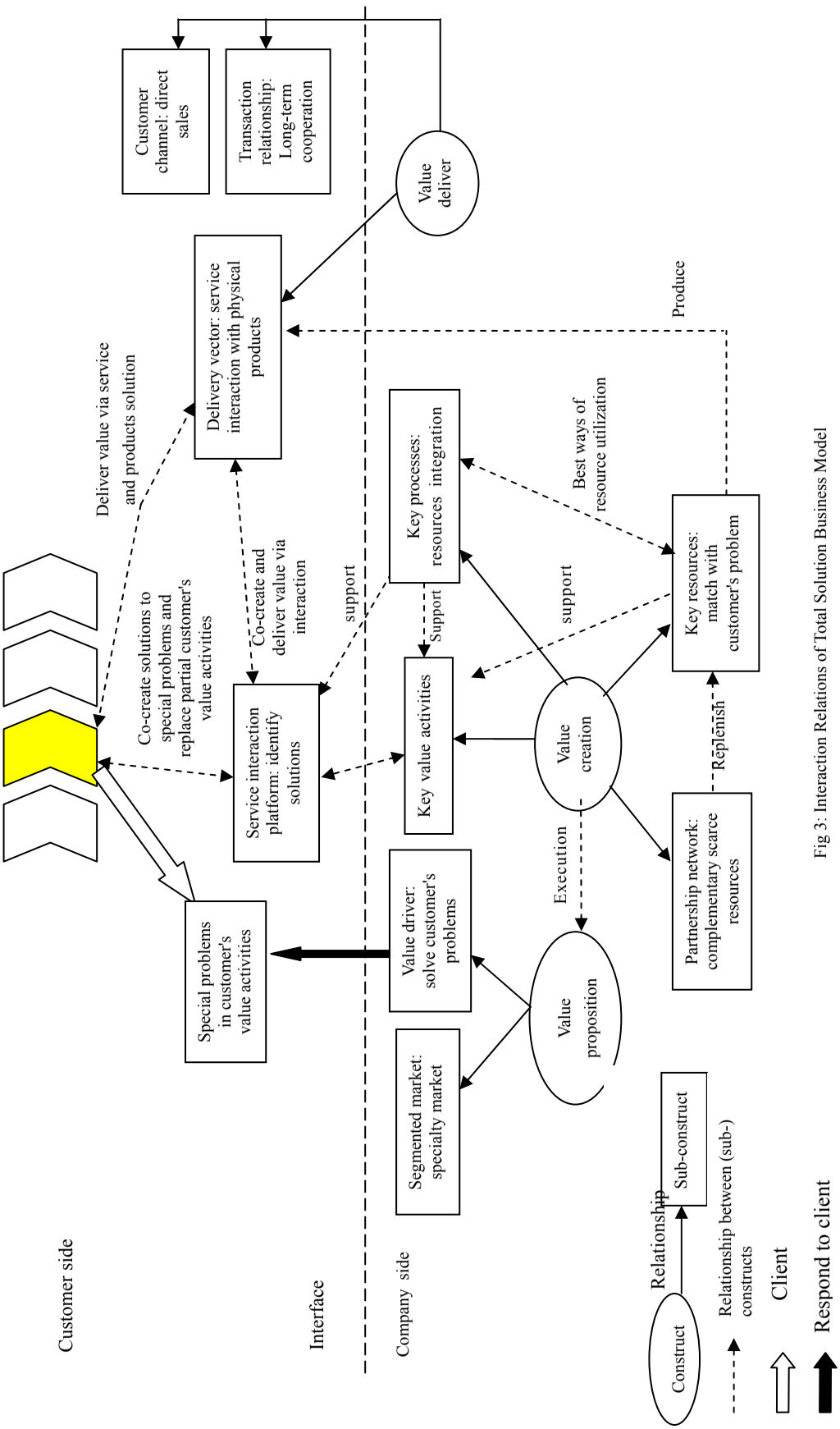

Fig 3: Interaction Relations of Total Solution Business Model

VI. CONCLUSION

To answer the research question-what is the business model of Taiwan's technology industry, first, we reviewed the literature to explore the construct of business models and proposed a logic system including the key components: value proposition, value creation, value delivery, and value acquisition, with the ultimate purpose of meeting customer needs .

Secondly, we integrated theoretical literature [5][7][9][12-14][16][18] and developed a set of adequate operational definitions and a systematic measurement framework as shown in Table 1, with a total of seven sub-constructs. This paper further adds the value driver, transaction relationship and delivery vector constructs and endows them with clear operational definitions to avoid subjective judgment during data collection. We also propose specific key indicators in the case analysis to provide a more practical reference value for future studies on business model.

Thirdly, by highlighting value driver as the core of the business model, this research emphasizes the customer needs and provides complementary perspectives on the conventional wisdom of business models [5][13][18]. Research findings also confirm the importance of value drivers and then induce two different types of business models . We entitle them as “total solution”, which aims to solve customer’s specific needs; and ‘best product’, which emphasizes providing competitive price and minimize quality variation. We reemphasize value configuration research [1][17] and three sub-dimensions of key resources, key processes and partnership networks.

Finally, this paper analyzes the relationship on these interactions to explore the different characteristics of the operation of the business model. In the case of total solution, interactions are characterized by dependent and mutually enhanced features. The output or performance of the interactions will affect the customer’s evaluation of the company. Therefore, the interaction management mechanism should be linked together and the development of interactions should also be based on holistic considerations. In contrast, in the best product model, the interaction relationships are independent, one is on production and the other is on marketing and transactions. Corporate management mechanisms should be designed to fit well with the independent nature of the interaction. Furthermore, the development of interactions should balance and rationally allocate corporate resources in order to correspond with the completion of individual tasks to achieve corporate profits.

To sum up, this paper provides the rationale of developing business models in Taiwanese companies. Value drivers are the starting point for the development of the business model. The value driver of the "total solution" model is to solve a customer's specific problem, while the "best product" model’s value driver is to provide high quality, competitively priced products to the customer. Value drivers will determine the logic of value creation through value activities which respond to and realize customer needs. In terms of value delivery, "customer can feel the company’s value created for him" is important. In the case of the “total solution” model, customer's problem solving is a continuous process and value creation coexists with value delivery. Starting from contacting customers, the company intensively interacts with the customers through various value activities. Thus, creating and delivering value happens simultaneously and "value" is the result of collaboration between the company and customers. In the case of the 'best products’ model, the characteristics of product itself are the value vector. Therefore, companies should increase product accessibility and customer channel network.

REFERENCES

[1] Allee, V. "Reconfiguring the value network," *J. of Busi. Stra.*, Vol.21, No.4, 1-6. 2000.

[2] Amit, R. and C. Zott. "Creating value through business model innovation," *Sloan Manag. Rev.*, Vol.53,No.3,pp.41-49. 2012.

[3] Benso-Rea, M., ,R.J. Brodie and H. Sima. "The plurality of co-existing business models: Investigating the complexity of value drivers," *Indus. Mark. Manag*., Vol.42, No.5, pp. 717-729. 2013.

[4] Chesbrough, H. and R. S. Rosenbloom. "The role of the business model in capturing value from innovation: evidence from XEROX corporation’s technology spinoff companies," *Indus. and Corp. Change*, Vol.11,No.3,pp. 529-555. 2002.

[5] Chesbrough, H. "Business model innovation: opportunities and barriers," *Long Range Plan.*, Vol.43,No.2-3,pp. 354-363. 2010.

[6] DaSilva,C. M. & Trkman, P. " Business model: What it is and what it is not," Long Range Plan. (2013 in press).

[7] Demil, B. and X. Lecocq. "Business model evolution: in search of dynamic consistency," *Long Range Plan.*, Vol.43,No.2-3,pp. 227-246. 2010.

[8] Eisenhardt, K. M. "Building theories from case study research," *Aca.of Manag. Res.*, Vol.41,No.4,pp. 532-550. 1989.

[9] Gambardella, A. and A. M. McGahan. "Business-model innovation: general purpose technologies and their implications for industry structure," *Long Range Plan.*, Vol.43,No.2-3,pp. 262-271. 2010

[10] George, G. and A. J. Bock. The business model in practice and its implications for entrepreneurship research," *Entrep. Theo. and Prac.*, Vol.35, No.1,pp. 83-111. 2011.

[11] Greenwood, D.J., W. F. Whyte and I. Harkavy. "Participatory action research as a process and as a goal," Human Rel., Vol.46, No.2, pp. 175-192. 1993.

[12] Itami, H. and K. Noshimo. Killing two birds with one stone: profit for now and learning for the future, *Long Range Plan.*, Vol.43, No.2-3, pp.364-369. 2010.

[13] Johnson, M. W., C. M. Christensen and H. Kagermann. "Reinventing your business model," *Harv. Busi. Rev.*, Vol.86, No.12,pp. 50-59. 2008.

[14] Magretta, J. "Why business models matter," *Harv. Busi. Rev.*, Vo.80, No.5, pp.86-93. 2002.

[15] Shafer, S. M., H. J. Smith and J. C. Linder. "The power of Business Models," *Busi. Horiz.*, Vol.48, No.3, pp.199-207. 2005.

[16] Sinfield, J. V., E. Calder, B. McConnell and S. Colson. "How to identify new business models," *Sloan Manag. Rev.*, Vol.53, No.2, pp.85-90. 2012.

[17] Stabell, C. B. and Ø. D. Fjeldstad. "Configuring value for competitive advantage: on chains, shops and networks, *Stra. Manag. J.*, Vol. 19, No.5,pp. 413-437. 1998.

[18] Teece, D. J. "Business model, business strategy and innovation," ***Long Range Plan.***, Vol.43, No.2-3, pp.172-194. 2010.

[19] Timmers, P. "Business models for electronic markets," *J. on Elec. Mark.*,Vol.8, No.2, pp. 3-8. 1998.

[20] Wirtz, B. W., O. Schilke and S. Ullrich. Strategic development of business models: implications of the web 2.0 for creating value on the internet," *Long Range Plan.*, Vol.43, No.2-3,pp. 272-290. 2010.
[21] Yin, R. K.; *Case Study Research: Design and Methods* (2nd Edn) London: Sage Publication. 1994.
[22] Yin, R. K.; *Case Study Research: Design and Methods* (3rd Edn), London: Sage Publication. 2003.
[23] Zott, C. and R. Amit. "The fit between product market strategy and business model: implications for firm performance," *Stra. Manag. J.*, Vol.29, No.1, pp.1-26. 2008.
[24] Zott, C. and R. Amit. "Business model design: an activity system perspective, *Long Range Plan.*, Vol.43, No.2-3, 216-226. 2010.