060-1384 Reactive capacity strategy of the Mexican electronic industry: an empirical study

Miguel Estrada Guzmán

IPADE Business School, Universidad Panamericana, México D.F., México, mestrada@ipade.mx

Abstract

Mexico's electronic industry has been based on reactive supply chain strategies for the North American market. This empirical research measures the relationship among different practices, such as reactive manufacturing, knowledge sharing, technological level, or supply chain position and the relative impact of such practices on the chain's reactive capacity.

Keywords: *Supply chain, reactive capacity, agility, technology, transmission of knowledge, reactive manufacturing, SEM-PLS.*

Introduction

The globalization of the complex production supply chains has made its management to emerge as one of the main opportunity areas of the companies who want to achieve advantages in today's world. Related to the latter, it has been shown that there are specific characteristics according to the demand type of each product. A product based on innovation with smaller life cycles, smaller production orders, a broader mix of products and larger margins will tend to experiment more uncertainty regarding the demand forecast with the difficulty that supplying at competitive costs entails. It follows that its availability becomes a value-creator factor. This means that there is a value associated to the reactive production and distribution capacity of the supply chain for high demand uncertainty. This kind of demand is typical of innovation products from which we can deduce the currentness of the phenomenon.

Such reactive capacity of the supply chain is a result of specific practices, beginning with (1) manufacturing practices that allow a reaction to (2) the information and knowledge sharing which provides its meaning and context, and also the technological level of the specific (3) product and (4) process design oriented to react appropriately and (5) the relative position of the specific operations. This means that the five concepts apparently tend to align to the objective of achieving availability of highly uncertain demand of innovation products, in an effective and relatively efficient manner.

To that effect, the electronic manufacturing cluster in the central-western area of Mexico has apparently developed competitive advantages which have evolved in the generation of reactive capacity within the supply chain they participate in. This is a spearheading industrial strategy that differentiates Mexico from other regions of the world that are based in the utilization of speculative capacity strategies which target high efficiency levels with low costs in labor force in countries such as China or Southeast Asia (Estrada, 2010).

Theoretical Framework

The discoordination of the supply chain with the demand is an undesirable phenomenon due to the losses it carries from excessive inventory after the end of a sale-season or in the opposite way, due to a lack of inventory to sell, therefore creating an opportunity cost. This discoordination has different facets. Maybe one of the most popular in the academic literature is the bullwhip effect (Forrester, 1961). A different perspective about uncertainty may be found in Bozar, Warsing, Fynn and Flynn (2009) who mention that it is necessary to measure the complexity of the supply chain providing a perspective of systems' complexity.

The demand's behavior of each product, including its uncertainty, requieres certain types of specific supply chain responses that are related to its manufacturing strategies. This results in ability to react to the information when talking about innovation products or to speculate with it when talking about functional products, thus minimizing the risk of shortage (Fisher M. L., 1997; Fisher et al., 1994; 1997). Some authors like Mason-Jones, Naylor and Towill (2000), have related these concepts to the agility orientation and lean production leading to proposals in which they created the named leagile, and stressing that there are no exluding classifications.

These characteristics, as a strategic differentiator, maximize the economic value (margin) specially in innovation products; as the life cycle of the products are shorter, the production orders' volume are fewer and the mix of products larger which derives in a hardship to forecast their demands. These characteristics are inherent to innovation-based products (Fisher M. L., 1997). Later authors such as H. Lee have associated these characteristics with agility, adaptability and alignment of the supply chains (2004) and have highlighted some specific practices of manufacturing associated to agility and adaptability and at the same time emphasizing the need of aligning the different actors by providing information in order to avoid discoordination as it happens in the bullwhip effect (Lee and Whang, 2000).

Additionaly, other authors like Shin et al. (2012) have related the place in the supply chain to the added value suggesting and the design content in active and passive components: the "smiling curve" concept. This creates the need of identificating the technological level of a company's operation to be able to design a product and its corresponding process. The Competitiveness Study Center in Mexico has prepared report that provide with vast information about the different technological levels specifically for the electronic sector in the country (CEC, 2005).

Value Asociated to Reactive Capacity (VARC). The concept of reactive capacity refers to the activities related to the acquisition of materials (components and products), their assembling and fabrication, after the market intelligence information is gathered as complement of the production planned on speculative basis; increasing reactive production capacity and giving less importance to the speculative production capacity, is a strategy that privileges cost reduction related to discoordination and excessive or shortage of inventory. To identify the proportion between one and another constitutes a strategic supply decision achieved from the management of the customer-supplier chain including the company's internal processes with the objective of mediating, by a thorough analysis, between production costs and discoordination.

The value is created when the reactive capacity of the supply chain generates the availability of the product, which in other way wouldn't be sold.

The value associated to the reactive capacity of the supply chain strategy is lined up for the utilization of the economic advantage related to the neighborhood which allows to compete as a region with the rest of North America and its economy.

Collaborative knowledge (CK). The concept of Knowledge Management has been deeply discussed by many authors (Nonaka and Takeuchi, 1995; Davenport and Prusak, 1998). To this matter it is important to define the knowledge sharing practices to be used in this research and the guide for this will be the work of Myers and Cheung (2008) as well as later works in cooperation with Mentzer (2011). From these studies three type of relational learnings are identified where knowledge is acquired and shared. These are: information sharing, a sense of team and knowledge integration.

A complementing approach of these works are Simantupang and Sridharan (2004; 2005) and Simantupang et al. (2002) where they show how cooperation is given by specific practices related to the knowledge sharing in order to integrate them to the supply chain. For this effect, there are three categories of activities related to sharing information, synchronizing decisions and incentivating the alignment between parts.

Reactive Manufacturing and Supply (RMS) . Supply chains are not static but should constantly evolve to be able to respond to the demand in and agile, adaptable and aligned manner. (Lee, H. , 2004). The manufactutring practices and reactive supply have been identified by different authors, like Fisher, M. (1997) who differentiates between practices-proocesses focused in efficiency and those focused in the market's response.

It is important to highlight the identification of practices suggested by Lee (2004), Kulp et al. (2004), as well as Fisher et al. (1994) to mention those that provide more flexibility and agility to respond to changes in the demand. In the same way, Bozart et al. (2009) emphasize the role of the complexity of the supply change in the performance.

Technologic Level: Product Design (PdD) and Process Design (PcD). For the development of this paper, the classification of technological levels was taken from the Competitiveness Study Center's report for the electronic industry in Mexico (CEC, 2005). This document mentions that the technological learning, defined as the process by which the company acquires technology, is related to the technological capacity which refers to the knowledge and skills needed to acquire, use, adapt, improve and create technology for the development for a product on one hand, and the developtment of the process on the other. It classifies the technological level in basic, intermediate and advanced according to their specific capacities and competitive position.

Electronic industry supply chain positioning (SCP). Given the importance of the"Smiling Curve" (Shih, 1996) which proposes that the greatest value added is captured by upstream and downstream companies, the lowest value is trapped in the middle of the supply chain. The purpose is to measure the position of the surveyed companies inside the supply chain.

In order to find the position of a company inside the supply chain, the products and services offered by the companies are categorized and are used as indicators measured under an ordinal scale (whether the company offers the product or service or not). These categories are raw material, key components' manufacturing (high investment or specialization), manufacturing of broadly standarized design components, components' sub-assembly, finished product assembly, final package, consolidation and assembly of orders, transportation, wholesale finished product distribution, retail finished product distribution and logistics coordination.

The relationship of CK, RMS, PdD, PcD and SCP with the VARC

Given the above, it is worth asking if the value associated to the reactive capacity (VARC) useful to cover the typicaly unpredictable demand of innovation products, holds a relationship with the transmission of the collaborative knowledge (CK) between the company and the customer and the product design (PdD) -derived from the reactive manufacturing and suppy (RMS) and process design (PcD) respectively-, as well as with the company position in the suppy chain (SCP), and which would allow the prediction of this concept. This research is limited to the electronic industry in the central-western area of Mexico in the 2012 to 2013 period.

Based on this question, it is interesting to study the relationships (see Figure 1) suggested in the following statements:

- Hypothesis 1, H_1. The collaborative knowledge (CK) between the company and the customer has a positive effect on the value associated to the reactive capacity (VARC) represented with β_1.
- Hypothesis 2, H_2. The manufacturing practices and reactive supply (RMS) have a positive influence in the collaborative knowledge (CK) represented with β_2.
- Hypothesis 2*, H_{2*}. Under the assumption of the previous relationships, there is and indirect effect between the RMS and the VARC which is mediated by the CK.
- Hypothesis 3, H_3. The product design practices (PdD) have an impact on the value associated to the reactive capacity (VACR) represented with β_3.
- Hypothesis 4, H_4. The process design (PcD) is positively related with the product design (PdD) practices and this relationship is referred to as β_4.
- Hypothesis 4*, H_{4*}. If the last two relationships occur, then the PcD has an impact on the VARC in an indirect way mediated by the PdD.
- There is a positive relationship between the product design (PdD) with the collaborative knowledge (CK) represented with β_5.
- The supply chain position (SCP) has a positive effect on the value associated to the reactive capacity (VARC). The impact of this relationship is represented as β_6.

This study tries to determine if the VARC can be measured and explained from the modeling of its relationship to the SCP, and to the CK and the PdD and the two later, in turn, to the RMS and the PcD respectively (see Figure 1).

Sample selection and data collection

The global strategy considers a cross-sectional study during 2013 for medium and large electronic manufacturing companies, focusing on the central-western cluster affiliated to CADELEC, a mexican electronic supply chain association (a sample of 71 companies) and an convenience sample from manufacturing companies of different sectors in the regions of the three biggest cities in the country (México City, Monterrey and Guadalajara), whose managers were attending a top management course at a bussines school (360 companies). This last sample was used as a control sample due to their heterogeneity

In the light of this, the items associated to each concept (VARC, CK, PdD, RMS, PcD, SCP) are based on the literature exposed before, measured by Likert´s summative technique.

The instrument was applied between January and December 2013. A total of 130 surveys were collected, from which 38 surveys matched the objective sample, 45 correspond to the control samples, 28 were non viable surveys for they don't belong to manufacturing companies and 19 were disregarded for not being answered in a satisfactory way. According to the previous information, the electronic data base was formed by 38 companies, the non electronic data base (control group) had 45 companies, the manufacturing group (electronic and non electronic) consisted of 83 companies. This manufacturing group comprises manufacturing, food, textile, automotive, transport, pharmaceutical and chemistry companies.

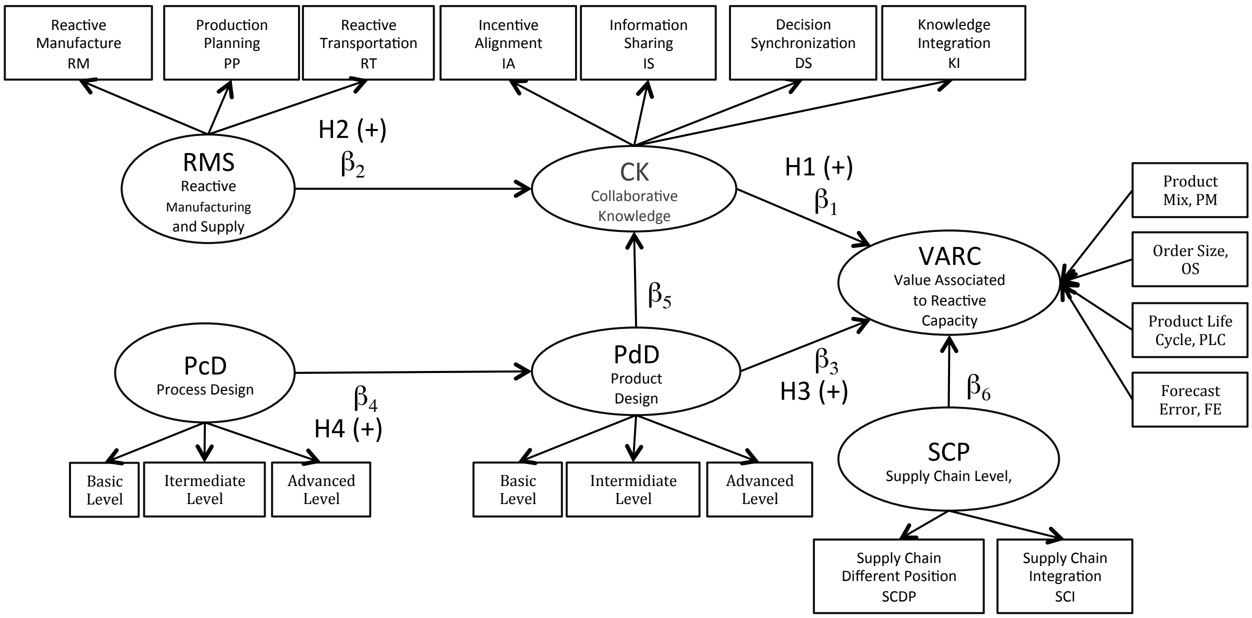

Figure 1. Conceptual Diagram of the Model Relationships.

The statistics tool used was the Structural Equations Model-Partial Least Square, also called SEM-PLS (Vinzi et al. 2010). The software used was SmartPLS (Ringle et al. 2005).

Confirmation of the relationship model among the construct CK, PdD y VARC.

The SEM model in this work define VARC, PdD and RMS as endogenous latent variables; and CK, PcD and SCP as the exogenous latent variables (see Figure 1).The VARC construct is measured with a formative model because the indicators are based on the definition proposed by Fisher (1997), that is, the characteristics of the VARC can be seen as a linear combination of the operations features (CK, RMS, PdD, PcD and SCP) that a company has in order to be able to respond reactively. The constructs CK, RMS, PdD, PcD and SCP are measured with a reflective model because they are characteristics explained through the practices associated to each concept. The indicators used to measure the CK and RMS were made based on a factor analysis and by creating scales that represent them.

The measurement model of the CK variable was defined using items from the point of view of the relationship with the customer, that were analized and on which the research statements are based.

The method used to estimate the loads was residual minimizing (Harman and Jones, 1966), the tools to prove the reliability of indicators are AVE and the discriminant validity (Hair et al., 2014). Tables 1 and 2 show the confirmatory analysis for the CK and RMS scales respectively. The results from the Fornell-Lacker test to verify the discriminant validity are acceptable, which means that none of these items explain any of the other scales.

Table 1. RMS Report for the Electronic Database

Scale	Item	Definition	Load	AVE	Composite realiability	R^2	Weighted average
Reactive Manufacture (RM)							
	P7D	Frequent changes between production cells	0.85				
	P7E	Quick change of product	0.87	0.619	0.828	0.864	3.389
	P8A	Product design changes, once early information is knwon	0.61				
Reactive Planning and Manufacture (RPM)							
	P6C	Process focused on rapid response to unpredictable demand	0.76				
	P6D	Available capacity to react to demand peaks	0.96	0.699	0.873	0.942	3.375
	P6E	Order size changes in production	0.77				

Table 2. Results Report of the Scales for RMS

Scale	Item	Definition	Load	AVE	Composite realiability	R^2	Weighted average
Information Sharing							
	K1AC	Promotional events and price changes	0.960	0.658	0.85	0.9317	3.35
	K1BC	Demand forecast	0.750				
	K1CC	POS data, order status and delivery schedule	0.710				
Incentive Aligment							
	K3AC	Frecuent shopper programmes, shared saveing on reduced inventory cost	0.870	0.616	0.825	0.862	2.833
	K3BC	Delivery guarantee for a peak demand	0.850				
	K3CC	Allowance for product defects	0.610				
Decision synchronisation							
	K2AC	Joint plans on product assortment and specifications, pricing policy and promotional events	0.820	0.738	0.893	0.936	3.41
	K2BC	Joint decisions on operative and security availability levels	0.960				
	K2CC	Joint decisions on order size and resolution on exceptions	0.790				
Knowledge Integration							
	K4BC	Order-delivery process, communication and contracts	0.680	0.605	0.818	0.885	3.52
	K4DC	Joint teams for operative problems and "face to face" communication	0.920				
	K4EC	Joint teams and systems to elaborate strategies and planning	0.710				

The Structural Model

Also, it was decided to research the relationship between the CK and the PdD and to subsequently evaluate the indirect effect of the RMS on the VARC mediated by the CK and the indirect effect of the PcD with the VARC mediated by the PdD. These last evaluations were made even without the direct effect among such variables because it has little significance thus it's not necessary (Zhao et al., 2010). Due to the sample size, a model with a statistical power of 80% where the number of arrows pointing at the construct wouldn't be larger than three was proposed in order to be able to reach the significance level appropiate for the construct VARC.

The following expression corresponds to the structural model written in its matrix form for the latent variables VARC, CK, PdD, SCP, RMS, PcD.

$$\eta = A\eta + B\zeta + \xi \quad (1)$$

Where:

$$\eta = \begin{bmatrix} VARC \\ CK \\ PdD \end{bmatrix}, \zeta = \begin{bmatrix} RMS \\ PcD \\ SCP \end{bmatrix}, \xi = \begin{bmatrix} \xi_{VARC} \\ \xi_{CK} \\ \xi_{PcD} \end{bmatrix} \quad (2)$$

$$A = \begin{bmatrix} 0 & \beta_1 & \beta_3 \\ 0 & 0 & \beta_5 \\ 0 & 0 & 0 \end{bmatrix} \qquad B = \begin{bmatrix} 0 & 0 & \beta_6 \\ \beta_2 & 0 & 0 \\ 0 & \beta_4 & 0 \end{bmatrix} \quad (3)$$

is the new form of the same model in Figure 1, now showing the results with standarized values of the structural model using the information from the electronic manufacturers' surveys. The values above the arrows correspond to the loads, weights and path coefficients. The values within the constructs refer to the coefficient of determination.

The SEM-PLS method does not use normality assumptions, therefore there's need to use nonparametric measures to evaluate the model's significance. To that effect, the bootstrapping methodology helps to reach this objective (Efron, 1979). This is why the significance was tested on the base of the bootstrapping (see Table 3). The CK, RMS, PdD, PcD and SCP constructs' evaluation are adecuated, as well as the discriminant validity. The AVE values are measured between 0.638 and 0.658. The R^2 for PdD, CK and VARC are 0.421, 0.489 and 0.673 respectively.

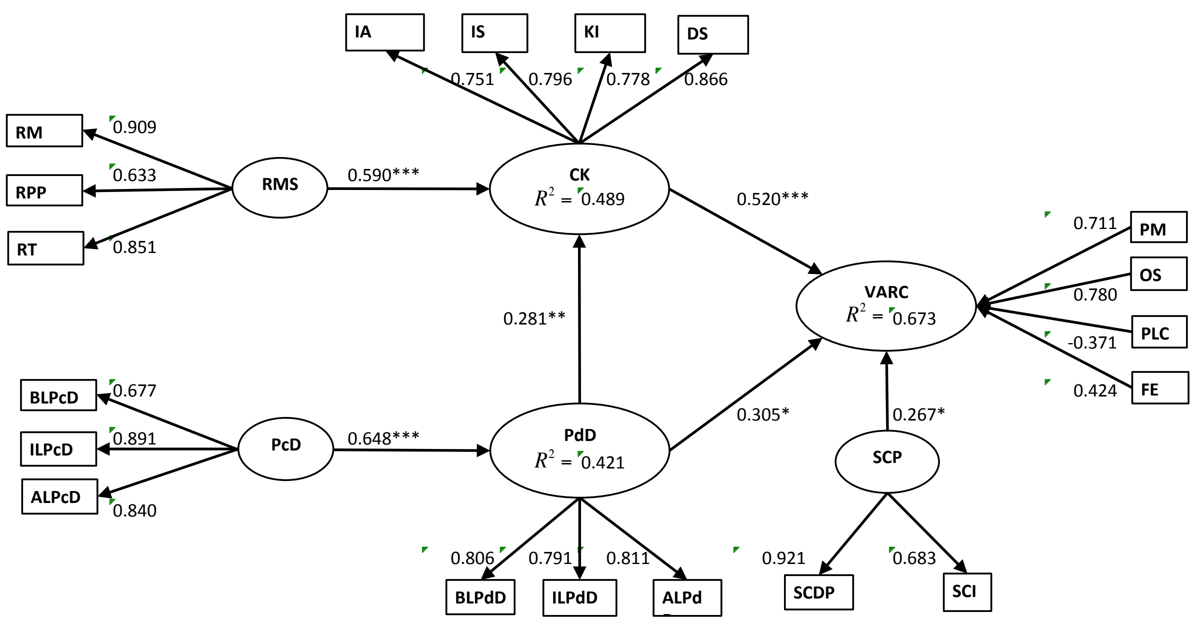

Figure 2. Structural Model for the Electronic Database.
*Note: The acronyms correspond to the definitions of Figure 1. *p< 0.1. **p< 0.05. ***p< 0.01.*

In the same manner, the significance of the VARC construct loads and the CK, RMS, PdD, PcD and SCP constructs loads were tested (see Figure 2). The tolerance and VIF values for the indicators were also evaluated in relation: PM (0.66, 1.51), OS (0.98, 1.02), PLC (0.73, 1.36) and FE (0.88, 1.13). This was done to measure the collinearity of the formative indicators, that is, the degree of correlation between variables (Hair et al., 2014). The discriminant validity test for the model construct shows that each variable related to its own construct explains something different from the rest at an aceptable level.

Table 3. Verification of the Statements of the Structural Model

Hypothesis	Predictable sign	Coeff.	Path	Path Coefficient	Sample Mean	Standard Error
H1	(+)	β 1	TC->VACR	0.520 (4.818) ***	0.521	0.108
H2	(+)	β 2	MSR->TC	0.590 (0.000) ***	0.587	0.102
H2*	(+)		MSR->VACR (Indirect)	0.306 (3.818) ***	0.306	0.080
H3	(+)	β 3	DPd->VACR	0.305 (1.790) *	0.304	0.170
H4	(+)		DPd->DPc	0.648 (7.640) ***	0.672	0.085
H4*	(+)	β 4	DPc->VACR (Indirect)	0.292 (2.756) ***	0.307	0.106
		β 5	DPd->TC	0.281 (2.169) **	0.290	0.130
		β 6	PS->VACR	0.267 (1.815) *	0.271	0.147

*Note: The t values of the bootstrapping test are in parentheses. *p< 0.1. **p< 0.05. ***p< 0.01.*

The blindfolding technique was used to measure the predictive relevance of the CK and of the PdD construct; the Q^2 values are 0.288 and 0.258 respectively. This implies that there is a medium level of predictive relevance (Hair et al., 2014). Finally, the VARC predictive relevance is moderate, as it is observed in the R^2 value of 0.673.

The structural model previously described was analyzed using different classifications in the database (see Table 4). The reason for applying the model on the surveyed companies from non electronic manufacturing, was to make a comparison of the surveyed companies from the electronic sector with those companies who are not part of it, which means that their supply chains do not necessarily compete for their reactive capacity like the electronic companies do.

Conclusions

This document shows that the PLS-SEM methodology is viable for the analysis of relatively small samples. This is important due to the recurrence of the situation in global supply chain studies from regional perspectives, given that the universe of companies in the cluster tend to produce small samples. The document's statements were proved under acceptable significance level, therefore it can be considered as valid as shown in Table 3.

Regarding the measuring variables of the value associated to the reactive capacity, it was observed that the most significant weights, in the case of electronic manufacturing, were associated to the mix of products variables, the order size, the forecast error and the life cycle. The rest of the variables tested did not reach an acceptable level of significance for the model and the sample size used; these variables were the gross margin, and delivery time. The explanation for this could be that the appropriation of the value on a regional basis is not transparent in relation to the value of the global supply chains.

In regard of the specific practices for knowledge sharing among companies and their customers, their reactive manufacture and supplying, their product and process design and their positioning, it was possible to identify those that are more likely to generate reactive capacity. However, this does not imply that only by having these practises the company will be able to execute a reactive response strategy. In this manner, the importance of these variables reside in their strenght to act as indicators of the value associated to the reactive capacity phenomenon.

Table 4. Model comparison to different classifications samples of the surveys.

				Path coefficient		
Coefficient	**Path**	**From**	**To**	**Electronic (38)**	**Manufacture without Electronic (45)**	**Manufacture. Included Electronic (83)**
β 1	CK -> VARC	Collaborative Knowledge (CK)	Reactive Capacity (VARC)	0.520 (4.818)***	0.337 (1.541)	0.402 (4.523)***
β 2	RMS -> CK	Reactive Manufacture and Supply (RMS)	Collaborative Knowledge (CK)	0.590 (5.799)***	0.475 (3.264)***	0.497 (4.986)***
β 3	PdD -> VARC	Product Design (PdD)	Reactive Capacity (VARC)	0.305 (1.790)***	0.423 (2.285)**	0.382 (3.867)***
β 4	PcD -> PdD	Process Design (PcD)	Product Design (PdD)	0.648 (7.640)***	0.396 (1.931)*	0.497 (5.008)***
β 5	PdD -> CK	Diseño de producto	Collaborative Knowledge (CK)	0.281 (2.169)***	0.212 (1.334)	0.244 (2.446)**
β 6	SCP -> VARC	Supply Chain Position (	Reactive Capacity (VARC)	0.267 (1.815)***	-0.252 (0.888)	0.152 (0.764)
Indirect Efect						
	RMS -> VARC	Reactive Manufacture and Supply (RMS)	Reactive Capacity (VARC)	0.306 (3.818)***	0.160 (1.317)	0.200 (2.930)***
	PcD -> VARC	Product Design (PdD)	Reactive Capacity (VARC)	0.292 (2.756)***	0.196 (1.455)	0.238 (3.683)***

*Note: The t values of the bootstrapping test are in parentheses. *p< 0.1. **p< 0.05. ***p< 0.01.*

This document validates the relationships preceding the generation of a value associated to reactive capacity through collaborative knowledge sharing and product design. Nonetheless, for that knowledge to be transformed into value, reactive manufacturing and supplying practices are also required, but have a mediated impact, not a direct one, to be able to positively influence the value associated to the reactive capacity.

In a similar way, the value of the reactive capacity through the technological level of the product design is impacted by the design process. In other words, for the process design to achieve an influence in the value, it should be done through mediation. The positioning in the supply chain has a lower impact compared to the other constructs, however it reaches significant levels.

A last reflection is that while it is true that order size weight is important to measure the value associated to reactive capacity, this weight is negative for this sample. This would be explained by the region's middle point approach between the most reactive clusters and the most especulative ones as in the case of China and Southeast Asia.

References

Bozart, C. C., Warsing, D. P., Flynn, B. B., & Flynn, E. J. (2009). The impact of supply chain complexity on manufacturing plant performance. *Journal of Operations Management , 27*, 78-93.

CEC. (2005). *La industria electrónica en México; diagnóstico, prospectiva y estrategia.* ITAM. México, D.F.: Centro de Estudios de Competitividad.

Cheung, M.-S., Myers, M. B., & Mentzer, J. T. (2011). The value of relational learning in global buyer-supplier exchanges: A dyadic perspective and test of the pie-sharing premise. *Strategic Management Journal , 32*, 1061-1082.

Davenport, T., & Prusak, L. (1998). *Working knowledge: how organization manage what they know.* Boston: Harvard Business School Press.

Efron, B. (1979). Nonparametric estimates of standard error: The jackknife, the bootstrap and other methods. *Biometrika , 63*, 589-599.

Estrada, M. (2010). Mecanismos para la transmisión del conocimiento relativo a la capacidad reactiva del clúster de Guadalajara, Jalisco. (J. C. Núñez, Ed.) *The Anáhuac Journal: Business and Economics , 10* (1), 51-68.

Fisher, M. L. (1997, March-April). What is the right supply chain for your product. *Harvard Business Review* , 1-11.

Fisher, M. L., Hammond, J. H., Obermeyer, W. R., & Raman, A. (1994 йил May-June). Making Supply Meet Demand in an Uncertain World. *Harvard Business Review* , 83-93.

Fisher, M., Hammond, J., Obermeyer, W., & Raman, A. (1997). Configuring a supply chain to reduce the cost of demand uncertainty. *Production and Operations Management , 6* (3), 211-225.

Forrester, J. (1961). *Dinámica Industrial.* Buenos Aires: Ateneo.

Gutiérrez F., S. (2012, December). Editor's Interview. *Mexico Now* , pp. 46-47.

Hair, J. F., Hult, G. T., Ringle, C. M., & Sarstedt, M. (2014). *A primer on partial least squares structural equation modeling (PLS-SEM).* Sage.

Hair, J., Ringle, C., & Sarstedt, M. (2011). PLS-SEM:Indeed a silver bullet. *Journal of marketing theory and practice , 19*, 139-151.

Harman, H., & Jones, W. (1966). Factor analysis by minimizing residuals (minres). *Psychometrika , 31* (3), 430-450.

Kulp, S. C., Lee, H. L., & Ofek, E. (2004). Manufacturer benefits from information integration with retail customers. *Management Science , 50* (4), 431-444.

Lee, H. L. (2004). The triple-A supply chain. *Harvard Business Review , 82* (10), 102-113.

Lee, H. L. (2004, October). The Triple-A Supply Chain. *Harvard Business Review* , 4-14.

Lee, H., & Whang, S. (2000). Information Sharing in a Supply Chain. *International Journal of Manufacturing Technology and Management , 20* (3-4), 373-387.

Lee, S. Y. (2007). *Structural Equation Modeling.* Wiley.

Mason-Jones, R., Naylor, B., & Towill, D. (2000). Lean, agile or leagile? Matching your supply chain to the marketplace. *International Journal of Production Research , 38* (17), 4061-4070.

Myers, M. B., & Cheung, M. S. (2008). Sharing Global Supply Chain Knowledge. *MIT Sloan Managemente Review , 49, Summer* (4), 67-73.

Nonaka, I., & Takeuchi, H. (1995). *The knowledge creating company: how Japanese companies create the dynamics of innovation.* New York: Oxford University Press.

Ringle, C., Wende, S., & Will, A. (2005). SmartPLS. *2.0 (beta)* . Hamburg, Germany.

Shin, N., Kraemer, K. L., & Dedrick, J. (2012). Value capture in the global electronic industry: empirical evidencie for the "smiling curve" concept. *Industry and Innovation , 19* (2), 89-107.

Simantupang, T. M., & Sridaharan, R. (2004). Benchmarking supply chain collaboration. An empirical study. *Benchmarking: An International Journal , 11* (5), 484-503.

Simantupang, T. M., Wright, A. C., & Sridharan, R. (2002). The knowlege of coordination for supply chain integration. *Business Process Management Journal , 8* (3), 289-308.

Simatupang, T. M., & Sridharan, R. R. (2005). The collaboration index: a measure for supply chain collaboration. *35* (1), pp. 44-62.

Vinzi, V. E., Chin, W. W., Henseler, J., & Wang, H. (Eds.). (2010). *Handbook of Partial Least Squares.* Springer.

Zhao, X., Lynch, J., & Chen, Q. (2010). Reconsidering Baron and Kenny:Myths and truths about mediation analysis. *Journal of Consumer Research , 37*, 197-206.