

An Empirical Research on Supplier Relationship Management in Automotive Industry

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Abstract

Supplier relationship management is an important research field in Supply Chain Management. This paper aims to study the existing portfolio models for supplier relationship management then apply Svensson(2000)'s model to classify buyer-supplier relationship in an Iranian automotive industry supply chain. Finally present a framework for supplier relationship management. Data for this study was collected through two surveys. The current study analyzes supplier relationship management in two phases: firstly, based on Svensson's model the relationship between the buyer and its suppliers was classified. Secondly, based on the strategic roadmap of the automotive manufacturer, the strategic goals were defined, and through a web survey the experts' opinions about the relation between strategic goals and current relationship among manufacturer and its suppliers were gathered. Finally, based on obtained result in two previous phases, a framework for supplier relationship segmentation and promotion was supposed.

Keywords: supplier relationship management, supplier segmentation, supply chain, automotive industry

1. Introduction

Supplier relationship management is one of the most important parts of supply chain management. In fact, effective supplier relationship management and improving qualitative and quantitative levels of suppliers could be a competitive advantage of every company. (Cusumano and Takeishi 1991)

Focus of Iran's economy on automotive industry, rapid growth of this industry and its developing competitive market in Iran, additionally, importing new products from leading car manufacturers to Iranian market, lead to the emergent need for revising buyer-supplier relationship strategy in order to promote supply chain capabilities, reduce supply chain costs and increase competitive advantages in comparison with other manufacturers in the market.

The current paper aims to study the buyer-supplier relationship in an Iranian automotive supply chain. The paper has been structured in five parts. A review of the literature on supplier relationship management has been presented in the second section. The third section describes the methodology of research. The results have been presented in the fourth section. Finally paper has been concluded by result discussion, limitations, and future researches.

2. Background

2.1 Supply Chain Management

The production, based on Supply Chain Management (SCM) thinking was appeared in 1960s by movement from mass production to lean production. (Huang and Keskar, 2006)

Many factors, such as competitive market place for products and variety of customer's demands, need for fast delivery of product to the market and development of information technology resulted in movement of organizations towards Supply Chain and forced them to outsource their organizational activities to appropriate and certain suppliers for sustaining market's profit margin (Kwai-Sang et al., 2004). In fact, SCM lets companies to use

their capabilities in an effective way. New concepts of SCM that defined as “Integration of relevant activities that changes raw material to semi-final product to final product and delivering these outcomes to customers” were presented about 20 years ago. (Heizer and Render, 2001). Figure 1 indicates simple structure of supply chain.

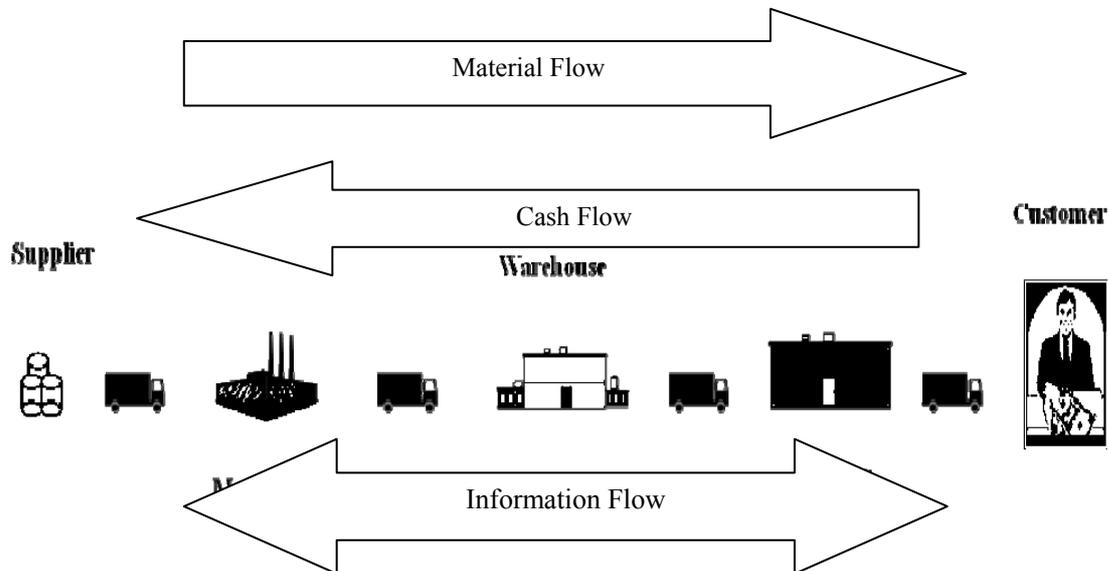


Figure 1. A classic view of supply chain (Schutt, J.H, 2004)

On the other hand, SCM is defined as: “ All links for transferring materials, products, money and information from suppliers to manufacturer and vice versa.” (Goffin et al.1997). Figure 1 shows transferring products, information and money through the supply chain. Considering the structural characteristic of SCM, one of the industries that can especially benefit this philosophy is automotive industry.

2.2 Supplier Relationship Management: Portfolio Models

In recent years, Supplier Relationship Management (SRM) has had a trend from traditional relationship (1960s) to logistic relationship (1980s) to partnership relationship (1990s) (Da Villa and Panizzolo, 1996). On the other hand, there are wide studies related to supplier segmentation and supplier relationship management based on their structures, named as Portfolio Models. These models commonly analyze effects of two factors on concepts and characteristics of buyer-supplier relationships. For example, for the first time, Kraljic (1983) classified buyer-supplier relationship, in his studies, based on two factors: Profit Impact and Supply Risk. Table 1 shows Kraljic’s model. Each factor has two states: Low and High. Thus the Portfolio model divides buyer-supplier relationship into 4 categories. Cells No.1 and No.4 include symmetric relationship between buyer and supplier. It means in these cells, both sides place equal importance to the relationship and either both of them tend to invest in the relationship promotion (cell 4) or none of them tend to put efforts on the relationship (cell 1). On the other hand, in cells No.2 and No.3 there is a non-symmetric relationship between buyer and supplier. In non-symmetric relationship, one of them has the tendency to promote the relationship, while the other tends to maintain current status.

Table 1. Kraljic portfolio model (Kraljic, 1983)

		<i>Supply Risk</i>			
		<i>Low</i>		<i>High</i>	
<i>Profit</i>	<i>Low</i>	1	Non-Critical	2	Bottleneck
<i>Impact</i>	<i>High</i>	3	Leverage	4	Strategic

Since Kraljic introduced the first portfolio model for buyer-supplier relationship segmentation and classification, several studies focused on these similar models such as Krapfel, 1991; Olsen and Ellram, 1997; Trend and Monczka, 1998; Bensaou, 1999; Kaufman et al., 2000 and Svensson, 2004. Table 2 describes these studies.

Table 2. Models and related factors

Model	Factors	<i>1=Low 2=Low</i>	<i>1=High 2=Low</i>	<i>1=Low 2=High</i>	<i>1=High 2=High</i>
Kraljic (1983)	1. Supply Risk 2. Profit Impact	Non Critical	Bottleneck	Leverage	Strategic
Krapfel (1991)	1. Interest commonality 2. Relationship value	Acquaintance	Friend	Rival	Partner
Olsen and Ellram (1997)	1. Strategic Importance of Purchase 2. Difficulty of Managing the Purchase Situation	Non Critical	Leverage	Bottleneck	Strategic
Trend and Monczka (1998)	1. Supply Risk 2. Profit Contribution	Low Value	Supply Assurance	Profit Contribution	Competitive Advantage
Bensaou (1999)	1. Supplier's Investment 2. Buyer's Investment	Market Exchange	Captive Supplier	Captive Buyer	Strategic Partnership
Kaufman et al. (2000)	1. Collaboration 2. Technology	Commodity Supplier	Collaboration Specialist	Technology Specialist	Problem-Solving Suppliers
Svensson (2004)	1. Supplier's Commitment 2. Commodity's Importance	Transactional	Friendly	Business Partner	Family

On the other hand, Ozlap et al., 2006 introduced some other aspects of buyer-supplier relationship and classified these models into 3 groups: Relationship-focused framework, Factor-based framework and Hybrid framework.

Relationship-focused framework categorized suppliers based on relationship characteristics (such as *trust* and *commitment* -Massella and Rangone, 2000), Factor-based framework segmented suppliers on more factors (such as *supplier capabilities, characteristics of the product on hand, availability of alternative suppliers*- Olsen and Elram, 1997) and Hybrid framework is a combination of two other frameworks. (Svensson, 2004)

According to all models presented in Table 2, common characteristic of various types of the relationship could be developed as pointed out in Table 3.

Table 3. Common characteristics of portfolio models (Rahimi et al, 2008)

<p>Transactional (<i>Non critical, Market Exchange</i>)</p>	1. Short-term relationship
	2. Allocating limited resources to supplier
	3. Simple buy-sell relationship
	4. Change supplier easily
	5. Local suppliers
	6. Standard commodities
	7. No need for innovation
	8. Stability of demand
	9. Lack of tendency to investment
<p>Friendly (<i>Leverage, Captive Supplier</i>)</p>	1. Suppliers depend on buyers
	2. Multi suppliers for every product
	3. High competition between suppliers
	4. Necessity of high-ranked engineering experiences

***Business Partnership
(Bottleneck, Captive Buyer)***

1. Buyers depend on suppliers
2. Development of supplier's competition power by buyer
3. High level value of buying
4. High level creativity of supplier
5. Supplier's technology ownership
6. High-ranked bargaining power of supplier
7. Variety of supplier's product

***Familiar
(Strategic, Strategic Partnership)***

1. Long-term relationship
2. Buyer's investment on supplier's innovation
3. Powerful joint venture with supplier
4. Development of supplier's technical skills by buyer.
5. High level of purchasing value
6. International suppliers
7. R&D planning for suppliers
8. Complex commodity's production
9. High competition power of suppliers
10. Extensive cost of changing supplier
11. Product development planning
12. Limited number of suppliers

As indicated in Table 2, Svensson presented a model for supplier segmentation that Ozlap, 2006 classified it as hybrid model. Due to having characteristics of both relationship-focused and factor-based frameworks, Svensson's model seems more comprehensive than other frameworks for segmentation of buyer-supplier relationship. Thus in the current research Svensson's model was chosen as a basic model. Svensson used a paired questionnaire (Table 4) to study buyer-supplier relationship in one of Swedish vehicle manufacturer (VM) and its suppliers based on two factors: supplier's commitment to VM and commodity's importance to VM (Svensson, 2000; Svensson 2002). Then he proposed a conceptual model for analysis, selection and managerial decision on strategic relationship between buyer and its suppliers. His questionnaire included 20 questions based on Likert scale. Questions 1-6 for measuring family relationship strategy, questions 7-10 for measuring business partnership strategy, questions 11-14 for measuring friendly relationship strategy, questions 15-18 for measuring transactional relationship strategy, also question 19 for measuring the importance of relationship and finally question 20 for measuring degree of cooperation in the relationship.

Table 4. Svensson's questionnaire (Svensson, 2004)

Buyer Questions		Supplier Questions	
We invest substantial resources (e.g. time, money, contacts, and meetings) in the relationship with this supplier	1	This VM invests substantial resources (e.g. time, money, contacts, and meetings) in the relationship with our company.	
We strive to maintain a strong partnership with this supplier	2	This VM strives to maintain a strong partnership with our company.	
This supplier and us are deeply committed to each other to achieve the best outcome	3	This VM and our company are deeply committed to each other to achieve the best outcome	
This supplier has a great strategic importance for our technological development	4	Our company has a great strategic importance for this VM's technological development	
This supplier is important to our future profitability	5	Our company is important to this VM's future profitability	
This supplier is very important to our brand	6	Our company is very important to the VM's brand	
We strive to develop a strong relationship with this supplier	7	This VM strives to develop a strong relationship with our company	

8	This supplier is deeply committed to the relationship with us	8	Our company is deeply committed to the relationship with this VM
9	This supplier is strongly dependent on us	9	Our company is strongly dependent on this VM
10	This supplier is not innovative (e.g. does not present his own proposals)	10	Our company is not innovative (e.g. do not present our own proposals)
11	We strive to ensure that this supplier's technology should be equal to comparative suppliers	11	This VM strives to ensure that our company's technology should be equal to comparative suppliers
12	This supplier is a technological market leader in his field of components/material for us	12	Our company is a technological market leader in its field of components/material for this VM
13	We make substantial purchases from this supplier	13	This VM makes substantial purchases from our company
14	This supplier has a wide range of different products	14	Our company has a wide range of different products
15	We invest very limited resources in the relationship with this supplier	15	This VM invests very limited resources in the relationship with our company
16	This supplier and us are not very committed to each other	16	This VM and our company are not very committed to each other
17	We can easily replace this supplier with other comparative suppliers	17	This VM can easily replace our company with other comparative suppliers
18	Our relationship with this supplier is mainly based on their price offer	18	This VM's relationship with our company is mainly based on our price offer
19	To what degree does this supplier deliver a critical component to you? (1 = Not at all critical; 7 = Very critical)	19	How important is this VM as a customer to your company's overall business? (1 =Not at all important; 7 = Very important)
20	To what extent does your company co-operate with this supplier? (1 = No co-operation at all; 7 = Very extensive co-operation)	20	To what extent does your company co-operate with this VM? (1 = No co-operation at all; 7 = Very extensive co-operation)

3. Research Method

The research was run in two phases:

- 1) Supplier relationship segmentation: in this phase we used Svensson's model and its questionnaire to study perception of relationship between a buyer and its suppliers in one of the Iranian automotive industries. The identity of this automotive Company is anonymous due to the confidentiality and thus will be mentioned as company "A". Regarding "A" company had more than 560 suppliers (tier 1 suppliers), 70 questionnaires was sent to suppliers and also to buyer. The suppliers were selected based on random sampling and all the answers to those questionnaires were gathered by e-mail, or phone interview. Finally 36 paired questionnaires were collected.
- 2) Supplier relationship promotion: In This phase a new questionnaire was designed and experts' opinions were gathered through a web survey. The main aim of this survey was to determine if the current relationship between "A" company and its suppliers could ensure achieving its strategic goals? In other word, is a supplier relationship promotion plan necessary or not?
- 3) The experts were chosen from three different groups:

The researchers and authors who have written articles in SCM in some of the ISI journals in 1998-2008.

The authors who have written books in SCM.

Iranian experts of supply chain who worked in automotive industries and also some members of Iranian Logistic Society (ILS).

Finally a model was suggested to promote suppliers relationship, based on obtained result in two previous phases.

4. Findings

The Findings of each phase are discussed as below:

4.1 The phase of Supplier Relationship Segmentation

Normal distribution assumptions of "Importance of Relationship" and "Degree of Cooperation in Relationship" were assessed by the Kolmogrov-Smirnov test. Paired sample t-test was used for comparison of buyer and suppliers' answers to question 19 (Importance of Relationship). For comparison of buyer and suppliers' answers to

question 20 (Degree of Cooperation in Relationship), Wilcoxon signed-rank test was used. In our discussion, correlation between buyer and suppliers answers was analyzed with Kendall correlation test (Table 5). The level of statistical significance was established at $p \leq 0.05$.

Table 5. Kendall Correlation between buyers and suppliers answers

		<i>Familiar</i>		<i>Transactional</i>	
<i>Supplier</i>	<i>Variables</i>	(2,3)	(3,4)	(3,5)	(16,18)
	<i>Correlation Coefficient</i>	0.326	0.277	0.388	-0.315
	<i>P-Value</i>	0.020	0.047	0.006	0.026
<i>Buyer</i>	<i>Variables</i>	(1,2)	(3,4)	(5,6)	(16,17)
	<i>Correlation Coefficient</i>	0.554	0.526	0.346	-0.371
	<i>P-Value</i>	0.000	0.000	0.016	0.009

* Other values were not in statistical significant level.

As Table 5 shows, according to the results of Kendall correlation test, correlation exists only between buyer-suppliers dyadic perception in familiar and transactional relationships because, in non-symmetric relationship there is not any correlations between perception of buyer and supplier. Hence, in Kendall correlation, results of business partnership and friendly relationship were not in statistical significant level.

This Table shows that in questionnaires gathered from suppliers, in familiar relationship, there was fairly strong positive correlation between questions 2-3 and also 3-5 and there is weak positive correlation between questions 3-4. In transactional relationship there is rather strong negative correlation between answers of 16-18.

Furthermore, for the questionnaire gathered from buyer, there was fairly strong positive correlation between answers to pairs 1-2, 3-4 and 5-6 in familiar relationship and fairly strong negative correlation between questions 16-17.

Questionnaire presented in Svensson’s model has been designed based on *Expectancy Theory*. It means that our expectation in this questionnaire is observing familiar relationship between buyer and its suppliers. Buyer tries to develop familiar (strategic) relationship to achieve its long term goals. Therefore, buyer tends to overestimate level of the relationship with its suppliers. Figure 2 shows the expectancy viewpoint of buyer and Figure 3 illustrates the interaction between buyer and its suppliers’ perspective of the relationship level.

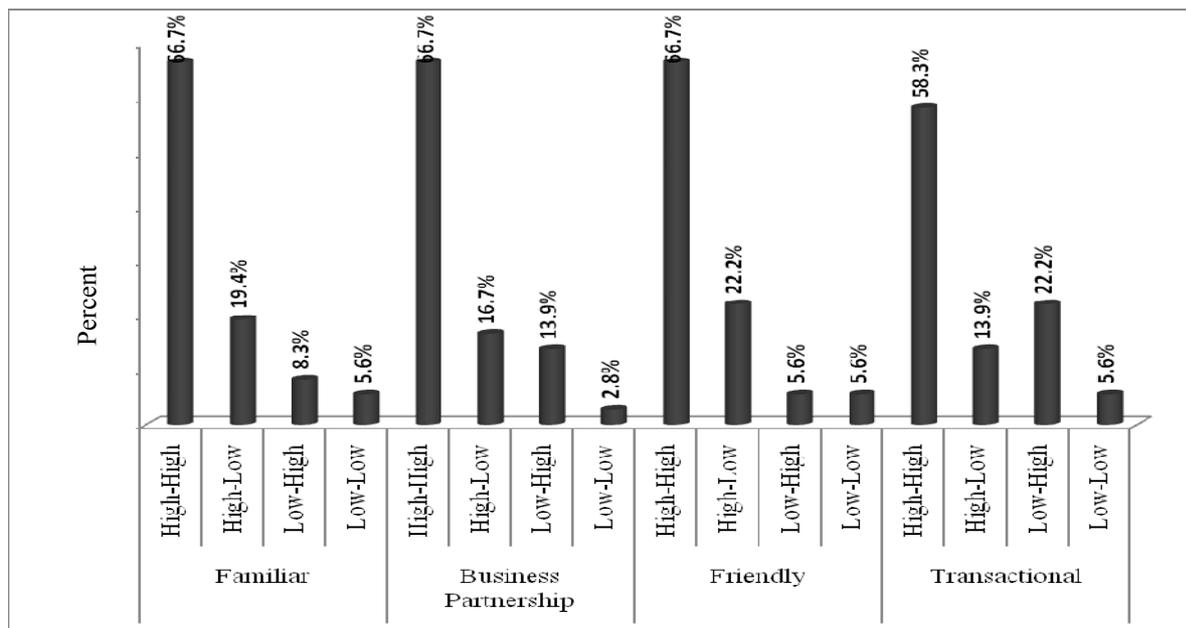


Figure 2. Buyer’s expectancy viewpoint of relationship with suppliers

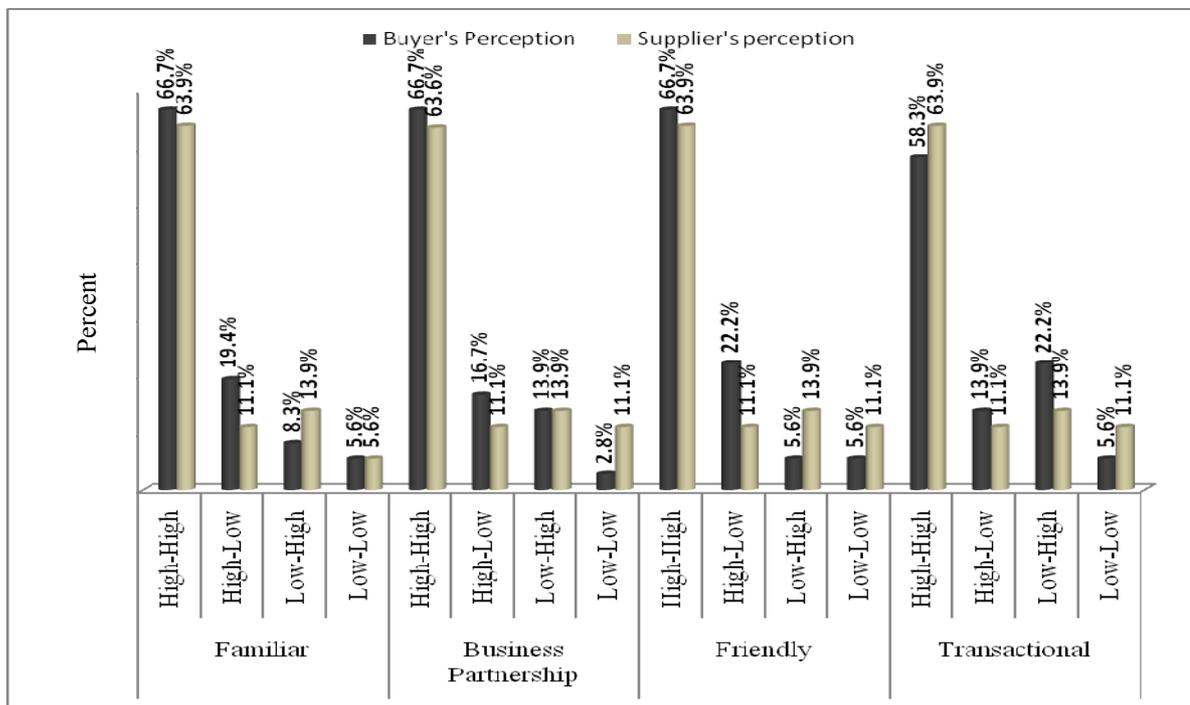


Figure 3. Interaction between buyer and supplier’s viewpoint of relationship based on the level of relationship

As mentioned above, Svensson’s model has been based on measuring the intensity of strategic relationship between buyer and its suppliers. Statistical analysis of buyer-supplier perception of relationship showed that there was proximity between buyer and supplier’s perception about familiar (strategic) relationship in Swedish automotive industry. However, due to the statistical results of our research, there was no strategic relationship between buyer and suppliers. In our study the buyer-supplier relationship was somewhat non-Strategic (Operational) relationship.

4.2 The Phase of Supplier Relationship Promotion

With regard to strategic roadmap of company “A”, there are some long-term goals and targets which related to their suppliers as follows:

- Supplier Quality Improvement
- Supplier Production Process Improvement
- Increasing Competitive Power in Market
- Supplier On-time Delivery
- Cost Leadership in Market
- Technical Knowledge Transition to Suppliers
- Logistic Knowledge Transition to Suppliers
- IT Knowledge Transition and Development
- Electronic Relationship and Information Sharing Development with Suppliers

Now, there are some questions about the relationship which are required for obtaining these goals: Is this kind of non-strategic relationship suitable for ensuring strategic roadmap goals? If not, what kind of relationship (mentioned in Table 3) is appropriate for these goals? To answer these questions, based on targets above, a questionnaire for a web survey was designed and distributed between some experts of supply chain.

After analyzing answers, the frequency of each question and its answers was classified into a chart (Figure 4). As shown in this chart, supply chain experts believed that, ‘A’ company has to change its relationship with suppliers from non-strategic to strategic (familiar) level, in order to obtain mentioned goals. Therefore, mentioned buyer needs a conceptual model for supplier promotion.

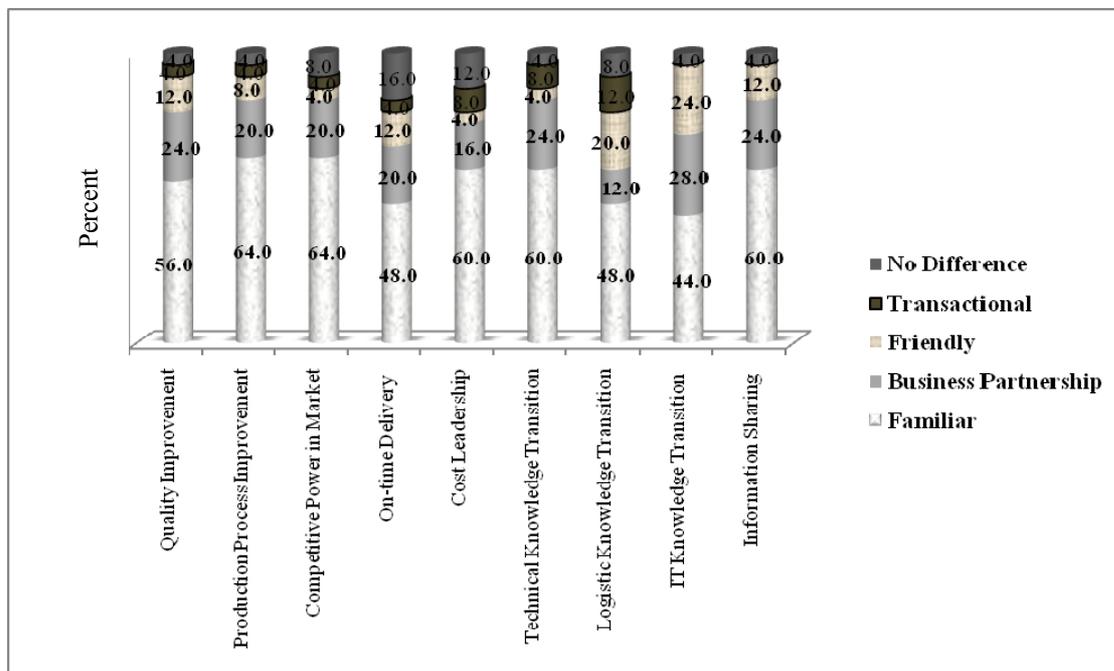


Figure 4. Results of expert questionnaire based on relationship classification

4.3 A Suggested Framework for Supplier Relationship Promotion

Finally we proposed a framework for supplier segmentation and promotion (Figure 5). The process starts with choosing a model for classification of the relationships with suppliers. As mentioned before, in our case we used Svensson’s model. After determining the relationship type, buyer company should compare the results of the first part with its long-term goals to find out if they are obtained by current relationship strategy. If current relationship strategy could ensure achieving goals, buyer company is in a good position and he needs to maintain the current situation, but if current relationship strategy is not suitable for achieving long-term goals, it is necessary to determine which relationship with suppliers does he need for the company? After answering this question, buyer needs a migration plan to move from the AS-IS state to the SHOULD-BE state. Defining the migration plan is a critical point for buyer because lots of problems may be driven from a poor definition. One of the alternative actions to determine an immigration plan is to choose suppliers which have suitable position for promotion from non-strategic level to strategic relationship level. At the end of this process, buyer should evaluate the implementation of migration plan results.

5. Conclusion

In the current study, at first, according to the literature review on buyer-supplier relationship management, we presented common characteristics of every segment of portfolio models. Next, we classified the relationship between buyer and its suppliers, based on Svensson’s model, in an Iranian automotive supply chain. Regardless of needing strategic relationship for achieving long-term goals (mentioned in expert questionnaire results), dyadic questionnaire results did not prove strategic relationship between buyer and suppliers. Therefore, we suggested a model for supplier relationship promotion.

In this study we had some limitations in data collection. Most of the suppliers which interviewed had a few sense about strategic relationship and it was very hard to explain the target of this research to them. Also, some parts of the requested data were confidential for them and somehow unreachable. On the other hand, for obtaining experts’ opinions we did a web survey but many of experts didn’t replied. Our result could be more realistic if we got more answers from experts

Although this model has not been implemented yet, there is a good opportunity to implement it in different of industries, especially automotive industry. Svensson (2004), in his model analyzed the relationship between one buyer and its suppliers. Considering more than one buyer is a good suggestion for future researches. In addition we suggest using fuzzy approach to rank answers of experts.

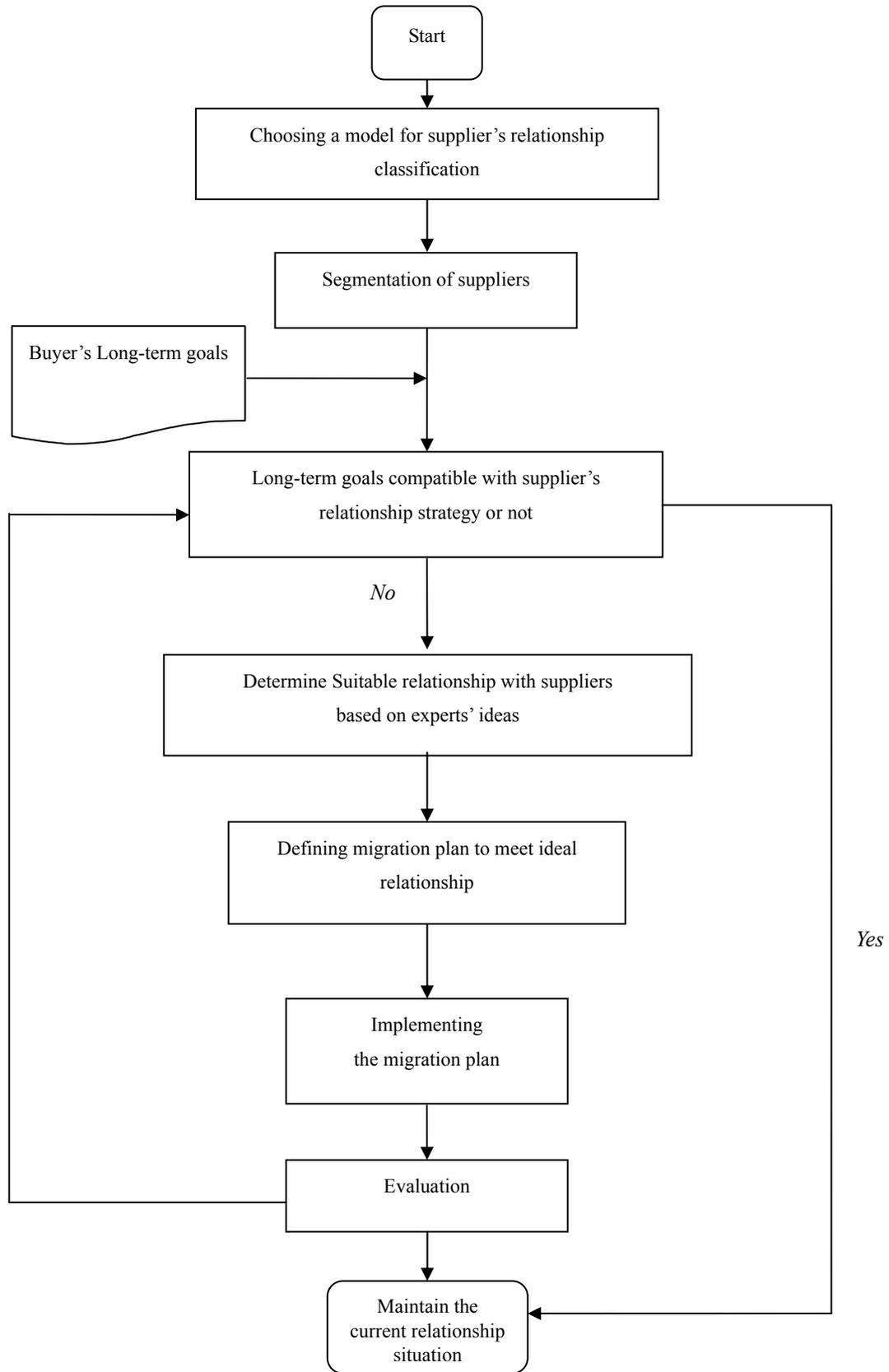


Figure 5. A Suggested framework for supplier segmentation and promotion

References

- Bensaou, M. (1999). Portfolio of buyer-supplier relationship. *Sloan management review*, summer, 35-44. Retrieved from <http://sloanreview.mit.edu/the-magazine/1999-summer/4043/portfolios-of-buyersupplier-relationships/>
- Chin, K, Tummala, V.M.R., Leung, J.P.F., & Tang, X. (2004). A study on supply chain management practices: The Hong Kong manufacturing perspective. *International Journal of Physical Distribution & Logistics Management*, 34(6), 505-524. Retrieved from <http://www.emeraldinsight.com/journals.htm?issn=0960-0035&volume=34&issue=6&articleid=846930>
- Cusumano, M.A., & Takeishi, A. (1991). Supplier Relations and Management: A Survey of Japanese, Japanese-Transplant, and U.S. Auto Plants. *Strategic Management Journal*, 12(8), 563-588. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/smj.4250120802/abstract>
- Da Villa, F., & Panizzolo, R. (1996). Buyer-subcontractor relationships in the Italian clothing industry: an interpretive framework. *International Journal of Operations & Production Management*, 16(7), 38-61. Retrieved from <http://www.emeraldinsight.com/journals.htm?issn=01443577&volume=16&issue=7&articleid=848983>
- Goffin, K., Szwajczewski, M., & New, C. (1997). Managing suppliers: when fewer can mean more. *International Journal of Physical Distribution & Logistics Management*, 27(7), 422-436. Retrieved from <http://www.emeraldinsight.com/journals.htm?issn=09600035&volume=27&issue=7&articleid=846649>
- Heizer, J., & Render, B. (2001). *Operations Management* (6th ed). Prentice-Hall, Englewood Cliffs, NJ.
- Huang, S.H., & Keskar, H. (2006). Comprehensive and configurable metrics for supplier selection. *International Journal of Production Economics*, 105, 510-523. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0925527306001241>
- Hugas, M. (2006). *Essential of Supply Chain Management*. John Wiley & Sons. Retrieved from <http://eu.wiley.com/WileyCDA/WileyTitle/productCd-0471791512.html>
- Kaufman, A., Wood, C.H., & Theyel, G. (2000). Collaboration and technology linkages: a strategic supplier typology. *Strategic Management Journal*, 21, 649-663. Retrieved from [http://onlinelibrary.wiley.com/doi/10.1002/\(SICI\)1097-0266\(200006\)21:6%3C649::AID-SMJ108%3E3.0.CO;2-U/abstract](http://onlinelibrary.wiley.com/doi/10.1002/(SICI)1097-0266(200006)21:6%3C649::AID-SMJ108%3E3.0.CO;2-U/abstract)
- Kraljic, P. (1983). Purchasing must become supply management. *Harvard Business Review*, September/October, pp. 109-117. Retrieved from <http://hbr.org/1983/09/purchasing-must-become-supply-management/ar/1>
- Krapfel, R.E., Salmond, D., & Sepekman, R. (1991). Strategic approach to managing buyer-seller relationship. *European Journal of Marketing*, 25(9), 22-36. Retrieved from <http://www.emeraldinsight.com/journals.htm?issn=0309-0566&volume=25&issue=9&articleid=853235&how=abstract>
- Masella, C., & Rangone, A. (2000). Contingent approach to the design of vendor selection systems for different types of co-operative customer/supplier relationships. *International Journal of Operations & Production Management*, 20(1), 70-84. Retrieved from <http://www.emeraldinsight.com/journals.htm?issn=0144-3577&volume=20&issue=1>
- Olsen, R.F & Ellram, L.M. (1997). A portfolio approach to supplier relationship. *Industrial Marketing Management*, 26(2), 101-113. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0019850196000892>
- Ozlap, Y., Koksal, G., & Wasti, S.N. (2006). *An integrative framework for supplier segmentation*. Proceeding of 35th International Conference on Computers and Industrial Engineering.
- Rahimi, M., Imanipour, N., Akhondi, N., & Ghadami, S. (2008). Supplier segmentation in Iranian automotive industry. *Proceeding of ICOVACS conference*. Izmir, Turkey.
- Schutt, J.H. (2004). *Directing the Flow of Product: A Guide to Improving Supply Chain Planning*. JROSS Publishing.
- Svensson, G. (2000). A conceptual framework for the analysis of vulnerability in supply chains. *International Journal of Physical Distribution & Logistics Management*, 30(9), 731-750. Retrieved from <http://www.emeraldinsight.com/journals.htm?issn=09600035&volume=30&issue=9>

- Svensson, G. (2002). The theoretical foundation of supply chain management: a functionalist theory of marketing. *International Journal of Physical Distribution & Logistics Management*, 32(9), 734-54. Retrieved from <http://www.emeraldinsight.com/journals.htm?issn=09600035&volume=32&issue=9>
- Svensson, G. (2004). Supplier segmentation in the automotive industry: A dyadic approach of a managerial model. *International Journal of Physical Distribution and Logistics Management*, 34(1), 12 - 38. Retrieved from <http://www.emeraldinsight.com/journals.htm?issn=09600035&volume=34&issue=1>
- Trend, Monczka. (1998). Purchasing and Supply Management: Trends and Changes Throughout the 1990s. *The Journal of Supply Chain Management*, 34(4), 2-11. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/j.1745-493X.1998.tb00296.x/abstract>