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SUPPLIER-RETAILER COLLABORATION IN FOOD NETWORKS: A TYPOLOGY AND EXAMINATION OF MODERATING FACTORS

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Abstract

The aim of this study is to examine Supplier-Retailer Collaboration (SRC) in food networks. Based on an extensive literature on the structural characteristics of trade collaborations, we develop a three dimensional construct of SRC which includes trade marketing, supply chain coordination, and relationship quality. We surveyed a large sample of Greek food retailers and their supplier and found that all three variables are positively related to collaboration efficiency. The findings were verified by a qualitative follow-up study. The differences between retailers and suppliers regarding collaboration factors are also discussed.

Key words: Supplier-Retailer Collaboration, Relationship Quality, Food Industry, Supply Chain Coordination

1. Introduction

In the current era of stiff competition and changing consumer needs there is consensus that conventional ways of managing firms and handling business relations are not adequate. Terms like coordinated supply chains, long term agreements and trustful collaborations are getting more and more common.

Mohr et al (1996) defines coordination as "the extent to which different parties in the relationship work well together in accomplishing a collective set of tasks". There is consensus that collaboration is a prerequisite of relationship performance, thus indirectly contributes to gaining a competitive advantage (i.e. Siguaw et al. 1998; Anderson and Narus, 1990; Carter and Jennings, 2002). Morgan and Hunt (1994) proposed that collaboration between dyadic channel members empowers the competitive position of that channel vis-à-vis other channels.

Supply Chain Council's (2002) proposed that there are three different types of collaboration: transaction collaboration, cooperative collaboration and cognitive collaboration. In transaction collaboration both parties are sharing information relevant to daily activities. Cooperation in order placement, invoices and product shipment characterize such kind of collaborations. In cooperative collaboration, that is rarer than the previous one, joint activities are being implemented at tactical level. Joint inventory management and joint promotional activities are taking place for succeeding better results and responding quicker in the demand fluctuations. Finally, cognitive collaboration is the highest form of collaboration. This form requires extensive levels of trust from both partners. Information of strategic importance is being shared and joint business plans are being prepared. At this point, it must be clarified that none of the above types of collaboration insure business success. There are plenty examples of firms that implement transaction collaboration with extraordinary financial results for both parties. However, leader firms in food chain are getting more and more adaptive to cognitive collaborations, as the most proprietary method to surpass competition and taste business success.

Supplier-Retailer Collaboration (SRC) has attracted considerable attention in food industry due to the great retailer's concentration and the need for better coordination in perishable products (Lee et al, 2002). The balance of power between food manufacturers and food retailers has changed considerably during the last decades. If we go back to '50 we will see some major food manufacturers to prevail against a fragmented retail sector. Recently, we have experienced high levels of retailer's concentration. For example, the largest five retailers in most Northern European countries have accounted around 50% of the grocery market. In France and the U.K, 2% of stores account for half the grocery market (Bell et al, 1997). The same trend has been also observed in Greek grocery market (ICAP, 2003). The purpose of this paper is to examine the factors that are associated with supplier-retailer collaboration (SCR). We develop and test a model that examines SCR empirically.

2. Factors affecting to Supplier-Retailer Collaboration

2.1 Supply Chain Collaboration

Every type of SRC aims at reducing excess costs in the supply chain and/or improving profitability by increasing sales and gross margins. Currently, food companies have a large array of techniques to manage SRC: Vendor-Managed Inventory, Efficient Consumer Response, Just in Time and Collaborative Planning Forecasting and Replenishment are the most important initiatives. All of them are trying to optimize operational management and trade marketing activities while boosting relationship quality.

When considering supply chain management from a logistics perspective, we can discern two areas of great importance in operations: Product logistics and information logistics. Product logistics is concerned with the flow of physical goods thought the chain while information logistics is focused on better utilizing information impact. (Simon K.A., 1995)

In product logistics there are three questions that most interest both parties. Are the products shipped in the right quantities, to the right place and at the desirable quality? If "Yes" then both parties enjoy better business results while boost their competitive advantage. Indeed, placing the right orders and taking the right deliveries help food retailers to succeed shelf availability and manufacturers to better organize production. Insuring, also, product quality is necessary for both parties. Retailers want to merchandise top quality products, enhancing the image of their stores. On the other hand food manufacturers are constantly trying to differentiate their products thought quality, reinforcing their brand's image and fostering consumer loyalty.

At the same time information sharing constitute another fundamental issue in SRC. Point-of-Sale (POS) checkout scanning systems implemented in almost all food retail stores is a key to increase supply chain efficiency. EPOS can provide accurate information about in-store stock levels, reducing greatly the amount of stock held in a modern superstore compared to the levels necessary in the past. (Duke, 1998) Retailer's demand forecasts,

which are mainly derived from their privileged access to EPOS data, can be transferred to manufacturers via advanced Information and Communication Technologies. Using these forecasts food manufacturers can better plan their operation process, reducing inventory levels while being able to meet retailer's demand for frequent, JIT deliveries to stores (Fernie, 1992). Sharing the appropriate information, though, helps both retailers and manufacturers to better coordinate their activities, enhancing their collaboration. Thus,

Hypothesis 1a (H_{1a}):
Suppliers that perceive positively their supply chain relationship with their retailers are more likely to perceive a positive Supplier-Retailer Collaboration

Hypothesis 1b (H_{1b}):
Retailers that perceive positively their supply chain relationship with their suppliers are more likely to perceive a positive Supplier-Retailer Collaboration

2.2 Trade Marketing

Another key variable which affects B2B relationships in food chain is trade marketing. According to Marc Depuit et al, (1996), trade marketing is a methodical procedure carried out jointly by suppliers and retailers, whose objective is to better serve customer's needs and expectations, increase profitability and competitive position while taking into account each other's constraints and specificity. In the current marketplace, though, trade marketing has mostly to deal with collaborative promotions, collaborative new product development and efficient product assortment, under the umbrella of course, of category management.

The obvious objective for selling more goods is more complex than it seems. Manufacturers are mainly interested in increasing the sales of their brands, while retailers are interested in heightening product categories sales. Strong brands are essential for retailers both for brand's ability to increase in store traffic and for their capability of enhancing retailer's store image. Private labels, on the other hand, have larger profit margins, satisfying, in parallel, other consumer segments. In order, both parties to be satisfied, category management has been introduced as a collaborative tool for better partnerships.

Under the prerequisite of category management, common efforts have been made in implementing some marketing tactics in a collaborative form. In new product development, for example, retailers seem to recognize manufacturer's superiority in research and development, while manufacturers seem to depend more and more in retailer's capability of better launching new products. Efficient product assortment is also an interesting field for both parties. Preserving well-structured product categories and better exploiting shelf space give retailers the potential for higher profits and manufacturers the potential to better promote their products. Other collaborative promotional activities are also taking place for heightening consumer demand. Cross category promotions, point-of-purchase activation techniques and collaborative sales promotions are useful tools for both parties. Thus,

Hypothesis 2a (H$_{2a}$):
Suppliers that perceive positively their trade marketing activities with their retailers are more likely to perceive a positive Supplier-Retailer Collaboration

Hypothesis 2b (H$_{2b}$):
Retailers that perceive positively their trade marketing activities with their suppliers are more likely to perceive a positive Supplier-Retailer Collaboration

2.3. Relationship Quality

Relationship Marketing theory points out the importance of trust and commitment in B2B relationships (Morgan and Hunt, 1994). Trust can be perceived as firm's A belief that firm B will perform promised actions that yield positive outcomes for firm A, and firm B will not ordinarily take unexpected actions that yield negative outcomes for firm A (Adnerson et al., 1990). A lot of benefits derived from trustworthy relationships including substantial decrease in transaction costs (Ganesan, 1994), reduction of the risks from opportunistic behavior (Ganesan, 1994), increase in long-term orientation (Ganesan, 1994), great willingness to make idiosyncratic investments and enhanced probabilities to engage in future business opportunity (Ganesan, 1994).

On the other hand, commitment can be defined as the desire by a party to a business relationship to maintain and strengthen that relationship (Morgan and Hunt, 1994). Highly committed partners can exchange market intelligence gaining competitive advantage. The understanding that commitment is crucial to long-term success can provide one of the core concepts in the understanding of organizational success. (Scheer L., et al, 1994).

Furthermore, high levels of conflict can raise serious obstacles in B2B relationships. Despite the fact that very low levels of it might lead to effective partnerships, generally, conflict is considered as a major problem in SRC. Gaski, 1984 defines conflict as "the perception on the part of a channel member that its goal attainments are being impeded by another, with stress and tension as the result". Thus,

Hypothesis 3a (H$_{3a}$):
Suppliers that perceive quality in their relationships with their retailers are more likely to perceive a positive Supplier-Retailer Collaboration

Hypothesis 3b (H$_{3b}$):
Retailers that perceive quality in their relationships with their suppliers are more likely to perceive a positive Supplier-Retailer Collaboration

3. Research Methodology

Retailers and their suppliers were surveyed. In depth interviews were conducted with several key decision makers prior to designing a pretest. The questionnaire was pretested

with randomly selected retailers and suppliers. Based on the results of the pretest instrument, the final questionnaire was refined.

For the purposes of this study, a systematic random sample of 500 firms in food chain was drawn from a joint sampling frame derived from ICAP Market Research Company as well as Industrial National Research report (2002). Ninety one completed questionnaires were returned, for a 18.2% response rate. Most respondents indicated that they were Marketing/Sales directors for their firms. Nonresponse bias was assessed by comparing early respondents with late respondents (Armstrong and Overton, 1997). No significant differences were found on any of the constructs used in the study (P>.10).

Furthermore, an additional qualitative research was conducted in order to verify the results of the quantitative survey. Five senior managers from leading firms in Greek food chain sector were interviewed. Three of them were representative from the food industry sector, while the other two from the food retailing sector. All five managers had previously completed the questionnaire of the survey.

Respondents were asked to provide demographic information about their individual companies and about their relationship with the partner who contributes the greatest percentage on its sales. Data relevant to annual sales of individual companies and the number of its employees were asked. The time period of the Supplier-Retailer Collaboration was also determined and some additional information was also given. Table 1 summarizes the basic descriptive statistics.

[Table 1]

4. Analysis and Results

Examining the use of Information and Communication Technologies we noted that only 7.8% of the respondents use Electronic Data Interchange. The large amount of the capital required for acquiring EDI can explain the significant low percent. However, those firms who use EDI to improve their collaboration seem to well exploit that technology. 75% of them exchange Point-Of-Sale and inventory information while 50% of them exchange information about sales forecasts and other sensitive information, like future business plans. Of course, 100% of them place/receive orders via EDI.

In addition, respondents were asked to determine in which sectors they collaborate with their business partner, at present and which sectors they intend to enhance in the following 2 years. As table 2 indicates, the majority of them collaborate in promotional activities and in the ordering process. Approximately, 50% of them collaborate in inventory management and in sales forecast process while only 22% of them collaborate in strategic issues. Significant progress is expected to take place in sales forecast process and in strategic issues, since there is a great inclination towards that direction.

[Table 2]

All respondents were asked to indicate the three most important reasons, which prompted them to further enhance their collaboration with the other business partner. All respondents had to choose among nine alternatives. As Table 4 indicates, the most significant factor was the increase in sales, while further increase of market share, cost reduction and enhancement of competitive advantage are followed. We tested the same hypothesis between the two groups of retailers and manufacturers. The endeavor from the manufacturers to obtain greater market share seems not to be adopted from the retailers. All the other differences are not statistically significant.

[Table 3] [Table 4]

Moving further, we calculated the means, medians and standard deviations of all our dependent and independent variables. For all variables, the means value agreed closely with the median, which suggests that skewness was low. As we can observe all variables are greater than 3 which indicate an efficient level of collaboration between partners. However, relationship quality succeeds the lowest level of all the other. Business partners don't seem to trust one another in a great extend while slightly high levels of conflict incorporates the collaboration. On the other hand, firms have attained an adequate degree of coordinated supply chains, since mean value of supply chain collaboration is rather high. Trade Marketing activities have also found a common ground in SRC. Finally, respondents indicate high, but not enough, degree of satisfaction from their partners. Table 5 summarizes the above, in more details. No statistically significant differences were found between retailers and manufacturers in the calculated variables.

[Table 5]

In order to test the hypotheses between our three independent variables, namely supply chain collaboration, trade marketing and relationship quality, and our dependent variable, collaboration efficiency, we calculated the Correlation Coefficients for both suppliers and retailers and we examined the strength of associations.

As tables 6a and 6b indicate there are major differences between supplier's and retailer's perception about the factors influencing Collaboration Performance. To be more specific suppliers seem to evaluate Relationship Quality as the only determinant which influences Collaboration Performance with their partners (r=0.514**). Thus, we accept the hypothesis H_{3a} and we reject the hypotheses H_{1a} and H_{2a}. On the other hand, retailers seem to evaluate all three variables. Relationship Quality plays the most significant role on the Collaboration Performance (r=0.826**), while supply chain collaboration and trade marketing are being followed (r_1=0.776** and r_2=0.517** respectively). Thus, we accept all three hypotheses H_{1b}, H_{2b}, H_{3b}.

[Table 6a] Table 6b]

Qualitative Research

Five in-depth interviews were conducted after the end of the quantitative survey. The aim of that research was to examine the correctness of the survey's findings. Indeed, the majority of our findings were verified by the interviewees. Unambiguously, the most important factor causing partnership formation is sales increase, while other factors like costs reduction, competitive advantage and market shares are being followed. Furthermore, high levels of collaboration in promotional activities and order procedures are being observed. In the areas of sales forecasts and inventory management, the managers claimed that there is a dynamic for closer collaborations, although big firms already collaborate in there.

As concerns the factors influencing collaboration performance, there were some interesting results. Relationship Quality does play the most significant role both for retailers and suppliers. As a senior sales manager in the food industry cited "*Trustful relations between salesmen and purchasing managers are fundamental for any collaboration. All the other activities are useless if we have not succeeded to foster healthy relationships*".

Trade Marketing activities seem to be perceived as highly vulnerable to competitive pressures. A marketing manager from the retail sector argued that "*Trade marketing and category management are useful tools on collaboration success. Nevertheless, they have not obtained a strategic importance in our partnerships, making them very vulnerable to competition*". A purchasing manager from the retail sector seems to be more confused about the collaborations in trade marketing. "*They have filled us with new products. They do not even ask our opinion. They seem to forget that the shelf space is limited. Afterwards, they complain about the limited space that their brands occupy*".

Finally in supply chain management both parties seem to be pleased about their collaboration. As a marketing manager from the food industry mentioned "*We collaborate successfully in inventory management. We are on-line with major retailer's distribution centers and the order placement fulfilled automatically. In addition, we receive bulk POS information from our key accounts and we collaboratively forecast demand fluctuations. Retailers have been also benefited. The amounts of stock hold have dramatically decreased*".

5. Conclusions

The aim of that research was to provide an in-depth insight of Supplier-Retailer Collaboration in food chain. Initially we tried to specify why both business partners make constant efforts to boost their partnerships and to transform them into more comprehensive ones. Afterwards, an attempt was made, to determine in which business sectors food retailers and food manufacturers do collaborate. We also tried to foresee how these collaborations will be formed in 2 years later. Finally we construct an appropriate model to measure the significance of three key variables on collaboration performance.

Based on theory, we consider trade marketing, supply chain collaboration, and relationship quality as the key determinants in SRC.

Data analysis revealed that both parties make constant efforts to further improve their partnerships in order to succeed a substantial sales increase. Other important factors prompting business partners to come more close one another include the endeavor for increasing their market share and reducing their excessive costs. Food manufacturers seem more aggressive in increasing their market share, as food industry is less concentrated than food retail sector, in Greek marketplace. On the other hand food retailers are trying harder to reduce their costs since there is a great potential to that direction, through better coordinated supply chains.

Examining the collaborative business sectors between suppliers and retailers we can easily infer that the fields of ordering and product promotions take the lion's share. Ordering is by nature, a collaborative process between business partners. However, as it is closely related to better replenishment programs, it still draws great attention from both partners. On the other hand, common promotional activities seem to be considered a great tool for them. Their significant potential for sales increase and shared benefits for both parties, make them a widely implemented tool. Collaborative inventory management and joint sales forecasts are issues which interest approximately 50% of our sample. There is a great tendency from both parties to dramatically increase their cooperation in sales forecast process but not in inventory management. Finally, only a small percentage of business partners collaborate in strategic issues, trying though to further enhance their partnership in that sector.

Regarding the key factors influence SRC, relationship quality plays the most significant role both for retailers and suppliers. As the analysis revealed, both parties receive greater levels of collaboration satisfaction when there is an adequate degree of trust and commitment between them. Low levels of conflict are also beneficial. Trade marketing activities and supply chain coordination are key determinants on collaboration performance from retailer's perspective. Suppliers seem not to correlate these variables with the performance of a partnership.

Collaboration performance is mostly depended from relationship quality between partners. It seems to be a priority, though, for all business partners to nurture strong relationship bonds if they want to achieve their common objectives. There are a lot of tools helping firms to tighten their relationships. Each firm must use the most appropriate ones which keep up with its business strategy.

Table 1. Sample Demographics

Sample characteristics	Percent of total sample
Food retailers	44
Food manufacturers	56
Sales	
<5 millions Euro	22
5-10 millions Euro	22
10-50 millions Euro	26.4
50-100 millions Euro	12.1
100-500 millions Euro	13.2
>500 million Euro	4.4
Employees	
1-20	16.5
20-50	24.2
50-100	13.2
100-500	29.7
500-1000	5.5
>1000	11
Age of Supplier-Retailer Collaboration	
<1 year	1.1
1-3 years	7.7
3-5 years	14.3
5-10 years	17.6
>10 years	59.3
Use of contracts	
No	30
Yes	70
Communication	
Tel	88
Fax	78
E-mail	66
E.D.I.	7.8

Table 2 Collaborative Business Sectors

Sectors of collaboration	2003	after 2 years
Promotional activities	89%	89%
Ordering process	84%	86%
Sales forecasts	54%	80%
Inventory management	40%	56%
Business strategy	22%	50%

Table 3 Factors Causing Partnership Formation

Cost Reduction
Sales Increase
Quick Response to Consumer's Needs
Enhancement of Competitive Advantage
Improvement of Product Quality
Inventory Reduction
Acceleration of Product's Deliveries
Access to Technology
Improvement of replenishment system

Table 4 SR Collaboration Facilitators

TOTAL SAMPLE

Ranks	**Mean Rank**	*Friedman Test*
Sales	7.27	Chi-Square=199.869
Share	5.57	df=8
Cost	5.47	
Competitive adv.	5.47	Asymp. Sig.=0.00

FOOD RETAILERS

Ranks	**Mean Rank**	*Friedman Test*
Sales	6.91	Chi-Square=80.647
Cost	5.99	df=8
Competitive adv.	5.76	Asymp. Sig.=0.00

FOOD MANUFACTURERS

Ranks	**Mean Rank**	*Friedman Test*
Sales	7.55	Chi-Square=152.991
Share	6.49	df=8
Quick response	5.52	Asymp. Sig.=0.00

Table 5 Descriptive Statistics of Variables

Statistics	Relationship Quality	Supply Chain Collaboration	Trade Marketing	Collaboration Performance
Mean	3.19	4.23	3.85	3.95
Median	3.13	4.30	3.75	4.00
Std Deviation	0.50	0.20	0.72	0.74

Table 6a Correlation Coefficient in Food Industry

	Trade Marketing	Supply Chain Collaboration	Relationship Quality	Collaboration Performance
Trade Marketing	1.000			
Supply Chain Collaboration	0.314*	1.000		
Relationship Quality	0.182	0.270	1.000	
Collaboration Performance	0.159	0.260	0.514**	1.000

** Correlation is significant at the 0.01 level
* Correlation is significant at the 0.05 level

Table 6b Correlation Coefficient in Food Retail

	Trade Marketing	Supply Chain Collaboration	Relationship Quality	Collaboration Performance
Trade Marketing	1.000			
Supply Chain Collaboration	0.459**	1.000		
Relationship Quality	0.635**	0.668**	1.000	
Collaboration Performance	0.517**	0.776**	0.826**	1.000

** Correlation is significant at the 0.01 level
* Correlation is significant at the 0.05 level

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