BUYER - SUPPLIER PRIORITIES CONSIDERING STRATEGIC OBJECTIVES. AN EMPIRICAL STUDY

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Abstract

This paper presents the results of an empirical study that explores buyer and supplier performance priorities with different strategic objectives. Several hypotheses concerning the impact of strategic market objectives are tested, along with comparisons between North American and European firms. The hypotheses were tested using data from the International Manufacturing Strategy Survey (IMSS) with a sample size of 414. The results indicate European firms with narrow strategic objectives tend to obviate the importance of establishing competitive priorities in their organizations.

Keywords

Supply Chain Management, Performance, Europe, North America, Market Strategy.

Introduction

During the last 15 years a combination of business trends have caused companies to rely increasingly on relationships with other firms. These trends include globalisation (Anderson and Narus, 1999), vertical disintegration (Parasuraman, 1997, Wilson and Jantrania, 1994), a reduction in supplier bases (Anderson and Narus, 1999, Wilson, 1995) focusing of operations and outsourcing of non- core activities, and the adoption of just in time practices. Firms are becoming more externally focused, recognizing the necessary contributions made by other players in the total supply network to their own success .

There are also global changes which have caused this reliance on inter-firm relationships. Worldwide improvements in computing and communications technologies have made business to business relationships easier to manage. International trade agreements have opened up trade zones around the world, making it easier to include other international firms in the total supply network. The improved operation of international capital markets allows freer global trade with other organizations.

These macro changes have contributed to the increasing interest in inter-organization relationships. Many leading authors, business texts and consultants provide different terms for these relationships and offer different solutions on how to manage them. Phrases including "partnership sourcing", "strategic partnering" and "supply chain management" are now common business ***parlance***.

High profile relationships such as those between automotive original equipment manufacturers and their first tier suppliers have attracted research and media interest. Some regional clusters of successful small and medium sized firms that have collaborated, gaining regional expertise and economic strength, have also been examined with lessons for success being derived. However, we still know relatively little about inter-firm relationships. Managers who have heard that outsourcing and partnership are good practice have little by means of guidance on whether one strategy and set of policies will suit their entire supply network or whether some differentiated approach should be adopted.
In order to understand all the components of the chain (suppliers, customers and priorities) will be useful analyse in detail each one.

Customer satisfaction is becoming an increasingly salient topic in many firms and in academic research. The need to better understand customer behaviour and the interest of many managers to focus on those customers who can deliver long-term profits has changed how marketers view the world. (Winer, 2001). One main rationale behind this interest is that customer satisfaction is believed to be associated with fruitful customer behaviour from the firm's point of view (Sóderlund, 1998). A number of empirical studies do in fact indicate that a link to customer behaviour is at hand. For instance, a positive association has been observed between customer satisfaction and loyalty (Anderson and Sullivan, 1993; Fornell, 1992; Rust and Zahornik, 1993; Taylor and Baker, 1994) and between customer satisfaction and the propensity to recommend the supplier's offer to other customers (Hartline and Jones, 1996; Parasuraman et al, 1988; Selmes,1993).

According to Soderlund (1998) there are some empirical studies which involve customer satisfaction usually fall into one of two categories. The first category is characterized by a sample design which does not impose any restrictions on the distribution of the values which customer satisfaction can take on. (cf. Fornell, 1992; Hall and Dornan, 1988; Peterson and Wilson, 1992; Resnick and Harmon, 1983). The second category of studies, in contrast, is characterized by a priori restrictions on the sample design, in the sense that only dissatisfied customers are included (cf. Keaveney, 1995; Richins, 1983; Singh, 1988, 1990).

Successful customer relationships do not just emerge or exist. Establishing and building successful customer relationships confronts marketing-oriented boundary spanners (e.g. salespeople, customer service personnel, sales managers, key account managers, industrial marketers) with a complex bundle of relationship and network management tasks (Lewin and Johnston, 1997; Moeller and Wilson, 1995; Narus and Anderson, 1995; Snow et al., 1992).

Supplier-customer relationships, - the other part of the chain- usually evolve incrementally) driven by mutual goals (Dwyer, et al., 1987; Ford, 1980, partner-specific adaptations, cooperative behaviour, structural and social bonds, and relational benefits (e.g. Anderson and Narus, 1990; Morgan and Hunt, 1994; Wilson, 1995). Various departments and functions of the supplier organizations have to interact with targeted customers in order to satisfy their needs and requirements.

These interactions have consequences for the development of the relationships (Biong and Selnes, 1996). The activities have to be coordinated and embedded within a broader range of other relevant (relationship) management activities in the supplier companies (Gemueden and Ritter, 1997). Supplier-customer relationships are influenced by other organizations (e.g. further customers and suppliers, competitors) that also interact and influence the parties (Turnbull et al., 1996).

For the majority of current industrial marketing re-search concerned with value creation, the focus is on the customers' value (Anderson 1995, Wilson and Jantrania 1994, Biong et al, 1997, Ulaga and Chacour, 1999). Reasoning behind such concentration is the assumption that supplier firms will only succeed in the marketplace once they offer "more" value to their customers compared to their competitors [Anderson, 1999, Slater,1997, Woodruff,1997). Customers are becoming a key source of competitive advantage because, in addition to revenues, suppliers can gain product ideas, technologies, and/or market access, etc. from their customers (Wilson 1995, Anderson Et al, 1994, Walter, 1999). A growing number of researchers point to the pivotal importance of business relationships for *value creation* (Biong Et al, 1997, Ravald and Gronroos, 1996, Anderson and Hakansson, 1994, Walter, 1999). Value creation is regarded as the essential purpose for a customer firm and a supplier firm engaging in a relationship (Anderson 1995, Wilson, 1995, Gronroos, 1997). This does not only apply to customers but also to suppliers. Empirical results indicate that suppliers focussing on a few selected customers achieve higher profitability in long-term relationships by reducing their discretionary costs to a greater extent than supplier firms who employ a transactional approach to deal with customers (Kalwani, 1995).

Within the last ten years, the marketing literature points to the pivotal importance of salespeople to the successful development and maintenance of relationships. The literature suggests that salespeople who are responsible for targeted customers should hold the role of a relationship manager, a coordinator, and promoter, as well as the role of an internal marketer (Biong and Selnes, 1996; Crosby et al., 1990; O'Neal, 1989; Webster, 1992).

When looking at how supplier companies in business-to-business markets respond to the challenging relationship and network management tasks, it becomes obvious that more and more suppliers shift from traditional management forms to customer-oriented management forms like national account management or key account management (Barrett, 1986; Millman, 1995; Pardo et al., 1995). These strategies rely on the support of key account managers or national account managers who are responsible for developing and maintaining the respective customer relationships (Hutt et al., 1985; Pardo, 1997).

The empirical study from Helfert and Gemuenden (1997) suggests that teams often manage customer relationships. Drawing on empirical research concerned with boundary spanning activities of teams (Ancona and Caldwell, 1992), they propose that the formal leader of a relationship team (e.g. a key account manager) will be most likely engaged in boundary spanning activities.

The present study aims at contributing to the clarification of the impact of market aim and regional aspects to supplier, customer and performance priorities. The paper is structured as follows. First, we will describe the research methodology and the validity and reliability tests performed in the data. Then, we will formulate the hypotheses regarding the relationship between continent and market aim among supplier requirements and integration, customer requirements and integration and performance priorities. The hypotheses will then be tested empirically. We conclude with a discussion of the empirical results and their implications for manufacturing strategy and theory.

Research Method and Data Collection

A survey instrument was used to gather the data for the analysis. The survey was distributed in 23 different countries around the world. However, the sample for the focus of this paper is composed of 414 firms distributed as follows: 304 from 10 European countries and 110 from 3 North American countries. The response rate was 14%. The companies represent those industries with ISIC codes from 3,400 to 3,700, which represents fabricated metal products, industrial machinery and equipment, electronic and other electric equipment, and transportation equipment.

The research reported in this paper is based on the data from the International Manufacturing Strategy Survey (IMSS). The IMSS was initiated by the London Business School and the Chalmers University of Technology and is being coordinated by the Instituto de Empresa in Spain. A worldwide researcher network in more than 20 countries carried out the survey.

The questionnaire was first designed by a Swedish team in the 1980s and modified for the first international survey in the 1992–1993 period. It was modified again for the second round of survey based on the experiences from 20 countries in the first round of survey.

The questionnaire was discussed in a workshop participated by IMSS researchers. For details of the IMSS project, please refer to the book by Lindberg et al. (1998). The questionnaires were sent to companies in individual countries, separately, in the period from 1997 to 1998. The methods of data collection vary from country to country. In some countries, postal survey was used, while in others, on-site interview was employed. All the data were sent to the coordinator in Spain and then distributed to all participants. As a participant of the IMSS project in Spain, the authors have the right to use the data for the purpose of teaching and research.

Convergent and Discriminant Validity

We performed a confirmatory factor analysis for convergent and discriminant validity testing. We examined the convergent and discriminant validity of the key constructs – customer requirements with 9 indicators, customer integration with 13 indicators, supplier integration with 13 indicators, supplier requirements with 16 indicators and company performance priorities with 24 indicators.

The criterion for dropping indicators from the analysis includes eliminating those indicators that contained communalities lower than 0.5 and factor loadings less than 0.6. In case the communalities were higher than 0.5, then we followed the criteria for the statistical significance of factor loadings shown in Hair et al. (1998). Having a valid sample size greater than 350 in all tested items, we could consider statistically significant factor loadings higher than 0.30. However, most factor loadings presented values higher than 0.5.

From this first screening of the data, we dropped some indicators from further analysis.
The corresponding deleted indicators for the different constructs are: 2 indicators customer requirements, 4 indicators from customer integration, 3 indicators from supplier integration, 7 indicators from supplier requirements and 2 indicators from company performance priorities. All those items that did not fit the criteria were subsequently dropped from further analysis.

Reliability and Validity of the Scales

From the results of the confirmatory analysis, we left out the 18 indicators that lacked convergent validity. We examined the internal consistency of all constructs first by a factor analysis, and second, by reliability testing of Cronbach's alpha. Our analysis hereafter was modelled after Flynn et al. (1994) who used largely exploratory analysis to examine the scales. Bagozzi et al. (1991) suggested that confirmatory analysis and exploratory analysis could supplement each other.

Each of the scales associated with the constructs was analysed separately. All the indicators included within each of the individual constructs were thought to load together as

one factor, so no varimax rotation was needed during the factor analysis. From the factor analysis, 2 indicators from company performance priorities were dropped from further analysis. Table 1 identifies the number of respondents, alpha score, and the number of items that loaded onto each scale. An alpha of 0.5 may be acceptable (Hair et al., 1995).

We have decided to drop price from customer requirements and timeliness from company performance priorities, since only 1 indicator represents them. Therefore, the final number of items for the analysis is 51 indicators. According to this criterion, all the items that reached this point are accepted based on the previous analyses.
TAKE IN TABLE 1.

We are analysing two factors (continent and market aim) to study differences among five constructs (CUSTREQ, CUSTINT, SUPINT, SUPREQ, PERFORMA). The two continents are North America and Europe. Market aim is defined as narrow market aim (few customers and few markets) and wide market aim (many customers and many markets). The following table contains the items for the different constructs.
TAKE IN TABLE 2.

Research Questions and Hypotheses

The following is a brief description of possible differences and similarities between the continents in study. Then, we posit the following set of research questions:

RQ1: Are there any differences in the constructs between North America and Europe? (Effect: Continent)
RQ2: Are there any differences in the constructs between the narrow market aim and the wide market aim? (Effect: Market Aim).
RQ3: As to the overall differences in the constructs between continents is this difference the same when we examine it separately for narrow and wide market aim (Interaction effect).

Using these research questions we are formulating a set of hypotheses that we will test in this paper.

H1: The interaction effect between continent and market aim is significant when analysing customer requirements (CUSTREQ), customer integration (CUSTINT), supplier requirements (SUPREQ), supplier integration (SUPINT) and company performance priorities (PERFORMA). In order for us to have a smooth analysis of our study, we expect this hypothesis to be rejected. However, if it is not rejected, we will go deeper and discover the type of interaction to see if we can justify it or not.
H2: North America and Europe could be expected to have some similarities in company performance priorities (PERFORMA), customer requirements (CUSTREQ) and supplier requirements (SUPREQ) since there are commonalties worldwide in the expectations of customers and suppliers, and also, in the important variables that should be measured to increase company performance. However, we expect to find some differences in customer

integration (CUSTINT) and supplier integration (SUPINT) since the way companies prevent and react to customer and supplier integration varies in this case, by continent.
H3: We expect North America to present higher scores in CUSTINT and SUPINT since they have shown to have more expertise in customer and supplier integration. If this is true, we will try to determine the areas of improvement for European companies so that they increase actions to integrate customers and suppliers to their companies. As literature review suggested, these two constructs help to improve customer satisfaction in the organizations.
H4: We don't want to examine only the impact of the continent on the constructs in study – SUPINT, SUPREQ, CUSTINT, CUSTREQ, and PERFORMA. We would also like to test the impact of the market aim on these constructs. Regarding market aim, we expect a different behaviour than using the effect continent. We expect differences in CUSTINT and SUPINT showing tests using the different effects.
In order to have an overall view of the comparisons, we are going to perform MANOVA tests, followed by univariate tests using different effects and t-tests in order to analyse differences from a broad perspective (construct means) to an item - level.

Analysis and Results

Statistical analysis has been performed on the data collected from both European and North American continents. Below we compare the findings between both continents using the total response for each continent.

Multivariate test using the effect market aim by continent

In this part of the analysis we will analyse if the differences found in the effect continent (North America and Europe) depend on what market aim we are considering (wide or narrow). We did examine the interaction effect first in order to know if there exists an ordinal interaction, a disordinal interaction or no effect. When we graphed the means for wide and narrow markets across the continents, we discovered that the lines are roughly parallel, meaning that there is no significant interaction effect. Therefore, the differences between groups (market aim) are constant at each level (continent). When the interaction effect is not statistically significant, then the effects of the treatments are independent. This independence means that the effect of one treatment is the same for each level of the other treatment and that the main effects can be interpreted directly. This is the reason for us to analyse continent and market independently and to conclude just on them and forget about their interaction.

From these results, we reject the hypothesis H1 and continue testing the rest of the research hypotheses concerning the effects continents and market aim.

Multivariate test using the effect Market Aim

As we show in the research questions, we tested the impact of the market aim on the five constructs. According to the results from MANOVA, the null hypothesis has been rejected; therefore there exist differences between wide market aim and narrow aim. In order to

understand and identify these differences, it is necessary to study them using a significant test such as a post-hoc test.
Analysing in detail the SPSS results, we found that these differences are evident in the constructs customer requirements (CUSTREQ), supplier requirements (SUPREQ) and company performance priorities (PERFORMA), because the significant value is less than the alpha value of 0.05.

Similar to the former analysis, CUSTREQ, SUPREQ and PERFORMA are constructs that have been defined by more than one item and variables (for better understanding see table 2). In order to see in detail the differences between these variables we conducted a t-test. For better understanding, we will structure the analysis of the differences found by the constructs that present differences under market aim:

Customer Requirements (CUSTREQ)

In the construct CUSTREQ, the independent samples t-test showed that the null hypothesis of equality of means for the variable "product variety" was rejected. The means show that wide market aim companies present higher priorities for product variety (3.51) than narrow market aim companies (3.12). Now that we have found the variables in which there are significant differences under the construct CUSTREQ, we will go deeper in our analysis to study the item level. The results are described below.

We can conclude that both types of markets (narrow and wide) consider "quality" as a very important requirement for customers in selecting products and services. Both markets present means higher than 4.

In the case of the variables that presented significant differences ("product variety"), the items in which the hypotheses of equal means that were rejected were: *wider product range* and *greater number of new products.* In both cases, wide market aim companies show significantly higher results than narrow market aim enterprises. This result is coherent to the previous variable, therefore, we can start perceiving a higher interest in CUSTREQ by those markets with many customers and many markets.

Supplier Requirements (SUPREQ)

In the construct SUPREQ, the independent samples t-test rejected the equality of means for the variables "delivery" and "cost".

Wide market aim present higher scores (4.05) than narrow market aim (3.93) in the variable "delivery". When we analysed the item level, we discovered that there exist a significant difference in *delivery speed*, whereas both market aims show similar interest in delivery flexibility and delivery reliability.

In the case of the "cost" variable, the hypotheses of equality of means have been rejected for all items; in which wide market aim present higher scores. The items are: *transportation storage/handling cost, equipment/container compatibility, physical proximity/within region* and *legal/contractual simplicity.*

Company Performance Priorities (PERFORMA)

The independent samples t-test gave evidence of significant differences in the variables "lean manufacturing", "green performance", "new product development" and "customer satisfaction" for the construct PERFORMA.

On this construct, there exist evidence of the significant difference between wide market aim and narrow market aim. In the variable "lean manufacturing", wide market aim (4.07) shows statistical evidence for a higher interest in measuring *manufacturing lead-time* than narrow market aim (3.84). In the rest of the five items, there is not enough statistical evidence for rejecting the equality of means hypotheses.

On the other hand, the variable "green performance" present significant differences in the items related to recyclability, where there is a general pattern on low interest (less than 3), however, wide market aim present higher scores. Therefore, wide market aim has more interest in measuring *product recyclability* and *waste/by-product recyclability*.

In the "new product development" variable, all items rejected the hypotheses of equality of means, showing again, a stronger interest by wide market aim in measuring *product variety, speed of product development, and number of new products developed*.

Finally, on the "customer satisfaction" variable one important item was proved to be statistically different for wide market aim (4.32) and narrow market aim (4.11), which is *customer service*. However, we can see that the means are really high, therefore, there are significant differences, but both market aims are considering customer service as very important.

Multivariate test using the effect Continents

The multivariate test from MANOVA for the effect Continents showed that there are significant differences among constructs between continents (North America and Europe). But in order to know exactly in which constructs there exist differences, we analysed univariate F-tests that proved statistical evidence for rejecting the hypothesis of equality of means in the constructs customer integration (CUSTINT) and supplier integration (SUPINT). In the results presented below, we analyse these constructs up to the item level in order to justify those differences and to find out which areas should be improved by the lower scores in order to increase integration levels both with suppliers and with customers.

Customer Integration (CUSTINT)

Under CUSTINT, there are two variables that we should study: "production/planning" and "delivery". The independent samples t-tests for those two variables, showed that both are significantly different in Europe and in North America. Therefore, we will perform other independent samples t-tests for the items under those variables to analyse the real cause of those differences.

The variable "production/planning" presents several items in which the hypotheses for equality of means have been rejected. The items that showed significantly higher scores for North America than for Europe are: *joint facility location*, a*ccess to planning systems*, *sharing production plans with the customers*, and *dedicated capacity*, whereas *joint production operations* do not have statistical evidence for any difference between continents. However, considering the mean values for all items under this variable, we can conclude that the interest in developing activities for integrating customers into the organizations, is low for both continents, since all mean values are less than 3.

On the other hand, the variable "delivery" presented only one items with not enough statistical evidence for rejecting the equality of means hypothesis (*delivery frequencies*). For the rest of the items, *knowledge of inventory mix/levels*, *packing customisation*, *and product/process engineering/design*, there exist a significant difference between North America and Europe, being North America the continent that shows higher interest in those integration activities with customers. Therefore, the European companies need to do an important improvement in the items mentioned in order to be more competitive in this strategic construct (CUSTINT). However, we would suggest both continents to improve in assigning higher priorities to activities that involve the customer into their processes and activities, since both presented very low rates (lower than 3).

Supplier Integration (SUPINT)

In the SUPINT construct, we could prove that there is enough evidence to reject the hypotheses of equal means for the two variables; "production/planning" and "delivery". Again, we performed further analyses to find out exactly in which items under those constructs, there exist significant differences, and which continent presents higher scores.

For the variable "production/planning", the following items present significantly different scores for the two continents: *product process engineering/design*, *technical support assistance* and *access to planning systems*. Again North America presented a better average than European evaluation.

In the variable "delivery" we discovered significant differences between North America and Europe in the items, *knowledge customisation*, *packing customisation*, *common use of logistical equipment/containers* and *common use of third – party logistical services.*

According to these results, it is evident that European and North American continents have strong differences in basic practices related to supplier and customer integration. But most important, both continents should work on their efforts to improve integration with suppliers and customers, since North America showed higher scores, but most of the mean values for both continents are below 3.

Conclusions

Customer and supplier priorities into the organizations are well-defined constructs in marketing research. However, the uniqueness of this paper is that we present a comparison of two important continents in the manufacturing area –North America and Europe. We are analysing the impact of continent and market aim in different supplier, customer and performance constructs. The results will contribute to marketing research in determining priorities of the organizations according to their geographical location and their market targets. We could conclude from the results, that the effects are independent, and therefore, we obtained separate analyses for continents and for market aims.

According to the results we found significant differences between continents (European and North American). Customer and supplier integration have shown statistical differences. These differences have been always with a higher performance of North American cases than European cases. However, it is important to specify that even though those differences exist also for the variables "delivery" and "production planning" under customer integration and "delivery" under supplier integration, in these specific cases, both continents must improve since their values are low.

In market aim, according to the SPSS results, we found significant differences in the constructs; customers requirements (CUSTREQ), supplier requirements (SUPPREQ), and company performance priorities (PERFORMA). We can conclude that exists statistical evidence in order to confirm that there are differences between narrow market aim and wide market aim. Several items have been rejected in all of the dependent variables for the mentioned constructs. And even more important is to conclude that companies with many customers and many markets (wide market aim) have higher priorities for these constructs than those with few customers and few markets (narrow market aim). From this analysis, we found areas of improvement for narrow market aims. On the other hand, we should remark that both continents showed very high scores on the variable "quality" under CUSTREQ, which means that even though there exists a difference, both continents are assigning high priorities to this variable.

In general, we obtained very interesting results concerning supplier and customer requirements and integration within the organizations. Europe needs to assign higher priorities to some of these constructs and narrow market aims also. It was expected that customer and supplier requirements along with company performance priorities were important in both continents, since it is a worldwide well-known philosophy for achieving global competitiveness. However, the analysis of customer and supplier integration is of valuable importance for research between the continents in study. On the other hand, the results from the market aim are valuable for all constructs.

Table 1. Overall internal consistency of scales

Scale Title	Number of respondents	Cronbach's alpha	Number of items in scale	Number of items deleted
Customer Requirements				
Price*	693	1.0000	1	1
Quality	683	0.6137	4	0
Product Variety	672	0.7158	2	0
Customer Integration				
Production/Planning	610	0.8149	5	0
Delivery	619	0.7529	4	0
Supplier Integration				
Production/Planning	620	0.7724	5	0
Delivery	606	0.8118	5	0
Supplier Requirements				
Delivery	648	0.6620	3	0
Cost	661	0.7343	4	0
Compromise	670	0.5523	2	2
Company Performance Priorities				
Lean Manufacturing	512	0.7421	6	0
Green Performance	466	0.7079	4	1
New Product Development	479	0.7560	4	1
Company Wide Performance	501	0.5871	3	3
Customer Satisfaction	560	0.6100	2	0
Timeliness*	606	1.0000	1	1

* Dropped from further analysis.

Table 2. Constructs definition.

Construct	Variable	Items
Customer Requirements (CUSTREQ)	Quality	customer service
		product design and quality
		manufacturing quality
	Product Variety	wider product range
		greater number of new products
Customer Integration (CUSTINT)	Production/Planning	Joint production operations
		Joint facility location
		Access to planning systems
		Sharing production plans
		Dedicated capacity
	Delivery	Packaging customization
		Delivery frequencies
		Common use of logistical equipment/containers
		Common use of third-party logistical services
Supplier Integration (SUPINT)	Production/Planning	Product/process engineering/design
		Joint production operations
		Joint facility location
		Technical support assistance
		Access to planning systems
	Delivery	Knowledge of inventory mix/levels
		Packaging customization
		Delivery frequencies
		Common use of logistical equipment/containers
		Common use of third-party logistical services
Supplier Requirements (SUPREQ)	Delivery	Delivery reliability - time,quantity-
		Delivery speed
		Delivery flexibility
	Cost	Transportation/storage/handling costs
		Equipment/container compatibility
		Physical proximity/within region
		Legal/contractual simplicity
Company Performance Priorities (PERFORMA)	Lean Manufacturing	Average unit manufacturing cost
		Materials and overhead total costs
		Manufacturing lead time
		Delivery lead time
		Supplier quality
		Worker/direct labor productivity
	Green Performance	Energy consumption
		Product recyclability
		Waste/by-product recyclability
	New Product Development	Product variety
		Speed of product development
		Number of new products developed
	Customer Satisfaction	Customer service (after-sales and/or technical support)
		Customer satisfaction

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