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# Sourcing alternatives as a problem of representation: a conceptual tool and application in textile-apparel supply chain\*

### **Summary**

The main aim of the paper is to introduce a tool, the indifference function, to help to understand supply markets and their link to sourcing alternatives representations and negotiation strategies, including win-win situations. To represent the buyer's alternatives, the paper proposes a non-orthodox use of the concept of indifference curve and the possibilities of its application explaining sourcing decisions along the supply chain. More specifically, we introduce the concepts of the no-purchase indifference function (indifference to the failure to make a purchase), which is to be compared and contrasted either with the function of the best supply alternatives that can be put forward by the seller or to the curve of the best supply alternatives by selecting the best combinations in all the possible mixes offered by all the possible suppliers in the market. The paper is an attempt to give this theoretical concept from economics an empirical background, highlightening the opportunity for its use in the analysis of business networks. The clothing supply chain is taken as empirical field of research, for it hosts of different purchasing requirements especially considering the impact that the rise of

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new distribution formats can have on purchasing behaviour of fashion retail companies. In particular the paper shows that depending on the business model different indifference functions emerge and different opportunities for collaboration between actors in the supply network rise.

### 1. Introduction

One of the most important components in understanding the B2B relationship is negotiation, as case studies as shown [Fisher and Ury, 1981, Guercini and Runfola, 2005]. The theme of negotiation in buyer-seller interaction is strictly linked with those of sourcing/buying activities. A number of studies have pointed out that the role of buying within the firm has undergone a change from a function that used to be a mainly administrative task to a strategic function [Freytag 2004, Ford et al 2003, Ferrero and Tunisini 2004, Gadde and Persson 2004]. The study of sourcing activities now represents a major theme within the framework of models that analyses the process of interaction [Håkansson and Ford [2005]. Within the framework of interactive processes, the representation of purchasing alternatives is a central problem, based on the presupposition that the intensity of "supply relations" and "interactive processes" can be adapted as a function of different purchasing situations [Bensou, 1999, Schurr, 2004].

In order to shed light on this particular problem, to represent the buyer's alternatives, in the paper we introduce the concepts of the no-purchase indifference function (indifference to the failure to make a purchase), which is to be compared and contrasted with the function/s of the best supply alternatives. The term "function" and the use of the Cartesian space are ways to build a picture of all the disposable alternatives. These picture is not the "real world" but a tool which can be used by decision makers to define the position of different actors in buyer-seller relationships.

We propose an analysis in customer-dominated relationships in the textiles and clothing sector, where small-medium sized suppliers, based in high wage countries, more and more find themselves having to interact with large customers (mainly retailers) who are seeking to extend their supply base globally. In addition as it is known, in the fashion sector delivery time is more and more an element for differentiation, as testified by the success of the new fast or quick fashion formulas. Consequently, time and price attributes would be considered as two main element in order to build our model.

In the next paragraphs we present the development of the model. We propose the concepts of: (a) seller's best supply alternatives; (b) buyer's no-purchase indifference function; (c) interactional space in negotiation process definable through comparison between the seller's and the buyer's functions; (d) representation of the shared utility space; (e) aggregate function of the best supply alternatives put forward by the buyer. The theoretical framework ends with the identification of factors determining the shape of the indifference functions when the buyer is an industrial apparel retailer.

The empirical part of the paper starts with a brief introduction to the empirical cases conducted for the purposes of the paper, discussing the relation between production management models and retail formats and its impact on sourcing strategies implemented by industrial retailers. Then we propose different indifference functions developed interpreting findings and resuming past buying behavior emerging in discussions and contacts with firm representatives of the Sourcing Division of six industrial apparel retailers.

# 2. Representation of sourcing alternatives and interactional space in the negotiation process

The buyer can define the possible purchase alternatives in terms of attributes associated with these alternatives. The combinations of attributes define the possible "products" desired and thus correspond to sourcing alternatives from the point of view of the buyer. The buyer can identify these alternatives either by evaluating hypothetical combinations of attributes, such combinations being thought up and proposed during the interactional process, or by evaluating pre-defined combinations of attributes, these combinations being proposed by the seller [Burresi, 1983]. From the point of view of the buyer, the supply alternatives which are available can be represented, a priori with respect to an empirical verification, according to different forms. However, a number of considerations can be put forward as guiding elements.

In the paper we propose a conceptual tool for representation of alternatives open to the buyer who is building up a relationship with the individual supplier, both in reference to the individual supplier and also in reference to the overall set of supply actors present on the market. More specifically, the supply alternatives that can be put forward by the individual supplier are first seen in a perspective of interaction with the given supplier, and of definition of the negotiating space during the bargaining process. Subsequently, attention focuses on the supply alternatives proposed by the overall set of suppliers who can be contacted on the

market. This latter set of alternatives, which is more extensive, derives from aggregation of the alternatives proposed on the market and can likewise be represented in terms of the complex of combinations of attributes of the different supply combinations.

Thus the point of view adopted is that of the buyer who evaluates the supply alternatives, considering first those proposed by the individual supplier, and then those of the overall set of suppliers with whom a relationship can be built up and whose supply proposal is accessible to the buyer. It is not necessarily the case that one among the supply alternatives appears to dominate over the others: that is to say, the attributes regarded a priori by the buyer as being desirable need not necessarily all cluster together in only one of the alternatives. There may be supply alternatives proposed by individual suppliers which could be dominated for some attributes, but not dominated for others. Similarly, considering the overall set of supply actors, it is possible to identify the locus of the alternatives that are not dominated by any of the others, which then effectively represent the best supply alternatives present on the market. This vision of the supply alternatives can be described in a first phase without taking into account the utility associated by the buyer with each of the alternatives.

### 2.1. The seller's perspective

In the definition we will adopt here, the best alternatives are defined as those in which the supply attributes cannot be increased simultaneously, i.e. in which the fact of having all the desirable attributes present to a greater degree would imply that at least one is reduced. Further reflection on the presence of attributes in the proposal to the customer also shows that the seller may, in addition to the best supply alternatives, generate other supply alternatives that are not the best ones. From the point of view of the buyer, such alternatives are "dominated" by the best ones, for instances in cases where under equal "economic advantageousness" attributes, they propose a lesser "service" attribute content [Sebenius 1992, Harwood 2002]. We will define this line as the "function of the seller's best supply alternatives".

From a managerial perspective, a further possible characteristic of the best supply alternatives involves their "confined" character, in the sense that they will always appear as a "stretch" of a curve and/or straight line. This is because it is generally assumed that each seller, when formulating the supply alternatives, cannot – given the conditions of the seller's business – rise above a given level of an attribute (for example, below a certain delivery time or a certain price). This condition is represented in the diagram below (Figure 1), where the

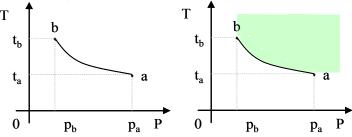
time level " $t_a$ " represents the maximum service level the seller can associate with the supply alternative, and the price level " $p_b$ " is the maximum economic advantageousness level the seller can associate with the supply alternative. Thus the seller can associate a price level " $p_a$ " with the alternative that embodies the time level " $t_a$ ", the alternative embodying the greatest time level as an attribute of the supply.

With regard to the shape of the function that represents the best alternatives, a number of different hypotheses can be put forward, first and foremost the assumption of a monotonic curve. With monotonicity, the trend may be that of a field of available alternatives demarcated by a straight line or a line which may be convex or concave. It is possible, here, to argue in favour of the convex shape of the field of available alternatives, since it is plausible that at least when starting out from an elevated service level, only a slight reduction in the service level would be required in order to achieve a strong increase in economic advantageousness, and, viceversa, that when starting out from elevated economic advantageousness levels one need only make a slight reduction in economic advantageousness to achieve a significant improvement in the level of service. The opposite alternative is that of concavity, which could be suggested if it were considered plausible – and conceivably verifiable on the empirical plane – that when starting out from an elevated service level, an increase in economic advantageousness could be obtained only at the cost of a marked reduction in service and that, when starting out from elevated economic advantageousness levels, an increase in service could be obtained only by virtue of a pronounced reduction in economic advantageousness

Since the aim of the function proposed here is to offer a representation of the seller's best supply alternatives, it is relevant to perform a critical verification of the empirical nature of the conditions of economic advantageousness and service proposed by the individual seller. In this case, the economic advantageousness variable can be evaluated through the price variable, which is inversely correlated with it (an increase in price associated with a given supply alternative implies a reduction in economic advantageousness), while the service variable can be evaluated through the delivery time variable, which is likewise inversely correlated (an increase in delivery time implies a reduction in service level). This link between the economic advantageousness/service attributes and the price/delivery time attributes is thus regulated by the inverse relation that holds on the one hand between the economic advantageousness/price variables, and, on the other, between the service/delivery time variables. The price/delivery time attributes appear as more flexible elementary attributes for use in representing the supply alternatives formulated by individual firms, and they can be checked by empirical verification. In effect, the supply combinations expressed in

these two dimensions are not only simpler by their very nature, but they are also simpler in terms of checking. By contrast, service may consist of attributes other than delivery time, just as economic advantageousness may be expressed in terms other than price, which means that there is no biunique correspondence between factors paired in this manner, whereas time and price can be more directly translated into quantity than is the case with service and economic advantageousness. We therefore propose a representation of the best supply alternatives expressed in terms of price/delivery time, maintaining the same basic conception in terms of a hypothesis of linear, concave or convex shape. We also hypothesizes that shorter delivery times should in any case be associated with an activity of service to the customer, although this element should be verified empirically and it represents a hypothesis that cannot necessarily be sustained in all circumstances (Figure 1).

Figure 1 – Trend of the function of the seller's best supply alternatives in terms of price/delivery time



In terms of price/delivery time the alternatives dominated are naturally those above the function, since they involve higher prices and/or longer delivery times as compared to the combinations represented by the best alternatives function.

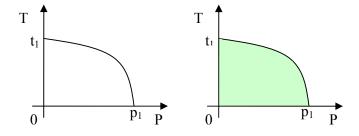
### 2.2. The buyer's perspective

In Figure 2 the hypothesis of convexity of the buyer's alternatives is adopted. This does not mean that such hypotheses cannot be verified by empirical observation, through direct research designed to assess the sensitivity of the seller's best supply alternative to price or time in the vicinity of the extremes "a" and "b". In the same way, it cannot be ruled out that there exist other possible hypotheses concerning the trend of the seller's best supply alternatives function (presence of flection points). A posteriori, when endeavouring to perform an empirical verification it might also prove necessary to discard the assumptions we

have adopted on the subject of the actual shape of the above function (continuity, monotonicity).

For the purposes of the bargaining process, the buyer will proceed by evaluating his/her preferences which, analogously to the circumstances described above for the seller, can likewise be represented [Lewicki and Litterer, 1985]. Given this approach, it is possible to define – from the point of view of the buyer – the set of combinations of sourcing attributes that may be equivalent to failure to make a purchase. It is thus hypothesized that such combinations can be represented as a continuous line either in the economic advantageousness/service space or in the price/delivery time space. On a strictly analytical plane, this also allows the function that demarcates the supply alternatives to be treated as a two-variable function, since the level of utility is associated with a constant, equal to that which tends towards the level of utility associated with the failure to make a purchase. This line will here be defined as the "function of buyer indifference to failure to make a purchase", henceforth "buyer's no-purchase indifference function". In other words, the purchaser's indifference function considered here is the one that appears as indifferent vis-à-vis the no-purchase alternative (Figure 2).

Figure 2 – The buyer's no-purchase indifference function in terms of price/delivery time



## 2.3. The interactional space in the negotiation process

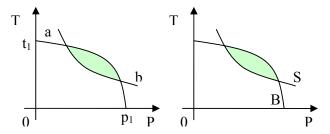
The no-purchase indifference function is thus proposed as a representation of alternatives dominated by all those that correspond to a lower level of price and/or delivery time (Figure 2, second diagram). In other words, the no-purchase indifference function demarcates the boundaries of the field of alternatives within which the buyer would accept to wrap up the deal, or, in terms of the sphere of individual utility, it represents the buyer's limit within the space of individual utility that is definable within a bargaining process [Rubin and Brown, 1975].

Similarly, from the point of view of the seller, the best supply alternatives function appears as the locus of the seller's limit point, expressed not on one single dimension (such as price) but over a mix of attributes (i.e. in terms of price/delivery time). That it has the character of a "limit", taken as an element of the space of individual utility in the structural model of bargaining analysis [Yulk, 1974, Rumiati and Pietroni, 2001], is demonstrated by the unwillingness, on the part of the seller, to accept alternatives that go any further, in terms of economic advantageousness/service or price/delivery time, even though these might be preferable in the buyer's perspective. For example, with respect to any point of the best alternatives function represented in the economic advantageousness/service space, under equal doses of economic advantageousness combined with the alternative, the seller is not willing to associate greater doses of service compared to those corresponding to the curve, or else, for each combination defined by the same function, for every given level of service the seller is not willing to associate a higher level of economic advantageousness. Analogously, in the case of the representation of the best supply alternatives in the price/delivery time space, the character of the "limit" can be defined with respect to each price level associated with each of the points of the function, with the result that for each economic advantageousness level there is no willingness to achieve shorter delivery times, or viceversa, for each level of delivery times associated with each of the points of the function, the seller is not willing to associate a lower price level.

Since the negotiating space in bargaining processes is defined by the level of the limits of the buyer and the seller, these limits can be represented respectively by the buyer's no-purchase indifference function and the seller's best supply alternatives function. The representation of the negotiating space [Lax and Sebenius, 1986] in the buyer-seller relationship can thus be effected by overlaying, in the price/delivery times space, the function of the best supply alternatives (S) with the space of the alternatives felt to be preferable from the seller's point of view, and by overlaying the no-purchase indifference function (B) with the space of the alternatives felt to be preferable from the seller's point of view.

The result is shown in Figure 3. Thus, on the level of interaction between the seller and the buyer, the comparison between the two functions depicts the space of the alternatives under which it is possible to wrap up the deal. These alternatives are not arrival points of the bargaining process expressed in terms of price or of some other attribute for a given product, as generally occurs in representations of the negotiating space: rather, they express mixes of attributes which, as such, represent possible products emerging as the result of the interaction [Äyväri and Möller, 2000].

Figure 3 – Representation of the negotiating space definable through comparison between the seller's limits (S) and the buyer's limits (B).



## 3. Relation between retail formats, models of production management and buyer indifference function

### 3.1 The representation of the space of share utility

The negotiating space represented in Figure 3 defines the achievable mix of prices/delivery times, among those proposed by the given seller, which the buyer prefers as compared to the alternative of failure to clinch the deal. The picture sketched by the representation in Figure 3 corresponds to a typical situation of representation of the space of individual utility with respect to an object of a bargaining process (a product) that is not defined a priori in its attributes but which emerges from the result of the interaction. In this representation the functions S and B define the limits of the parties in a bargaining process, so that it becomes possible to identify, in a logic of analytical modelling of this process, the "bargaining space" that is typical of a negotiation situation. The objectives and requests of the parties involved will be reasonably formulated within the spaces delimited by these functions, and will be highlighted for the buyer and seller as areas which, as far as the functions are concerned, are respectively below and above the curves in the prices/delivery time space.

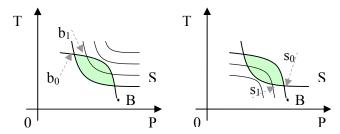
If we now seek to make a transition from reflection on distributive negotiation processes [Walton and McKersie, 1965, Raiffa, 1982] to an inquiry into integrative negotiation [Follett, 1940, Bazerman, et al. 1985, Simons, 1993, Barry and Friedman, 1998], it is necessary to perform a further analysis, which we will structure on two levels. On a first

level, we begin by evaluating the doses of utility that can be associated by the buyer and seller with the individual points of the negotiating space represented in Figure 3 (space of individual utility), keeping in mind that these points constitute possible moments of conclusion of the bargaining procedure with which the points are associated. On a second level, the results of this analysis are represented in terms of space of utility shared by the buyer and seller in the bargaining process. The interaction between buyer and seller leads to the emergence of the possible negotiated solutions, expressed in terms of a combination of attributes of the supply alternatives (for example the price/delivery time combination). Such solutions embody a mix of characteristics of the supply attributes that have been formulated through the bargaining process: that is to say, they represent a potential outcome of this process, inasmuch as they are solutions included within the seller and buyer's limits, but they cannot be defined as breadbaskets of the supply attributes. Overall, therefore, the bargaining process does not merely define the conditions for purchase and sale of a given product, but it effectively plays a constitutive role in defining the attributes of the product themselves, in the sense that these become formulated through, and arise from, the interaction between buyer and seller [Mouzas 2004].

Let us once again examine the representations concerning the seller's best supply alternatives (S) and the buyer's no-purchase indifference function (B). We will now consider these representations not so much in order to identify a negotiating space in an approach focusing on the space of individual utility, but rather in order to assess the overall level of utility that the two parties can associate with the individual possible solutions/products in the framework of an attitude focusing on the space of shared utility. In this phase we will consider only the mode of representation pertaining to the price/delivery time combination which is conceptually an example of a greater array of supply attributes. Here too, for purposes of figure exemplification, we consider only the hypothesis of convexity of the alternatives evaluated by the seller (delimited by the best supply alternatives function) and by the buyer (delimited by the no-purchase indifference function). Looking at Figure 4, it can clearly be seen, in the first diagram, that the level of utility the buyer can associate with the alternative represented by point "b<sub>0</sub>" is the same as can be associated with alternative "b<sub>1</sub>", but it can also be noted that the level of utility which can be associated by the seller is higher in point "b<sub>1</sub>" as compared to the level that can be associated in point "b<sub>0</sub>". In the same way, one can observe that the utility associated by the seller with point "so" is the same as that associated with point "s<sub>1</sub>", but the utility the buyer associates with point "s<sub>1</sub>" is greater than that which can be associated with point "s<sub>0</sub>" in the second diagram of the same figure.

Therefore the overall utility, and more generally the position - within the utility space - that the buyer associates with the different alternatives each of which is associable with the negotiating space, is variable because under equal utility associated by the buyer or the seller one can have different levels of utility associated by the opposite party. Thus the exploration of the negotiating space delimited by the seller's best supply alternatives function and the buyer's no-purchase indifference function provides elements that are useful not only for a perspective of distributive negotiation but also in a perspective of integrative negotiation, since the points included within the negotiating space turn out to correspond to different levels of overall utility.

Figure 4 – Levels of utility that can be associated with the seller's best supply alternatives (S) and the buyer's no-purchase indifference function (B)

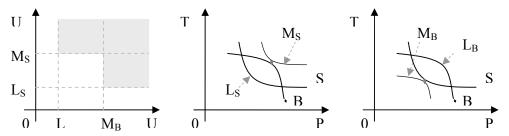


Let us now consider the second level of analysis, as anticipated earlier. On this level we propose the representation of the space of shared utility in a diagram defined by the dimensions "level of utility associated with the outcome of the bargaining process in the buyer's perspective" and "level of utility associated with the outcome of the bargaining process in the seller's perspective". The resulting picture is shown in Figure 5.

In this figure the seller's best supply alternatives function corresponds to the minimum utility level at which the combinations represented with the stated function can be associated (LS), hypothesising that these combinations are equivalent to one another. The greatest level of utility the seller can associate with the negotiating space is hypothesized to correspond to a point of the buyer's no purchase indifference function, and is indicated in the figure by MS. Similarly, the buyer's no-purchase indifference function will be associated with a level of utility for the buyer indicated as LB, and the highest level of utility that the buyer can associate with a combination situated within the negotiating space is hypothesized to correspond to a point on the seller's best supply alternatives function, and is indicated as M<sub>B</sub>.

The representation of the space of shared utility also allows for the theoretical possibility of not associating the limit of one party (let us say, the buyer) with the greatest utility for the other party (let us say, the seller), but rather, of achieving greater utility for both parties, or at least for one of the parties (Figure 5, first diagram, shaded areas).

Figure 5 – Space of the levels of utility associated with the solution negotiated between buyer and seller (first diagram) and minimum and maximum utility levels associated by the buyer (second diagram) and by the seller (third diagram) with solutions included within the negotiating space



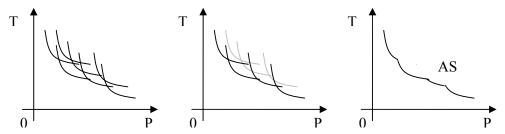
If we now consider a situation that embodies a specific application of the proposed representations, we find that the bargaining process offers further relevant elements that illuminate the relational processes between seller and buyer and which go beyond the dimension represented in a purely mathematical sense [Bazerman et al., 2000]. The model for analysis of the relation holding between representation of the buyer and seller's alternatives and the negotiating activity is evaluated in this paper with reference to the specific application consisting of business to business relations in the field of textiles and clothing. More specifically, attention will focus on representation of the alternatives and the bargaining processes that arise during an interaction between seller and buyer in cases where the seller is a supplier of semifinished textile products and the buyer can be characterised as an industrial retailer [Guercini, 2003, Guercini and Runfola 2004]. The industrial retailer is defined, in our framework, as an actor who, unlike the common apparel retailer, does not restrict the scope of activity to retail distribution but sets up the project for the collection and embarks on a process of integration of functions that were traditionally typical of the clothing manufacturer (research and development for the collection, sourcing of semifinished products, etc.). In other words, this is an actor who can be assimilated to the category of the retailer manufacturer already described on a more general plane within the framework of textiles and apparel [Hollander, 1970].

### 3.2. The aggregate function of supply best alternatives

If the situation features the presence of a large number of suppliers, with well differentiated characteristics, then it becomes useful to devise procedures for representation of an aggregate function of the best supply alternatives. In effect, each supplier can in such cases put forward an array of alternatives, which in some cases will be dominated by those of other suppliers, in the sense that the alternatives proposed by other suppliers may be superior, as regards all the attributes associated with them, as compared to all the alternatives proposed by the first supplier. But in other cases, individual suppliers may, within the context of their own supply alternatives, propose mixes of attributes that do not turn out to be dominated by those of other suppliers, in the sense that for at least one of these attributes no other supplier is capable of associating such an advantageous condition with the mix represented by the other attributes. These, then, are the supply alternatives proposed by the most competitive sellers. It will thus be possible to construct an aggregate function of the best supply alternatives (AS), which will represent the alternatives that are dominant among those proposed – or at least, among those which could be proposed – by the suppliers contactable on the market. This function will then represent a managerial tool for evaluation of the available supply alternatives. Individual segments of this function will be traceable to the different most competitive suppliers. These segments of the AS function will correspond to segments of the S functions of the individual most competitive suppliers. The aggregate function of the best supply alternatives thus appears clearly connected with the function that delimits the individual seller's supply alternatives.

The set of alternatives proposed by the various suppliers contactable on the market, and the subsequent process of identifying the various most competitive suppliers and building the AS function are represented in Figure 6. More specifically, the first diagram of the figure proposes the representation of supply alternatives functions referring to the suppliers contactable on the market (S); the second diagram, on the other hand, shows the supply functions of the most competitive suppliers; finally, in the third diagram a representation of the aggregate function of the best supply alternatives (AS) is given, distinguishing among the individual segments linked to the various different suppliers. These segments correspond to the alternatives of the most competitive suppliers, and they not only are not dominated by any other alternative proposed by the same supplier, but are not even dominated by any other supply alternative present on the market.

Figure 6 – Functions of the supply alternatives proposed by suppliers contactable on the market. Representation of the aggregate function of the best supply alternatives (AS)

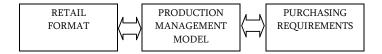


In general terms, the models put forward and the hypothesis advanced here, which has been subjected to empirical and conceptual testing as outlined in the following paragraphs, support the argument that in order to construct the buyer's indifference function it has to be hypothesized that the attributes of the retail format, which are directly connected to the production management model adopted, contribute to defining the purchasing requirements and consequently influence the shape of the buyer's indifference function.

## 3.3. The indifference function in the case of industrial clothing retailer: factors influencing the shape

With regard to the specific case where the buyer is an industrial clothing retailer, the assessment of the buying alternatives, expressed terms of economic advantageousness/service or price/delivery time, is affected by the purchasing requirements of this type of operator, as such requirements are closely linked to the production management model, and are also closely dependent on the retail formats established by the model. Although, insofar as the industrial retailer is concerned, it is the retail formats that play a central role as the factor which crucially determines the purchasing requirements, it should be noted that the other two elements mentioned (namely, the production management model and the purchasing requirements themselves) can likewise contribute to shaping the character of the retail formats; consequently, the relation between these factors can be characterized by reciprocal influences (Figure 7).

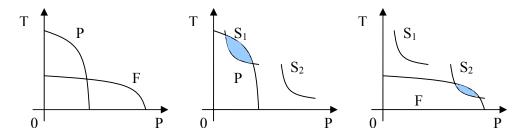
Figure 7 – Factors determining the shape of the indifference function when the buyer is an industrial apparel retailer.



The buyer's no-purchase indifference function is hypothesized to take on different shapes on the basis of the different purchasing requirements connected to the production management model and to the retail formats. This hypothesis can be formulated as a representation of alternative shapes of the buyer's indifference function in terms of price/delivery time. In the case of retail formats characterized by prompt range renewal and rapid production management models (swift planning, fast or quick fashion), one might have "F" type functions, while in the case of retail formats that have a more stable range throughout the season and have production management models based on seasonal planning, one might have "P" type functions (Figure 8, first diagram).

As was mentioned in the previous section, the tool proposed for the representation of the individual seller's supply alternatives, namely the seller's best supply alternatives function (S), can be considered in the buyer's perspective as a useful element to represent the moment of interaction and bargaining with the individual supplier. However, it should be kept in mind that in the buyer's perspective the supply alternatives are more numerous than those proposed by any individual supplier, given that the buyer interacts with a number of different potential suppliers. Thus in a broader framework represented by the set of supply alternatives deriving from the extensive range of suppliers contactable on the market, the tool of the seller's best supply alternatives function lends itself to comparative evaluations. Such evaluations are partly linked to the buyer's specific requirements, but they also derive from a specific production management model and from the characteristics of the retail format which the buyer may have chosen for the sales outlet. Let us consider for example two individual suppliers who propose fairly differentiated mixes of the attributes of their supply, distinguished, say, in terms of price/delivery time. The respective seller's best supply alternatives functions (S<sub>1</sub> and S<sub>2</sub> in Figure 8, second and third diagram) may or may not attract the buyer's interest, on the basis of the shape of the latter's indifference function. More specifically, in the case of a buyer's indifference function of an "F" type in terms of price/delivery time, the supply alternatives proposed by the first seller and delimited by function S<sub>1</sub> are indeed of interest, whereas those of the second supplier delimited by function S<sub>2</sub> (Figure 8, second diagram) are not of interest. If, on the other hand, the buyer's indifference function in terms of price/delivery time is of a "P" type, then the supply alternatives proposed by the second supplier that are delimited by function S2 hold considerable interest, whereas this is never the case for those proposed by the second supplier delimited by function S<sub>1</sub> (Figure 8, third diagram). This highlights the fact that study of the retail format and of the production management model is of relevance not only in general, for an evaluation of the purchasing alternatives and sourcing strategies, but in particular for choice of suppliers. Consequently, it also underscores the type of managerial utilization that the seller's best supply alternatives function can have in the sourcing strategy.

Figure 8 – Possible representations of the buyer's no-purchase indifference functions in situations of different formats and production management models



In this case, for the purposes of figure exemplification, we once again consider the hypothesis of convexity of the alternatives, which naturally is no more than one of the hypotheses that could be subjected to empirical observation. That is to say, we do not exclude other hypotheses concerning the trend of the buyer's no-purchase indifference function (for example, due to the presence of flections points), including hypotheses that involve a posteriori rejection of the assumptions we have put forward concerning the shape of this function (continuity, monotonic).

## 4. Representation of the no-purchase indifference function and collaboration along the supply chain: the cases of six operators of textiles-apparel distribution

## 4.1. Production management models and retail formats: an introduction to the empirical cases

We will now endeavour to propose the construction of the no-purchase indifference function in the case of some operators working in textiles-apparel (t/a) distribution, who represent buyers of textiles semi-finished productions and making-up services. The main body

of literature that deals with the t/a sector [Bruce et al, 2004, Christopher et al., 2004] as well as the empirical evidence both show that when the retailer acts as the buyer of categories of merchandise different from those involved in sales, this function is integrated with other functions of an industrial nature, primarily those that concern definition of the collection and management of production. Even Hollander [1970], in discussing the issue of the internationalisation of distribution in the apparel sector, recognizes the "industrial" nature of these distributors, when he states that "…many, although not all, are manufacturing retailers who have developed highly integrated operations".

The integration of industrial competencies, as far as the commercial enterprise is concerned, depends partly on the organizational models adopted and partly on the production management model. Therefore, in order to acquire an in-depth understanding of the implications of this evidence and the way it affects construction of the buyer's indifference function, it is necessary to examine the production management models that can be adopted by the retailer. This is of interest for a study of buyer-supplier relations, but it is also of noteworthy importance because the models are directly connected to the innovative content of the retail format that is being proposed.

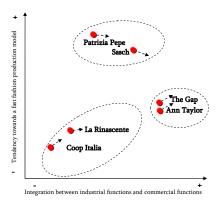
In the sphere of textiles-apparel, it is customary to identify three production management models, as a function of the production time schedules adopted and of the number of annual collections that are created on the basis of these schedules [IRPET-Textrends, 1991, Guercini, 2003, Vona, 2003]. The following types of firms are distinguished: quick fashion, firms operating with a planned programme, firms operating with a mix. Over recent years, the formula of rapid production (fast fashion or quick fashion) has acquired greater importance than was previously the case [Azuma, 2002, McLaren et al, 2002, Guercini, 2001], and firms adopting this type of model are now also characterised by their quality brand positioning, which traditionally used to be linked to the planned model [Guercini, 2003, IRPET-Textrends, 1991]. By acquiring considerable expertise in supply chain management, these operators are succeeding in establishing a flexible pace of range renewal, which can allow faster renewal than in the case of the traditional models, yet without having to forego their own style and branding policies which are designed to ensure that their brand makes a strong statement and is endowed with a distinctive personality. The empirical evidence shows that operators who act as industrial retailers [Guercini, 2003] and who adopt production management models linked to new quick fashion formulas [Moore and Fernie, 2004] are achieving considerable success in this phase of the market [Runfola, 2006].

This emphasis on new fast or quick fashion models suggests the need for reflection on the concept and nature of the retail format in the clothing sector and its role in innovation [Runfola, 2006]. It also raises the question of the greater importance of certain format attributes as compared to others during the current historical phase. Among such attributes, it is worth noting the importance attached to a high frequency of range and display renewal in sales outlets (by means of gradual insertion in small reference batches) and the capacity for prompt real time response to demand (and the consequent reduction in lost sales). These elements, which are taking on central importance, are directly linked to the supply chain management model and to relations within the supply network.

It is of interest to draw up a summary outline of the case studies presented for this paper. In this context, we consider two important dimensions that are relevant for a representation of the different situations that were analysed, involving case studies of distributors (Figure 9): (a) fairly strong integration between industrial functions and commercial functions (in terms of presence of both); (b) the tendency, which is increasing in the present phase, to move towards a fast fashion production model. The figure gives a visual representation of the positioning of the actors on the basis of the two dimensions identified. The arrows represent the trajectories of evolution, with reference to the dimensions proposed, which emerged from discussions during interviews with members of the firms contacted during the case analysis process. Simplifying and summarising our results, three situations can be pinpointed, focusing specifically on these cases.

The first situation concerns the area containing Coop Italia and La Rinascente. Both of these companies are characterised by low levels insofar as integration between functions of an industrial and commercial nature is concerned, and also in terms of adoption of the kind of approach embodied by the fast fashion production management model. These low levels are clearly ascribable to the nature of the two firms, since Coop Italia is a despecialised retailer where the textiles-apparel component is connected to the hypermarket formula, whereas La Rinascente is a "traditional" retailer that operates predominantly with the retail format of the "department store".

Figure 9. A summary representation of the case studies conducted



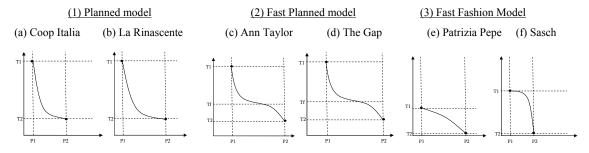
The second situation concerns the area containing Ann Taylor and The Gap, which are American distribution chains specialized in clothing. The operators are characterized by elevated levels of integration between functions of an industrial nature and commercial functions (with integration translating into a relation between merchant, sourcing and design); they also show a tendency to adopt a greater orientation towards a fast fashion management approach, through the development of a production management model that is in line with the so-called fast planned approach. Effectively, these are subjects that act as fully-fledged industrial retailers, and their retailing competencies play a dominant role as compared to their manufacturing activities, although the latter are in any case controlled.

The third situation is that of Patrizia Pepe and Sasch. These are subjects situated on the upper levels (albeit with different intensity) as far as adoption of the fast fashion type of production management models is concerned; at the same time, they also propose levels of integration between retail and industrial functions that are lower than observed in the case of Ann Taylor or The Gap. In effect, both Patrizia Pepe and Sasch were set up as production firms that gradually integrated into retailing through a number of different routes, and at present Sasch can be described as having the profile of an "industrial retailer". In such cases, the original combination within the network, which modifies the nature of the buyer-supplier relation, is the mechanism that has given rise to the format innovation, which thus takes on a strongly firm specific connotation. These are hypotheses, with reference to the case studies, that were formulated on the basis of the first evaluations of a qualitative nature; therefore they are subject to subsequent empirical tests to ascertain their real tendency.

## 4.2. The development of the indifference function in the cases of six industrial apparel retailers

With these considerations in mind, we can now look more closely at the construction of the buyer's no purchase indifference function. In this regard, the empirical analysis demonstrates that the convexity hypothesized to be an intrinsic aspect of the retail operator's no purchase indifference function is only one of the possible shapes of this function. Thus in the case of retailers who adopt traditional production management models, one notes that the buying strategies award greater relevance to price orientation, as is the case with La Rinascente and Coop Italia. In such cases, orientation towards the price attribute in supply relations increases in intensity with increasing plannability and basic content of the product, and with decreasing price positioning of the retail operator's apparel supply. In our view, construction of the no-purchase indifference function presupposes a concave set of the preferences (Figure 10 – Planned model), since a reduction in delivery time is not matched by a similar willingness to accept an increase in purchase price. In particular, it can be shown in these cases that the function does in fact represent a stretch, included between a maximum time (T1) and a minimum time (T2), with T1 being defined by the typical timing of the planned management model and T2 by the tighter timing of the integrations launched by the distributor during the season. Similarly, it can be shown that there is a price interval defined by a minimum level (P1) and a maximum level (P2), the width of which can be interpreted by virtue of the positioning of the distributor's supply on the market.

*Figure 10 – The no-purchase indifference functions in the case of retailers* 



In the case of the "fast planned" model, as observed for Ann Taylor and The Gap, the construction of the indifference function presupposes a rather special situation (Figure 10 – Fast Planned model). Here too it can be shown that the function effectively represents a

stretch, included between a maximum time (T1) and a minimum time (T2), and a minimum price (P1) and a maximum price (P2). However, as compared to the previous cases, it can be presumed that the trend of this function is give by a concave set of the preferences up to a given time (Tf) (corresponding to the flection point in Figure 10), beyond which the relevance of the time attribute, rather than the price attribute, assumes a central role in buying strategies, thus resulting in a convex trend of the indifference function. This change is linked to the importance of flash collections (new collections launched during the selling season) which are characteristic of the fast planned approach. In such cases, the buyer's sensitiveness to shorter delivery times may lead to greater rigidity as compared to corresponding increases in the purchase price. Once again, with reference to the trend of the indifference function thereby constructed, the acceptable minimum and maximum levels of the purchase price are defined by the supply bands established by the retailer.

In the case of fast fashion models, the retail operator's orientation in supply relations can (potentially) take on a greater significance in terms of sourcing different supply alternatives that may allow a higher service level (in terms of time to market). This can be interpreted as reflecting a "agile" orientation in supply chain management [Guercini and Runfola, 2004]. Emblematic in this regard is the case of Patrizia Pepe: here it can be shown that the ability of suppliers to adapt to the firm's rationale is one of the driving forces behind priority choices. The reason is that the possibility of rapid range renewal in the retail format chosen by Patrizia Pepe is closely connected with the supplier's ability to meet the tight delivery deadlines and to engage in production according to the timing required by the fast fashion model. This empirical case provides several examples of how suppliers (fabric and manufacturing services) and Patrizia Pepe have developed their capabilities to work together. As an example we cite a statement made by the firm's executive director on the relationships between Patrizia Pepe and two of its fabric suppliers:

"...Five years ago we were working with two suppliers for the same fabric: supplier A capable of producing at most 2,000 metres of fabric per week and supplier B capable of producing at most 4,000 metres per week. Consistently with the expected sales in that period we were expecting to work more with the latter. However at the end of the season we found that supplier A reached a turnover (due to our orders) which was more than double with respect to the turnover of supplier B. This apparent paradox can be explained by considering that supplier A was able to fit better with our production management model, assuring precise quality standards and, above all, delivery times. In our production management model even an hour's delay matters, because it implies not having the garments at the points of sale on the right day. The supplier realized how to work with us

and we realized what the supplier needed in order to be able to better fit with our philosophy..."

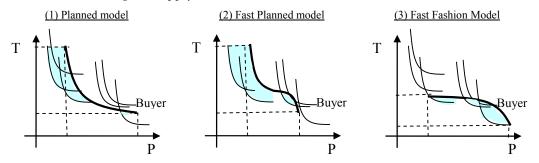
The decision by Patrizia Pepe to opt in favour of a "agile" approach [Guercini and Runfola, 2004] to the supply chain becomes relevant when it is a question of defining the characters of the interactive process, and it is particularly important with reference to the nature of the bargaining processes [Da Silva et al, 2002], which in this specific case assume the form of integrative negotiation. Similar considerations can be put forward with regard to Sasch, although the quick or flash fashion approach is implemented with less intensity as compared to Patrizia Pepe. However, even in these cases it can be shown that the indifference function does in fact represent a stretch (Figure 10 – Fast Fashion model), included between a time interval (T1)-(T2) and a price interval (P1)-(P2). However, as compared to the previous cases, it can be presumed that the trend of this function is based on convex preferences, on account of the greater emphasis placed on time to market, with less regard for the price attribute.

Interesting evidence emerges when one considers the opportunities for working together open to actors operating in the textile-clothing supply chain. In this framework, a central role is played by behavioural differences in terms of the buyer-retailer's use of a predominantly local supply chain as compared to a predominantly global supply chain [Hines, 2004]. This issue is of considerable relevance in the current phase of buyer-supplier relations in the textile-clothing sector, since small and medium-sized businesses localized in high labour cost countries are increasingly finding that they have to interact with retailer-customers who can, potentially, expand their supplier base globally [Mattson, 2003]. In this regard, a distinction should be made between distributors who adopt planned management programmes and those who adopt management models oriented towards fast-fashion.

In the case of retail operators who adopt traditional management models (planned and fast planned), one finds a predominance of the lean orientation [Christopher et al, 2004], as shown by the cases of Ann Taylor, The Gap, La Rinascente and Coop Italia. In these cases, the orientation towards the price attribute in supply relations takes on greater intensity with increasing plannability and basic content of the product, and with decreasing price positioning of the retail operator's clothing supply. As regards Ann Taylor, its price positioning on medium-high levels and the elevated fashion content of the brands proposed by the distributing enterprise justify the integration in high labour cost supply areas, on account of the quality of productions of these contexts. By contrast, with Coop Italia, on account of its basic content and the plannability of a substantial part of the range, price orientation in choice

of supplier represents a priority driver, and can justify recourse to global sourcing. In the case of fast fashion models, the retail operator's orientation in supply relations takes on – at least potentially – greater significance in terms of the search for alternative suppliers who will provide a higher level of service (in terms of time to market). This is in line with their agile orientation in supply chain management [Christopher et al, 2004]. Emblematic, in this sense, is the case of Patrizia Pepe, where the ability of suppliers to behave in a manner that fits with the corporate philosophy has been shown to be one of the drivers of priority choice. This is due to the fact that the possibility of range renewal in the distributive format proposed by Patrizia Pepe is closely linked to the supplier's capacity to meet tight delivery deadlines and to set up production according to the time schemes of the fast fashion model. Patrizia Pepe's orientation towards a agile approach to the supply chain becomes relevant above all when it is a question of defining the characters of the interactive process, especially in reference to the nature of the bargaining processes, which in this particular case assume forms of integrative negotiation. However, in general it can be said that the agile approach of operators who propose production management models based on the fast fashion concept does not necessarily mean resorting to local suppliers. Rather, in the cases we surveyed, the correspondence between agile and local remains an important aspect as far as outlet markets are concerned, which do exhibit a predominance of the local market (Patrizia Pepe and Sasch), and also as far as price positioning on high brand levels (Patrizia Pepe) is concerned. But if these conditions are not present, the agile supply chain could correspond to global supply alternatives, which would at the same time offer an advantage in terms of cost, as seems to be delineated in the tendencies analyzed with reference to the case of Sasch.

Figure 11 – The no-purchase indifference functions in the case of retailers and opportunity for collaboration along the supply chain



At a general level, the suggestions emerging from analysis of the relations among these actors in the framework of the supply network delineate a situation where the relations among clothing retailers and semifinished textiles operators and making-up services can differ as a function of the production model adopted by the subject who integrates functions of a commercial nature and functions of an industrial nature. In this regard, different opportunities for working together in the supply chain are brought to light. Figure 11 endeavours to synthesise such situations, proposing a distinction in the relation among the actors which descends from the type of model (planned, fast planned, fast fashion) adopted by the retail buyer.

#### 5. Final remarks

This paper has considered the manner of representing the supply alternatives contactable on the market, looking at the question from the buyer's perspective. More specifically, the aim of this paper was to analyse some aspects of the relation between buyer and seller with reference both to representation of the supply and sourcing alternatives and also to the implications for bargaining processes. In this context, the paper has put forward the concepts of the "seller's best supply alternatives function" (S) and the "buyer's no-purchase indifference function" (B), which are to be seen as modes of representation of the alternatives available to the two actors involved in the interaction, and as a limit for definition of the negotiating space within the bargaining process.

In our proposed interpretation, an indifference curve is a graph showing combinations of two key supply attributes to which an economic agent (such as the buyer or the seller) could be indifferent. The best alternatives in terms of different combinations of key supply attributes with regard to all the possible suppliers in the customer's market can be chosen by the buyer. Therefore, the curve of the best supply alternatives can be drawn by selecting the best combinations among the entire array of possible mixes offered by a supplier on the market. This perspective allows for a shift in the buyer's point of view, from sourcing strategies connected with "distributive negotiation", which rely on the economic advantageousness of the source, to sourcing strategies connected with "integrative negotiation", which are based on evaluation of the suppliers' service capabilities.

In putting forward the above analysis based on the curves (S, B, AS), our objective at this stage is not so much to provide a realistic representation in a descriptive sense as, rather, to furnish a preliminary formulation of a tool that will be useful for managerial assessment of the actors of the interaction (buyer and seller). However, it is worth noting that the best supply alternatives function and the no-purchase indifference function can be represented in the terms we have proposed here only if a series of simplifying assumptions are made (continuity, monotonicity). Such assumptions may need to be revised in future research. In addition, the

shapes of the indifference function shown in the paper are strictly related to the textileclothing sector which has a different time sensitiveness than most other industries.

The validity of these functions as models capable of representing the supply alternatives is formulated as a hypothesis, and it can naturally form the object of further debate and possible revision. Thus in this context we propose a future line of research aiming to identify the underlying form of modes of representing perceptions and alternatives in processes of interaction, with a detailed account to be achieved by devising a set of alternative modes of representation and an empirical test of these alternatives. In future empirical investigations it could be interesting to study the impact that interaction between parties and time passing can have on modifying the shapes of the actor's function and the implication of it in terms of opportunity for collaboration along the supply chain.

Taking into account that there is a fairly large number of suppliers on the market, an aggregate function of the best supply alternatives contactable on the market (AS) is then put forward. In defining this function, an important role is played by the most competitive sellers' best supply alternatives. If comparison of the individual buyer 's function B with the individual seller's function S makes it possible to identify a negotiating space as part of the bargaining process, then comparison of the individual buyer's function B with the AS function defined by the dominating alternatives of the most competitive suppliers makes it possible to identify further aspects that are endowed with considerable strategic importance, such as: (1) sustainability, in terms of available supply alternatives, of the distributive format and of the corresponding production management model; (2) identification of which ones among the contactable suppliers are the most competitive and could thus turn out be the main reference point, given the characteristics of their supply alternatives; this would then imply that interactional processes should focus attention above all on these suppliers.

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