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**OPERATIONS FLEXIBILITY AND OUTSOURCING BENEFITS**

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**Summary:**

Outsourcing of operations management activities is a widely extended practise for many manufacturing and service industries competing at the global level. This way, firms are able to clearly define their core field of activity while relocating other non-core activities to organisations which are able to perform them with higher degrees of efficiency. However, outsourcing is not exempted from some risks, specially those derived from process coordination, information sharing or possible oportunistic behaviour on the outsourced firm. Operations flexibility can play a fundamental role in moderating these risks while increasing the benefits from outsourcing by decreasing the level of dependability on the outsourced activities. In this paper, a structural analysis is performed to analyse the relationship between operations flexibility and outsourcing benefits in service firms. Results show that higher levels of flexibility in the Informations Systems, markets, expansion and personnel dimensions are directly related to higher outsourcing benefits.

**Key words:** Outsourcing, strategic alliances, operations management, flexibility.

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## **1. Introduction**

Operations Management may be understood as productive processes management, both in manufacturing goods and in providing services. Therefore, although the operations management initially established its analysis range under the perspective of tactic analysis, and with a clear orientation towards businesses dedicated to production (Buffa, 1980; Mabert, 1982), it was later redefined as a field of guideline decisions related to those processes carried out the firm, applicable both to production and services (Chopra, Lovejoy and Yano, 2004). Whilst certain research developed in the marketing research field concentrated its attention on service quality, with consumer participation and finding the service to be the cause of a new phase in the client service analysis, and a supplementary source of earnings for companies (Reichheld and Sasser, 1990; Zeithaml, Berry and Parasuraman, 1996), various authors have argued for the need of more research in the service activities management field (Amoako-Gyampah and Meredith, 1989; Bretthauer, 2004).

One of the great challenges in the management of service operations is to build a clear framework for a classification or categorisation of these firms. The definition of service is so wide that many times it is complicated to differentiate between service and production activities, specifically in some Information Technologies (IT) industries. However, when considering services processes, these are all of a perishable, heterogeneous, intangible or simultaneous nature and all require some degree of customer contact (Metters and Marucheck, 2007). Inside of this same process perspective, the participation of the consumer in the productive process is the most important difference that exists between production and services (Sampson and Froehle, 2006).

When analysing some of the most relevant service classifications in literature, two basic types differentiate service companies from internal services (Fitzsimmons, Noh and

Thies, 1998; Fitzsimmons and Fitzsimmons, 2006). Hence, service companies are those organisations whose main activity is to deliver a service to an external customer either at the customer or at the firm location. Internal Services are those delivered out internally in organisations in order to support production processes. Activities such as accounting, maintenance or administration are internal services. It is crucial for the firm to differentiate which activities are core activities and should be kept inside the organisation from other activities that could be susceptible of being outsourced to other companies offering better performance.

Flexibility in service companies has received increasing attention by literature in the last years (Karmarkar, 2004; Verdú-Jover, Lloréns-Montes, and García-Morales, 2004). Service firms need to adapt rapidly to changing global environments. Hence the needs, requirements, objectives and structures need to alter and react to new challenges and market opportunities (Wright and Snell, 1988; Wright, Snell and Dyer, 2005). Outsourcing is a strategic option that should be embedded in the operations management decisions system of the service firms, especially when facing the challenge of dealing with changes in flexibility in situations of constant adaptation, under the assumption that adaptation is temporary for organisations, while flexibility is a long term issue (Miles and Snow, 1994).

In this paper, a model on the relationship between the different flexibility dimensions and benefits of outsourcing is empirically tested on a sample of service firms located in the Spanish territory. The remainder of this study is structured in four parts. First, a theoretical framework is introduced, leading to the statement of hypotheses. Second, the methodology is described in order to present the results and main findings in the third part. Finally, the fourth part will present discussion, conclusions and limitations of the present study.

## **2. Theoretical Framework**

Outsourcing involves that a process or activity that was traditionally performed within the company is moved to company outside of the organisation, mainly due to organisations needing to define their field of activity. At present, few management practices have attracted as much attention as the outsourcing practice, and along with this interest, specialised literature has dedicated many efforts to analyse its sources and implications (Kedia and Lahiri, 2007; Doh, 2005).

What seems evident in the analysis of this concept is how outsourcing became a useful way of adjusting company limits in response to external economic pressures. From the perspective of the *Transaction Costs Theory*, outsourcing optimises costs of transactions as the outsourced firm performs the activity with a better cost structure than the contractor. Hence, both firms benefit from this transaction and each one can focus on those activities they can develop efficiently.

Outsourcing practices also generate involves a loss of control over those outsourced activities or processes. This loss of control relates not only to the productive process but also to the assets with high levels of specificity and resources monitoring (Ittner et al., 1999; Wouters, Anderson and Wynstra, 2005). Operation flexibility can mitigate this loss of control by reducing dependence on outsourced activities. In case of failure or delay of the outsourced process, a firm with high operations flexibility can relocate or even modify its processes, routes or production capacities among others to alleviate the effects of possible shortage or even complete stop of the outputs from the outsourced processes (Stevenson and Spring, 2007; Duclos, Vokurka, and Lummus, 2003).

### **2.1. OUTSOURCING AND STRATEGIC ALLIANCES**

The Transaction Costs Theory is one of the frameworks that explains firm strategic alliances, joint ventures and outsourcing (Yasuda, 2004). Based on this theory, outsourcing

practices and the development of strategic alliances are performed considering certain characteristics of assets of specific nature, associated levels of uncertainty, difficulty in evaluating performance and the frequency of transactions among others (Aubert et al., 1996). Outsourcing contracts tend to be signed in conditions of low levels of uncertainty, previous frequent transactions and high levels of asset specificities. Hence, company management decisions are taken with the intention of reducing the total transaction and production costs. The alliance will be used in all those cases where the transaction cost associated to an exchange is mutually acceptable but not sufficient to justify a vertical integration. On the other hand, there is a source of instability inherent to alliances, which is the opportunistic behaviour of both parties, which needs to be controlled..

The term strategic alliance covers a wide range of methods of collaboration such as the association of suppliers and customers, outsourcing agreements, technical collaborations, combined research projects, the joint development of new products, combined production or distribution agreements or franchising relationships. The increasing importance of this field of research has led to the need of more studies to deeply analyse its causes and consequences. The different studies investigating the formation of alliances cover, among others, the ability to gain control of the market by creating monopoly-based structures (Katz, 1986; Schwartz, 1987), the role of strategic options in firm alliances (Kogut, 1991; Sanchez, 1993) or the relationships between products development and the outsourcing of production-related networks (Rotemberg and Saloner, 1991). These issues have been studied from the perspective of their resources and capacities (Van de Ven, 1976; Barley, Freeman and Hybels, 1992) as well as from the perspective of the Transaction Costs Theory (Ring and Van De Ven, 1992; Oxley, 1997).

Outsourcing is a kind of strategic alliance with very specific terms and relationships regarding a lapse of time for which such relationship will be effective. This refers to the

type of "agreements where two or more businesses participate in trying to achieve the same objective by sharing resources and activities." (Teece, 1992). Outsourcing as a strategic alliance is developed between at least two organisations that remain legally independent, sharing benefits and management control on a previously assigned work with performance levels requirement made explicit in a contract (Yoshino and Rangan, 1995). Outsourcing relationship can configure hybrid organisational forms sharing specific goals in order to face environmental changes (Auster, 1994; Olk, 1999).

## 2.2. THE ROLE OF FLEXIBILITY IN OUTSOURCING IN THE CONTEXT OF STRATEGIC ALLIANCES

Flexibility in operations management is a concept which has received increasing attention from the researchers in the last decade (Slack, 2005). Even though most managers recognize the importance of flexibility when responding to changes in the environment, implementation is still mainly focused more on machines than in the integral dimensions of flexibility (Slack, 1987; Upton, 1994). Strategic alliances decisions have a direct impact on the levels of operations flexibility of the firm, due especially to the existence of a series of conflicting competitive forces that create the dimensions of instability in these alliances (Das and Teng, 2000, Teng and Das, 2008).

Operations flexibility is subjected to modifications when the members of an alliance need to modify its firm structure to adapt to changing opportunities in the business environment. In comparison to other organisational frameworks strategic alliances have some advantages as they are intrinsically more flexible allowing firms to maintain their structures through rigidity (Teng, 2007; Folta and Miller 2002, Kogut 1991). Rigidity is based on the degree of communication and informations interchange between the members of an organisation (Stevenson and Spring, 2007). Rigidity helps to unify criteria during the decisions making process (Sharfman and Dean, 1997) or in the management of the

essential capacities (Leonard-Barton, 1992). In the same way, this concept also includes, the structural rigidity that comes from the inter-connection of the integral elements of the organisation, as well as the rigidity maintained in the external relations network available to the different organisations. In this aspect, a high amount of rigidity has important advantages in alliances, such as increases in incentives and mutual objectives, a correct alignment between the interests of both parties and a reduction in possible opportunistic behaviour (Parkhe, 1993).

Flexibility and rigidity should coexist in order to maintain congruence in the decision making process while reacting to environment changes. Both help strategic alliances to remain along time and should not be understood as opposite constructs but complementary to maintain coherence in objectives of the whole alliance (Das and Teng, 2000).

The different types and dimensions of flexibility have different impacts on the firm performance. For service firms, there is no a clear agreement on the right levels of flexibility in each dimension and which are the specific benefits from each of them (De Rond and Bouchikhi, 2004). Many research studies on manufacturing plants focus on machine programming as well as production models integration (Taymaz, 1989). Some studies adapt long and short term flexibility dimensions scales for service firms finding significance between levels of flexibility and performance (Arias-Aranda, 2003). In addition, achievement of higher levels of flexibility in service firms is feasible at much lower costs through the implementation of Information and Communications Technologies (ICTs) which help to accomplish reengineering processes fast (Sanchez y Perez, 2005)

Operations flexibility reduces firms vulnerability to unexpected alterations in short term issues such as product and/or service volume, timings or schedules as well as long terms concerns like variations in customers needs or fast obsolescence of technology (Eppink, 1978; Foss, 1998; Hatum and Pettigrew, 2006). It helps controlling and favouring

a general sensibility when uncertain situations or unexpected disruptions may exist in the business environment (Kickert, 1985). Hence, flexibility applied at all firm levels fosters the ability for the organisations to react quickly while putting the variety of management capacities into action that permit an increase in the capabilities for administrative control and increasing manoeuvrability (Volberda, 1996).

Flexibility can be achieved either by technological, work teams and/or process development (Garud and Cota, 1994). Literature on flexibility has focused its studies on different aspects such as strategic planning and perspective (Jonson, Lee, Saini and Grohmann, 2003; Eppink, 1978, Harrigan, 1980; Sánchez, 1997; Young-Ibarra and Wiersema, 1999; and Grewal and Tansuhaj, 2001), functional perspective (Gupta and Goyal, 1989; Gerwin, 1993; De Meyer, Loch and Pich, 2002), IT relationship (Ozer, 2002) and organizational flexibility (Mascarenhas, 1981; Nagarur, 1992; Bahrami, 1996; and DeLeeuw and Volberda, 1996). In all perspectives, flexibility implementation is driven by resources availability and coordination considering the costs and risks associated and time required implementing the necessary changes (Fredericks, 2005).

Outsourcing decisions affect all functional activities of the firm with different intensity. Those activities remaining in the firm are the key activities. All relationships between key activities and outsourced activities are transformed after contracting or licensing with external organisations (Quinn and Hilmer, 1994). Although outsourcing decisions are made at a strategic decision level, precisely in its corporative aspect, the most affected capabilities are found at operations levels of managerial activity (Bettis, Bradley and Hammer, 1992). This is the point in which more flexible firms react faster and more efficiently to these new scenarios. In fact, prior research inherently has presupposed that firms outsource activities in order to increase performance based on cost reduction. However, other variables such as risk aversion or the perception of environmental

dynamism affect the outsourcing strategy (Gilley et al., 2004). Operations flexibility reduces these perceived risks as it increases the ability to manoeuvre in dynamic environments (Volberda, 1996; Volberda, Verwaal and Van Der Weerd, 2006).

Market changes generate temporary fluctuations in operations activity levels. Flexibility is a competitive priority that allow the firms to respond fast to uncertainty (Schilling and Steensma, 2001). When designing the operations management basic processes a certain level of flexibility is necessary just to respond to all possible sources of variability (Harrigan, 1982). From an open systems point of view operations flexibility is considered as the ability for the company to react to fluctuations in the business environment, in a way that allows the company to interchange production factors on an established network of subsidiary companies (Kogut, 1985, Allen and Pantzalis, 1996; Tang and Tickoo, 1999).

In this context, a threefold fit needs to be achieved by adapting outsourcing decisions to the operations strategy sustained by systems flexibility (Burnes and Stalke, 1961; Schilling and Steensma, 2001). Combining different contracting partners in a high flexibility operations system can drive to profiting from economies of scale and learning-curve efficiencies. In fact, focusing on in-house production limits the possibilities of incorporating new technologies hindering as well operations flexibility while outsourcing opens the possibilities to benefit from newer and more cost effective technologies (Harrigan, 1984; Dess et al., 1995). In situations of variable demand, firms can diminish risks associated to inoperative plants or workforce reduction by outsourcing some production activities to external suppliers. These suppliers can change according to improvements in technology, which has a direct and positive impact on the operations flexibility of the firm (Pagell and Krause, 2004).

To benefit from outsourcing decisions, firms need to ensure that suppliers meet all the requirements that guarantee use of adequate technology and expertise in order to increase value and reduce costs (Das and Teng, 2000). Then, firms can build up core competences obtaining competitive advantages while being competitive in the markets and increasing operations flexibility (De Meyer et al., 2002). Considering the fact that flexibility and outsourcing decisions are determinant factors to maintain and increase competitiveness of firms in hostile environment, this study is undertaken to analyse the relationship between operations flexibility and the benefits of outsourcing and determine best practices to increase the potential of competition in changing and fast growing markets.

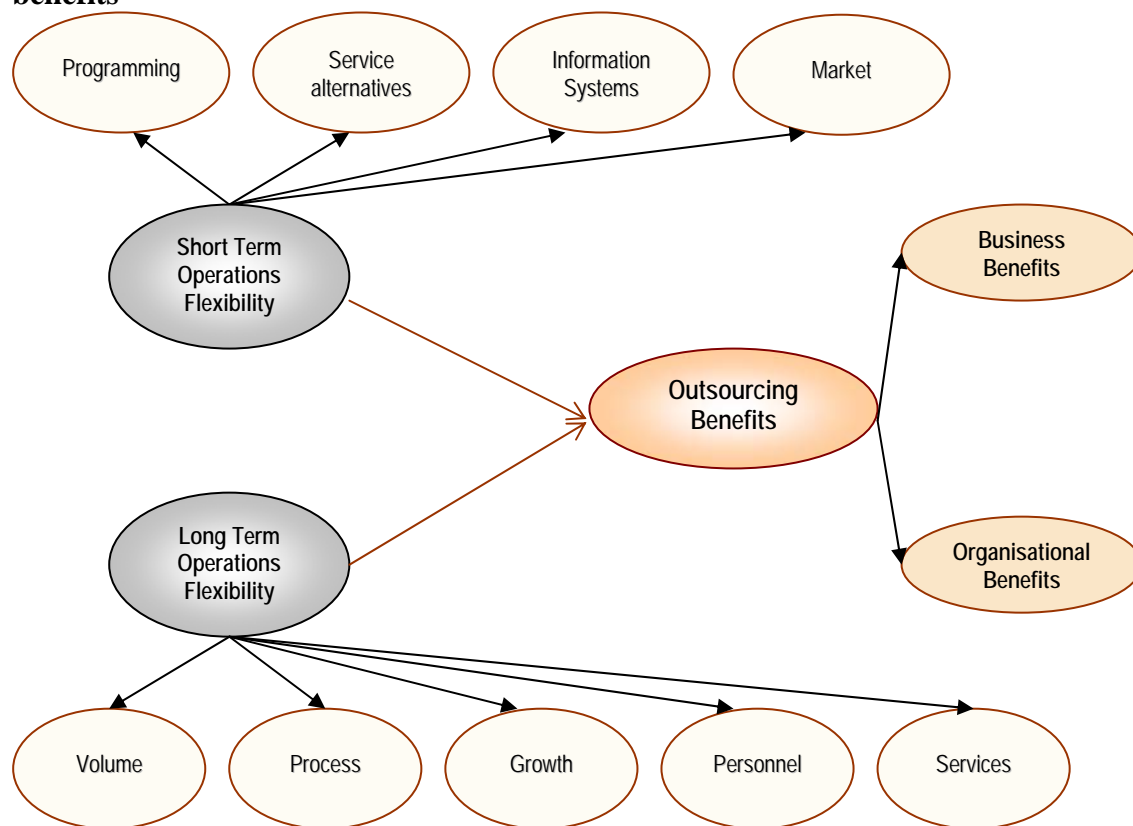
Whereas outsourcing decisions are considered a specific type of alliance, the relationship between flexibility and outsourcing have not received specific attention in service firms in strategic management literature. In fact, when considering both constructs, no evidence can be found to ensure that reacting to uncertainty in the business environment only by outsourcing or by flexibility restructuring leads to an increase in the performance of the organisations (Pagell and Krause, 2004; Baer and Frese, 2003). In fact, outsourcing decisions are made under different levels of uncertainty in different industries (Burns and Stalke, 1961; Schilling and Steensma, 2001) while operations flexibility is generally associated to decreasing levels of uncertainty in the firm for the short as well as for the long term flexibility dimensions (Riley and Lockwood, 1997). Hence the following hypotheses:

***H1:** Short term operations flexibility dimensions are positively related to the benefits obtained by outsourcing activities in such a way that the greater the flexibility the higher the benefits obtained from outsourcing.*

*H2: Long term operations flexibility dimensions are positively related to the benefits obtained by outsourcing activities in such a way that the greater the flexibility the higher the benefits obtained from outsourcing.*

Ramasesh and Jayakumar (1991) analyse the different flexibility dimensions which have been grouped in this study as long and short term operations flexibility in order to analyse the overall impact of outsourcing decisions as shown in Figure I.

**Figure 1. Analysis of the relationship between operation flexibility and outsourcing benefits**



### 3. Methodology

#### 3.1 SAMPLING PROCEDURES

Survey methodology was used to collect data to test the hypothesis. The sample included top executives from the service sector firms with more than 20 employees and located in the Spanish territory. The data base used for establishing the population was the DICODI directory 2005-2006, which includes basic financial information on the 50,000

biggest Spanish companies. Data was handled with the statistic software SPSS 15.0 and EQS 6.1. A pre-test was initially performed to ensure a clear understanding of all the questions by the managers. In depth interviews to 10 service firms CEOs not finally included in the sample were the base to make some concepts more easily understandable to non-academics and helped to include some control items. After two batches of questionnaires sent to improve the response rate, a total of 204 valid questionnaires were obtained with a rate of 21.43 per cent replies out of the 950 firms of the population. The individuals object of the questionnaire received cover letter to inform them about the relevancy of the research project and to request them to fill the questionnaire enclosed. In return for their participation, they could request a copy of the final report with the most substantial findings. Two types of letters were sent to respondents and non-respondents. In the first case, all respondents received a 'thank you' letter while non respondents received a remainder letter as well. Telephone calls were made to participants who did not respond 3 weeks after sending the letters until the final sample was obtained. All firms belonging to the sample were independent ones and not corporate-sponsored ventures in order to avoid substantial performance differences and different outsourcing strategies in the different markets they operate as noted by Weiss (1981).

### 3.2 MEASURES

Operations Flexibility was measured through a 7 point Likert scale (from 1 = "completely disagree" to 7 = "absolutely agree") adapted to the scales developed by Arias-Aranda (2002) to measure the dimensions of operations flexibility in services, being those as follows: Programming, Service alternatives (Routes), Information systems and Market (grouped as short term flexibility), and Volume, Process, Expansion, Personnel and Services (grouped as long term flexibility).

The analysis of the flexibility scale unidimensionality reveals positive results, so all indicators load on the corresponding factor. The Cronbach Alpha obtained is 0.764, which proves internal consistency of the scale after eliminating the items of the Programming, Process and Services due to high inter-item correlation among them. Figure 2 shows the items and dimensions that configure the flexibility construct as used in the present analysis with the numbered items as they appeared in the questionnaire.

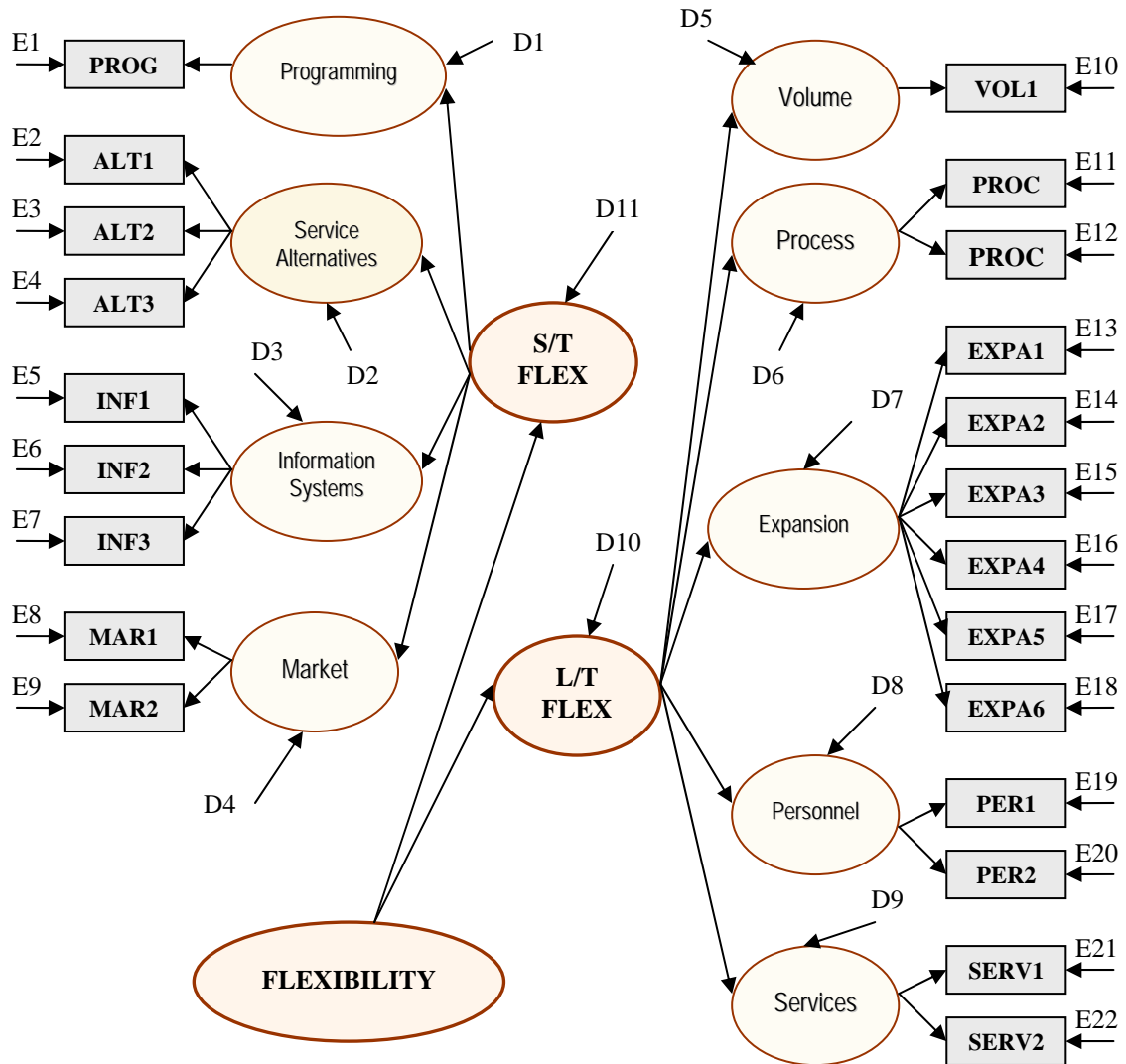
Even though many potential outsourcing benefits have been appointed in the strategic management literature, not all of the have been clearly quantified. Some of the reasons are the consideration of outsourcing as a tactical decision focused only in reducing costs and the lack of the collaboration factor in many outsourcing studies (Tarsh, 1998). Outsourcing benefits are commonly summarised as turning fix into variable costs, balancing human capital, economies of scale and resource reassigning to different added value activities (Collins and Bechler, 1998). Ehie (2001) considered that outsourcing also helps to develop essential competences in order to build entry barriers, get a better market positioning, weighing workforce and increasing performance. Based on his findings, table 1 shows the different items measuring outsourcing benefits. They were included in the questionnaire through a 1 to 7 Likert Scale scale (from 1 = “completely disagree” to 7 = “absolutely agree”).

**Table 1. Items measuring Outsourcing benefits**

<i>Organisational Benefits</i>	<i>Business Benefits</i>
1.- Shortens activities development cycles	1.- Allows focusing on core activities
2.- Improves Technologically operations	2.- Increases business flexibility
3.- Allows access to new technologies	3.- Increases financial profits
4.- Reduces training costs	4.- Increases capabilities of response to customer needs
5.- Improves management processes	5.- Increases customer satisfaction
6.- Increases innovations trends	6.- Allows to focus on internal business improvements
7.- Reduces organisational risks	7.- Improves strategic positioning
8.- Builds entry barriers for competitors	

Source: Adapted from Ehie (2001)

**Figure 2. Factors that affect Flexibility**



#### 4. Results

The results of the structural analysis are shown in Figure 3 which includes values obtained from structural equations, excluding the measurement model approach. Table 2 shows factorial load and reliability analysis. The hypotheses were tested through this model to examine the extent to which operations flexibility are determinants of outsourcing benefits.

Table 2  
Factorial Load and Reliability Analysis

Construct/items	Mean	S.D	Factorial Load	t-Values	Compound Reliability	Extracted Variance
<i>Information Systems</i>					0.86	0.54
INF1	4.45	1.65	0.92	11.03		
INF2	4.56	1.66	0.89	11.42		
INF3	4.84	1.77	0.87	10.27		
<i>Market</i>					0.89	0.59
MAR1	3.65	1.70	0.72	10.34		
MAR2	3.61	1.77	0.78	10.12		
<i>Expansion</i>					0.87	0.63
EXP5	3.96	1.54	0.87	3.67		
EXP6	4.01	1.46	0.89	3.88		
<i>Personnel</i>					0.88	0.62
PER1	4.13	1.60	0.94	6.02		
PER2	4.28	1.51	0.97	6.07		
<i>Organisat. Benefits</i>					0.89	0.51
ORG3	5.06	1.57	0.93	9.24		
ORG5	4.79	1.70	0.95	9.18		
ORG6	5.12	1.51	0.97	9.12		
ORG7	4.88	1.60	0.92	9.87		
<i>Business Benefits</i>					0.88	0.50
BUS1	4.66	1.62	0.91	12.89		
BUS2	4.69	1.67	0.90	13.82		
BUS4	4.64	1.54	0.92	14.15		
BUS5	4.46	1.51	0.96	14.29		

$\chi^2 = 65829$ ,  $d.f. = 378$ ,  $GFI = 0.93$ ,  $RMSEA = 0.060$ ,  $RMR = 0.048$ ,  $AGFI = 0.89$ ,  $NFI = 0.92$ ,  $NNFI = 0.95$ ,  $CFI = 0.92$ ,  $\chi^2 / d.f. = 1.74$

<sup>a</sup>All factorial loads are significant for a level of  $p < 0.01$

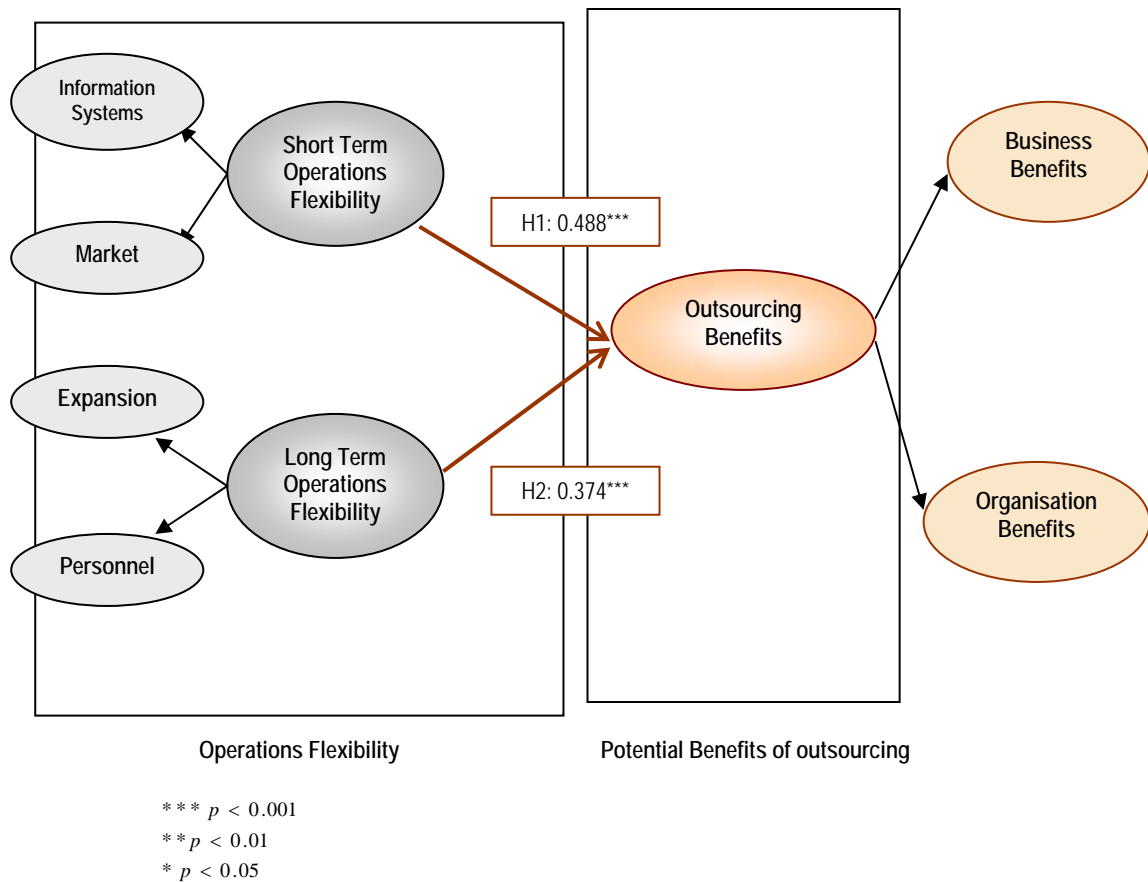
Regarding the model fit, the comparative fit index (GFI), the root mean square error of approximation error (RMSEA) and the root mean square residual error (RMR) are calculated (Hair et al., 2001). The first of these indicators, GFI is restricted to interval (0.1) and the higher the value, the better the fit. Values above 0.90 are considered to represent an adequate fit, the value obtained for the model reaches 0.93. With regards to the RMSEA,

this is an indicator based on the approximation error expected for every degree of freedom presented by the population, object of the investigation. Values in the interval that go from 0.06 to 0.08 indicate an adequate fit, being able to reach values of even 0.10 in some cases. Our model presents a value of 0.060 which indicates that it fits within the interval indicating an acceptable fit level. Finally, the RMR is an indicator similar to the previous and should have values below 0.05 to give a good fit, 0.048 for the model tested.

On the other hand, it is also necessary to check that the model presents a good incremental fit. This type of fit is based on the investigation of the increment in the fit of the model studied in comparison with another model, generally the zero model. In the majority of cases, indicator values above 0.90 are considered to be acceptable. In this model, all indicators are found to be above this minimum value (AGFI= 0.89; NFI= 0.92; NNFI= 0.95; CFI= 0.92). The last aspect of this analysis is the fit of the parsimonious nature of the model. For this, the regulated  $\chi^2$  ruling is adequate for this type of analysis. The range of values for this indicator goes from 1 to 3 and even 5, so that our value being equal to 1.74 is within acceptable limits.

The results of the analysis are consistent with the hypotheses put forward, thus confirming the predicted hypotheses (see Figure 3). No significant differences have been found for organisational and business benefits of outsourcing. Only in the case of the relationship between certain dimensions of Operations Flexibility (Volume, Process, and Service dimensions) and the Outsourcing Benefits, results do not confirm a clear relationships. General results confirm the general hypothesis of the investigation so, operations flexibility have a positive influence on the benefits that come from outsourcing.

**Figure 3. Estimation of structural equations**



## 5. Discussion of the results

The parameters shown in Figure 3 for H1:0.488 ( $p < 0.001$ ); and for H2: 0.374( $p < 0.001$ ) correspond to the regression coefficients of the exogenous variables and latent variables. The model is identified because a unique mathematical solution exists for these parameters. As the underlying statistical process is of Maximum Likelihood, the evaluations obtained are such that they increase the probability that the data found has been taken from a population where these parameters exist. It is a recurrent process until convergence is achieved, that estimates a function fit or a minimization of discrepancies between the co variances seen and those obtained from the model presented.

There is a substantial difference between the interpretation of the coefficients that correspond to the causal relationship between the variables and the  $R^2$  value, which represents the explanatory percentage that one variable has over another. Starting from

these hypothesis, the objective of this research is not to determine all explicative factors of the behaviour of the different variables, but to analyse if it is possible to state that a significant causal relationship exists between them, that is, whether the hypothesis formulated can be accepted or not. Results prove that the hypothesis is accepted, clarifying that the corresponding modification indexes of the model have been performed with no possibilities for further improvement, which permits the corroboration that our model gave an adequate result for the purposes of contrasting, which was the object of its design.

Both general hypotheses relating operations flexibility and outsourcing are supported. Therefore, long and short term flexibility dimensions help to diminish the levels of expected risks when outsourcing non core activities. The values obtained for the coefficient assigned to the causal relation between both concepts (0.488;  $p < 0,001$ ) indicate that this relationship is important enough to ensure the acceptance of the corresponding H1 hypothesis, showing that flexibility is positively related to the benefits derived from outsourcing.

Flexibility dimensions have an important causal relation with benefits of outsourcing with some differences, as much for the short term (Information Systems and Market dimensions present statistically significant coefficients of 0.391;  $p < 0.01$  and 0.364;  $p < 0.01$  respectively) as for the case of the dimensions associated to the long term (Expansion and Personnel where the coefficients associated to the causal relation between these variables are 0.475;  $p < 0.001$  and 0.583;  $p < 0.001$  respectively).

Some of the flexibility dimensions items had to be eliminated due to validation setbacks. The Programming dimension on the scale corresponding to short term flexibility could not be validated obtaining low levels of the Cronbach's alpha. This dimension referred to the system's ability to work without supervision over a long period of time. Service firms need to continuous interaction with customers makes programming a much

more complicated and difficult to achieve task than for manufacturing firms (Fitzsimmons and Fitzsimmons, 2006). Hence, this dimension as established in manufacturing literature does not apply as is for service firms. Later, the analysis of structural equations for the proposed model found no statistical significance for the indicators of the service alternatives dimension which represents the possibility of delivering a certain service through alternative routes even at the expense of lower productivity. In this case, most outsourcing decisions are made on the base of incrementing performance and productivity. The service alternative dimension may not be a cost-effective option when outsourcing is far more effective than re-routing as no duplicity of resources is required. The Information Systems and Market dimensions keep a close relationship with outsourcing benefits. Outsourcing success is mainly based on the distribution, processing and exchange of information between both parts, so flexibility in these tasks generates faster responses to potential environmental changes. In the case of market Flexibility, as the ability to adapt processes and service delivery systems to adjust to market conditions, it needs to be transferred to the outsourcing practices. In fact, when potential environmental changes are perceived, firms tend to discourage those managerial or financial commitments which could jeopardize flexibility (Gilley et al., 2004).

For long term flexibility dimensions, validation and reliability indicators do not support those items measuring the Volume, Process and Services dimensions (scales presented a relatively low Cronbach's alpha,  $\alpha < 0.6$ ). The degree of customisation and increase in the volume of services delivered as well as the number of different services provided are variables difficult to be increased in parallel. The scale used to measure these three dimensions, even adapted from manufacturing to service firms needs still to be better defined in order to assess the analysis of these types of operations flexibility for future research. Finally, the Expansion and personnel dimension indicates the possibility of

increasing the capacity of the system reducing the costs of the introduction of new services as well as the ability of the staff to carry out a wider range of tasks and activities. Hence, Outsourcing supports clearly both types of flexibility in threatening, risky and complex environments (McGee and Rubach, 1997) establishing a tight relationship between these dimensions and the benefits of outsourcing proved in the model.

## **6. Conclusions and future lines of research**

The correct implementation of outsourcing decisions drives towards the achievement and development of competitive advantages. Companies that align outsourcing with the different operations flexibility dimensions obtain better success rates than firms which consider outsourcing as a cost saving tool for the short term as the first ones obtain higher outsourcing benefits. Therefore, operations flexibility generates a positive influence on outsourcing benefits, which has been proved by the results obtained in this investigation. This finding broadens the new research possibilities in order to analyse whether different environmental conditions moderate the relationship between operations flexibility and outsourcing. In addition, heterogeneity of services creates different scenarios for implementing outsourcing decisions under different priorities.

In this study, a model that relates long and short term flexibility dimensions of operations management and outsourcing benefits has been applied to services firms. Both concepts have been examined through empirical methods under the scope of a field-based study. Different service sectors will need to find which flexibility dimensions support outsourcing implementation according to specific sector main concerns. In this research, results prove not only the existence of a strong relationship between flexibility and outsourcing but also, the magnitude of the impact of short and long term flexibility dimensions with the outsourcing benefits.

Finally, the methodology applied in this research proves that much of the theoretical base used in manufacturing flexibility is applicable to the service industry even though some adaptations and modifications are necessary in order to fully incorporate the specific nature of services. However, this research is not exempted from some limitations. The scale used on the present investigation for operations flexibility is adapted from scales used in manufacturing companies, thus the fundamental dimensions and indicators in service companies may not necessarily coincide. From the original dimensions used to carry out the short term and long term analysis, some dimensions had to be excluded due to validation restrictions.

As a consequence, the Information Systems dimension which refer to the ability to distribute and process information, as well as the facility to exchange it, and the market dimensions, which is the flexibility that allows the firm to adapt to market changes play a fundamental role in fostering outsourcing benefits. Both dimensions support the allocation and dispense of information within the firm and regulate the level of uncertainty in the decisions making process which impact positively in the outsourcing benefits as shown in different studies (see among others Livingston, 1992; Eisele, 1994; Pinnington and Woolcock, 1995; Iyer and Kusnierz, 1996; Lankford and Parsa, 1999; Large, 1999; Kakabadse and Kakabadse, 2000).

Regarding long term flexibility, the expansion dimension when implicitly related to outsourcing implementation allows the firm to achieve additional capacities in the system due to these activities being carried out by companies with a greater specialisation in them, while the firm focuses on core activities (Quinn and Hilmer, 1994). Service Personnel dimension encourages those activities which are really essential for the organisation to not be considered as support activities, reducing the strategic vulnerability.

Although important relations have been obtained between the variables analysed in the present study, the results have to be interpreted with a certain caution, mainly due to the exploratory nature of the study and, thus, the objective is, in essence, to prove the existence or not of inter relations between variables.

On the other hand, this transversal or static type of analysis does not capture the dynamic nature of the determining factors of the relationship between the variables affecting the benefits of outsourcing. This means that even though the relationships are significant, still further research is needed in order to establish other variables that could also be decisive in moderating the relationship.

Although these limitations are present, the empirical work carried out offers interesting findings as it involves an advance in the coordination of the existing relation between the practice of outsourcing and the control variables of operations flexibility. New future lines of investigation are open from this study. In the first place, the analysis of the effect of the service suppliers ability and the degree of complementarities could lead to interesting findings in order to understand information flows and quality in outsourced activities.

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