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A Matter of Coherence: the Effects of the Offshoring of Intangibles on Firms' Performance.

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Abstract

The offshoring of intangibles activities requires firm to coordinate critical resources that are spread across different geographical locations. This process has significant implications in defining the firm's possibilities to externalize complex activities and to coordinate the knowledge flow between the firm and foreign suppliers. The objective of this paper is to shed light on the effect of offshoring of intangibles on firms' performances. Empirically, we use an original database obtained by merging secondary data with survey data on offshoring of intangibles in 87 firms. Our findings show that offshoring intangible increase firms' performance. However, firms that are not providers of intangibles themselves seem not to be able to benefit from the offshoring of intangibles. We conclude that firms that offshore capabilities and activities that they do not manage internally are likely to fail in coordinating and integration the knowledge flow. Therefore, it becomes crucial the presence of coherence between what the firms' outsource and what firms provide.

Keywords: Offshoring of intangibles, Capability, Coherence.

1. Introduzione

Recent development of information technologies determines an increasing digitalization of business processes: activities such as order processing, billing, customer service, accounts and payroll processing can be carried out without regard to physical location. This is producing a global realignment of jobs across different skill levels: the traditional division of labor is facing new challenges and new configurations: it is becoming a common and widespread practice for firms to delocalize a portion of their internal productive process in different countries. In such new scenario, firms are called to manage complex relational architectures with business partners frequently located outside the national boundaries (Gupta and Mattarelli 2007).

At the beginning of this practice, offshoring was largely motivated by a cost reduction necessity (Slack and Lewis 2002). Productive processes were delocalised in low cost country without attention to losses in quality or in reputation (Rottman and Lacity 2006). Nowadays we assist to a new approach to offshoring: firms delocalize not only low valued activities but also high valued and, in some cases, firms are also offshoring activities that are central in their core business (Sako 2006). Meaningful examples that contribute to illustrate the variety of offshoring strategy configurations, come from pharmaceutical firms of New Jersey that are increasing outsourcing R&D activities to Indian firms, whose researchers have studied in the best western university, European airports that outsource nocturnal inner announcement service to Asian companies and benefit of optimal language skills and diurnal job, and hospitals that demand specialised diagnosis to doctors often located in the other part of the world. Recent contributions labelled this practice: offshoring of intangibles (Grimaldi and Tagliaventi 2007, Cirillo and Prencipe 2006). The debate about this practice is gaining importance not only among academics but also among practitioners and policy makers since this phenomenon is becoming always more important and it is affecting the actual economic scenario in terms of competition, employment, innovation process and competitive advantage of economic systems (Venkatraman 2004, Couto et al. 2006). With offshoring of intangibles we refer the delocalization of

diverse intangible resources, assuming forms that range from intellectual property rights of patents, scientific works, know-how, copyright and registered design.

Delocalization of value added productive process such as the offshoring of intangibles entails a number of challenges for the offshoree. Difficulties are due to geographical location, cultural differences among sites, required knowledge about local labour practice and local law (Gupta and Govindarajan 2000). The continuous flow of information, knowledge, activities, processes and capabilities that goes from the offshoree to the offshorer and vice versa has to be properly coordinated. Failure will lead the firm to loose the capabilities that entails to the performing of specific activities: if that happens, the offshorer will also loose his ability to control the delocalized activities (Gupta and Govindarajan 2000). The coordination of flow of knowledge is a phenomenon that has been largely studied in the context of multinational companies (Gupta and Govindarajan 2000), complex products (Prencipe and Tell 2001, Brusoni, Prencipe and Pavitt 2001) and innovative process in different sites but, so far, little attention has been devoted to those mechanism in the offshoring practice (where ownership it is not a necessary condition for exchange and coordination of work and site of production are located in different and far countries).

This paper aims to explore the effect of offshoring intangibles on firms' performances. We prove that offshoring intangible increase firms' performance. However, we claim that firms that are not providers of intangibles themselves are not able to benefit from the offshoring of intangibles since in such situations firms are called to offshore capabilities and activities that they do not manage internally: this will cause a failure in coordinating and integration the complex flow of knowledge occurring among the offshoree and the offshorer. We argue that coherence between what the firms' outsource and what firms provide must exist.

To provide empirical support to our argument, we use data from an original database constructed merging secondary data on firms' performances with survey data on offshoring of intangibles activities. In the following section,

we review the existing literature on the offshoring practice. The most important contributions are summarized here in order to provide a more complete understanding of the topic. Then, on the basis of the theoretical contributions, we develop a framework for the analysis of the offshoring of intangibles practice and testable hypotheses. A description of methods follows, along with the presentation of the results and a discussion of empirical findings.

Nowadays, an increasing number of firms decide to move part of their activities abroad, outsourcing internal processes to firms located in foreign countries. This decision, defined as offshoring outsourcing, as been indirectly investigated by the literature exploring the firms' make-or-buy decisions: this literature provided many conclusions and insights that remand the effects of offshoring outsourcing. In particular, in defining the main rationales, the transaction cost economics identified the following: importance of asset specificity, length of relationship and uncertainty and frequency of transactions (Coase 1960, Teece 1986, Williamson 1985, Dietrickx and Cool 1989, Williamson 1975). According to the specific combination of these factors, firms choose the most appropriate option among internalization, outsourcing and offshoring outsourcing. Accordingly, cost savings and access to skilled labour force has identified as the main determinants of offshoring (Khan and Fitzgerald 2004). In other words, firms implement offshoring strategies to exploit skilled labour force in those foreign countries characterized by lower labour costs.

However, offshoring is evolving in a more complex strategy involving the external acquisition of knowledge processes from foreign suppliers. In particular, intangibles activities (e.g. product design, R&D, distribution know-how, etc.) are increasingly subjected to offshoring (Cronin, Catchpowle and Hall 2004, Kotabe and Swan 1994). The management of intangibles poses a number of new challenges for the firms: competitive advantage based on intangibles radically differs, due to the main characteristic of intangibles

activities: they are more difficult to evaluate than tangible activities (Sussland 2001, Goldkuhl and Styvén 2007). Measuring issues create confusion and increase the possibilities to differentiate the outcomes. Moreover the knowledge involved in the productions of intangibles is more difficult to manage, transfer and replicate without direct observation. Therefore, investing on intangibles activities assure higher value added to firms but also an increase in the complexity of operations to be managed and controlled. Some scholars suggested that the management of intangibles activities requires planning procedures separated by the firms' strategic objectives and coordinated with them (Schiuma and Lerro 2008).

When firms engage in offshoring practices involving sophisticated activities such intangibles, they need to develop internal capabilities that facilitate the coordination between critical resources, information and knowledge that are spread across different geographical locations, and to manage the incumbent risk of losing idiosyncratic competences (Govindarajan and Gupta 2001). In this regard, the capabilities view (Teece, Pisano, and Shuen, 1997; Eisenhardt and Martin, 2000) explained how attributes of the firm affect the sourcing decisions. Firms will focus on the activities and products that are close and related to their area of expertise. Expertise represents for firms not simply the sum of prior experiences, but it is incorporated in technologies and skills (Parmigiani 2007). In other words, experience and resources represent "stepping stones" for firms (Barney 1991, Wernerfelt 1984, Prahalad and Hamel 1994). According with this perspective, firms have to focus on products that better fit with the present resources and knowledge of the firm, while other products that do not fit should be more efficiently externally acquired (Kogut and Zander 1992, Grant 1996, Conner and Prahalad 1996);). The complexity associated with the transfer of certain type of knowledge usually determine an increase in term of costs and difficulties in term of coordination which make the buy option less attractive (Teece 1985). In such a case, offshoring represent a complex and challenging form of acquisition of services or particular tasks from foreign providers: when a firm engages in offshoring, it has to deal with higher geographical and

cultural distance existing among actors. Therefore problems of coordination increase.

Previous researches have explained how distance can severely limit spontaneous conversation, mutual learning and collaboration. Specifically, the offshoring of tasks involving intangibles is costly to the firm. Intangibles represent assets such as intellectual properties, scientific formulas, designs for new machines, or new software (Hill 1977). The value of intangibles depends on the income that they are expected to generate (Gupta and Govindarajan 2001). In offshoring intangibles activities, the risk of appropriability hazards might emerge. This risk is represented by the possibility that distinctive capabilities are expropriated by the partners (Anand and Khanna 1997). Therefore, intangible properties are generally protected by copyright, trademarks, patents, and trade secrets. However, the enforcement of copyrights outside of the country of origin is particularly difficult (Johns, 2002).

Moreover, the offshoring of tasks involving intangibles generate communication costs to the firm. Gupta (2001) included among the communication costs those costs that the firm has to suffer due to the extra time that managers have to spend to codify information from distant organizations and other, more intangibles, costs produced by cultural and linguistic barriers that may lead to misunderstandings (Leamer and Storper 2001, Fujita and Thisse 2006). Therefore, when firms engage in offshoring practices involving complex activities such intangibles, they need to develop internal capabilities that facilitate the coordination between critical resources, information and knowledge that are spread across different geographical locations (Govindarajan and Gupta 2001).

Recent contributions aiming at understanding how firms operating in complex environments integrate and coordinate dispersed activities pointed out that to be able to control and monitor the outsources activities firms should keep in house part of the capabilities to produces them (Prencipe, Davies and Hobday 2003, Brusoni et al. 2001). Despite the efficiency that could be obtained by outsourcing specific activities, firms tend to evaluate their internal

assets (their capabilities) and then design their boundaries accordingly, reinforcing their comparative advantage within the industry. This is in line with the conclusions of the emerging comparative advantage research stream, in which scholars argue that firms specialize in activities that grant them a comparative advantage over competitors (Jacobides and Winter 2005, Jacobdes, Winter and Kassberger 2007). In fact, a complete externalization of the activities will results in losses in competitive advantage and, in the long run, incapability to control and monitor the work performed by the offshore. This it has been studied in the context of offshoring but we suggest that in the offshoring context such mechanism will be more evident since the difficulties of control the provider are higher, due to cultural and territorial distance (Govindarajan and Gupta, 2001).

1. Hypothesis development

As it has been already pointed out in the previous section, the rationales behind the decision of offshoring outsourcing lay in the possibility to exploit skilled labour force in foreign countries characterized by lower labour costs. However, while implementing the outsourcing offshoring practice, firms will incur in a series of additional costs generated by difficulties in monitoring and controlling the offshored activities. Appropriability hazards, communication costs and the developments of adequate capabilities generate additional costs that may undermine the competitive advantage represented by the differential of labour cost between the two partners. We expect that firms evaluate such risks while offshoring intangibles and therefore we propose the following hypothesis:

Hypothesis 1: The offshoring of intangibles activities positively effects firms' profitability

In our research we link the effect of offshoring on performance to the presence of a certain degree of coherence between firm' area of expertise in tem of business and the task and activities the firm decided to offshore. In doing so, we refer to the concept proposed by Heeley et al. (1999) that relay on the idea that technologies and business need to share symbiotic relationships. While previous works explored the concept of coherence referring to the company ability to exploit the interconnectedness between firms' different business, different technology, and between technological competencies and business (Piscitello 2004), we are akin to consider coherent firms that "efficiently correlate interrelated assets and activities" (Kogut and Zander 1992). Such coherence will enable the firms to control and monitor the activity of the offshoree.

In the specific context of the offshoring of intangibles, we can identify two types of offshorer: intangibles-oriented and product-oriented firms. Such firms are defined according to the characteristics of their business and their positioning the value chain: intangibles-oriented firms obtain part of their revenues from the selling of services, patents, royalties from technologies or other intangibles activities. Drawing upon the contributions summarized in the previous section, we argue that to be successful firms should retain in house part of the activities they outsource. In line with this reasoning, intangibles-oriented firms that offshore intangibles activities are more able to control the efficiency of the offshoring process, obtaining superior performance: we define coherent firms that correlate in such a way offshored and internalised activities. On the other hand, product-oriented firms that offshore intangibles activities risk to not have in house any of the resources and knowledge necessary to control the offshoree, losing efficiency and costs savings advantages that the process could allow. Therefore, we propose the following hypothesis:

Hypothesis 2a: in intangibles-oriented firms, the offshoring of intangibles activities positively affects firms' profitability

Hypothesis 2b: in products-oriented firms, the offshoring of intangibles activities negatively affects firms' profitability

2. Methods

Data collection: Sample selection and questionnaire administration

The data for this study were obtained via a survey of a sample of companies operating in Italy in the sector of IT and Automotive. Those sectors have been selected looking at the likelihood of offshore activities. On the basis of preliminary interviews conducted by a research partner involved in the same research project on of the literature of the topic, the following NACE codes are the more likely to offshore activities and therefore more appropriate to our study: 722 (Software consultancy and supply); 731 (Research and experimental development on natural sciences and engineering (NSE)); 2852 (General mechanical engineering) ; 291 (Manufacture of machinery for the production and use of mechanical power, except aircraft, vehicle and cycle engines). Companies included in the sample have been selected from the database AIDA (a database of Italian companies published by Bureau Van Dijk) on the basis of the NACE code and the dimension of the company (over 50 employees). The initial sample was of 352 companies.

A research assistant has personally contacted the 352 companies. To increase the response rate, we guaranteed that data would remain absolutely confidential and they would be used only for academic purposes. Telephone interviews were chosen as the preferred mode of data collection because they allowed the researcher to complement the data from the questionnaire with qualitative information that could be used to better characterize the firms. To set up interviews, a researcher first contacted the firms in the sampling frame via e-mail or fax and made follow-up calls one week after the first message. In both cases the researcher briefly explained the aim of the research and the content of the questionnaire and asked to arrange a phone meeting with a

representative of the company. To facilitate the collection of the data, a website has been created: *www. offshoringintangibles. org.* Each company included in the sample accessed to the website via a personal username and password. The interviewee had the option to complete the questionnaire online or by telephone. The second option was preferred; only the 12,5% of the respondent (14 out of 112) completed the questionnaire on line. This administration method yielded a 32% response rate, which is in line with other studies of this nature (Miller and Roth 1994, Bensaou and Venkatraman 1995).

Operationalization of variables and analytical approach

The dependent variable we used in our models is a performance indicator: *ROE* (Return On Equity). ROE is viewed as one of the most important financial ratios and it measures a firm's efficiency at generating profits. Comparing the effectiveness of use of return on assets (ROA), return on sales (ROS) and ROE, Markides found that "no matter which of the three profitability variables are used, the result remains unchanged" (Markides 1995). To test the models we use as dependent variables *roe* that is a 2-years average of the ROE from the years 2006 and 2007. We used the mean to increase the validity of the results since this performance indicator, if it refers to a single year, can be influenced by specific actions on financials.

The independent variables have been constructed as follows: the variable *offshoring* is a dummy variable that assume value 1 if the firm has practised offshoring of intangibles, 0 otherwise; the variable *intangibles* is a dummy assuming value of 1 if the firm obtains its revenues also from the selling of the selling of services, patented and not patented technologies and royalties from the sales of technology internally developed, 0 otherwise; *internationalization* is a measure of the internationalization of the firms and it measures the share of revenues from sales in countries outside Italy. In the model we also included some control variables: *size*, measured as the number of employees, *age*, the proxy used is the number of years, *sector*, a dummy variables with value 1 if the firm operate in the software industry, 0 otherwise, *region* measured by mean of a series of regional dummy variables

to control the effects of territorial locations. Table 1 in Appendix shows the relevant descriptive statistics.

[Insert Table 1 above here]

The database used for this research has been constructed merging survey data collected with data obtained via a public database (AIDA). Merging data from diverse sources allow us to overcome the risk of having common method variance. For all the self-reported measures, we tested for common method variance (CMV) using Harman's single factor test (Podsakoff et al. 2003). Results (available upon request) showed no evidence of CMV.

We tested the two hypotheses developed above via a regression analysis. To test Hypotheses 1, we estimated the model (1) below, using the variance robust estimator for ordinary least-squares regression.

$$Y = \alpha + \beta_1 \textit{offshoring} + \beta_2 \textit{intangibles} + \beta_3 \textit{internationalization} + \beta_4 \textit{size} + \beta_5 \textit{age} + \beta_6 \textit{sector} + \beta_7 \textit{region} + \varepsilon \quad (1)$$

To test hypotheses 2a and 2b we proceed to split the sample into two subsamples. Subsample A contains intangibles-oriented firms, which are firms whose revenues are constituted also by sales of intangibles. We did that including in the regression firms respecting the following condition: intangibles 0. Subsample B contains product-oriented firms, which are firms that do not obtain any revenues from the sales of intangibles. We did that including in the regression only firms respecting the following condition: intangibles = 0. We then estimated the model (2) that follows on both samples, using the standard variance robust estimator for ordinary least-squares regression.

$$Y = \alpha + \beta_1 \textit{offshoring} + \beta_2 \textit{internationalization} + \beta_3 \textit{size} + \beta_4 \textit{age} + \beta_5 \textit{sector} + \beta_6 \textit{region} + \varepsilon \quad (2)$$

3. Results

Results from the estimation of model (1) in table 2 suggest the following: offshoring ($p < 0.05$). These results support Hypothesis 1. Moreover, our results show that selling *intangibles* exerts a positive and significant impact on firm's performance ($p < 0.01$). Coherently with previous studies on the topic discussed also in the theoretical section of the present work, since services and other intangibles activities present an higher value-added then products, selling intangibles increases the firms' profitability.

[Insert Table 2 and 3 above here]

In regard to Hypotheses 2a and 2b, results from the estimation of model (2) applied to the two different sub-samples leads to different results. This offers empirical support for the Hypothesis 2a, in fact, in the sub-sample of intangibles-oriented firms, we observe that offshoring exerts a positive and significant impact on firms' performance ($p < 0.05$ in the model 2 a), while the same model applied to the sub-sample B (product-oriented firms) do not present significant results for the variable offshoring, not offering any support for the Hypothesis 2b.

Coherently with what has been stated in the Hypothesis 2a, offshoring intangibles combined with the selling of intangibles allow the achievement of superior performance. According with the recent development in the theory of core capabilities and internal resources, we provided some empirical evidences to support the assumption that firm that are not provider of intangibles themselves are note able to benefit from the cost reduction and increase in efficiency to be obtained by the offshoring, since in such situations firms are forces to offshore capabilities and activities that they do not manage internally and this can bring problems of co-ordination and control over such activities

4. Discussion and Conclusions

The paper investigated the link existing between offshoring and performance in the specific context of the offshoring of intangibles. Using data from an original database constructed merging secondary data on firms' performances with survey data on offshoring of intangibles activities, we proved that offshoring intangible increase firms' performance. However, we also proved that firms that are not providers of intangibles themselves are not able to benefit from the offshoring of intangibles since in such situations firms are called to offshore capabilities and activities that they do not manage internally: this will cause a failure in coordinating and integration the complex flow of knowledge occurring among the offshoree and the offshorer. Coherence between what the firms' outsource and what firms provide is fundamental to benefit from the cost saving and the increase in efficiency that offshoring guarantee.

The research illustrated in this paper leads to contributions relevant for scholars, practitioners and policy makers. The first set contributes to the academic debate on the relations among activities, capabilities and performance. In fact, our evidences shed further light on the importance of having coherence between what firms know and what firms do: if a firms do not posses the knowledge for controlling and managing the process, performance are negatively affected. Management scholars have stressed that capabilities are not static and immutable, but rather dynamic (Teece and Pisano 1994, Zollo and Winter 2002). When competitive landscapes shift continuously, market boundaries are blurred, and business models become unclear, the achievement of sustained competitive advantage is guaranteed only by the ability to continuously reorganize and reconfigure internal resources to match changes in the external environment. According to this view, a coherence between activities and capabilities not only increase efficiency and profitability in the short term, as our model shows, but, in the long term, firms will be able to evolve and reorganize its internal assets,

following and anticipating environmental changes. On the other hand, losses in internal resources and capabilities are risky especially while offshoring intangibles: due to the well known difficulties if managing intangibles activities, offshoring them without retaining in house any of the capabilities to control them will seriously undermine the firms ability to evolve and reorganize its offer to be able to follow market changes.

Moreover, our findings contribute also to the research stream focusing on the offshoring practice. As it has been already pointed out in the literature review section, the new phenomenon of offshoring can be investigated throughout a number of theoretical lenses; resources based view and transaction cots economies among those. Due to the novelty of the practice, we do not know yet of all the theories developed in other context are applicable also in the offshoring context. For this reason, our study provides evidences that support the possibility to apply what we know about intangibles and capabilities also in the context of offshoring. Also in this case, firms should know what they are doing since this guarantee them superior performance.

The second set of contributions offer useful insight to practitioners and managers are implementing the offshoring practice. As we already know, offshoring help in reducing costs and increase efficiency but, when this practice includes intangibles, the risk is to lose internal resources ad capabilities. Our study offers clear indication to the management since we prove that the risks of offshoring intangibles can be mitigated by the development of appropriate capabilities: firms must guarantee coherence between inbound and outbound activities. Following these guidelines, practitioners can exploit the advantages of the offshoring practice also if involving intangibles, diminishing the risks related to such activity.

The last set of contributions is represented by insights and reflections that can be used by policy makers and analysts. One of the biggest concerns is the nation whose firms offshore production process to low cost counties, risks to loose capabilities and resources. This is more evident and more risky in the case of intangibles: the intangibles capital of the nations could migrate

offshore, leaving the offshorer as an empty box without distinctive capabilities or resources. Our work cannot provide any answer or any predictions to that but can be used to identify two different scenarios as outcome of this practice. If the offshoring of intangibles is correctly managed, this will lead to an increase in performance; to be correctly managed we refer to the opportunity to retain in house some of the distinctive capabilities and this will lead to an increase in the profitability for the firms in the short term and to a sustainable competitive advantage in the long term period. On the other hand, is not correctly managed, this strategy will not lead to any increase in the performance in the short-term periods and an erosion of core capabilities. In the latter scenario, many firms will be forced to go out of the business with negative influence over the competitiveness of the whole nation. Summarizing, our study suggest attentions and careful management of this practice since the impact on performance is clear and direct. There are many advantages as well as many disadvantage and managers and policy makers should be aware of that.

Overall, our results should be viewed in the context of a few limitations. First, the analysis is based on a small sample, which raises the issue of low statistical power. The target population of this study was narrowly defined to include a homogeneous set of firms, which may limit the generalizability of the research. Secondly, our study is subject to some data limitations. Data were gathered at one point in time, so no inferences of causality can be conclusively established. Another consequence of our data-gathering approach is that whilst the analysis provides a very good static picture of the firms studied, it offers limited information about their evolution over time. These observations point toward several avenues for future research. Follow-up empirical studies are called for to confirm our hypotheses. These should be extended to different industry sectors. It would also be interesting to replicate this analysis in the near future to assess whether the hypothesized market changes have actually occurred.

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6. Tables

Table 1. Descriptive Statistics

Variable	N. Obs	Mean	Std. Dev	1	2	3	4	5	6
1. Roe	87	8.70	19.07	-					
2. Offshoring	106	0.11	0.31	0.15	-				
3. Intangibles	106	0.42	0.49	0.23	0.01	-			
4. Internationalization	106	39.03	32.31	0.14	-0.09	-0.17	-		
5. Size	106	127.66	112.98	0.02	0.01	-0.10	0.34	-	
6. Age	103	32.72	21.85	-0.10	-0.18	-0.36	0.43	0.11	-
7. Sector	106	0.14	0.35	-0.08	0.18	0.40	-0.45	-0.31	-0.39

Table 2. Test of hypothesis 1

	Model 1 Total Sample		
	Coef.		(S.E.)
Offshoring	16.043	**	[6.937]
Intangibles	13.741	***	[4.518]
Internationalization	0.063		[0.080]
Size □	- 0.029		[0.019]
Age	- 0.021		[0.117]
Sector	- 9.395		[8.951]
Region_dummies	OK		
R-squared	0.34		
N	86		
* Significant at the .1 level.			
** Significant at the .05 level.			
***Significant at the .01 level.			

Table 3. Test of hypotheses 2a and 2b

	Model 2a Intangibles-Oriented			Model 2b Product-Oriented	
	Coef.		(S.E.)	Coef.	(S.E.)
Offshoring	24.153	**	[9.155]	2.690	[6.120]
Internationalization	0.091		[0.149]	- 0.026	[0.081]
Size □	-0.028		[0.035]	- 0.008	[0.023]
Age	-0.304	**	[0.139]	0.176	[0.156]
Sector	- 16.503	*	[7.928]	- 6.011	[12.004]
Region_dummies	OK			OK	
R-squared	0.62			0,40	
N	34			52	
* Significant at the .1 level.					
** Significant at the .05 level.					
***Significant at the .01 level.					