Manufacturing Back-shoring

Theoretical Conceptualization and Empirical Evidences

Luciano Fratocchi[1], Sonia Equizi[2], Guido Nassimbeni[3], Marco Sartor[4], Alessandro Ancarani[5], Carmela Di Mauro[6], Andrea Zanoni[7], Paolo Barbieri[8], Matteo Vignoli[9]
[1,2]DIIIE, University of L'Aquila, Italy
[3,4]DIEGM, University of Udine, Italy
[5]DICA University of Catania, Italy
[6]DAPPSI University of Catania, Italy
[7,8]Department of Management, University of Bologna, Italy
[9]DISMI University of Modena & Reggio Emilia
[1]luciano.fratocchi@univaq.it, [2]sonia.equizi@gmail.com, [3]nassimbeni@uniud.it
[4]sartor1@uniud.it, [5]aancarani@dica.unict.it, [6]cdimauro@unict.it, [7]andrea.zanoni@unibo.it
[8]p.barbieri@unibo.it, [9]matteo.vignoli@unimore.it

Abstract

In the last years, the term "back-shoring" has been more and more diffused, especially in the economic press and in consulting firms' white papers. More recently, the topic started to be investigated also in the academic context, even if available data are still limited.

The paper aims to highlight the relevance of back-shoring strategies for manufacturing companies, especially after the recent financial crisis. With this aim in mind, we analyse and discuss 230 evidences of our Uni-CLUB MoRe Back-shoring data base of back-shoring strategies at world-level. Furthermore, a specific focus on 50 operations implemented by Italian companies is proposed and a comparison with evidences belonging to German firms already available in literature is conducted.

Introduction

On the last December 6, Apple CEO Tim Cook revealed that one of the existing Mac lines will be manufactured exclusively in the United States next year. Apple is only the last of a huge number of US manufacturing companies which decide to move back production at the home country. Other well known cases are represented by industrial giants like General Electric, Caterpillar and Ford, but also by a plethora of small and medium enterprises operating in a differentiated set of industries. In the last years, the term "back-shoring" (and its supposed synonyms, "on-shoring", "in-shoring", "re-shoring", "reverse-shoring", "international re-concentration", "reverse-globalization") have been more and more diffused, especially in the economic press and in consulting firms' white papers. More recently, the topic started to be investigated also in the academic context, even if available data are still limited.

The paper aims to put in evidence the relevance of back-shoring strategies for manufacturing companies, especially after the recent financial crisis, since several authors (see, among others, McDermott, 2010; Engel & Procher, 2010) predicted that it would have increased the likelihood of divestures of earlier conducted foreign direct investments. With this respect, it must be noted that such strategies are often made public in quite rare cases and generally not captured by public statistics (Kinkel & Maloca, 2009). Holz explains such evidence affirming that a firm implementing a back-shoring strategy "usually proceeds in secret. Otherwise the management would have to admit to have made a serious strategic

mistake" (2009, 157). This is consistent with the idea that back-shoring is an "error correction mechanism" (Casson, 1986); therefore, as noted by Hennart, Roehl & Zeng (2002) such a phenomenon is generally perceived as a negative experience and so "more easily forgotten than entries". At the same time, it must be noted that evidences of this phenomenon often emerged in the context of researches having a broader aim, especially when they are conducted by managerial consulting company (see, among others, Coxon, Ritter & Sternfels 2005). Moreover, earlier findings are often based on an anecdotal approach; therefore, they demonstrate the existence of the phenomenon under investigation but do not carry out analysis voted to characterise it. With this respect, the only exception is represented by studies focused on German companies (see, among others Holz, 2009; Kinkel & Maloca, 2009; Leibl, Morefield & Pfeiffer, 2011; Kinkel, 2012).

Since this lack of reliable quantitative data about back-shoring strategies, in this paper - based on our Uni-CLUB MoRe Back-shoring data base – the characterization of 230 of such operations implemented at world level is presented and discussed. Furthermore, a specific focus on 50 operations implemented by Italian companies is proposed and a comparison with the available evidences of German firms (Kinkel & Maloca, 2009; Kinkel, 2012) is conducted.

Discussion

In order to reach the paper aims, it is useful to conduct a quick but thorough review of the academic and practitioners' available literature on back-shoring. The first aim of such a review is the proposition of an operative definition of such a phenomenon. According to Holz (2009), the former CEO of Oracle, Yet Fields, was the first one to publicly use the term back-shoring in an interview with the Fortune Magazine, speaking about the return relocation from India in the IT industries (Fisher, 2006). However, the first real definition seems to be that proposed by the same Holz, according to which back-shoring is "the geographic relocation of a functional, value creating operation from a location abroad back to the domestic country of the company" (2009, 156). At the same time, the author defines back-sourcing the case in which the geographic relocation takes place externally with respect to the company. On the contrary, Kinkel & Maloca, define back-shoring as "re-concentration of parts of production from own foreign locations as well as from foreign suppliers to the domestic production site of the company" (2009, 155). More recently, Kinkel, conceptualizes such a strategy as the "re-concentration of the firm's production capacities, trying to exploit the benefits of higher capacity utilisation and a superior relation of variable costs to fix at their existing locations" (2012, 696).

The definitions earlier reported are quite useful to investigate the back-shoring phenomenon; however, they should be partially extended to take into account a set of questions proposed by some international business' scholars: a) is back-shoring a voluntary or a forced strategy (Calof & Beamish, 1995; Benito & Welch, 1997)?; b) back-shored products are addressed only to the home market or can be exported in other countries (Liao, 2010)?; c) the back-shored production capacity is referred only to already existing products manufactured off-shore or also to new product version and/or lines (Dholakia, Kompella & Ales, 2012)?; d) back-shored products are produced internally – so called "internal back-shoring" (Kinkel & Maloca, 2009) or "direct back-shoring" (Renz, 2005) - and/or externally – so called "external back-shoring" (Kinkel & Maloca, 2009), "indirect back-shoring" (Renz, 2005) or back-sourcing (Holz, 2009)? Consequently, we propose the following operative conceptualization of manufacturing back-shoring: *"a voluntary firm strategy on the home-country partial or total re-location of value activities to serve global than rather regional*

demands of existing of totally new products relying on internal (captive) and/or external (outsourcing) governance modes".

The second aim of the literature review is the definition of the back-shoring phenomenon magnitude. With this respect, the only reliable evidences actually available are those related to the "Innovation on Production" survey developed by the Fraunhofer Institute for Systems and Innovation Research in 1997. Based on such data, Kinkel & Maloca (2009) found that: a) 2,5% of responding firms have carried out back-shoring between 2004 and 2006; b) 17% of firms implemented off-shore strategies from 2000 and 2011 back-shored manufacturing activities between mid-2004 and 2006 (that is, 4,5 years later); c) 10% of companies that have off-shored production activities from 2002 and 2003 have back-shored them between 2004 and 2006 (that is 2-2,5 years later). As a consequence, authors estimate that in the following 4-5 years every fourth to sixth off-shoring activity is countered by a back-shoring phenomenon. Those findings induce Kinkel & Maloca to consider re-shoring strategies as "short-term corrections of prior location misjudgements, rather than long-term reactions to slowly emerging local development trends" (2009, 159).

At the same time, it must be noted that data on US and EU companies implementing back-shoring strategies are generally based on anecdotal approach and not describe the firms' main characteristics (see, among others, Ferreira & Prokopets, 2009; Lewin et al., 2009; Flangan, 2009; Mariotti & Mutinelli, 2010).

The third aim of the literature review regards motivations proposed for the explanation of back-shoring strategies. With this respect, the most cited is related to costs, and especially to labour's ones (see, among others, Ritter & Sternfels, 2004; Leibl et al., 2009; Powell, 2011; Sirkin *et al.*, 2011; Leibl & al., 2009, Platts & Song, 2010; Holweg, et al., 2010). Other types of costs which seem critical are those related to freight (see, among others, Goel & al., 2008; Leibl et al., 2011), taxes, natural gas, employee benefits, torts and pollution abatement (see among others, Leonard, 2008; Shiry *et al.*, 2009). Recently, Kinkel (2012) highlights that the cost motivation has more than doubled in importance, since the global financial crisis (Kinkel, 2012).

The second main reason proposed to explain back-shoring strategies is the loss of operative flexibility (Kinkel et al, 2007). This derives from: a) purchase orders' rigidity after the emission (Ferreira & Prokopets, 2009); b) penalizations for late orders (Ritter and Sternfels, 2004); c) container-size minimum orders (Ferreira and Prokopets, 2009); d) high inventory levels (Ferreira and Prokopets, 2009); e) less responsiveness to customer demand due to the different locations of engineering and manufacturing activities (Accenture, 2011). However, the relevance of such a motivation seems to be decreasing (Kinkel & Maloca, 2009) and significantly lost in importance since the emergence of the financial crisis (Kinkel, 2012). Poor product quality is the third more cited cause, especially in the case of off-shore out-sourcing. According to data by Kinkel & Maloca (2009) and Kinkel (2012), such a cause had been dramatically increased its relevance since 1999 up to now. However, such a problem seems to specifically belonging to manufacturing activities performed in China, while good results are generally recognized for productions located in Mexico, which, in turn, induce US companies to near-shoring (Agrawal et al., 2003).

A fourth set of elements which induce company to back-shore manufacturing activities are referred to firm's home country: a) national/regional subsides for relocation (Sirkin et al., 2011); b) actually increased labour market flexibility (Sirkin et al., 2011); c) high unemployment rates, which induce people to ask for more protectionist industrial policies and unions to accept less expensive labour concessions (Sirkin et al., 2011); d) weakness of US dollar with respect to Chinese Yuan, which imply US imports result more expansive (Sirkin et al., 2011). The final set of motivations belongs to the host country environment: a) political/social risks; b) exchange rate risk (Leibl *et al.*, 2011); c) lack of

well-prepared technicians and skilled workers (Couto et al., 2008; Shiry et al, 2009; Leibl et al., 2011; Sirkin *et al*., 2011). With respect to the latter element, Kinkel (2012) pointed out it more than doubled in relevance compared to before the financial crisis.

Procedures for collecting data

Since the earlier mentioned lack of reliable quantitative data about back-shoring strategies, we created the Uni-CLUB MoRe Back-shoring data base, where the acronym stays for the initials of the Italian Universities of Catania, L'Aquila, Udine, Bologna, Modena and Reggio Emilia. The data base actually contains data belonging to 230 back-shoring operations implemented by manufacturing companies. Data were collected from different secondary sources: a) news on international economic newspapers and magazines; b) white papers of major consulting companies; c) internet research engines; d) earlier conducted qualitative academic studies. For each of these evidences, the following variables were investigated: a) headquarter country of origin; b) industry; c) year in which back-shoring strategy was implemented; d) "left" host country. A specific focus was then reserved to Italian companies, adding information about: i) year in which off-shoring strategy was implemented (in order to define the time range between off- and back-shoring decision); ii) firm dimension (in terms of sales and/or number of employees); iii) declared motivations of the back-shoring strategy.
While we recognise that our data are by no means exhaustive and not completely representative of the investigated phenomenon, we believe they can be still used to support a preliminary characterization of the main features of the back-shoring operations.

Results

As already mentioned, the data base is composed by 230 evidences belonging to 192 different companies, since 26 of them (13,5% of the total) implemented more than one operation. With this respect, it must be noted that 4 companies account for 4 evidences each and 5 for 3 each. This finding seems to be in contrast with the idea of manufacturing back-shoring as a "correction mechanism" of earlier implemented wrong managerial decisions (Casson, 1986; Kinkel & Maloca 2009).

With respect to the breakdown by the home country, USA companies result the more represented (46%), followed by Italian (21%) and German (17%) ones. This evidence is coherent with the huge relevance of manufacturing industries in those three countries. With respect to the host country where back-shoring was implemented, almost three out of four evidences belongs to China (59%) and Eastern Europe (13%). However, while China evidences are almost equally distributed among USA and EU companies, those referred to Eastern Europe belongs only to European companies (Table 1).

Analysing collected data on a time basis, it is evident the dramatic growth of the phenomenon in the last years, with around 50% of evidences in the last 3 years and 80% after the beginning of the financial crisis (Table 2). This is consistent with the already mentioned prediction by McDermott (2010) and Engel & Procher (2010) and the recent findings regarding German companies (Kinkel, 2012).

The data breakdown by industry put in evidence that back-shoring operations were implemented in almost all manufacturing industries, even if the more relevant are the traditional ones: Mechanical (21%), Home furnishing (18) and Clothing & footwear (17%). At the same time, it is interesting to note that while the data belonging to US companies are more widespread among industries, those related to Germany and Italy are more focused on specific sectors (Table 3).

Table 1 Breakdown by home and host countries

Home country	Host country							
	China	Eastern Europe	Asia (other than China)	Western Europe	Central & South America	North America	Total	%
USA	80	1	17	4	3	1	**106**	**46,1%**
Italy	22	14	3	9		2	**50**	**21,7%**
Germany	9	10	6	9	5	1	**40**	**17,4%**
France	9	5	1				**15**	**6,5%**
UK	8	1					**9**	**3,9%**
Japan	2						**2**	**0,9%**
Norway	2						**2**	**0,9%**
Canada	1						**1**	**0,4%**
Finland				1			**1**	**0,4%**
Slovenia				1			**1**	**0,4%**
South Korea	1						**1**	**0,4%**
Spain	1						**1**	**0,4%**
Sweden	1						**1**	**0,4%**
Total	**136**	**31**	**27**	**24**	**8**	**4**	**230**	**100,0%**
%	**59,1%**	**13,5%**	**11,7%**	**10,4%**	**3,5%**	**1,7%**	**100,0%**	

Source: Uni-CLUB MoRe Back-shoring

Table 2 Breakdown by host countries and time of back-shoring

	Host country							
Year	**China**	**Eastern Europe**	**Asia (other than China)**	**Western Europe**	**Central & South America**	**North America**	**Tot.**	**%**
'80s			4		4		**8**	**3,5%**
'90s	1						**1**	**0,4%**
2000-2005	7	2	4	4	1	2	**20**	**8,7%**
2006	4			2			**6**	**2,6%**
2007	4	6	1	3			**14**	**6,1%**
2008	12	7		3	1	1	**24**	**10,4%**
2009	28	7	5	6			**46**	**20,0%**
2010	14	5	5	3		1	**28**	**12,2%**
2011	30		3	2	2		**37**	**16,1%**
2012	36	4	5	1			**46**	**20,0%**
Total	136	31	27	24	8	4	**230**	**100%**
%	**59,1%**	**13,5%**	**11,7%**	**10,4%**	**3,5%**	**1,7%**	**100 %**	

Source: Uni-CLUB MoRe Back-shoring

According to the breakdown by industry and host country, evidences related to China and other Asian countries are more widespread among industries (at least one evidence for each of the 15 investigated sectors) with respect to Eastern Europe (only seven) (Table 4).

The 50 operations realised by Italian firms belongs to 38 companies, since 7 firms implemented more than one back-shoring strategy each. With this respect, it is interesting the case of two big companies each of whom implemented in the same year (respectively, 2009 and 2012) 4 operations. Twenty-one out of thirty-eight companies are classified as big ones according the Commission Recommendation 2003/361/EC while 3 as small ones.

Analysing the time distribution, we note two peaks corresponding to the years in which the effects of the global financial crisis on the Italian economy were more dramatic (Figure 1).

Table 3 Breakdown by industry and home country

Industry	Home country														
	USA	I	D	F	UK	J	N	C	FIN	SLO	ROK	E	S	#	%
Mechanical	18	10	17	4	1									**50**	**21,7**
Home furnishing	28	4	1	4	3					1			1	**42**	**18,3**
Clothing & footwear	9	22		4			2	1				1		**39**	**17,0**
Electronic	16	2	8			1			1					**28**	**12,2**
Appliances	10	4	3		1									**18**	**7,8**
Electric	5	2	5		1									**13**	**5,7**
Food & beverage	5	1	3											**9**	**3,9**
Biomedical	4	4												**8**	**3,5**
Toys	2		3	2	1									**8**	**3,5**
Biomedical	4				1									**5**	**2,2**
Health & beauty care	2			1										**3**	**1,3**
Aerospace	1				1									**2**	**0,9**
Automotive	1	1												**2**	**0,9**
Jewellery	1										1			**2**	**0,9**
Materials						1								**1**	**0,4**
Total	**106**	**50**	**40**	**15**	**9**	**2**	**2**	**1**	**1**	**1**	**1**	**1**	**1**	**230**	**100**

Source: Uni-CLUB MoRe Back-shoring

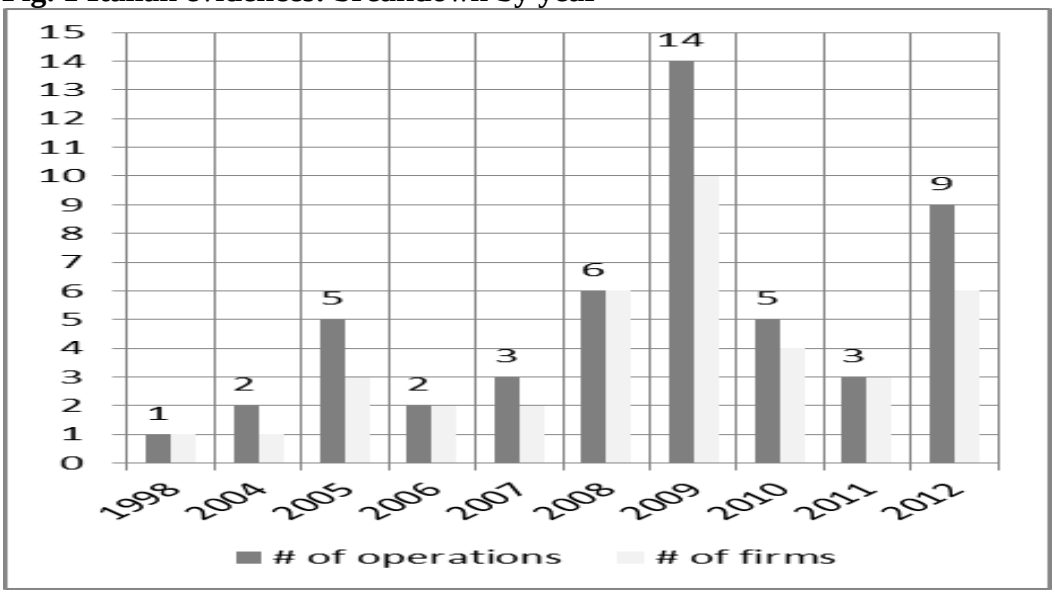
Table 4 Breakdown by industry and host country

Industry	Host country							
	China	Eastern Europe	Asia (no China)	Western Europe	C&S America	North America	#	%
Mechanical	15	13	8	9	4	1	**50**	**21,7%**
Home furnishing	33	3	2	4			**42**	**18,3%**
Clothing & footwear	26	9	4				**39**	**17,0%**
Electronic	15	2	6	2	3		**28**	**12,2%**
Appliances	13		3	1	1		**18**	**7,8%**
Electric	7	2	2	2			**13**	**5,7%**
Food & beverage	3	1		4		1	**9**	**3,9%**
Biomedical	4		1	1		2	**8**	**3,5%**
Toys	8						**8**	**3,5%**
Biomedical	4		1				**5**	**2,2%**
Health and beauty care	3						**3**	**1,3%**
Aerospace	1	1					**2**	**0,9%**
Automotive	1			1			**2**	**0,9%**
Jewellery	2						**2**	**0,9%**
Materials	1						**1**	**0,4%**
Total	135	31	27	24	8	4	**230**	**100%**
%	**58,7%**	**13,5%**	**11,7%**	**10,4%**	**3,5%**	**1,7%**	**100%**	

Source: Uni-CLUB MoRe Back-shoring

Splitting data according to the industry, the traditional Italian sectors emerge as the most represented. More specifically, it is interesting to note the relevance of Clothing and footwear, a sector widely exposed to the international competition, which induced a large number of Italian companies to re-locate manufacturing activities in low-cost countries, mainly the Eastern European ones and China (Table 5). With this respect, it is remarkable that back-shoring evidences in this industry were implemented even before the global financial crisis (10 evidences out of 22) (Table 6).

Fig. 1 Italian evidences: breakdown by year



Source: Uni-CLUB MoRe Back-shoring

Table 5 Italian evidences: breakdown by industry and host country

Industry	China	Eastern Europe	Western Europe	Asia (other than China)	North America	Total
Clothing & footwear	12	8		2		22
Mechanical	2	3	4	1		10
Home furnishing	2	1	1			4
Biomedical	1		1		2	4
Appliances	3		1			4
Electric		2				2
Electronic	1		1			2
Food			1			1
Automotive	1					1
Total	**22**	**14**	**9**	**3**	**2**	**50**

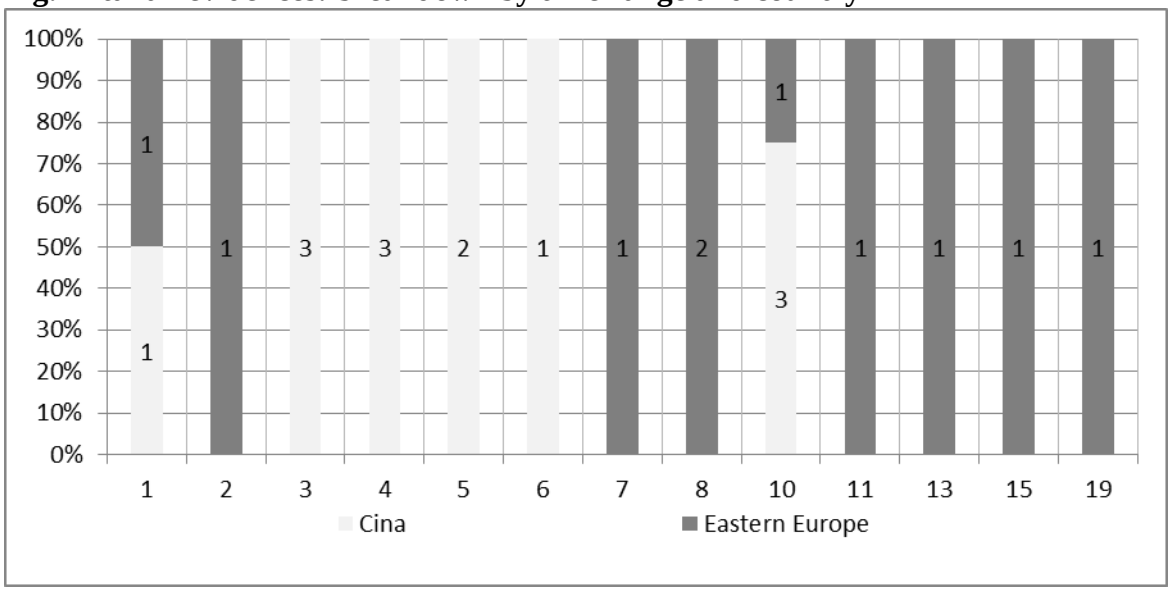
Table 6 Italian evidences: breakdown by year and industry

Industry	1998	2004	2005	2006	2007	2008	2009	2010	2011	2012	# of evidences	# of firms
Clothing & footwear	1	2		2	3	2		4	1	7	**22**	**16**
Mechanical						1	8	1			**10**	**6**
Home furnishing			1			2			1		**4**	**4**
Biomedical			4								**4**	**2**
Appliances							4				**4**	**4**
Electric							1			1	**2**	**2**
Electronic							1		1		**2**	**2**
Food						1					**1**	**1**
Automotive										1	**1**	**1**
Total	**1**	**2**	**5**	**2**	**3**	**6**	**14**	**5**	**3**	**9**	**50**	**38**

Source: Uni-CLUB MoRe Back-shoring

Another useful investigation was performed implementing data breakdown by the time range between the off- and the following back-shoring decision. Considering the 34 evidences for which it was possible to compute such an indicator, we found the distribution ranges from a minimum of 1 year to a maximum of 19 years, a result which is quite different from data related to German companies (Kinkel & Maloca, 2009; Kinkel, 2012). However, when you focus your attention specifically on China and Eastern Europe, which are the most relevant areas in term of evidences (34 out of 50), a clear dichotomy emerges. More specifically we analysed data referring to 13 out of 22 Chinese subsidiaries/suppliers and 10 out of 14 Eastern Europe ones. While the Asian evidences are almost all (10 out of 13) characterized by a range between 1 and 6 years, those belonging to Eastern Europe firms generally highlight a range between 7 and 19 years. This result once more contradicts the widely diffused conceptualization of back-shoring as an "error correction mechanism" (Figure 2).

Fig. 2 Italian evidences: breakdown by time range and country



Source: Uni-CLUB MoRe Back-shoring

In order to further investigate the result under discussion, time range data were analysed with respect to the year of back-shoring implementation. In so doing, we found that operations realised before the 2000 had a time range of at least 6 years and, in 8 cases out of

10, a range of at least 10 years. On the contrary, the more recent evidences are generally characterized by a range of 2-4 years, a finding similar to those found for German companies (Kinkel & Maloca, 2009; Kinkel, 2012).

Finally, elements declared by entrepreneurs and managers as motivations of back-shoring operations were investigated . Grouping them in homogeneous categories, the most mentioned one is quite different with respect to those cited by German firms: the positive "made-in effect" which, in the customers' mind, characterizes goods manufactured in Italy with respect to those realised in low cost countries (42%). The second antecedent regards the low quality level of off-shored productions (24%), which is coherent with earlier findings by Kinkel & Maloca (2009) and Kinkel (2012). The third one is the need of a higher attention to customers' needs (21%). Other relevant motivations were: social pressure at the home country (18%), higher level of home country employees (16%), availability of production capacity at the home country caused by the economic crisis (13%), reduction of labour cost gap (13%) and higher logistic cost (11%).

Conclusions

The conducted literature review and the analysis of evidences from the Uni-CLUB MoRe Back-shoring data base clearly demonstrate that the back-shoring phenomenon is a quite relevant topic for both, practitioners, policy makers and scholars.

With respect to the latter, further researches are needed, based on a multi-disciplinary and multi-method approach. A relevant contribution could be offered by case study methodology, since their longitudinal approach. With respect to managerial implications, specific tools should be developed for supporting the back-shoring decision making phase and the consequent implementation. Finally, policy makers should investigate home-country conditions which may promote the implementation of back-shoring strategies.

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