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Eco-innovation determinants in service industries
Determinantes de la eco-innovacion en el sector servicios

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Abstract: The objective of this paper is to determine, empirically, the determinants of service firms' environmental orientation (firm environmental responsiveness and environmental performance) while innovating. We analyze 3013 Spanish service firms using multivariate analysis with data retrieved from PITEC Database (Spanish Technological Panel). Results show that environmentally oriented service firms are characterized by product and process orientation. Furthermore, results show that service eco-oriented firms are those that have been more innovative and that rely more on market information sources for the innovation process.

Keywords: eco-innovation drivers, PITEC, Spanish service industry.

Resumen: El objetivo de este trabajo es determinar, empíricamente, los determinantes de la orientación medioambiental de las empresas de servicios (responsabilidad medioambiental de las empresas y comportamiento medioambiental) cuando innovan. Hemos analizado 3013 empresas de servicios españolas mediante análisis multivariante con datos obtenidos de la base de datos de PITEC (Panel de innovación tecnológica). Los resultados muestran que las empresas de servicios medioambientalmente orientadas se caracterizan por la orientación hacia productos y procesos. Además, los resultados muestran que las empresas de servicios eco-orientadas son aquellas que han sido más innovadoras y que se basan en fuentes de información de mercado cuando innovan.

Palabras clave: sector servicios, facilitadores de la eco-innovación, PITEC, eco-innovación.

1. Introduction

The relationship between being sustainably concern ("green") and competitiveness has been remarked in previous studies (Porter and Van der Linde, 1995, Esty and Winston, 2009, Carrillo-Hermosilla et al. 2009, Junquera and Del Brío, 2012). Since then, studies in this area are trying to explain superior performance related with firm´s environmental orientation (Da Silva et al. 2009, Gázquez-Abad et al. 2011, Segarra-Oña et al. 2011). In this work, we follow Elsayed (2006) definition of environmental orientation, that is, indeed, based on previous studies (Russo and Fouts, 1997; Sharma, 2000).

The need of an analytical, theoretical and regulatory framework, is pushing several researchers to work on understanding why some firms are going beyond legislation and what are the defining characteristics of firms that consider the environment as a priority when innovating (Segarra-Oña et al. 2011). Eco-innovation, environmental attitude or environmental management are crucial variables to be analyzed when we talk about sustainable development related aspects (Horbach 2008, Kemp and Pearson 2009, Da Silva et al. 2009, Tietze et al. 2011).

On the other hand, social pressure (Kuik et al. 2006, Blischwitz et al. 2009), public policies (Chappin et al. 2009, Telle and Larsson 2007, Kranjac et al. 2012), and environmental regulations (Pirani and Secondi 2011) are also leading knowledge and research in this direction.

The manufacturing industry and its environmental implications have been widely studied while the service sector has received less attention, although the current economy seems to be mainly service-oriented (Montresor and Marzetti 2011).

Eco-innovation is generally understood as any innovation that reduces environment's damage and its definition is a concept still under review (Carrillo-Hermosilla et al. 2010 ,Kemp 2010, Mossalanejad 2011). Research on this field, concerning industry type is still limited.

In this study, we address the key aspects that drive eco-innovative activities in service firms[1]. First, we present the conceptual framework of the study, and we specify the hypothesis. Second, we introduce the methodology and data set used in the study. We conclude the paper with some remarks, limitations and further research orientations.

2. Theoretical approach

Environmental proactivity and innovation have an impact on the competitive positioning of companies (Hitchens et al. 2005, Esty and Winston2009) by transforming existing markets and creating new ones (Beise and Rennings 2005, González-Benito 2010).

De Marchi (2011) studied firms' innovative behavior measured by R&D investment cocnlcudind, in the same line as other researchers as Biondi et al. (2002) or Berkhout (2005) that size, the export orientation or the former R&D innovative activities are vital to the eco-innovative development at the firm level. Segarra-Oña et al. (2011), highlighted that eco-innovation is positively affected by the size and the export orientation of the firm, and that former innovation activities are a driver of the environmental orientation of the firm while innovating.

Regulations are affecting the rapid development of this field of study (Hellström 2007, Chappin et al. 2009, Šauer et al. 2012). The key aspects of businesses turning into green (Rennings 2000, Gabaldón et al. 2003, Rehfeld et al. 2007, Hu et al. 2010, Del Río et al. 2011, Carrascosa et al. 2012, Mondéjar-Jiménez et al. 2010) or how previous innovative levels positively affect the environmental orientation of the companies (Jaffe and Palmer 1997, Wagner 2008, De Marchi 2011, Segarra-Oña et al. 2011, Peiró-Signes et al. 2011) have also been considered.

Carrillo-Hermosilla et al. (2010) addressed the impact that eco-innovation have in new business' start-ups and, therefore, to its contribution of building a more sustainable society, highlighting the importance that collaboration among the different stakeholders which is actually a crucial managerial implication

In a deeper level, some facilitators and barriers of the eco-innovative behavior and environmental orientation have been identified; such the lack of absorptive capacity or high educated human resources availability (Chen and Huang 2009), the maturity of the firm (Cainelli et al. 2011) and the industry's technological level (Peiró-Signes et al. 2011). However, taking one step further and analyzing what are the drivers of services´firms eco-innovation haven't been considered so far.

Previous works have compared manufacturing and services firm´s patterns; Forsman (2011) made a significant contribution comparing patterns of innovative behavior between manufacturing and services, indicating, as Sirilli and Evangelista (1998), that there are not significant differences between them regarding the innovation capacity and innovation development.

On the contrary, Cainelli et al. (2011) found a negative relation between environmental innovative strategies and employment, turnover and productivity in services firms. So, considering that eco-innovation policies in EU countries are a key part of the sustainable development and the economic growth strategies (Burciu et al. 2010, Kemp and Oltra 2011, Berger et al 2001) and also that little studies regarding eco-innovation at services have been done and one could understand that conclusions differ. Therefore, we think, according to different authors (e.g. Hipp and Grupp 2011), that the need to address different proactive environmental strategies depending on the type of industry of the company is necessary (therefore, understanding the patterns that explain eco-innovation orientation in services firms and if the previous studied variables that influence eco-innovation orientation in manufacturing industries are the same in services industries is the objective of this work.

This issue becomes important on one hand regarding the policy making implications and, on the other hand, managerial implications considering that investments in "greening" their innovative behavior are becoming a key strategic issue and providing firms with competitive advantages (Esty and Winston, 2009, Albino et al. 2009).

3. Hypothesis development

Environmental innovation has been mainly studied from the manufacturing industry perspective (Wagner 2008, Ziegler and Seijas-Nogareda 2009, Del Río

[1] Service firms are defined by the INE (Spanish statistics institute), as those firms that belong to Trade, Tourism, Transportation, Information Technologies and Other services to firms. (http://www.ine.es/inebmenu/mnu_servicios.htmhttp://www.ine.es/inebmenu/mnu_servicios.htm).

2010, Peiró-Signes et al. 2011)but considering the increasing importanceof services and the increasing tertiarisation of the economy (Peneder et al. 2003, Lay et al. 2010) we are focusing the research in service industries.

Disentangling the driving forces and the distinctive characteristics of eco-innovative activities in service industries is still an open field for researchers, so we build our hypotheses regarding eco-innovation drivers in service firms by replicating previous findings in manufacturing industries (Segarra-Oña et al. 2011 and Segarra-Oña et al. 2013). Then, we state that, as in manufacturing industries:

Hypothesis 1: The previous innovation activity has a positive effect on the environmental orientation of service firms.

Hypothesis 2: Service firms´ eco-innovation activities are positively affected by the process and product innovation orientation of the firm.

Hypothesis 3: The importance of the market information sources in the innovation process positively affects the environmental orientation of service firms.

4. Research methods

4.1. Data collection

To explore the hypotheses proposed in this paper we used data from 3013 service companies. While the hypotheses proposed earlier in this paper can be tested by empirical data collected from any region or country, our study is based on information from Spain.

We used data from the Technological Innovation Panel (PITEC) database. PITEC is a statistical survey for studying the innovation activities of Spanish firms over time. The database is supported by by the INE (The Spanish National Statistics Institute), supported by academics and researchers and the Economy and Competitiveness Spanish Ministry. Yearly data from 2004 are available.

PITEC allows researchers among others to monitor the technological innovation activities of Spanish companies. PITEC database analyzes 255 variables for more than 8000 Spanish companies that are characterized by the type of innovation they undertake (classified according to the Oslo Manual, 2005), by industry (in line with the Spanish National Activities Classification, CNAE 2009) and by geographical location. We retrieved data from 2010 for our analysis as it were the last available year of observations.

Except for the anonymization of a set of variables, the data used in the study correspond with the files in the hands of the INE. This anonymization is necessary in order to avoid the disclosure problem (i.e., the possibility of identifying firms through the data). Between other measures, the anonymization process applied implies to replace the firm-level observations of some quantitative variables and to replace the (4-digit) NACE Codes with a 44-industry breakdown. Only industry breakdown affects the selected variables of the study, so we don't expect any bias due to the anonymization process.

We used 2-digit CNAE 2009 classification to identify service firms[2] (see exhibit 1 and annex 1 for further explanation). We used the variable "ACTIN", which represents the activity classification number (CNAE 2009) for each firm in the survey to identify service firms.

Table 1
Service industries 2-digit CNAE-2009 codes[3]

Service firms statistical classification	33, 61, 62, 58, 59, 60, 63, 64, 65, 66, 72, 85, 86, 87, 88, 35, 36, 37, 38, 39, 45, 46, 47, 49, 50, 51, 52, 53, 55, 56, 68, 69, 70, 71, 73, 74, 75, 77, 78, 79, 80, 81, 82, 90, 91, 92, 93, 95, 96

PITEC survey contained several items related to the innovative capacity and orientation of the firms. These measures provide finer-grained, more specific information than the objectives measures set in the hypothesis. We chosen, attending to theoretical implications, 27 variables (represented in Exhibit 2) to conduct our analysis

As we want to analyze previous innovative activity "INORG" (Dichotomous variables indicating if the company introduced any organizational innovation during the last two years) and "INCOM" (Dichotomous variables indicating if the company introduced any commercial innovation during the last two years)

[2] http://www.ine.es/inebmenu/mnu_servicios.htm.
[3] www.ine.es.

Exhibit 2
Selected variables from PITEC [4] database

PITEC Variables	Function type	Explanation
SOURCEi (i=1,…,10)	Cat.	Importance of information sources while innovating (1-internal sources, 2-supliers, 3-clientes, 4-competitors, 5- external consultants, 6- universities, 7-public research institutions, 8-Research institutes, 8- conferences, industrial fair, 9-scientific journals, 10- industry associations)
INORGNi (i=1,2,3)	D.	Introduction of Organizational innovations in (t-2, t)
INCOMNi (i=1,..,4)	D.	Introduction of Commercial innovations in (t-2, t)
OBJETi (I=1,..,10)	Cat.	Importance of the objective "n" while innovating (1.- increase offered number of products or services, 2.- Old product substitution, 3.- new markets penetration, 4.-increase market share, 5.- increase quality, 6.- increase production flexibility, 7.- increase production capacity, 8.- labor cost reduction (per unit) 9.-material cost reduction (per unit), 10.- energy cost reduction (per unit), 11.- reduce environmental impact, 12.- increase employees health and security, 13.- environmental, health and security regulatory

Categorical variables: 1=High; 2=Medium 3= Low 4=Not considered or not important.
Dichotomous variables: 1=Yes; 2=No
F1 is defined as internal information sources, F2-F5, are defined as market sources, F6-F8 as government sources, F9-F10 other external sources.
O1-O5 are defined as product oriented objectives, O6-O10 as process oriented objectives, O11-O13 as other types of objectives

were selected. To measure orientation towards introducing products´ innovation variables Objet1-5 were used and Objet 6-10 to measure orientation towards introducing processes´ innovations variables.

However, several of these items might represent identical or similar constructs. Therefore, we used Principle Components Analysis (exploratory factor analysis) to develop reliable multiple-item measures for each of the underlying theoretical constructs (Hair et al., 1998).

Three eigenvalues exceeded the generally accepted cutoff value of 1.0 and were therefore retained in the further data analysis. Together, the three retained factors explained approximately 67.18% of the variance in the data. In order to increase the interpretability, a Varimax rotation was performed on the identified principle components. Items were then assigned to the factor on which they had the highest loadings.

Exhibit 3 presents the Varimax rotated principle components analysis results. For the sake of clarity, rotated factor scores lower than 0.6 are not shown.

We have labeled each of the five factors shown in Exhibit 3 according to the items, which loaded on that latent competitive priority dimension. The product orientation while innovating is comprised of four items related to increase or to substitute product range, to increase product quality or to reach grater market share or new markets. The second factor labeled as Process orientation while innovating is comprised of five items, all of which try to breadth of firm actions to increase operational flexibility or production capacity or to reduce labor costs per unit or energy consumption per unit when they are looking for new innovations. Four items related commercial innovations loaded on the third factor. Similarly, three other items related to organizational innovation loaded on the fourth factor. We have labeled the fifth factor as the importance of the market information sources and it measures the firm's reliance on market information sources for the innovation process.

We must take care to assess the inter-item reliability of the items comprising each scale (Flynn et al., 1990). Cronbach's coefficient alpha was used to assess inter-item reliability, with alpha values of 0.70 or higher considered to indicate acceptable reliability for established scales and 0.60 being acceptable for new scales (Nunnally, 1978; Churchill, 1979). Therefore, we concluded that the scales are comprised of reliable items. We also eliminated the items that loaded on multiple factors. Using the above guidelines, a total of 19 items were retained in the analysis as measures for five company characteristics.

[4] www.fecyt.es.

Exhibit 3
Factor analysis (Varimax rotated factor scores)

	Component				
	Fac1	*Fac2*	*Fac3*	*Fac4*	*Fac5*
Factor name and items					
Eigenvalue	6,40	2,41	1,76	1,18	1,01
Percent variance explained	33,69	12,69	9,27	6,19	5,33
Product orientation while innovating (α = 0.878)					
objet3	,846				
objet4	,838				
objet1	,795				
objet5	,692				
Process orientation while innovating (α = 0.828)					
objet9		,838			
objet10		,831			
objet8		,770			
objet7		,660			
objet6		,615			
Commercial innovations (α = 0.778)					
incomn3		,796			
incomn2		,782			
incomn4		,713			
incomn1		,682			
Organizational innovations (α = 0.792)					
inorgn1				,832	
inorgn2				,831	
inorgn3				,698	
Importance of stakeholders information (α = 0.735)					
source2					,759
source4					,689
source3					,601

Total % of variance explained 67,18. KMO 0,882 sig .000

To evaluate environmental orientation of the firm while innovating, we used the PITEC variable "Objet11" that measures "how essential it is for firms to improve their environmental impact while innovating". PITEC database considers the importance of environmental impact improvement by firms when innovating as particularly important (1), important (2), not so important (3), not considered or not important (4).

Finally, a discriminant model was developed based on the five company characteristics (independent variables) and by assuming that service companies were originally classified into four groups (dependent variable). This, allows us to test the effectiveness these characteristics in classifying service firms attending to their environmental orientation while innovating. Then, the discriminant analysis will check if the selected variables can accurately predict the groups attending the environmental orientation of the firm.

Exhibit 4 shows the coefficients for each of the three discriminant functions, as well as Wilk's lambda and the mean scores for each of the four groups (Hair et al., 1998). The discriminant function maximizes the differences between the values of the dependent variable, so it differentiates a case into categories of the dependent based on the values on the independents.

5. Analysis and results

As shown in Exhibit 4A, the three discriminant functions were statistically significant based upon Wilk's lambda ($p < 0.05$) supporting our three hypothesis.

More specifically, structure coefficients show the correlations between a given independent variable and the discriminant scores associated with a given discriminant function. They are used to describe how closely a variable is related to each function. The co-

efficients for *process and product orientation* while innovating were the highest and substantially higher than the other coefficients in discriminant function 1. Discriminant function 2 was heavily weighted by the *importance of market information sources*. Finally, function 3 was weighted mainly by *organizational and commercial innovations*.

Approximately, 97.9% of the variance is explained by discriminant function 1. Therefore we can focus the analysis on this one to see the relative importance of each of the constructs in the model. *Process and product orientation* weight from two to three times more than the *importance of market information sources* or *organizational and commercial innovations* in determining the environmental orientation of the service firms.

Negative coefficients are due, on one hand, to standardized factor scores and, on the other hand, to the way of categorizing multinomial variables (1=high to 4=no relevant) and dichotomous variables (1=Yes; 2=No). For example, highly environmentally oriented firms have lower scores (negative scores) than not oriented firms in *organizational and commercial innovations*. Therefore, the highest number of commercial or organizational innovations the firm has introduced on the past years, the highest the factor score (positive) and, more negative the resulting discriminant function will be. Since a negative value of the discriminant function reflects the highest chance to be environmentally oriented, we can conclude that firms that introduce commercial or organizational innovations are more likely to be environmentally oriented that those that do not.

In addition, the group centroids (group means) for each of the four groups differed substantially. Discriminant function scores were standardized so that the entire sample had a mean of 0.00 and a standard deviation of 1.00. This allowed easy comparisons between the groups being classified.

Although it is extremely important to have statistically significant functions, it is also very important that the discriminant functions perform well in classifying service companies into their original groups for calibration and validation samples.

Exhibit 4B presents the classification results based on the three discriminant functions shown in Exhibit 4A for calibration sample. The rows of Exhibit 4B show the actual classification based on the eco-innovative orientation of the firm (Objet11), while the columns show the predicted group based on the discriminant functions. The companies in the main diagonal have correct predictions (shown in bold), while the other cells represent the misclassified firms.

If each group is comprised of equal number of responses, then without any additional prior information, one can randomly assign the services into the five groups with an expected probability of making a correct decision to be 25%. In our case, the group sizes vary between 483 and 1460; therefore, a proportional chance criterion can be used to assess the predictive accuracy of a discriminant model (Morrison, 1969; Perreault et al., 1979; Huberty, 1984; Hair et al., 1998). Since the total observations are 3013, the expected probabilties for the four groups are 16.99%, 18.52%, 16.03% and 48.45%, respectively. Therefore, the proportional chance criterion becomes 32.37%. Hair et al. (1998) recommend that classification accuracy should be at least 25% higher than the proportional chance criterion for a good discriminant model (1.25 × 32.37% = 45.46%). As shown in Exhibit 4B, the classification accuracy for the estimated model was 54.86%, which is considerably higher than the suggested guideline of Hair et al. (1998). Note that the classification accuracy of the estimated discriminant model is also higher than the maximum chance criterion (probability of being in the group with the largest sample size s 48.45 % chance of being in group 4 (Hair et al., 1998).

Further, we used cross-validation techniques over a split sample approach (Hair et al., 1998) to validate the estimated discriminant models. In cross-validation, discriminant models are estimated by leaving one observation out and then the estimated models are used to predict the membership of the unselected observation. The results presented in Exhibit 5C show that cross-validated cases are classified fairly accurately and exceed the proportional chance criterion, maximum chance criterion.

It is remarkable, that the model are quite proficient in classifying extreme cases (high or low environmentally oriented), which indicates that these variables would be particularly useful to discriminate between highly oriented and not oriented firms.

6. Discussion, conclusions, limitations, and further research

The objective of this paper was to empirically find out the determinants of the environmental orientation of the service companies when innovating con-

Exhibit 4

Standardized canonical discriminant function coefficients and groups means for Service firms

A. Standardized canonical discriminant function coefficients and group means					
		Function 1	*Function 2*	*Function 3*	
Scale	Product orientation while innovating	.559	.472	-.007	
	Process orientation while innovating	.852	-.511	.154	
	Commercial innovations	-.129	-.176	.537	
	Organizational innovations	-.284	-.042	.739	
	Importance of market information sources	.344	.629	.351	
	Wilks' lambda	0.677 p<0.001	0.990 p<0.001	0.997 p<0.05	
Mean scores	Group 1	-.874	.131	-.047	
	Group 2	-.682	-.040	.097	
	Group 3	-.351	-.148	-.073	
	Group 4	.683	.018	.004	
	Percent variance explained	97.90%	1.46%	0.63%	
B. Classification results for original cases overall accuracy: 54.86					
Predicted group	Group 1	Group 2	Group 3	Group 4	Total
Actual group					
Group 1	222 (43.36%)	98 (19.14%)	5 (0.98%)	187 (36.52%)	512
Group 2	156 (27.96%)	144 (25.81%)	6 (1.08%)	252 (45.16%)	558
Group 3	84 (17.39%)	84 (17.39%)	6 (1.24%)	309 (63.98%)	483
Group 4	81 (5.55%)	84 (5.75%)	14 (0.96%)	1281 (87.74%)	1460
Total	543	410	31	2029	3013
C. Classification results for cross-validated cases overall accuracy: 54.36					
Predicted group	Group 1	Group 2	Group 3	Group 4	Total
Actual group					
Group 1	214 (41.8%)	106 (20.7%)	5 (0.98%)	187 (36.52%)	512
Group 2	158 (28.32%)	139 (24.91%)	6 (1.08%)	255 (45.7%)	558
Group 3	85 (17.6%)	84 (17.39%)	5 (1.04%)	309 (63.98%)	483
Group 4	81 (5.55%)	85 (5.82%)	14 (0.96%)	1280 (87.67%)	1460
Total	538	414	30	2031	3013

Maximum chance criterion= 48.5 %; Proportional chance criterion= 25 %; Hair et al. Criterion= 40.45 %

sidering the environment, what is considered eco-innvate. Data collected from PITEC database in service industries provide several interesting insights about the characteristics that determine the environmental orientation.

The results presented in this paper show that to be oriented towards the introduction of *process and product innovations* are crucial aspects in determining the environmental orientation of the service firms. Results also show that it is necessary to consider *the importance of market information sources* and *the former introduction of commercial and organizational innovations* as differentiators but with a lower impact. These results were already known for manufacturing industries (Segarra-Oña et al., 2011a and Segarra-Oña et al., 2011b). but it is the first time that the study is addressed to service firms. Then, it has been empirically demonstrated that service companies that innovate through the improvement of products and processes are more likely to be environmentally oriented fulfilling second hipothesis.

As results also show that previous innovation activity affects in a direct way the consideration of the environmental aspects when innovating, hipothesis 1 is fulfilled and we demonstrate that, innovative orientation drives eco-innovative orientation at the service industries.

The results also suggest that those companies that rely on the information from the competitors, the suppliers and the customers are also more sensitive to introduce environmental innovations what demonstrates our third hipothesis. Then deploying the definitions of the variables Object 1-5 and Object 6-11 that we previously grouped to better model the analysis, an environmental company is is highly concern about cost reduction, about developing new products and searching for new markets, and where

external information sources are relevant. That is, firms that are concerned about internal and external operational improvement, in the same direction that previous studies indicated (Zhu et al. 2006, Dekker et al. 2012), but with empirical demonstration, in our case.

Based on these results, it becomes possible to determine which company´s behavior have to be promoted in order to get firms focused on environmental aspects. According to the results, environmentally oriented firms are characterized by a dynamic and "open to change" behavior, showing some of the characteristics that can be found in those companies looking for the excellence. Those results have important applications as far as industrial policy actions that promote eco-innovation refers, since allow us to characterize those companies likely to benefit from public grants.

The optimization of these public programs financed by European public funds require a prior characterization of the companies that develop eco-innovation processes as well as to identify the factors that positively influence a company so that it can switch from being innovative to consider the environment as a variable to take into account and be eco-innovative. This paper has pointed out that it would be more effective to promote eco-innovation in enterprises that are already innovative.

The exploratory factor analysis results, the high factor loading and the high reliability scores for the identified factors provide validity for the results presented earlier in this paper and also give confidence in using these scales in future researches for additional analysis.

Further, the results of the discriminant analysis serve to model how service firm's characteristics determine the environmental orientation of the firm. Even though the discriminant functions could only classify about 54% of the responses correctly, we consider the results to be very encouraging. We should highlight the ability of the model to differentiate extreme orientations, high and low environmentally oriented, when the classification task is inherently very difficult. This research confirms previous findings (Segarra-Oña et al. 2011a and 20011b), showing highly polarized positions in environmental aspects.

There are a number of limitations of our study, which should be addressed in future works. For example, we have used direct relations between the constructs and the environmental orientation in our study, while we can expect relations between constructs or indirect effects between constructs and environmental orientation. Future studies should try to deep in the analysis with other techniques such as structural equation modeling to address properly direct and indirect effects of each construct.

Overall, we believe that we have managed to address a number of relevant and important issues, which should be of interest for future research.

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ANNEX 1_ CNAE 2009 CODES AND "ACTIN" VARIABLE CORRESPONDENCE

Código (ACTIN)	Rama de actividad	CNAE-2009
0000	AGRICULTURA, GANADERÍA, SILVICULTURA Y PESCA	01, 02, 03
0001	INDUSTRIAS EXTRACTIVAS	05, 06, 07, 08, 09
0002	INDUSTRIAS DEL PETRÓLEO	19
0003	ALIMENTACIÓN, BEBIDAS Y TABACO	10, 11, 12
0004	TEXTIL	13
0005	CONFECCIÓN	14
0006	CUERO Y CALZADO	15
0007	MADERA Y CORCHO	16
0008	CARTÓN Y PAPEL	17
0009	ARTES GRÁFICAS Y REPRODUCCIÓN	18
0010	QUÍMICA	20
0011	FARMACIA	21
0012	CAUCHO Y PLÁSTICOS	22
0013	PRODUCTOS MINERALES NO METÁLICOS DIVERSOS	23
0014	METALURGIA	24
0015	MANUFACTURAS METÁLICAS	25
0016	PRODUCTOS INFORMÁTICOS, ELECTRÓNICOS Y ÓPTICOS	26
0017	MATERIAL Y EQUIPO ELÉCTRICO	27
0018	OTRA MAQUINARIA Y EQUIPO	28
0019	VEHÍCULOS DE MOTOR	29
0020	CONSTRUCCIÓN NAVAL	301
0021	CONSTRUCCIÓN AERONÁUTICA Y ESPACIAL	303
0022	OTRO EQUIPO DE TRANSPORTE	30 (exc. 301, 303)
0023	MUEBLES	31
0024	OTRAS ACTIVIDADES DE FABRICACIÓN	32
0025	REPARACIÓN E INSTALACIÓN DE MAQUINARIA Y EQUIPO	33
0026	ENERGÍA Y AGUA	35, 36
0027	SANEAMIENTO, GESTIÓN DE RESIDUOS Y DESCONTAMINACIÓN	37, 38, 39
0028	CONSTRUCCIÓN	41, 42, 43
0029	COMERCIO	45, 46, 47
0030	TRANSPORTES Y ALMACENAMIENTO	49, 50, 51, 52, 53
0031	HOSTELERÍA	55, 56
0032	TELECOMUNICACIONES	61
0033	PROGRAMACIÓN, CONSULTORÍA Y OTRAS ACTIVIDADES INFORM	62
0034	OTROS SERVICIOS DE INFORMACIÓN Y COMUNICACIONES	58, 59, 60, 63
0035	ACTIVIDADES FINANCIERAS Y DE SEGUROS	64, 65, 66
0036	ACTIVIDADES INMOBILIARIAS	68
0037	SERVICIOS DE I+D	72
0038	OTRAS ACTIVIDADES	69, 70, 71, 73, 74, 75
0039	ACTIVIDADES ADMINISTRATIVAS Y SERVICIOS AUXILIARES	77, 78, 79, 80, 81, 82
0040	EDUCACIÓN	85 (exc. 854)
0041	ACTIVIDADES SANITARIAS Y DE SERVICIOS SOCIALES	86, 87, 88
0042	ACTIVIDADES ARTÍSTICAS, RECREATIVAS Y DE ENTRETENIMIEN	90, 91, 92, 93
0043	OTROS SERVICIOS	95, 96

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