



TECHNISCHE  
UNIVERSITÄT  
WIEN  
Vienna University of Technology

**Master Thesis**

Real Estate and Facility Management Department TU Wien

# **FACILITY MANAGEMENT MARKET IN SPAIN AND ANALYSIS OF THE TIME SERIES**

**MEMORY**

Vienna, June 2016

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## **Information summary**

**Title:** Facility Management market in Spain and analysis of the time series

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**Department:** Real Estate and Facility Management Department

**Motivation:** Master Thesis



## Summary

The present research aims to determine the added value of Facility Management (FM) and the parameters influencing the magnitude with the help of scientific models and methods. Precisely, the principal objective is to analyze the Spanish market and fill the existing gap of information that exists up to that point. The project has been carried out with the support of Vienna University of Technology which, since 2005, analyzes the demand side of FM on a yearly basis in different European countries such as Austria, Germany, Bulgaria, Romania, Turkey and the Netherlands. The study is conducted among the Top 500 companies in Spain (ranking is sales driven) from different types of industries.

Thereby, the project has been divided into different points structured as follows:

- Background of the study. It outlines the research problem, objectives and scope.
- Selection of the research design and methodology.
- Discussion of the whole essence of facilities management.
- FM volume market in Spain and the evolution of the main areas.
- Analysis of data and interpretation of results found from the interviews and questionnaire process.
- Finally, summary of findings, conclusion and discussion of implication for theory, practice and research.

**Keywords:** Facility management, Spain, Mixed Methods Approach, Added value, Outsourcing.



## TABLE OF CONTENTS

Information summary .....	1
Summary.....	5
TABLE OF CONTENTS .....	7
List of figures .....	9
1. Introduction .....	13
1.1 Facility management contextualization .....	13
1.2 Status quo.....	13
1.3 Objectives and Scope.....	14
1.4 Outline Structure.....	15
2. Methodology.....	16
2.1 Literature Review and Identification of Knowledge Gaps .....	16
2.2 Methods of Data Collection .....	16
2.2.1 Secondary data.....	17
2.2.2 Primary data.....	17
2.3 The Setting of the Study .....	18
3. Facility Management in Spanish market .....	20
3.1 State of the FM market in Spain .....	20
3.2 Value added in FM .....	21
3.3 Outsourcing.....	23
3.4 Key Performance Indicators in FM .....	27
4. Evolution of the main areas of FM in Spain.....	29
4.1 Cleaning .....	29
4.2 Catering.....	31
4.3 Real Estate .....	33
4.4 Security .....	35
4.5 Maintenance.....	37
4.6 Energy.....	39
4.7 Waste .....	40
4.8 Email and messaging .....	41
4.9 Fleet Management.....	42

5. Results and analysis.....	43
5.1 Evolution of FM discipline in Spain.....	43
5.1.1 Basic data of the company .....	43
5.1.2 Organization.....	44
5.1.3 Outsourcing.....	50
5.1.4 IT Support .....	53
5.2 FM Spanish market compared to European countries .....	56
5.2.1 Basic data of the company .....	56
5.2.1 Organization.....	56
5.2.2 Outsourcing.....	60
5.2.3 IT Support .....	62
6. Conclusions and recommendations .....	65
7. References .....	68

## List of figures

Fig 1. Steps to be followed when developing a research.....	19
Fig 2. 4P Life-Cycle Model: The Added Value of FM (Ashworth, 2012) [7] .....	21
Fig 3. Management Costs in the Various Phases of a New Building (Hubbuch, 2012, p.3) [7] .....	22
Fig 4. Main outsourced areas in a company [9] .....	23
Fig 5. Principal activities outsourced in General Services and Administration [9] .....	24
Fig 6. Service providers: demand by industry. KPMG 2014 Survey [9] .....	24
Fig 7. Why some activities have not been outsourced. KPMG 2014 Survey [9].....	25
Fig 8. Top drivers for REFM change/outsourcing efforts. KPMG 2014 Survey [9] .....	25
Fig 9. Evolution of turnover in the cleaning sector [13] .....	29
Fig 10. Evolution of the number of employees in the cleaning sector [13] .....	30
Fig 11. Evolution of the average number of employees per company in the cleaning sector [13].....	30
Fig 12. Evolution of the number of companies in the cleaning sector [13] .....	30
Fig 13. Evolution of the turnover in catering [13].....	31
Fig 14. Evolution of the number of employees in catering [13].....	31
Fig 15. Evolution of the average number of employees per company in catering [13] .	32
Fig 16. Evolution of the number of companies in catering [13].....	32
Fig 17. Evolution of the investment (M €) front office real estate assets (M m <sup>2</sup> ) [13] ..	33
Fig 18. Evolution of the monthly average income in Madrid and Barcelona (€/m <sup>2</sup> ) [13] .....	34
Fig 19. Evolution of the unemployment rate (%) [13] .....	34
Fig 20. Evolution of turnover in the security sector [13] .....	35
Fig 21. Evolution of the number of employees in the security sector [13] .....	36

Fig 22. Evolution of the number of companies compared to the market share of the top 5 companies [13] .....	36
Fig 23. Evolution of the total turnover in the maintenance sector compared to the building maintenance [13] .....	37
Fig 24. Evolution of the number of employees in maintenance sector [13].....	38
Fig 25. Evolution of the number of companies in maintenance sector [13].....	38
Fig 26. Consumption trends by sector in energy [18] .....	40
Fig 27. Evolution of residues sector in Spain [18] .....	41
Fig 28. Evolution of email and messaging sector in Spain [18].....	41
Fig 29. Sectors to which belong the companies surveyed.....	43
Fig 30. Distribution of the number of employees in the enterprises surveyed.....	44
Fig 31. Portion of companies with a separate FM department in 2014 and 2016.....	44
Fig 32. Staff members in FM departments in 2014 and 2016 .....	45
Fig 33. Comparison of the hierarchic level of FM department between 2014 and 2016	45
Fig 34. Main goals by number of mentions that FM departments have .....	46
Fig 35. Evolution of the main goals FM departments have.....	46
Fig 36. Main cost drivers that FM departments have .....	47
Fig 37. Fields with the biggest savings through the use of FM.....	47
Fig 38. How big are savings in % in each field in 2016.....	48
Fig 39. Reasons why savings are achieved (2016).....	48
Fig 40. Fields with the biggest increases in productivity .....	49
Fig 41. How big are increases in productivity in % in each field.....	49
Fig 42. Reasons why increases in productivity are achieved .....	50
Fig 43. Evolution of the number of external service providers .....	50
Fig 44. Distribution of tasks executed by themselves (0%) or by external service providers (100%) .....	51

Fig 45. Most outsourced facility services in Spain.....	51
Fig 46. Evolution of the most outsourced facility services .....	52
Fig 47. Contract type and average duration in infrastructural services .....	52
Fig 48. Contract type and average duration in technical services .....	53
Fig 49. Main reasons when choosing an external service provider.....	53
Fig 50. Percentage of companies with CAFM system .....	54
Fig 51. FM processes covered with CAFM system .....	54
Fig 52. Percentage of companies with ERP system .....	55
Fig 53. Type of ERP system used by companies .....	55
Fig 54. Business processes covered with ERP system .....	55
Fig 55. Comparison of the number of employees between different European countries [14] .....	56
Fig 56. Portion of companies with a separate FM department [14] .....	57
Fig 57. Comparison of staff members in FM departments [14] .....	57
Fig 58. Comparison of the hierarchic level of FM department [14].....	58
Fig 59. Main goals of FM departments [14].....	58
Fig 60. Main cost drivers that FM departments have [14] .....	59
Fig 61. Fields with biggest savings through the use of FM in Romania, Austria and Spain [14] .....	59
Fig 62. Fields with biggest increases in productivity in Romania, Austria and Spain [14] .....	60
Fig 63. Number of external service providers in Romania, Austria and Spain [14] .....	60
Fig 64. Most outsourced facility services in Romania, Austria and Spain [14] .....	61
Fig 65. Comparison of contract type for infrastructure between European countries [14] .....	61
Fig 66. Comparison of contract type for technical services between European countries [14] .....	62

Fig 67. Percentage of companies with CAFM system in different European countries [14] ..... 62

Fig 68. Processes covered with CAFM system in different European countries [14] ... 63

Fig 69. Percentage of companies with ERP system in different European countries [14] ..... 63

Fig 70. Processes covered with ERP system in different European countries [14] ..... 64

## 1. Introduction

### 1.1 Facility management contextualization

In today's world the building industry is one of the largest. In this area, customers in the great majority do not search only for a construction; they seek the use of facilities. They find value in the availability of serviced space, developed and run to support their business or social service. [1]

Due to the important relationship between technical installations, space distribution and productivity of people, it is necessary to manage and administer these resources in an integrated manner, thereby obtaining a whole and optimum performance. It is in this niche where discipline Facility Management (FM) appears. In fact, it is becoming an area of vital importance for companies as it allows to optimize the profitability of real estate and asset infrastructure, reduce costs of maintenance and conservation and, in addition, to offer more competitive services. [2]

According to the European Standard EN15221-1, Facility Management is "*an integration of processes within an organization to maintain and develop the agreed services which support and improve the effectiveness of its primary activities*" (EN15221-1: 2006 Facility Management – Part 1: Terms and definitions). [19]

In this way, the principal purpose is to ensure a work environment that strongly support the core business objectives of an organization. For that, FM seeks the integration of maintenance operations, improvements and adaptations of the buildings and infrastructure and efficiency in services.

### 1.2 Status quo

Financial, social and economic crisis has been the best scenario for the development of a discipline that looks at business management from another perspective. In today's market, organizations to survive must be competitive and profitable and, therefore, their objectives are often based on the margin optimization provided by each of its business activities. In this context, FM has offered the opportunity to gain greater control of resources and reduce operating costs, achieving savings of up to 20% in global models. [3]

For the above reason, in recent years there has been an increasing acceptance of the added value FM brings to ensure that users and building owners achieve the best value and performance from a building over its whole-life.

The importance of FM Know-how and its potential to deliver real value to the economy and society has never been greater and FM is now being included in government Corporate Real Estate (CRE) strategies (All Party Parliamentary Group for Excellence in the Built Environment, 2012). Experience has shown that acceptance of the lowest price

bid does not provide value for money in both the final cost of construction or throughout the cycle life and operational costs (Bourn, 2001).

Furthermore, it may be stated that the main benefits Facility Management offers in organizations in accordance with the European Norms EN15221-1 are: [19]

- Clear and transparent communication between the demand side and the supply side.
- Most effective use of synergies amongst different services, which will help to improve performance and reduce costs of an organization.
- Simple and manageable concept of internal and external responsibilities for services, based on strategic decisions, which leads to systematic insourcing or outsourcing procedures.
- Reduction of conflicts between internal and external service providers.
- Integration and coordination of all required support services.
- Transparent knowledge and information on service levels and costs, which can be clearly communicated to the end users.
- Improvement of an organization sustainability by implementing a life cycle analysis for the facilities.

### **1.3 Objectives and Scope**

The research aims to determine the added value of FM and the parameters influencing the magnitude with the help of scientific models and methods. The principal objective is to analyze the Spanish market of this sector and fill the existing gap of information that exists up to that point.

The following research objectives have been established at the start of the research to be answered in this study:

- What do enterprises in Spain want to accomplish with the use of FM?
- In which fields are the biggest savings through the use of FM in Spain?
- How is the FM department in Spanish companies organized and which IT support is used?
- How important is outsourcing for companies in Spain and which are the most outsourced services?
- How has the Facility Management market evolved in Spain over the last years?
- How different is the FM demand side in Spain from other European Countries?

As stated above, the scope of this project is basically focused on the FM market in Spain. Accurately, it is based on companies that are among the Top 500 companies in Spain from different types of industries (updated daily in the National ranking of companies by revenue).

The project will be carried out with the support of Vienna University of Technology which, since 2005, analyzes the demand side of the FM on a yearly basis in different European countries such as Austria, Germany, Bulgaria, Romania, Turkey and the Netherlands. For this purpose, the study will focus on expanding the data obtained from the same study in 2014 (Facility Management Market in Spain - TU Wien, 2014) and compare it gathering more information and analyzing it.

### **1.4 Outline Structure**

The thesis consists of six chapters, organized in a systematic and comprehensible manner. The structure of each of the main chapters is as follows:

Chapter One: is the introductory chapter and it provides the background of the study and places the research in context to establish why it is important. It outlines the research problem, aim and objectives, the scope of the research and the structure of the thesis.

Chapter Two: describes the selection of the research design and methodology. It is composed of the setting of the study and explains the method approach. Furthermore, it addresses the planning of data collection and the interview and questionnaire process.

Chapter Three: deals with the review of the related literature and explores the existing state of the art of research and information that currently exists. It is structured into a discussion of the whole essence of facilities management detailing its market volume, the value added, outsourcing and KPI for measurement of FM.

Chapter Four: presents the concept and the principal framework of the research. It is composed of the FM volume market in Spain and the evolution of the main areas.

Chapter Five: presents the analysis of data and interpretation of results found from the interviews and questionnaire process. This information is compared with the data obtained from the same study in 2014. On the other hand, the Spanish market is also compared to recent data about other European countries.

Chapter Six: focuses on the summary of findings, conclusion and discussion of implication for theory, practice and research.

## 2. Methodology

### 2.1 Literature Review and Identification of Knowledge Gaps

The first step in the procedure of a thesis is to review the state of the art literature and establish the key theory, models and best practice in the research area of interest. Initially, the preliminary search has helped to generate and refine the research ideas. After that, it has been done an extensive critical literature review which has helped to identify theories and ideas that have been tested using data.

This is known as a deductive approach in which a theoretical or conceptual framework subjected to a rigorous test is developed. Deduction possesses several important characteristics. First, there is the search to explain relationships between variables. To test this hypothesis it is important to use another characteristic, the collection of quantitative data. Therefore, it is needed to employ controls to allow the testing of hypotheses.

The research should also use highly structured methodology to facilitate replication (Gill and Johnson 2002), an important issue to ensure reliability. Furthermore, in order to pursue the principle of scientific rigor, deduction dictates that the researcher should be independent of what is being observed and it has to be able to generalize statistically about regularities in human social behavior selecting samples of sufficient numerical size. [15]

### 2.2 Methods of Data Collection

In literature, three major research paradigms to collect the required data can be found: Quantitative Research Method, Qualitative Research Method and Mixed Research. Both, quantitative and qualitative methods have particular lacks of strength so it has been considered convenient to use Mixed Research or Approach. [14]

Mixed Methods Approach is the general term for when both quantitative and qualitative data collection techniques and analysis procedures are used in a research design. It is subdivided into two types: Mixed Method Research and Mixed Model Research. *Mixed Method Research* uses quantitative and qualitative data collection techniques and analysis procedures either at the same time (parallel) or one after the other (sequential) but does not combine them. This means that quantitative data are analyzed quantitatively and qualitative data are analyzed qualitatively. In contrast, *Mixed Model Research* combines quantitative and qualitative data collection techniques and analysis procedures as well as combining quantitative and qualitative approaches at other phases of the research such as research question generation. [15]

Tashakkori and Teddlie (2003) argue that multiple methods are useful if they provide better opportunities to answer the research questions and whether they allow to better

evaluate the extent to which the research findings can be trusted and inferences can be made from them. For that reason, in this study both Mixed Method Research and Mixed Model Research have been performed.

### **2.2.1 Secondary data**

It is also important in a project to know how to look up information and data that have already been collected for some other purpose. Such secondary data can provide a useful source from which to answer, or partially to answer, the research questions. Most research questions are answered using some combination of secondary and primary data.

In the case of the project that concerns us, data from government departments that undertake surveys and publish official statistics have been used to cover the evolution of the main sectors of FM in Spain. Some of these data, in particular, documents such as company minutes, are available only from the organizations that produce them, so access has been negotiated to gather more general information about companies surveyed. Moreover, secondary data has helped to find out the basic data of companies, which includes for example questions about the industry of the company, number of employees, turnover or number of sites.

### **2.2.2 Primary data**

To collect the rest of the required data, a standardized questionnaire with up to 27 closed and opened questions has been used. The survey strategy is usually associated with the deductive approach. It therefore tends to be used for exploratory and descriptive research. Using a survey strategy should give more control over the research process and, when sampling is used, it is possible to generate findings that are representative of the whole population at a lower cost than collecting the data for the whole population. Moreover, often obtained by using a questionnaire administered to a sample, these data are standardized, allowing easy comparison. However, it is needed to spend time ensuring that the sample is representative, designing and piloting the data collection instrument and trying to ensure a good response rate. [15]

First of all, the questionnaire used was translated from German to English, and afterwards to Spanish. The fact of carrying out the questionnaires in Spanish is a measure that makes it much easier for better understanding and faster response time of those interviewed. The standardized questionnaire for the survey with closed and opened questions was subdivided into the main areas: [14]

- FM organization: questions about the availability of a FM department, number of employees and the position in the hierarchy of the company etc.
- Value added: cost drivers and savings through the introduction of FM and the increase of productivity through the use of FM.

- The way of service provision: number of external service providers, fields that are outsourced etc.
- IT support: questions about the use of IT systems as ERP or CAFM systems and processes that are covered with it.

In order to secure representative responses, the size of the sample for the study should not fall below the representative size determined from statistical estimation theory, which is based on the degree of confidence that the researcher wishes to employ (Kothari, 1978). For this study, it was defined how large a sample of companies should be in order to be 75% confident that the probable error of using a sample rather than surveying the whole population will not exceed 11,5%. The following formula is given:

$$N = \frac{Z\alpha^2 \cdot n \cdot \beta \cdot (1 - \beta)}{(n - 1) \cdot \delta^2 + (Z\alpha^2 \cdot \beta \cdot (1 - \beta))} \quad \text{where:}$$

$N$  = sample size

$n$  = population size, in this case 500 companies.

$Z\alpha$  = a value such that the probability of a normal variable exceeding it is  $(1 - \alpha)/2$  and obtainable from Z Table. In this case 1.15.

$\beta$  = unknown value we are trying to estimate and taken to be 0.5 conservatively in which case  $N$  will be maximum and the sample will yield at least the desired precision.

$\delta$  = is the true value of  $\beta$  which in this case is 0.115 or 11,5%

In this case, the formula yields 24. Thus, a sample size of 24 was obtained. It was clear from the start that the number of interviewees would be relatively small and a risk that could occur is that it would not be possible to represent the entire population in terms of sampling. To help the procedure and allow generalization, the selection was based on randomization principle, which is a procedure of giving every subject in a population an equal chance of appearing in the selection.

### 2.3 The Setting of the Study

As has been previously mentioned in the research, since 2005 the Vienna University of Technology (TU Vienna) analyze the demand side of FM on a yearly basis in different European countries such as Austria, Germany, Bulgaria, Romania Turkey and the Netherlands. The fact of not owning enough data about Spain has made Spain the niche of this research study.

Thereby, the investigation has taken place in Spain and the populations for the surveys have been the Top 500 companies in Spain (ranking is sales driven). 24 of these companies were selected randomly for the project. Interviewees were the internal Facility Managers or the persons responsible for all FM tasks according to the European

Norm EN 15221-1. The tools used for the surveys have been phone and E-mail. All the phone interviews with the Facility Managers of the different companies have been carried out by one researcher. By this means, the data quality was more secured. These answers have been entered in a MS Access database and afterwards exported into Microsoft Excel in order to evaluate and analyze the data. [14]

As a summary, the next image shows all steps made in the development of the project (See Fig 1).

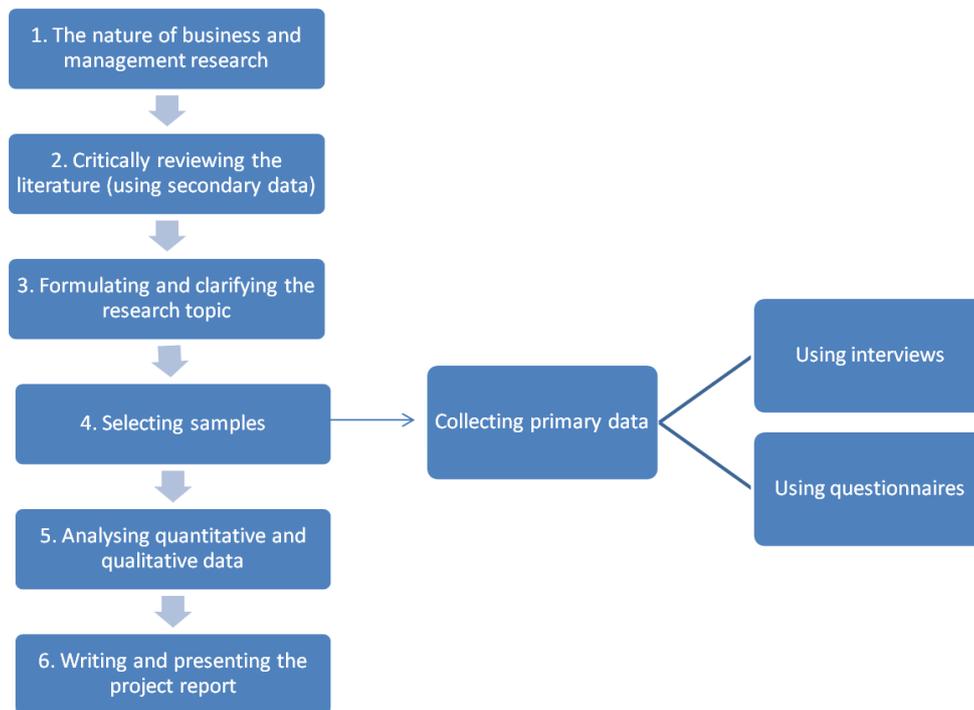


Fig 1. Steps to be followed when developing a research

### **3. Facility Management in Spanish market**

#### **3.1 State of the FM market in Spain**

Facility Management is the professional discipline that has grown fastest in Europe in the last fifteen years. According to data provided by the Spanish Society of Facility Management, IFMA, the approximate volume of that market in Spain nowadays is 70.000 million Euros, around 35% more than 2 years ago, representing a sector full of opportunities. [4]

It is a discipline where a multitude of profiles and professional categories and a wide variety of environments participate. It is estimated that in 2016 the turnover exceeds 70.000 million Euros, representing 6.47% of GDP according to the latest report of IFMA Spain. The usual sectors that require Facility Management services are Telecommunication and Banking because they have many square meters of working areas. Conversely, it is the industrial sector which records more incipient penetration of this activity, but is expected to be one of its main lines of development in the future. [6]

In Spain there are about 7.000 large companies with more than 2.500 workers. Approximately, there are between 21.000 and 25.000 people dedicated to manage the field of FM. To this amount, the service employees covered by housekeeping, maintenance, security guards, receptionists, etc should be added. Therefore, just in terms of large companies, it could be posted for around 200.000 employees working for that discipline.

Even so, the volume that exists in Spain regarding the FM market is much lower than other countries as in the UK, that reaches 135.000 million Euros, due to the British economy which is more developed. Nonetheless, Spain is above countries like Poland and Portugal. [6]

As mentioned before, the discipline has grown enormously in the last decade, even though still in the process of maturing, especially focusing on saving. "Being an emerging market, growth prospects are high but it is still necessary to publicize the benefits of this type of management" qualifies Pedro Garcia, FM Director of Neinver.

Currently in Spain, FM is implemented via cost reduction, although the ultimate goal should be to optimize: cut costs to improve service. A high percentage of large companies has in its structure a person that is responsible for FM. However, this activity is not still widespread among small and medium enterprises as, generally, exists a low level of awareness of the importance of it. [4]

José Andrés Elizaga, Communication Director of Clece, indicates that the problem of Spain is cultural; "there is not a dedicated person for facility management, but still

remains the director of general services, which has acquired responsibilities in areas such as space management or assets" (December 2014).

On the other hand, public sector in Spain is in delay comparing to the private sector. "The public sector is a strategic medium-term sector due to there is no budget to take on new specialists to manage their properties and services. It is for that reason that now is not a target sector," adds Mariano Sanz, FM Director of Alentis.

### 3.2 Value added in FM

The added value of Facility Management can be defined as the contribution to improve the process of the organization with regard to people, performance, profit and the planet.

These four dimensions has led to create the *4P Model of the Added Value of FM* which can be identified with some parameters associated with each dimension. [4]

- People: Satisfaction, Image, Culture, Health and Safety
- Processes: Productivity, Flexibility, Innovation, Risks
- Profit: Costs, Asset Value
- Planet: Corporate Social Responsibility, Sustainability

This model was created by Per Anker Jensen in 2009 and the figure is shown below (See Fig 2). The FM Value Map shows FM primarily as a value adding rather than cost saving discipline, which supports and links the stakeholders' needs with resources, processes, outputs and outcomes.

In 4P Life-Cycle Model, FM sits at the centre of the model with the red arrows outwards representing the application of FM Knowhow in each whole-life phase of a buildings life cycle over time. The outer blue dark ring representing the 4P idea of achieving a building design with an ideal and sustainable Performance, made up from of a balance of value and benefits that meets the user's needs (People), are as environmentally friendly as possible (Planet) and which result in a design that is has efficient construction and operation costs (Profit/savings) for the organization. [7]

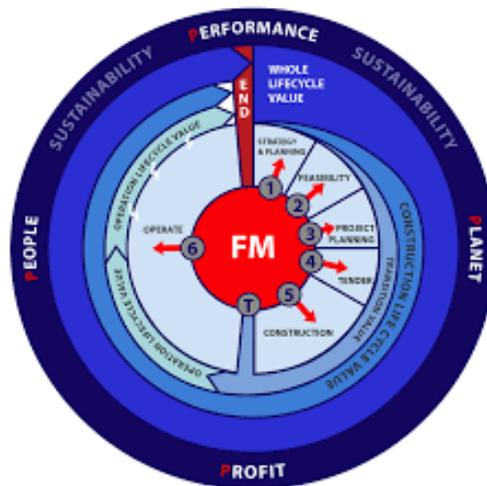


Fig 2. 4P Life-Cycle Model: The Added Value of FM (Ashworth, 2012) [7]

According to an investigation done by EuroFM Research Papers 2015 about the perception and application of the added value of FM, the results showed that benefits were mainly linked to clients, customers and end users but also to shareholders and – less often - to society as a whole. On the other hand, practitioners mainly steer on the impact of FM on the core business and organizational performance. Prioritized values were costs and satisfaction, followed by productivity.

It was also concluded that added value and adding value by facilities and services are currently well-known and widely applied concepts in daily practice among leading practitioners in interactions between various stakeholders, and perceived as key issues in FM.

At the same time it can be said that there is still a long way to go to design a clear, well-visualized and widely accepted framework of well-defined value parameters and connected performance indicators, and ways of value adding management on strategic, tactical and operational level.

In order to improve value adding management and to be able to share insights, to benchmark and to compare research findings, a common taxonomy should be developed. Furthermore, clear operationalization is needed, not only in order to be able to measure the added value of different interventions in buildings, facilities and services, but in particular also to disentangle complex cause-effect relationships between input (type of change), throughput (implementation) and output (outcomes in terms of benefits, sacrifices and risks). [8]

On the other hand, many researchers including Hubbuch have researched the timeline relationship as per Fig 3 between a buildings operational costs (blue) and potential influence on the cost (red) during a buildings whole life. This illustrates why the early involvement of FM Know-how is critical at the early stages when key decisions are being made which will largely define the long-term Life Cycle Costs (LCC) and which have a direct and lasting impact on future FM functionality and the resulting operational costs and the degree to which they can be optimized in the future (Hubbuch, 2012, p. 3).

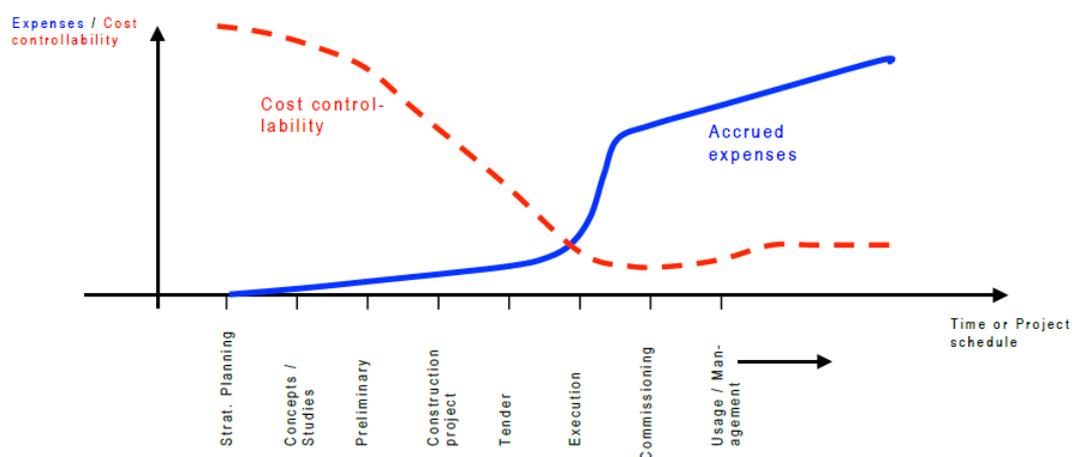


Fig 3. Management Costs in the Various Phases of a New Building (Hubbuch, 2012, p.3) [7]

"It is the relationship between long-term costs and the benefit achieved by clients that represents real value for money" (OGC, 2007).

Last but not least it has to be mentioned that to add value to the service and thus achieve cost reductions without making damage, it must ensure that the department of FM is always provided with information of an economic nature of the business, in addition to the strictly technological and technical information. Moreover, the facility manager has to work in a interactive and participatory way with the rest of the company, so innovation can achieve economies generated from FM.

### 3.3 Outsourcing

It is believed that FM represents a unique set of outsourcing management challenges. Reviewing the definition of FM, one can easily find a clear relationship as FM refers somehow to the outsourcing of a part of the services a company provide.

Nowadays, outsourcing is shaping up as a powerful tool to optimize current production models. It is a practice that has been already fully incorporated in some areas of medium and large enterprises. The data presented below corresponds to a survey carried out by KPMG named "KPMG 2014 Global Outsourcing REFM Pulse Survey". It is about the main trends in the real estate and facilities management (REFM) outsourcing market gleaned from buyer organizations undertaking REFM outsourcing and the leading global REFM outsourcing service providers.

To begin with, it points out that within the same company, there are various activities that may be susceptible to be outsourced by an expert provider (See Fig 4). General Services and Administration is the most outsourced area by companies with 44.7% of respondents. The activity of Production or Operations is the second one with 31.3% of respondents, followed by the Commercial area with 24% of companies. [9]

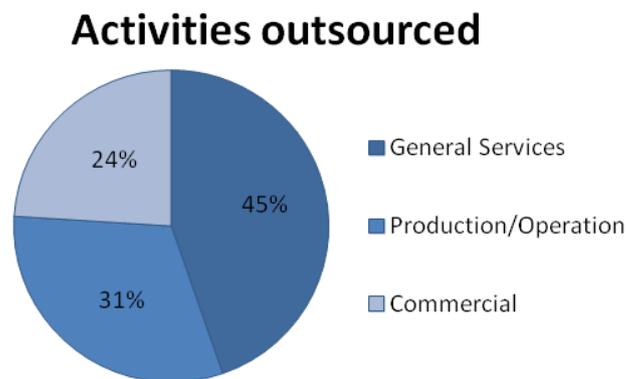


Fig 4. Main outsourced areas in a company [9]

Within each functional area, different services are also outsourced (See Fig 5). In this way, General Services distributes its budget between cleaning and security services

(36.2%), reception and access control (20.6%), service occupational health and safety (16,1%), data recording (13.8%) and translations (13.4%).

### Principal activities outsourced in the General Services department

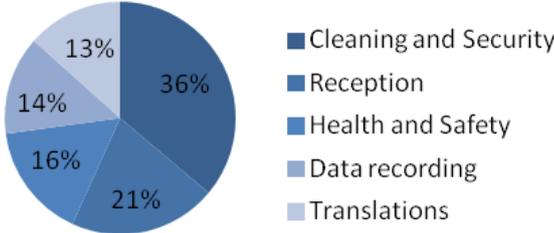


Fig 5. Principal activities outsourced in General Services and Administration [9]

On the other hand, if we distinguished beyond type of companies, Banking, financial services, and insurance (BFSI) is clearly the top industry group, cited by 49% of service providers (See Fig 6). Healthcare is next at 39% followed by pharmaceutical and biotech at 36%.

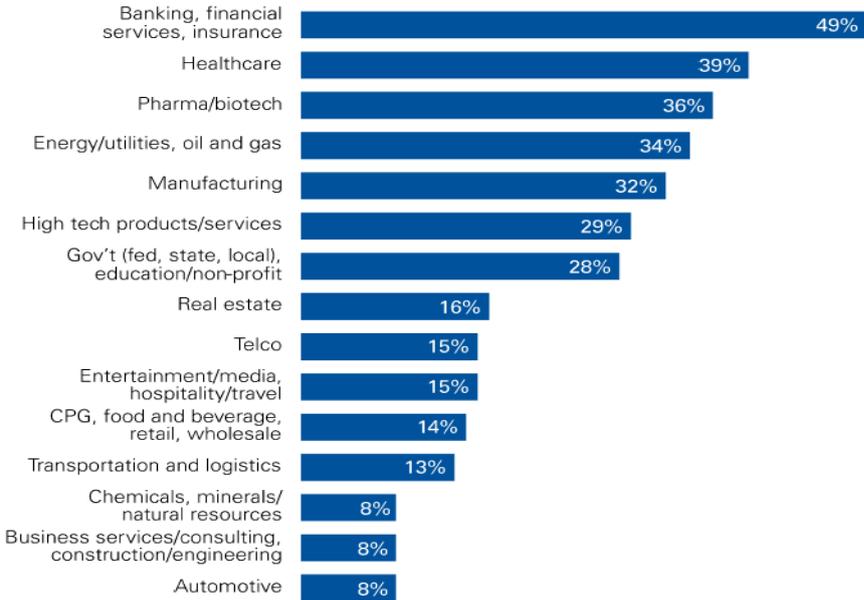


Fig 6. Service providers: demand by industry. KPMG 2014 Survey [9]

Regarding to the reasons why some companies have not outsourced certain activities, in Fig 7, some interesting divergences in answers may be detected between buyers and providers (SPA). These differences are not unexpected given providers have less visibility into buyer decision-making around outsourcing for processes not up for consideration or active pursuit in the market.

The most commonly cited reason by buyers for not outsourcing certain activities are *activities are too strategic in nature*, *costs would be higher* followed closely by *no compelling business case*. The argument against outsourcing strategic work is an old one, but over the years, what is deemed “too strategic” has consistently been narrowing. The cost and business case arguments are very client and activity dependent and will vary depending on how aggressive buyers want to get with their outsourcing efforts in terms of scope, the degree of control assigned to the provider and the underlying characteristics of the supporting IT platform.



Fig 7. Why some activities have not been outsourced. KPMG 2014 Survey [9]

While outsourcing has always been about reducing costs, this goal is not as monolithic as it is often perceived in the market. As outsourcing buyers become more sophisticated, so do the benefits they seek from outsourcing. Reducing costs is a base level goal for buyers and a base prerequisite deliverable for providers competing for the business, but the ultimate benefits from outsourcing and differentiators for service providers are the benefits derived or provided above and beyond cost reduction. The key for buyers defining outsourcing goals is to ensure that their scope and level are practical and achievable given the nature of the outsourcing effort and in the context of buyers’ own outsourcing skills and capabilities. For this reason, Fig 8 shows the main factors that are sought when a company needs to outsource some services.

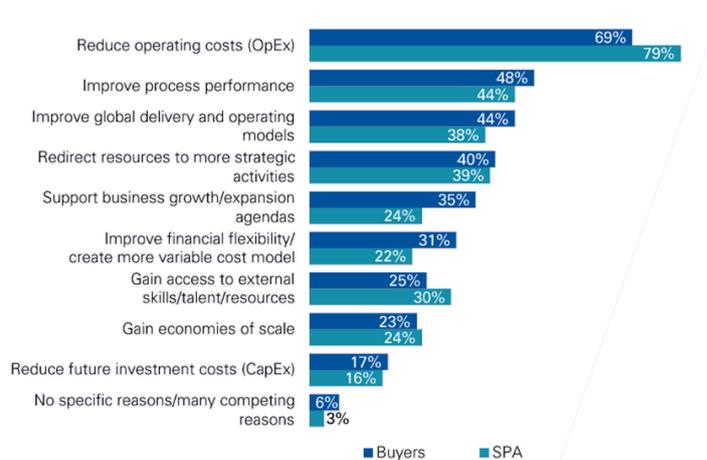


Fig 8. Top drivers for REFM change/outsourcing efforts. KPMG 2014 Survey [9]

Furthermore, ensuring collaboration and communication between the two parties, defining meaningful incentives and building organizational support for the initiative are essential to success.

If we focus on Spain, the outsourcing is an upward trend or so appears from the study Trends in outsourcing of facility management services in Spain, promoted by the Polytechnic University of Madrid (UPM) in collaboration with the Spanish society of Facility Management (IFMA Spain).

In this aspect, more and more companies outsource some services as a formula that optimizes its resources, enabling focus on their core business. In fact, it is expected that the outsourcing market grow at a rate of between 4 and 5 percent annually in the coming years. The study shows that the market generally tend to work with more global contracts where key performance indicators (KPI), new technologies and potential associated risks are present to achieve a higher quality of services. In terms of the services outsourced by companies remain those related with work area and facilities. [10]

Initially, concerning the main advantages of outsourcing in Spain, cost optimization, flexibility and an increase in competitiveness can be highlighted. To use the experience of specialized professionals who provide solutions to improve the operation of a business or activity at a competitive price seems to be the main objective.

In addition, outsourcing allows the management to delegate certain functions to a specialized third party that enhances a particular service. This, according to experts, impacts positively into the business performance, the quality of the process that is outsourced, in transforming fixed costs into variable and strategic development over other companies in the sector. Moreover, it represents savings of more than 50 percent of whether these services were developed within the company by contract personnel. [10]

Thereafter, and about the main barriers in Spain for the implementation of these services, unions often have a negative influence. In addition, the regulatory environment does not help anything. Therefore, and due to the natural resistance to change, it is important to plan and perform good management with the anticipation of risks and problems. The need for integration between the contractor and the applicant is also a factor to consider. Meanwhile, the main risks make reference to the selection of suitable suppliers, the absence of internal control mechanisms, the lack of communication between the client and the supplier and the loss of control of the service and address.

Definitively, the best way to mitigate risks and solve problems, to reach a higher quality of services, is to apply a specific methodology through Service Level Agreements (SLA) and good reporting. For their part, new technologies play a key role in the present and the future of outsourcing. Its constant renewal and its possible application determine the market and its evolution. Therefore, providers must innovate to improve services while the client must have an open mind to these new methods. [11]

### 3.4 Key Performance Indicators in FM

Performance management is frequently defined as an ongoing process that aligns the corporate goals with functional strategies. In FM, the objective of that process is to accomplish an integrated control system, where the corporate and functional strategies are transferred to all support processes, activities, tasks and personnel.

As H. James Harrington announced in 1999, "*measurement is the first step that leads to control and eventually to improvement*". The goal of that control function is the provision of reliable feedback and information through the performance measurement system. According to the European Norm EN 15221-1, benchmarking is that process of measuring performance (including price) of facility services and comparing the results internally and/or externally.

The most valuable instruments of this performance measurement system are the Key Performance Indicators (KPI), a measure that provides essential information about the performance of facility services delivery (EN 15221-1). Key Performance Indicators (KPIs) are established in order to measure performance and monitor progress over time. KPIs management is primarily the responsibility of the demand side. They can be used to monitor against the SLAs<sup>1</sup> and to benchmark them across organizations to identify best practices. [19]

In this way, and due to the interdisciplinary and complex character of the sector and the significant scope of services provided, the KPI Institute, Euro FM and IFMA reported the more useful and frequently monitored KPIs in FM practice today. For that purpose, provided below are the most often used KPIs in FM: [12]

1. € Gross FM Costs (TCO) / 1 m<sup>2</sup> (ft<sup>2</sup>) of Gross Floor Area (GFA), annually
2. % Degree of User Satisfaction from FM Services
3. € Capital Costs / 1 m<sup>2</sup> (ft<sup>2</sup>) of GFA
4. # End User Complaints
5. # Net Floor Area in m<sup>2</sup> / 1 working place or per 1 user
6. € Maintenance Costs / 1 m<sup>2</sup> of GFA
7. € Operational Costs / 1 m<sup>2</sup> of GFA or per 1 user
8. % Planned maintenance vs. Reactive maintenance Ratio
9. € Utility Consumption Costs / 1 m<sup>2</sup> of GFA or per 1 user
10. € Cleaning Costs / 1 m<sup>2</sup> of GFA

As Pedro Garcia pointed out, former president of IFMA Spain, "if business indicators of the company are not known, you can hardly adapt services to those needs." The challenge is to select and maintain a manageable number of monitored KPIs.

The selection criteria for identifying, developing and applying KPIs in Facility Management are based on 3 points. First, KPIs must be balanced by offering indicators

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<sup>1</sup> SLA, service level agreement, is the agreement between the client or customer and the service provider on performance, measurement and conditions of services delivery. [19]

that measure quality and quantity; effectiveness and efficiency; objective and subjective domains.

Moreover, the responsibility for monitoring and managing the feedback from KPIs within the concept of Plan-Do-Check-Act must be assigned to specific unit/position. The integration performed by FM, in accordance with the definition given in EN 15221-1, is best described by the Quality Cycle Plan-Do-Check-Act (PDCA) described in ISO 10014, *Quality management – Guidelines for realising financial and economic benefits* and also in EN 15221-3.

The basic concept is that each activity should be planned and checked. As mentioned before, to close the quality cycle with a continuous improvement process, KPI and benchmarking data is required. To achieve this, standardized processes, products and cost allocation methods are needed. The quality cycle is applicable on all levels, not only on the strategic level, but also for each single activity, if suitable. [20]

Finally, KPIs should be also SMART: Simple & Specific, Measurable, Achievable, Relevant and Time phased.

## 4. Evolution of the main areas of FM in Spain

### 4.1 Cleaning

Among the companies of outsourcing, it is known that the cleaning industry is considered a fundamental pillar due to its significant invoicing. However, this is not the only merit attached to it, as in Spain it is clearly the most important economically statewide service within Facility Services. [13]

Cleaning is the service related to hygiene and cleanliness that maintain a proper working environment and help to maintain assets in a good condition. (EN 15221-4). Cleaning operations are often undertaken out of business hours, but provision may be made during times of occupations for the cleaning of toilets, replenishing consumables (such as toilet rolls, soap) plus litter picking and reactive response. Cleaning is scheduled as a series of periodic (daily, weekly, monthly) tasks.

It should be mentioned that the information set forth below belongs to the last close of 2015 inside buildings and accommodations, taking into account an expected growth forecast of 2.6% for 2016. Besides, it is not included gardening, a service that is often associated with this sector.

The turnover in the cleaning industry in Spain suggests a trend of slight growth (See Fig 9) reaching an invoice in 2015 around 9.400M€.

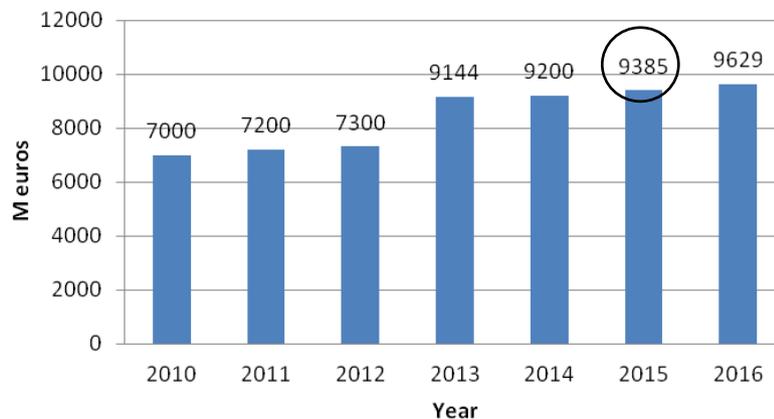


Fig 9. Evolution of turnover in the cleaning sector [13]

With regard to the number of employees, it has increased compared to 2014, ranking above 480.000 employees. Precisely, in 2012 the cleaning sector had 390.000 employees, nearly 20 percent less than today (See Fig 10). Moreover, it has been observed that the average number of employees per company continues to decrease in recent years, taking an average of less than 20 workers. The percentage of companies that employed more than 20 workers in 2013 was around 5.6% (See Fig 11).

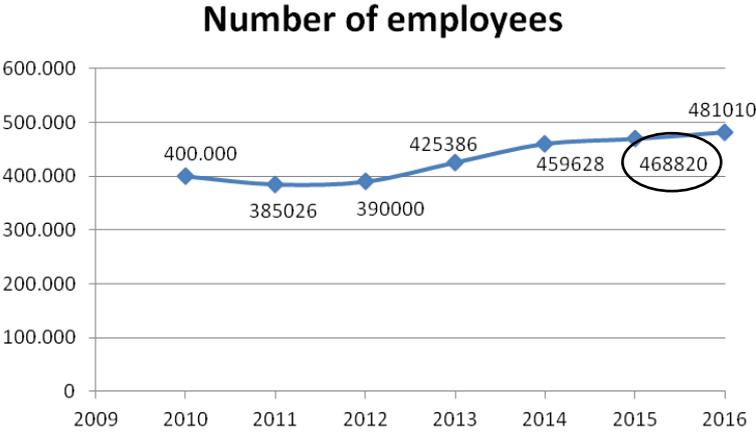


Fig 10. Evolution of the number of employees in the cleaning sector [13]

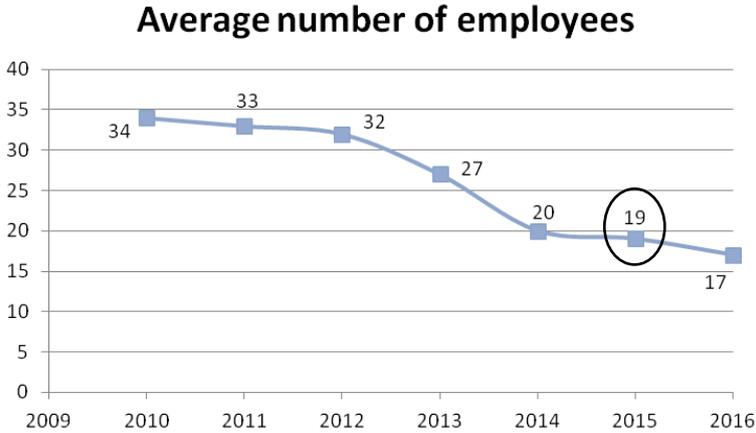


Fig 11. Evolution of the average number of employees per company in the cleaning sector [13]

Regarding the number of companies that are registered in this sector, it has increased by the end of 2015 establishing the final number in 29.695 companies. This increase has been motivated by the creation of numerous micro-enterprises and self-employment solutions (See Fig 12). The sector remains highly fragmented since in 2014 the turnover of the top 5 operators reached around 17% of the total market share.

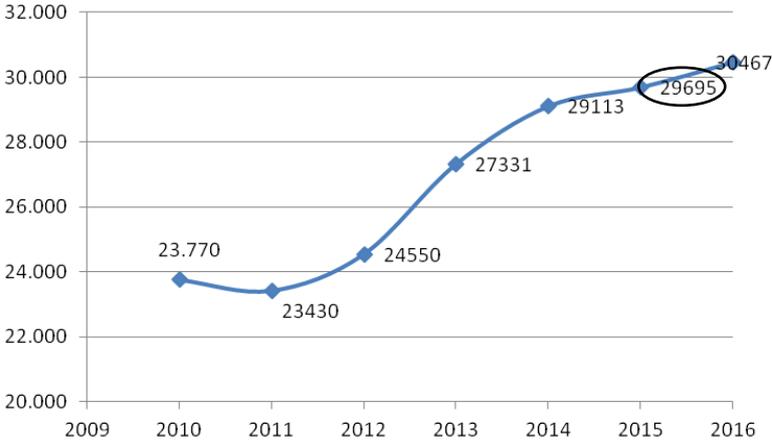


Fig 12. Evolution of the number of companies in the cleaning sector [13]

By autonomous region, the largest number of companies continue to focus on Madrid, Catalonia and Andalusia. In 2016, according to the sources, a modest acceleration is expected in the growth rate with an increasing revenues up to 3%. Moreover, market conditions will continue to improve in 2017. [13]

### 4.2 Catering

According to the European Standards (EN 15221-4), catering consist of the provision of food and beverage to personnel and guests.

Data about the catering sector in Spain indicates a growth of 2.8% in 2015, mainly due to the recovery of the collectives segment, which had fallen significantly in the past two years, and due to the greater dynamism of economic activity. Throughout 2015, the turnover in this sector has reached 3.250 million Euros, representing an increase over the year 2013 around 5%, as it can be seen in Fig 13.

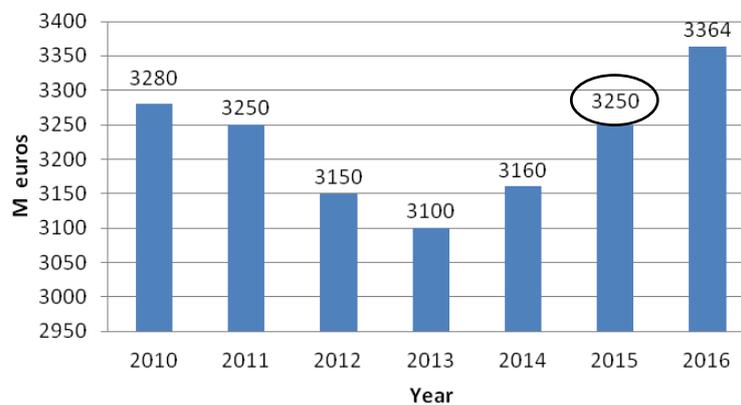


Fig 13. Evolution of the turnover in catering [13]

With respect to the number of employees and regarding the existing data, it can be observed that it has also experienced positive growth during 2015, reaching around 57.600 employees (See Fig 14).

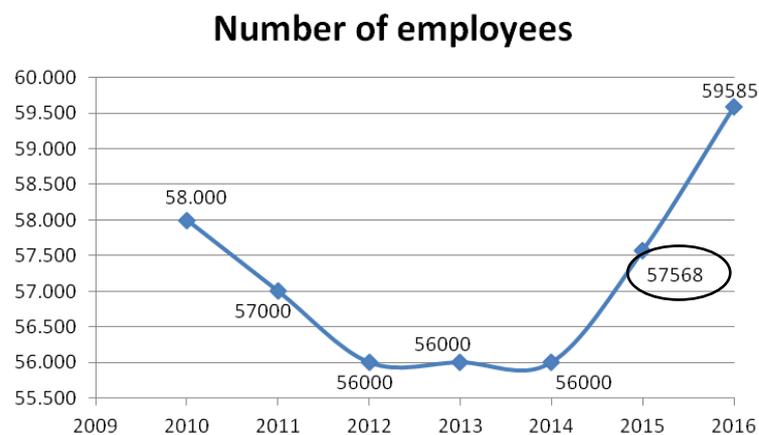


Fig 14. Evolution of the number of employees in catering [13]

In addition, the average number of employees per company over 2015 was 60 workers, increasing by two workers compared to the years 2013 and 2014. Fig 15 shows the evolution.

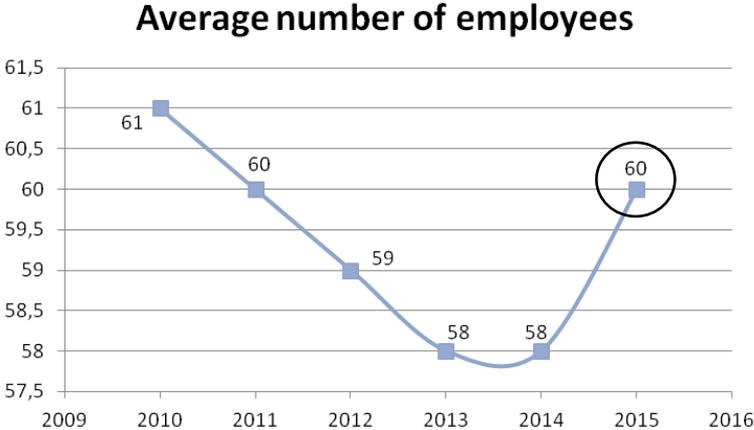


Fig 15. Evolution of the average number of employees per company in catering [13]

Concerning the number of companies dedicated to the catering sector, it has also increased over the previous years. In 2015 there were a total of 986 companies operating in this sector, compared to 960 in 2014. Moreover, as it can be observed in Fig 16, the trend is to keep on rising in the following years. Of these companies, only the top 10 gathered 52% of total turnover. The hotel and catering sector as a whole continues to be characterized by a notable fragmentation, although it has a tendency of progressive concentration of the supply part, caused by carrying out operations of business purchase and the reduction of the number of establishments or centers.

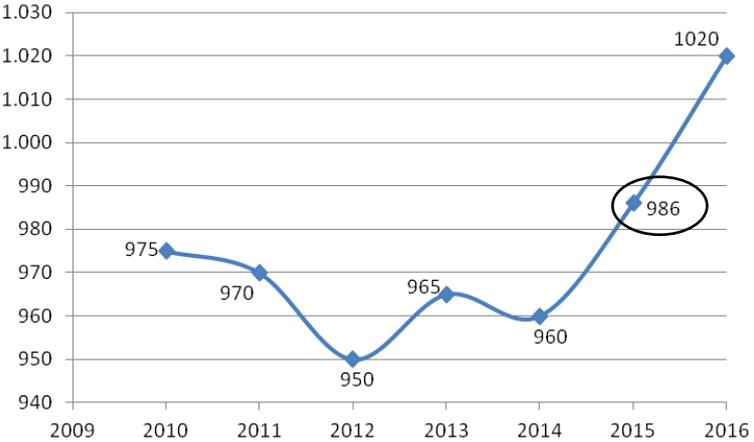


Fig 16. Evolution of the number of companies in catering [13]

By autonomous region, 71% of companies remain focused, as in previous years, in Madrid and Catalonia, followed by Valencia and Andalusia.

The growth prospects of economic activity allow experts to anticipate that the market in that sector will maintain a positive performance over the years 2016 and 2017, growing at about 3.5%.

### 4.3 Real Estate

According to the European Standard EN 15221-4 (2011), real estate encompasses land along with anything affixed to the land, such as buildings.

In Spain, the economic crisis has caused companies to be increasingly stringent in their demands for office space. It has also contributed the existing oversupply in real estate in the market over the years and the long recession that has occurred. For that reason, nowadays companies are increasingly demanding high-quality offices in good locations with high technological component, which are sustainable and energy efficient. In addition, they seek to optimize the size and therefore cost, by applying the space management strategies that best suit their needs.

According to the latest data from 2015 and first quarter of this 2016 about real estate offices in Spain, the improvement experienced since 2013 can be confirmed (See Fig 17). The investment volume has increased almost twice compared to 2014, reaching 5.500M€. Madrid stands out above the rest of Spanish cities focusing most of the investment on it, 83%, followed by Barcelona, with 17%.

Furthermore, the largest number of offices is still focused in Madrid and Barcelona, followed at a considerable distance by Seville, where the market remains stable, Bilbao and Valencia. The estimated stock in 2015 was of more than 13 million m<sup>2</sup> in Madrid and around 6 million m<sup>2</sup> in Barcelona,

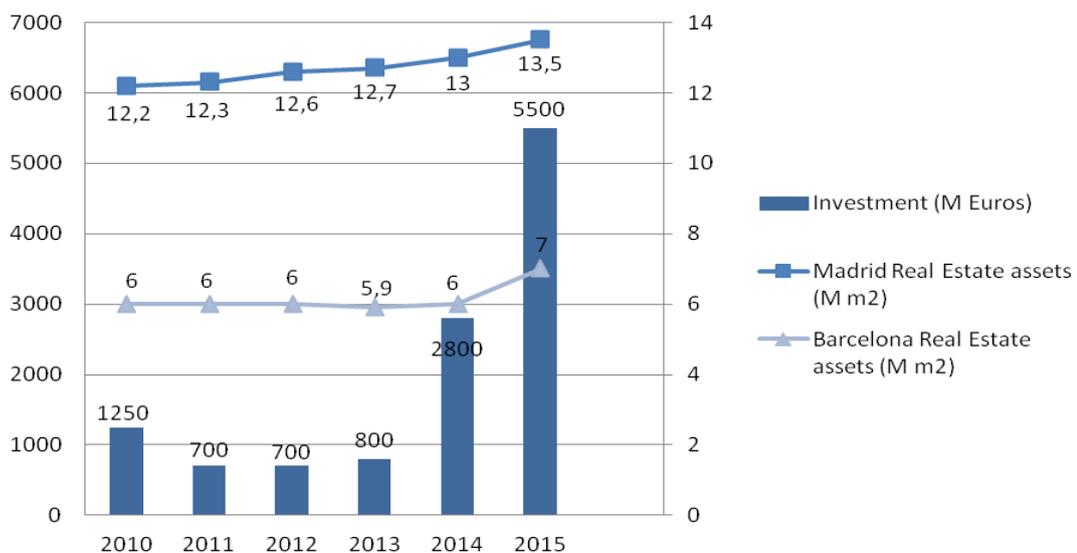


Fig 17. Evolution of the investment (M €) front office real estate assets (M m<sup>2</sup>) [13]

From the trends analyzed, the one that has more weight in the office sector is the integration of several sites (28%) followed by refurbishment of offices (26%) and occupancy of buildings in the periphery (25%).

On the other hand, the increase in rents in Madrid and Barcelona has become widespread in all areas, reaching maximum rents of 27 €/m<sup>2</sup> and 21 €/m<sup>2</sup> respectively in the central districts. The average monthly rent in these cities was around 13,5 €/m<sup>2</sup> in 2015 (See Fig 18). By contrast, the average monthly rent in the rest of Spain was at a lower level, around 6,3 €/m<sup>2</sup> in Seville or 9 €/m<sup>2</sup> in Valencia.

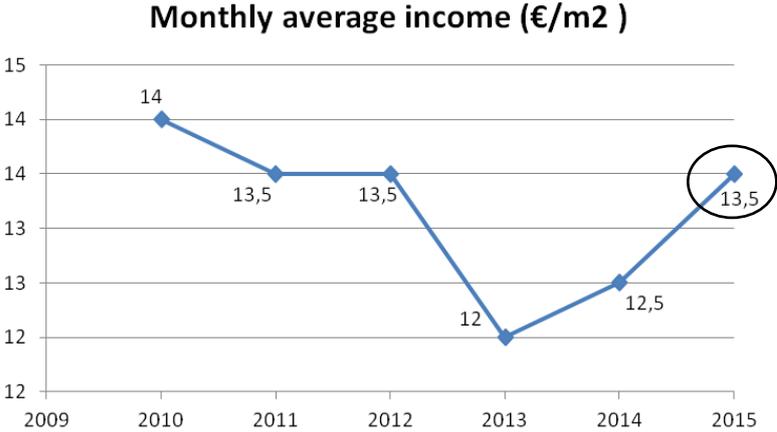


Fig 18. Evolution of the monthly average income in Madrid and Barcelona (€/m<sup>2</sup>) [13]

Unemployment property offices in 2015 generally shows a downward trend, reaching approximately 11% in Madrid, 13% in Barcelona, 21% in Valencia and about 35% in Seville, where the rate continues to rise. Thereby, Fig 19 shows the evolution in Spain over the last 5 years.

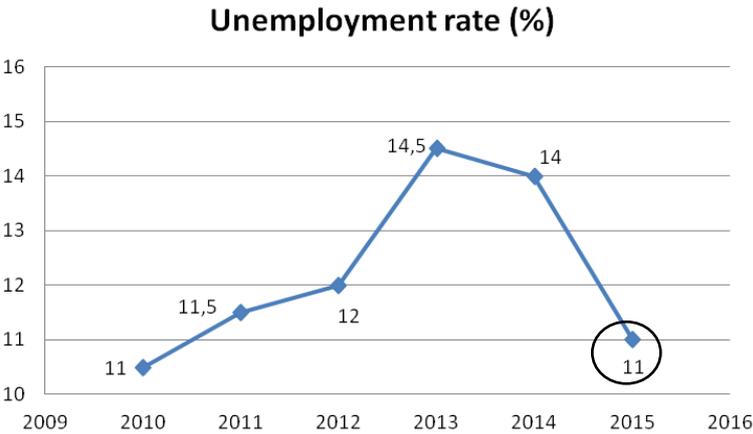


Fig 19. Evolution of the unemployment rate (%) [13]

Overall a lack of quality offices is still observed in the center of cities, with high potential in the rehabilitation of buildings. Practically all of the expected new surface for 2016 will come through the rehabilitation and renovation of buildings.

Moreover, Madrid and Barcelona will continue to record a higher growth in prime rents in these areas.

"2015 exceeded all expectations in Spain, being an exceptionally good year for Real Estate sector. This applies both to the markets of sale and rental. The investment market reached its historical peak in Spain in terms of surface transacted, and the largest economic volume since 2008. The rental market, meanwhile, also reached extraordinary numbers, growing by 25% compared to 2014, reaching the biggest business numbers since the beginning of the crisis", said D. Vicente Redondo, National director at JLL.

#### 4.4 Security

According to the European Standard EN 15221-4 (2011), security is defined as the protection of people and assets, to secure and guarantee the security.

Turnover in Spain in the private security sector, specifically the surveillance area, suffered in the last year 2014 a further decline in the total turnover, reaching around 2.121 million Euros. The general downward trend remains in the invoicing since the beginning of the crisis in 2009, with a cumulative decline of -24%.

As D. Córdoba Díaz, President of the Professional Association of Private Security Companies Services, said "In any case, the worrying thing is not only the drop in turnover, since it is quite understandable that the contracting companies have had to cut their expenditure budgets. What is really worrying is the fall in margins and the effects on both the quantity and quality of employment".

Even so, forecasts closing 2015 in the security sector were a stabilization or even slight growth in the sector (around 1,25%), data that nowadays still can not be confirmed. Fig 20 shows the evolution mentioned.

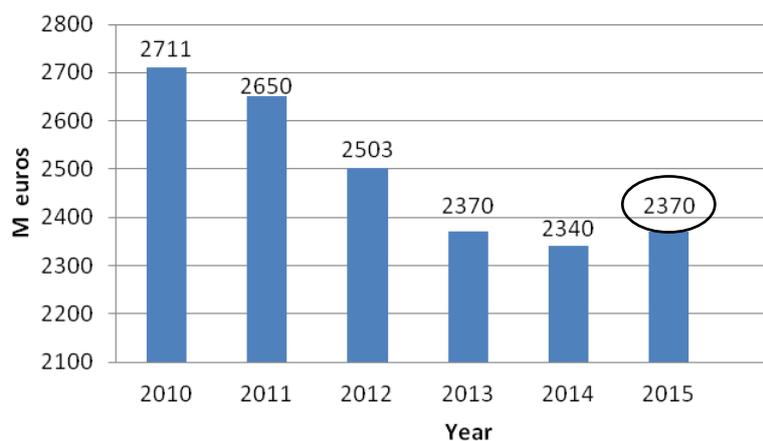


Fig 20. Evolution of turnover in the security sector [13]

On the other hand, the number of guards in active has also suffered a decline in the last years, to around 75.650 in 2014. Fig 21 shows the trend over recent years.

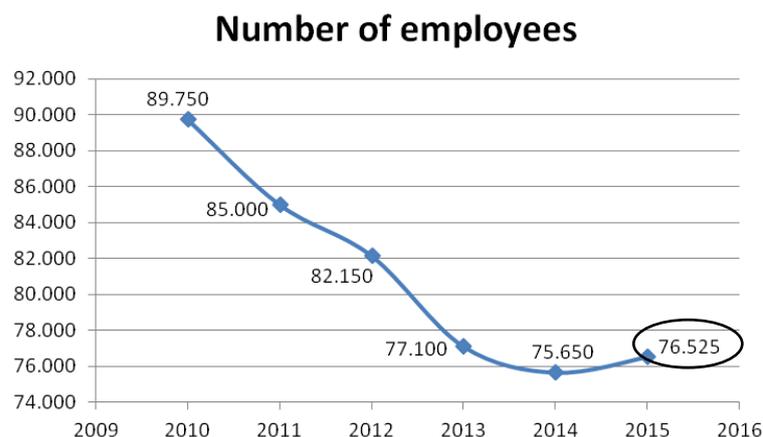


Fig 21. Evolution of the number of employees in the security sector [13]

The number of private security companies was 1.539 in 2015, of which 418 were security and protection firms. Most companies in the security sector are engaged in the installation and maintenance (around 1.200 companies) followed distantly by monitoring and protection and alarm center. In addition, most of the business comes from the private sector, increasing its share to 82%, compared to 18% of the public sector.

According to the Spanish Statistical Office data, most of the companies dedicated to private security guards are small; in 2014 83% of the total had less than 50 workers, reflecting the strong fragmentation of the sector. In the following graphic, Fig 22, the evolution of the number of companies with CNAE<sup>2</sup> 8010 (private security activities) is presented in comparison to market share of the top 5 companies (%).

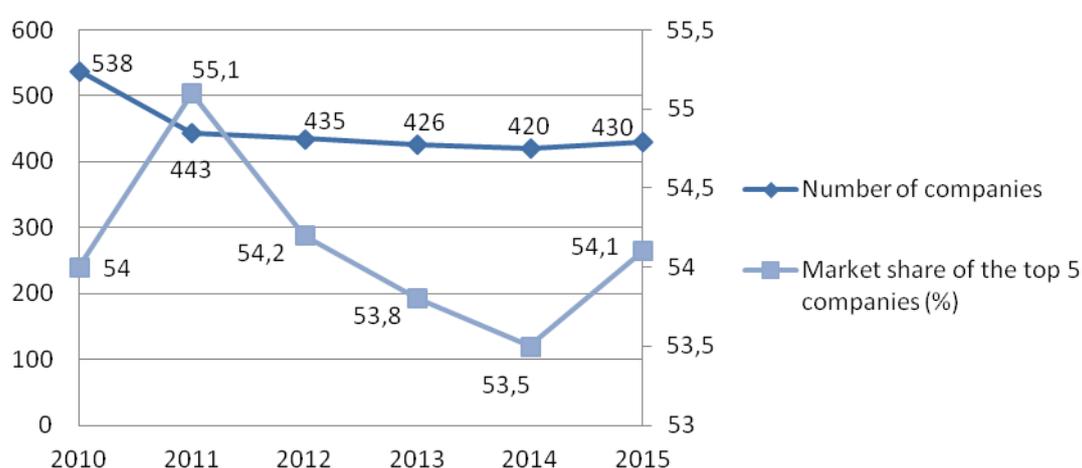


Fig 22. Evolution of the number of companies compared to the market share of the top 5 companies [13]

By autonomous region, the largest number of companies were still concentrated in Madrid and Catalonia, followed by Andalusia and Valencia.

<sup>2</sup> The National Classification of Economic Activities of Spain

The main activities that demanded security services in 2014 were trade (18.70%), industry and energy (17%) and financial institutions (16%).

In conclusion, during the last year 40% of companies have maintained their service and budget in this sector, while 23% have reduced staff because of the incorporation of technology. Thereby, the most promising trends in order of importance are: cyber security, remote monitoring of real estate, consulting, analysis and planning processes. Lastly, it would be surveillance and physical protection of buildings. [13]

### 4.5 Maintenance

EN 13306 (2010) defines maintenance management as all activities of the management that determine the maintenance objectives, strategies and responsibilities, and implementation of them by such means as maintenance planning, maintenance control, and the improvement of maintenance activities and economics.

Regarding the total turnover of the maintenance sector, historically, the sector grew between 7% and 8% annually from 2000 to 2008, when there was a turning point due to the crisis. In that year, a turnover of around 8.650M€ was reached. In the years thereafter, the sector shrank with annual declines of 2% or 3%, reaching about 7.700M€ in 2014.

In 2015, the total turnover of that sector in Spain was around 8.020M€. Furthermore, the building maintenance sector concentrated 59% of the total maintenance sector and invoiced around 4.770 million Euros. This represents an increase of 2.5% over the previous year 2014. To a great extent, this market registered a positive increase after dragging five consecutive years falls in turnover. Fig 23 shows the evolution of the total turnover in the maintenance sector with respect to the turnover in building maintenance.

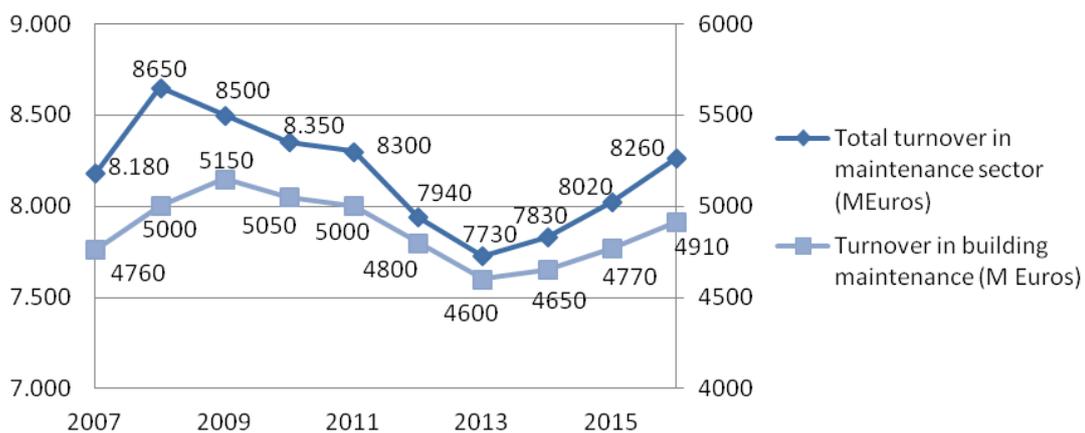


Fig 23. Evolution of the total turnover in the maintenance sector compared to the building maintenance [13]

By business segments, the maintenance of elevators continues to accumulate the highest turnover (24%), followed by maintenance of industrial machinery (18%) and maintenance of electrical installations and lighting (17%).

Concerning the number of workers in this sector, it has increased slightly since 2014, reaching 151.700 workers engaged in maintenance of any type of facility. Moreover, as it can be observed in Fig 24, the tendency is to continue growing in the following years.

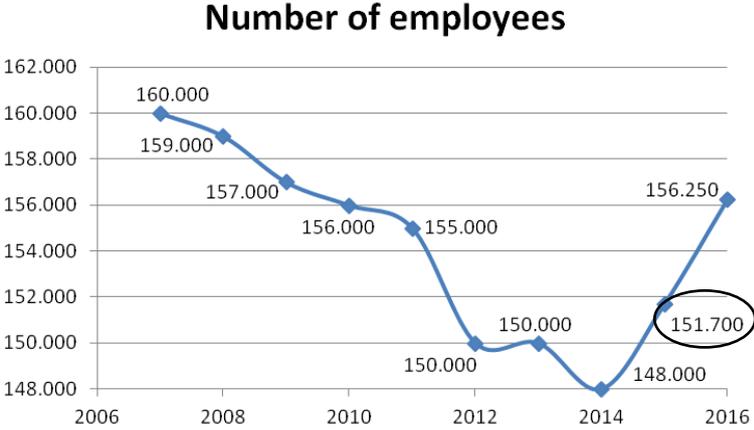


Fig 24. Evolution of the number of employees in maintenance sector [13]

With regard to the number of companies dedicated to the sector, in 2014 remained the downward trend of recent years, leading to 6.600 companies. The decrease in the number of companies was mainly due to the closure of small and large operators and the integration of small businesses in major operators. However, it can be seen in Fig 25 that the drift became positive in 2015, with an increase of 2.6% over the previous year, reaching 6.770 companies.

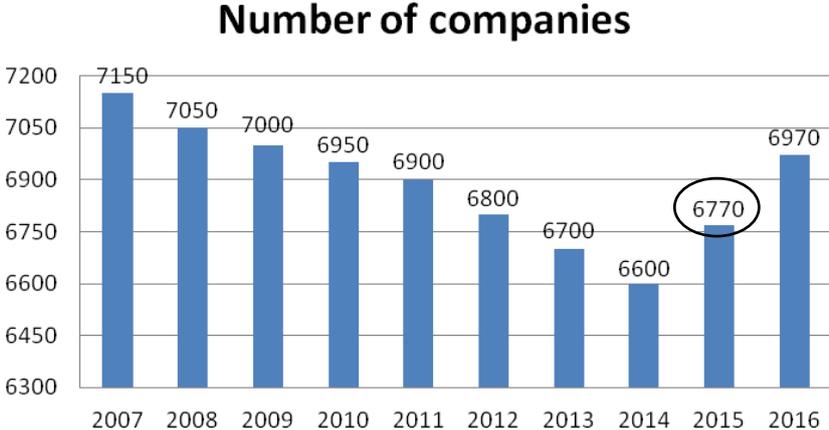


Fig 25. Evolution of the number of companies in maintenance sector [13]

In addition, the top five operators collected a combined market share of 18.9% (26.6% taking into account the top ten). As IFMA Spain said, the main operators continue strengthening its activities abroad, especially those that already have a presence there. On the other hand, the average number of employees per company remains at 22. By

autonomous region, the largest number of companies continued to focus on Madrid and Catalonia.

Among the companies in the maintenance of buildings, it should be noted that the trend is to unify different auxiliary services on a single supplier, which strengthens the positioning of the multiservice groups. In many cases these operators are subsidiaries of construction companies that diversify their services inside and outside the sector to meet the demand for global offers.

On the other hand, IFMA Spain submitted in March 2016 an article in which mentioned the three most valued points in maintenance planning. These are legal compliance on technical regulations, specific engineering controls to equipment and facilities and enforcement applied to safety and health maintenance interventions.

Finally, it has been observed that the existing trend in the sector is outsourcing the service to achieve more advanced technology (73% of respondents). [4]

#### **4.6 Energy**

Energy is defined as the energy supply to a built facility. Can include procurement from external producers and/or internal production of energy and includes the necessary infrastructure typical to a meter, but not the internal distribution system (EN 15221-4: 2011).

Energy consumption in Spain in 2013 was around 230.000 GWh, representing a decrease compared to data from 2011 and 2012. Revenue for that year was approximately 35.000 million Euros. As stated IFMA Spain, the main problems in developing energy saving policies are due to the lack of comparative strategy (31%) and lack of awareness (29%). [4]

In the breakdown by sector, the service sector had a higher energy consumption compared to other sectors such as industry or transport. Among the services sector, the highest level of energy consumption was in private offices, around 20.000 GWh, which was equivalent to a turnover of around 3.000M€.

Second in energy consumption were hospitals, which in 2013 had a consumption of 17.000 Gwh and a turnover of 2.500M€. It was followed by the trade sector and education, with 13.700 Gwh and 15.800 Gwh values respectively. This represented a turnover of 2.400M€ and 2.000M€ for each. Finally were hotels, consuming roughly 3.100 Gwh in 2013 with a turnover of 470M€. Fig 26 shows the consumption trends by those sectors.

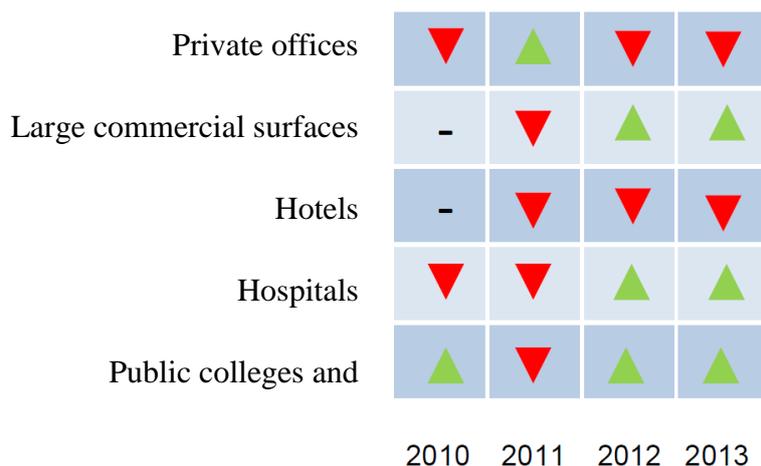


Fig 26. Consumption trends by sector in energy [18]

On the other hand, the number of energy trading companies increased to 220. Even so, only the five largest companies of this sector commercialized in 2013 around 95% of energy consumption in Spain. Moreover, the number of employees of these five companies was more than 32.000 workers.

#### 4.7 Waste

According to the European Norm EN 15221-4, residues can be described as waste treatment and disposal, including sorting and reuse of solid waste as well as liquids and sewage. Usually only includes collection of filled containers and replacing with empty containers and not the internal collection and handling.

In 2014, 1.3 million tones of household packaging were recycled, 5.3% more tons than in 2013. Taking charge of the recycling of packaging has led to investments of around 446 million Euros. This generated a recycling industry with a turnover of more than 10.000ME.

This can be clearly seen in the statistics in relation to waste management and recycling services, where 89% of the supply side stated that they perform some actions about it. In addition, 40% consider that they have high or medium knowledge of waste management.

This sector remains highly polarized with some large companies and many small businesses. By generation of waste, in 2013, construction (28%) and mining (23%) were those that generated greater volume of waste, followed by households waste (17%), services (16%) and industrial sector (12%). Furthermore, the socio-economic context has reduced the generation and the number of tons of waste recycled. However, in percentage terms, the number of tons recycled compared to those generated continues to rise.

The number of employees in the so-called green jobs was around 130.000 people in the last quarter of 2014, whereof 90.000 were within the management sector and waste treatment.

Regarding the number of companies engaged in waste management in 2014, it has increased slightly over previous years, settling around 709 companies. Fig 27 shows a summary of this information.

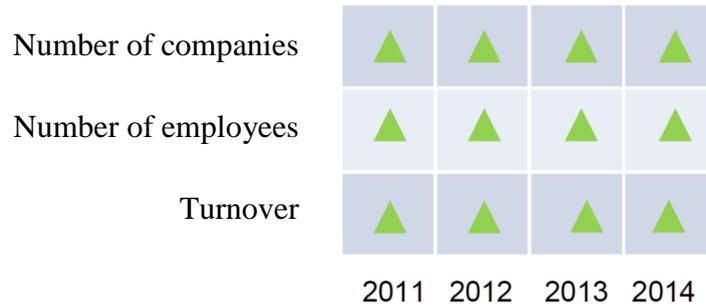


Fig 27. Evolution of residues sector in Spain [18]

By autonomous region, the largest number of companies were located in Catalonia, Andalusia and Madrid, followed closely by Valencia. About 60% of the employment generated by waste management was concentrated in these regions.

#### 4.8 Email and messaging

The Email service is defined as the management of the E-mail facilities for (End) Users (EN 15221-4). The postal sector in Spain invoiced more than 3.700 million Euros in 2013. This data supposed the confirmation of the decline in turnover that companies have been suffering since the last 5 years.

The number of employees has also decreased since 2011, reaching only 77.000 employees in 2013. On the other hand, the number of companies registered in postal activity were close to 1.000 companies. Fig 28 shows a summary of this information.

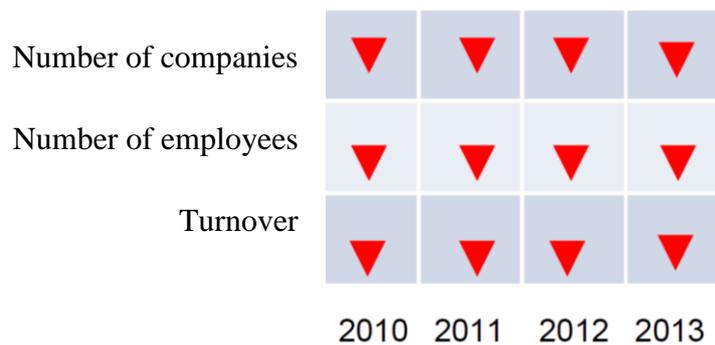


Fig 28. Evolution of email and messaging sector in Spain [18]

The most important trends in this sector were the outsourcing of service (38%) and the decline of traditional mail service (37%). The main clients of postal services were large companies such as financial institutions, insurance, electricity, telecommunications, and public administrations. According to the answers of surveyed, in recent years the most important change in the sector has been the dramatic decline in postal items.

Lastly, by autonomous region, the highest concentration of companies are located in Catalonia, followed by the Community of Madrid.

#### **4.9 Fleet Management**

According to the European Standards EN 15221-4, fleet management consist of the management of motor vehicles such as cars, vans and trucks.

Concerning fleet management, only 16% of organizations has a specific department for it. In 28% of companies these arrangements are made through the department of General Services or Facility Management.

With regard to the number of companies aimed at fleet management in 2014, there were 769 companies, mainly concentrated in Madrid (26%), Barcelona (11%) and Valencia (5.8%). In addition, around 30% of companies with more than 100 employees were planning to increase its fleet in coming years. To this end, in the first quarter of 2015, a growth of 27% was experienced compared with the previous year, resulting in 63.500 new vehicles.

Finally, investment in company cars has increased in the last year in Spain by 0.8% placing the average price of the vehicle around 29.000 €.

## 5. Results and analysis

After collecting all the information needed in the ways previously discussed, the data was analyzed to draw the following conclusions. It should be mentioned that this chapter will consist of two parts. Initially, the evolution of FM in Spain with regard to 2014 is presented and afterward the Spanish market will also be compared to recent data about other European countries.

In order to review the data collected in an organized way, this chapter has been structured as follows: basic data of the companies, organization, outsourcing and IT support.

### 5.1 Evolution of FM discipline in Spain

#### 5.1.1 Basic data of the company

All the results discussed below are based on interviews with 24 companies within the top 500 Spanish companies. These companies have been chosen randomly and belong to different types of industry (See Fig 29).

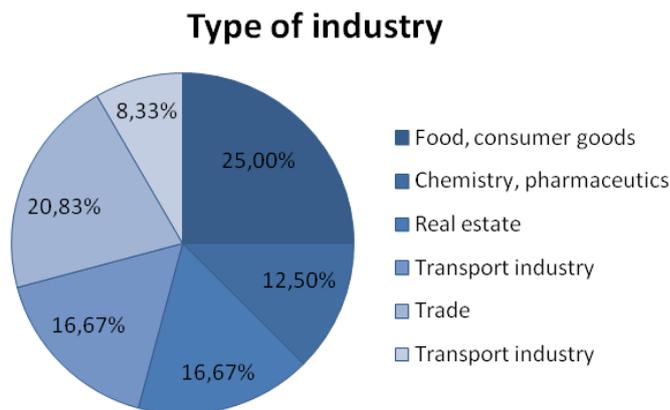


Fig 29. Sectors to which belong the companies surveyed

The interviewed enterprises have a turnover of between 21.000M Euros and 300M Euros. For this reason, they are generally very large companies with more than 1000 employees. Fig 30 shows how the number of employees is distributed in the firms surveyed. It can be observed that more than 85% of companies have more than 1000 workers, an amount that exceeds the results of 2014 where 82,6% of them had more than 1000 employees.

## Number of employees

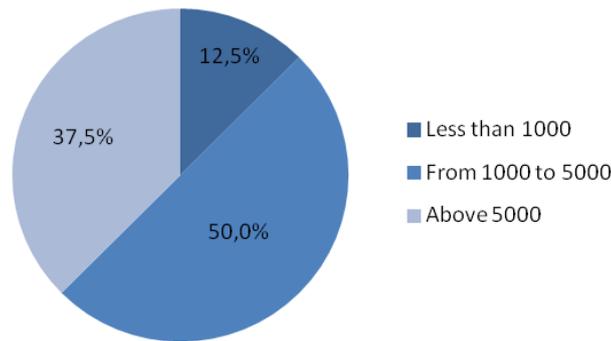


Fig 30. Distribution of the number of employees in the enterprises surveyed

Finally, as relevant data, it should be added that around 72% of companies have more than 10.000 square meters office space, including meeting rooms, corridors etc.

### 5.1.2 Organization

As has been discussed throughout the project, FM discipline is increasingly present in companies and is being implemented in most of the top 500 Spanish companies. Fig 31 shows that, in almost 80% of these enterprises, a separate FM department or responsible person exist. Precisely, 79% of these companies have a FM department.

As can be noted, it seems that this number has decreased since 2014, where 83% of the companies had a separate FM department. Nonetheless, this fact can be explained by the random sample which was chosen totally arbitrary. Moreover, any company that implemented this department has replied that currently the FM department no longer exists. For these reasons, it should not be thought that the number of companies that have this department has decreased.

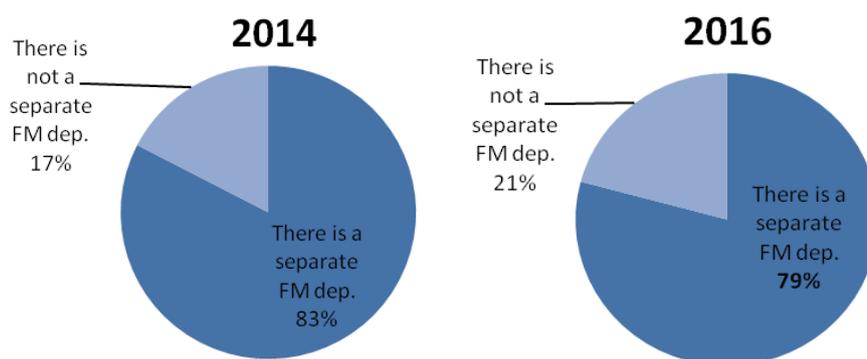


Fig 31. Portion of companies with a separate FM department in 2014 and 2016

Concerning the number of workers who are part of the FM department, Fig 32 shows the trend with regard to the year 2014. Over 70% of companies have fewer than 10 people. However, the number of companies with only 1-2 personnel dedicated to it has decreased since 2014 and nowadays is more common for enterprises to have between 6 and 10 staff members.

This measure could indicate that companies that already have this department have devoted more resources to it.

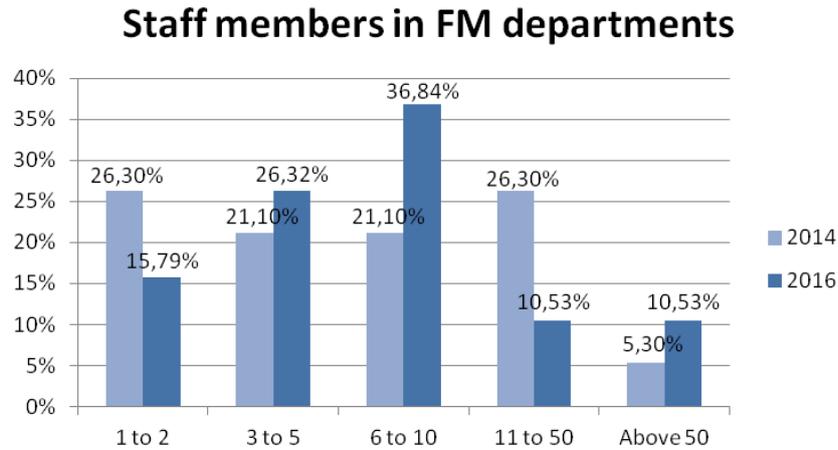


Fig 32. Staff members in FM departments in 2014 and 2016

The importance of FM departments is underlined by its organizational integration within the company’s hierarchy. This can be structured as a staff unit, administrative department of the management, that supports the organization with specialized advisory and support functions or as a line function, second level next to other functions, that directly advances an organization in its core work.

The results indicate that most of the FM departments remain fully integrated in the organizational structure of the businesses although at a lower percentage than in 2014 (See Fig 33).

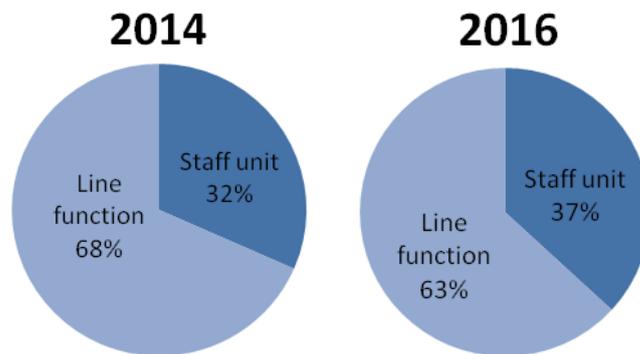


Fig 33. Comparison of the hierarchic level of FM department between 2014 and 2016

A positive development observed is that most of the surveyed companies, almost 90%, have a description of tasks for the FM department and around 80% have those tasks assigned to specific persons. This implies that those who include a separate FM department in their companies, do it in an organized manner; a fact that can help to contribute to a better long-term effect.

On the other hand, as it has been mentioned several times, FM is an interdisciplinary business function that coordinates space, infrastructure, people and organization. To this end, companies set specific goals to achieve the result they seek. Fig 34 shows the principal strategies that companies adopt in Spain. It can be observed that all businesses have cost reduction as a target, followed closely by cost transparency, outsourcing, save environment and quality assurance.

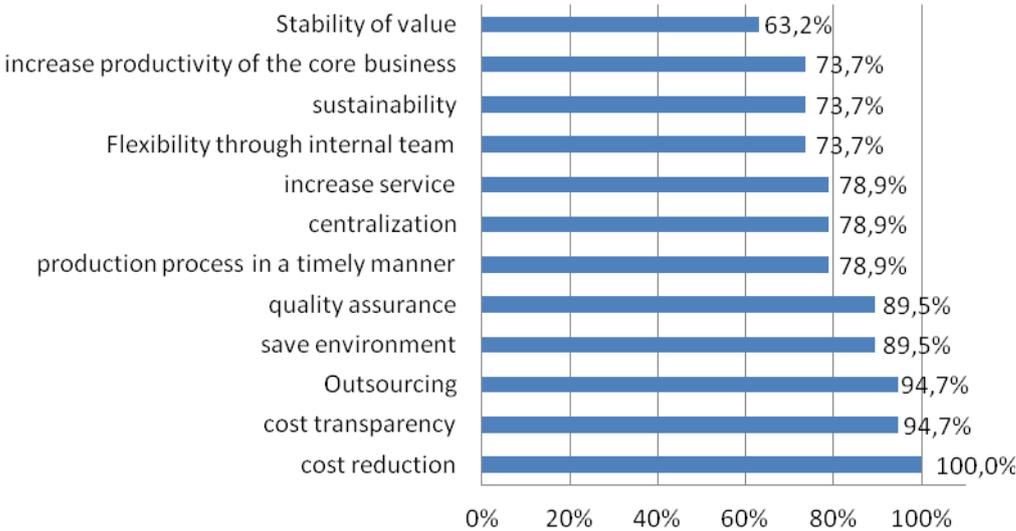


Fig 34. Main goals by number of mentions that FM departments have

If these results are compared with those obtained in 2014, it can be found that the same trend is followed (See Fig 35). It could be noted that production process in a timely manner is a goal that has increased its importance around +33,4%, while flexibility through internal team is no longer among the highlights with a decrease of -22,2%. Moreover, save environment has decreased around -6% compared with 2014.

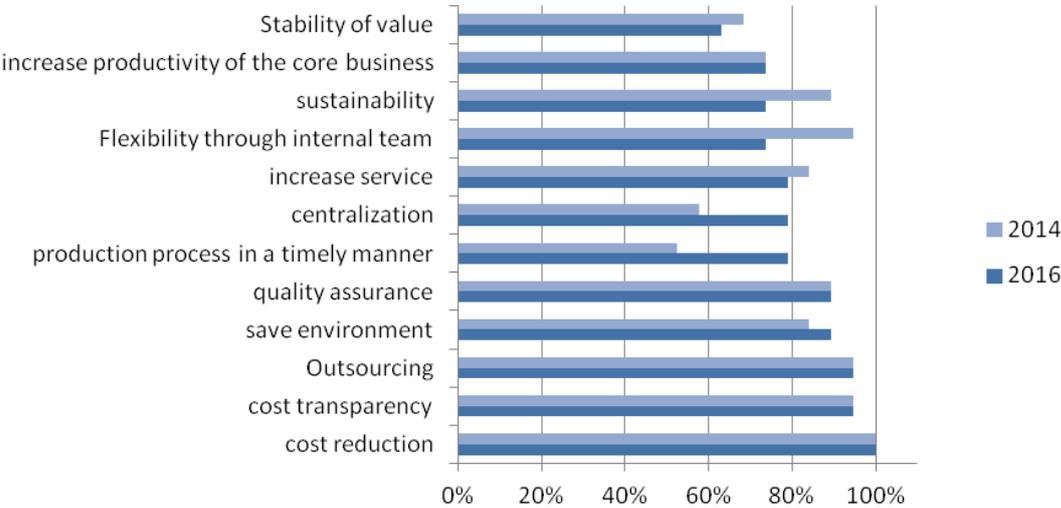


Fig 35. Evolution of the main goals FM departments have

Furthermore, the biggest problems in the field of real estate have also been obtained (See Fig 36). As happened in 2014, maintenance/repair is the main cost driver in Spanish companies followed closely by cleaning, personnel costs and energy. It is needed to be stressed that technology/hardware, which is currently at the bottom, was one of the main problems discussed in 2014. Moreover, none of the companies surveyed have chosen data collection-digital maps neither launching new software as principal problems.

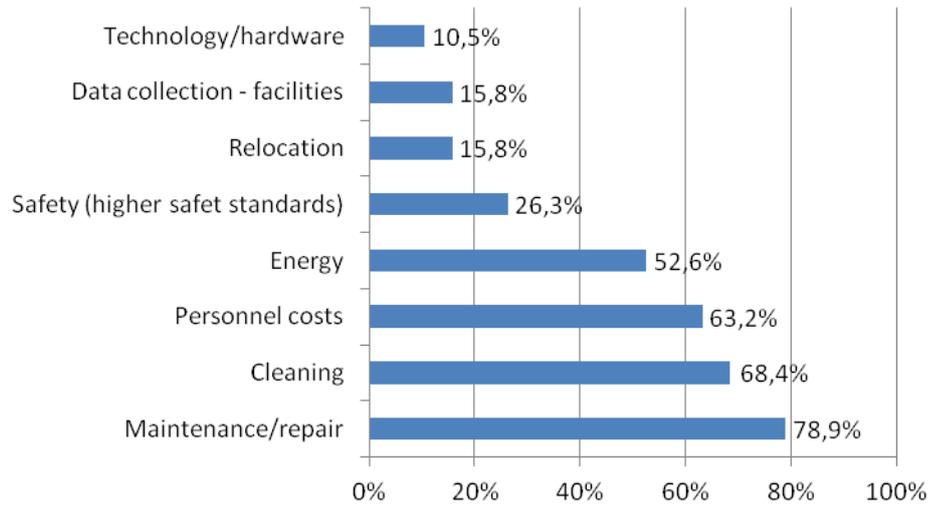


Fig 36. Main cost drivers that FM departments have

After seeing what are the main cost drivers and knowing that one of the principal objectives of companies are cost reduction and cost transparency, shown in Fig 34, an important point to study has been in which fields companies achieve savings and increase productivity.

On the basis from the results obtained, it can be drawn that most companies reach savings in energy, stated by 61,90% of respondent companies. The cleaning sector has been mentioned by 57,14% of companies surveyed and staff only by 33,33% (See Fig 37).

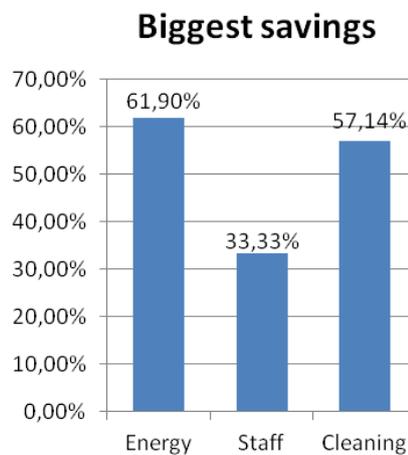


Fig 37. Fields with the biggest savings through the use of FM

If these results are compared with those obtained in 2014, a small difference is observed since approximately 70% of companies said in that year that the biggest saving was in the cleaning sector, followed by personnel and finally energy with only 47,8% of companies surveyed. To find out the cause, we should inquire further about the specific question.

Fig 38 shows the average of those with savings in each area. It can be seen that the biggest one comes from cleaning (12,17%), followed by staff/personnel (12,14%). The last one is energy and featured a saving of 8,92%.

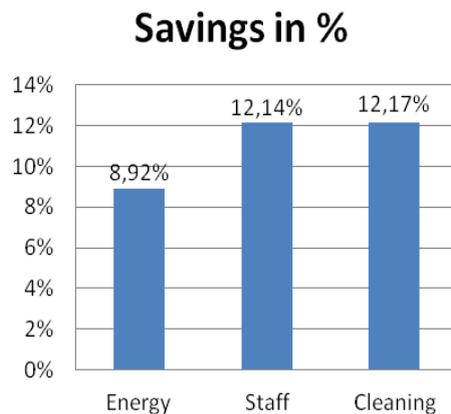


Fig 38. How big are savings in % in each field in 2016

Savings were mainly possible through the following reasons (See Fig 39). Regarding the energy field, 57,1% of companies surveyed said that the main reasons are tariffs and technical upgrade. In terms of personnel savings, 28,6% of companies believe it is due to the synergies between services and the reorganization. Finally, for the cleaning sector, the main reason would be the reorganization (35,7%) followed by outsourcing (28,6%).

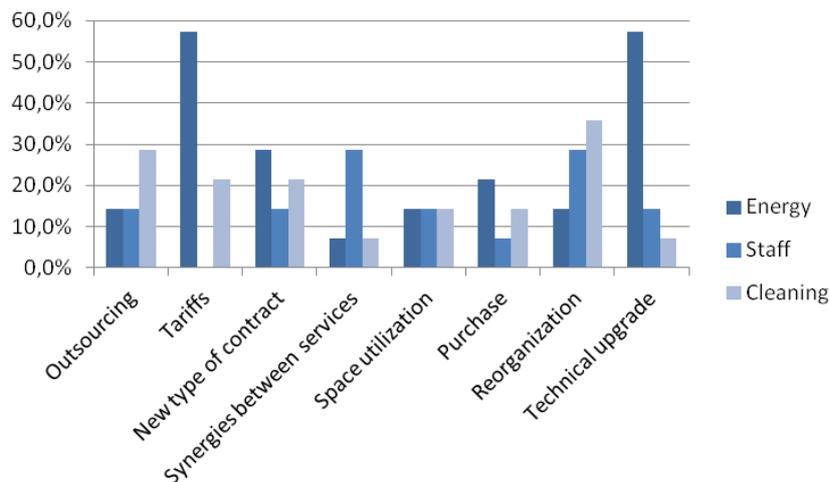


Fig 39. Reasons why savings are achieved (2016)

The following figure shows the most named areas in which an increase in productivity could be observed (See Fig 40). As it can be seen, maintenance/repair is the most mentioned field with around 48% of respondent businesses. This data follow the same structure that results from 2014 where higher increases in productivity were also achieved firstly by maintenance and followed by personnel in second place.

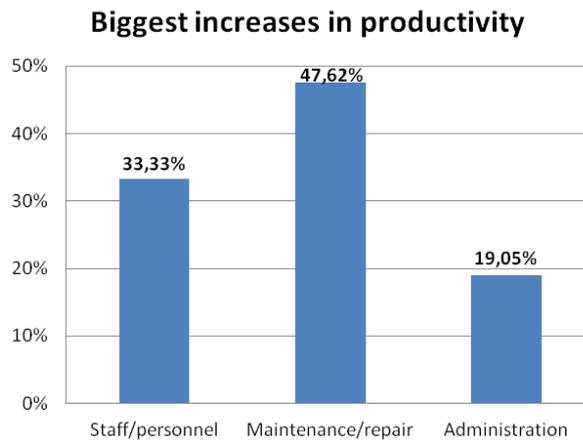


Fig 40. Fields with the biggest increases in productivity

Besides, the highest increases in percentage are achieved in the staff field, with an increase in productivity of 10,29% on average with respect to those who have increased productivity in that area. Fig 41 shows the data.

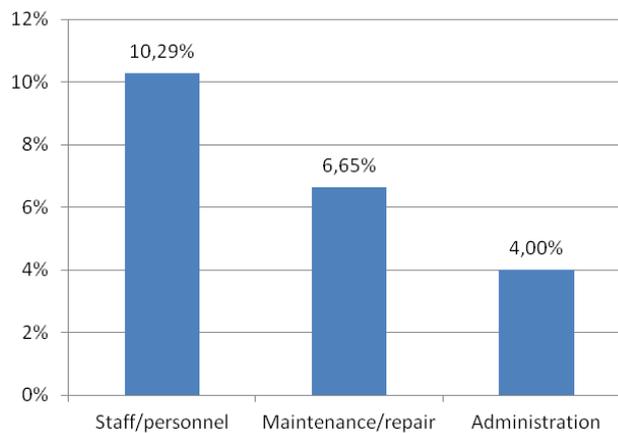


Fig 41. How big are increases in productivity in % in each field

These productivity gains are mainly due to the process optimization, synergies between services and reorganization. Regarding the personnel field, 45,5% of companies surveyed said that the main reasons are reorganization and process optimization. In terms of gains due to maintenance, 63,6% of companies believe it is due to the synergies between services. Lastly, for the administration sector, the main reason would be process optimization (45,5%) followed by technical upgrade (27,3%). Fig 42 shows more precisely this information.

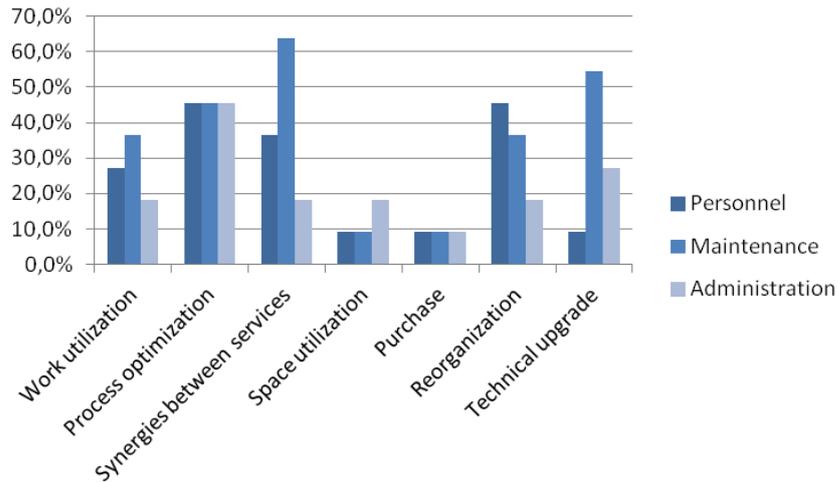


Fig 42. Reasons why increases in productivity are achieved

### 5.1.3 Outsourcing

Outsourcing is one of the main goals FM departments have (See Fig 34). Besides, this is not surprising since, as have been discussed throughout the project, outsourcing is strongly linked to that discipline.

In a first step it was analyzed how many external service providers have companies retained. Fig 43 shows the evolution between 2014 and the current results. As it can be observed, the trend remains between 3 and 10 external service providers per company but a slight decline in it could be pointed out, leading to the rise of the other two options.

In addition, from all tasks carried out, half of companies outsource more than 75% to external service providers. It can be seen in Fig 44 that there is a greater tendency to outsource than to perform tasks by themselves. In fact, almost 80% of companies outsource more than 50%, which is lower than in 2014.

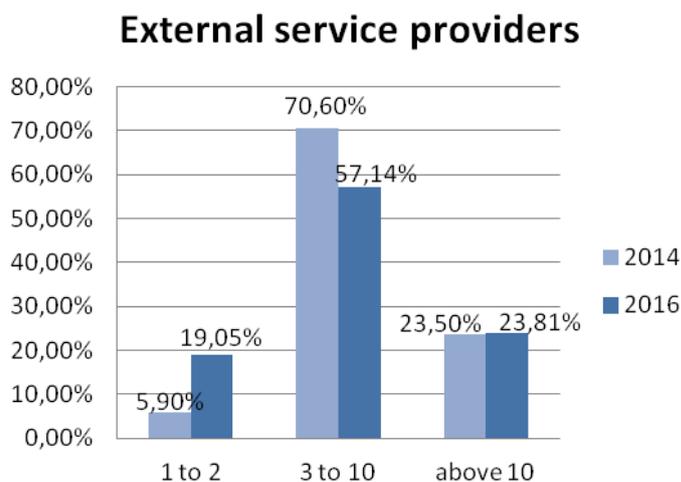


Fig 43. Evolution of the number of external service providers

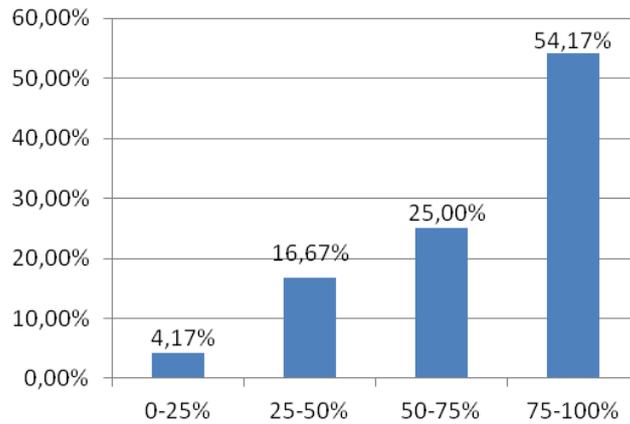


Fig 44. Distribution of tasks executed by themselves (0%) or by external service providers (100%)

Fig 45 presents the possible services that can be outsourced in Spain. The most outsourced facility services are cleaning, technical maintenance, security and postal service.

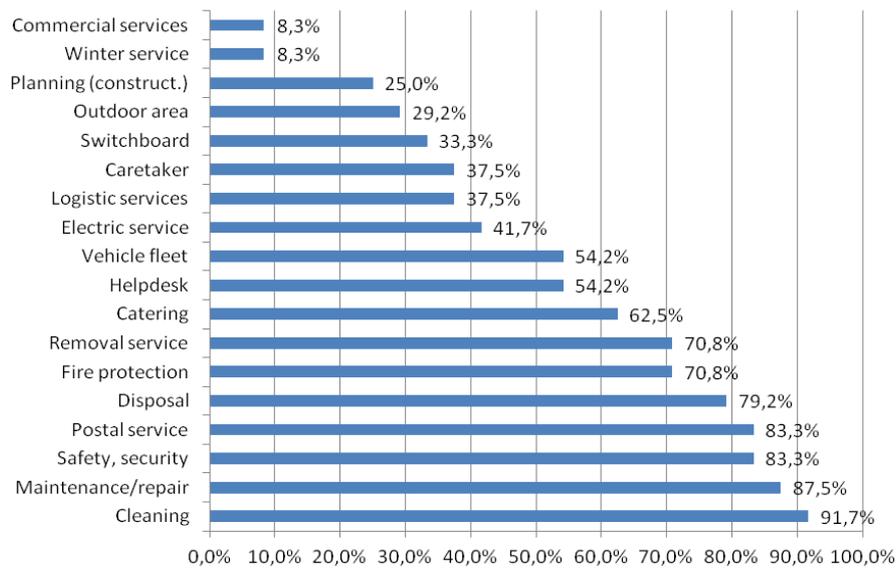


Fig 45. Most outsourced facility services in Spain

If we compare these results with those obtained in 2014, it can be seen in Fig 46 that the most requested services remain the same. It is important to note the descent of fire protection and catering, with a decrease around -20%.

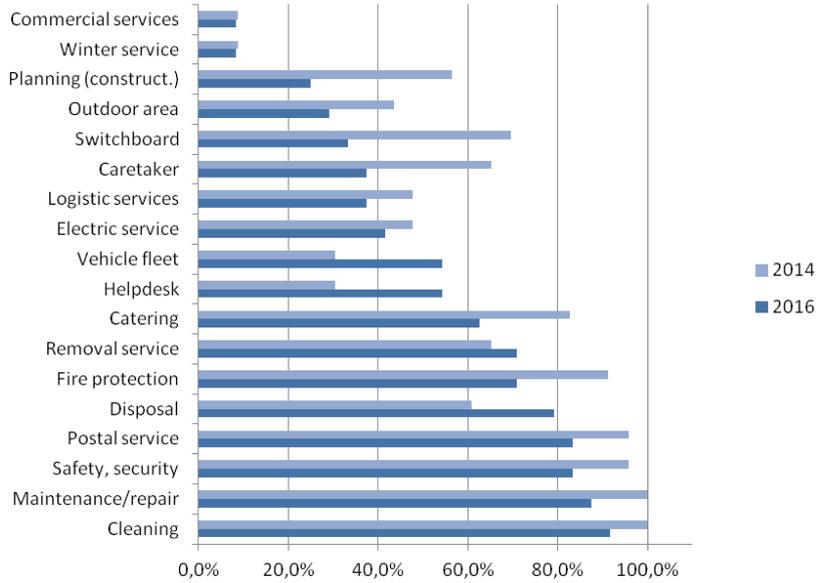


Fig 46. Evolution of the most outsourced facility services

Regarding the contract type that companies apply to their external service providers, the following two cases are differentiated. The infrastructural services (safety, cleaning, etc.) are all governed by service provision contract and in some cases also by personal loan service. The average duration of contract is between 2 and 3 years, distributed as shown in Fig 47.

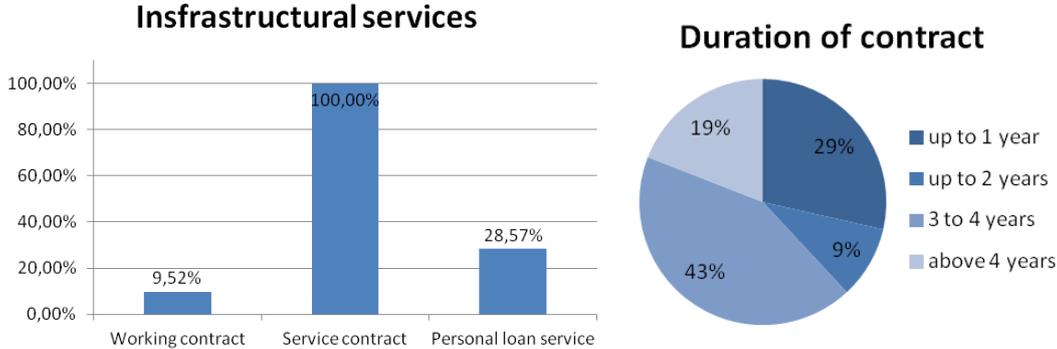


Fig 47. Contract type and average duration in infrastructural services

The technical services (maintenance, repair, etc.) are also outsourced by service contract. Fig 48. Contract type and average duration in technical services shows the contract type and the average duration of contract.

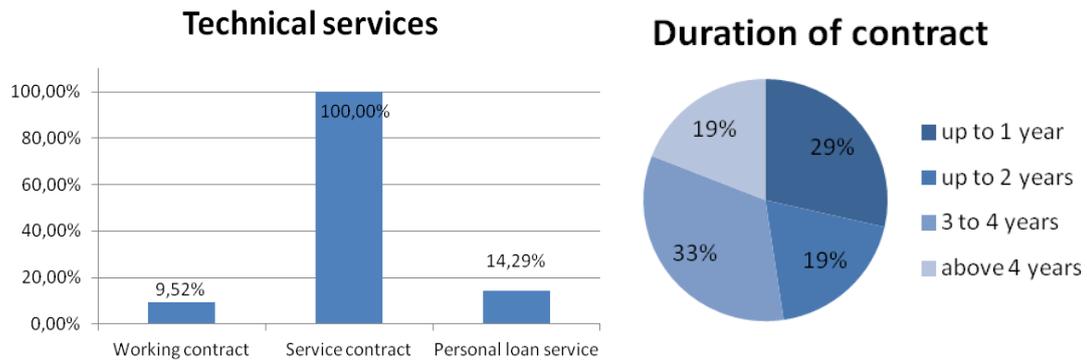


Fig 48. Contract type and average duration in technical services

Finally in terms of outsourcing, choosing a good supplier is one of the most important decisions. Knowing how to choose provider is not easy because there are several elements to consider. To find the best ones it is necessary to carefully review all alternatives and select the one that best fits the needs. For this reason, the main criteria for choosing an external service provider were analyzed (See Fig 49). As can be observed, price and its relation with performance, quality and competence or know how are the most important for companies.

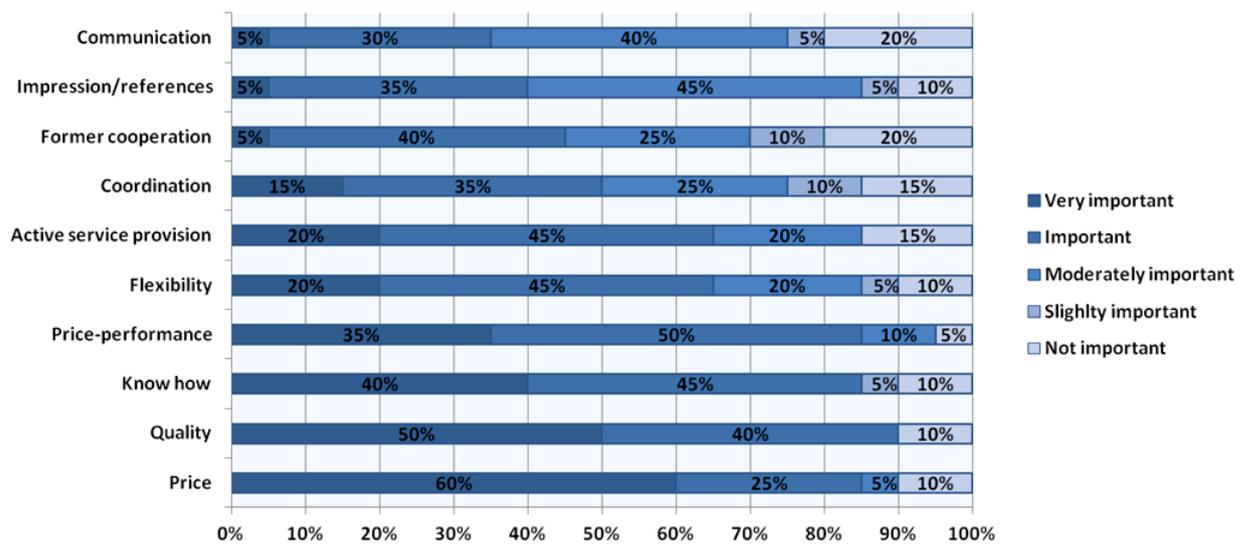


Fig 49. Main reasons when choosing an external service provider

### 5.1.4 IT Support

Nowadays, the computer system of enterprises has become one of the most critical tools in their production processes, being essential for the proper functioning of any company.

Two IT systems that are used to support FM and Real Estate processes are CAFM-systems and ERP-systems. CAFM (Computer Aided Facility Management) is a high-tech tool used by facility professionals to track and manage virtually any facility-related asset. ERP (Enterprise Resource Planning) is a business software system that enables companies to share common data and activities throughout the entire enterprise, automate and integrate the critical parts of its business processes and generate and access information in real-time environment. [16]

Firstly, it can be seen in Fig 50 that most companies do not use a CAFM system. Only 25% of companies use it and most of them use one developed by themselves.

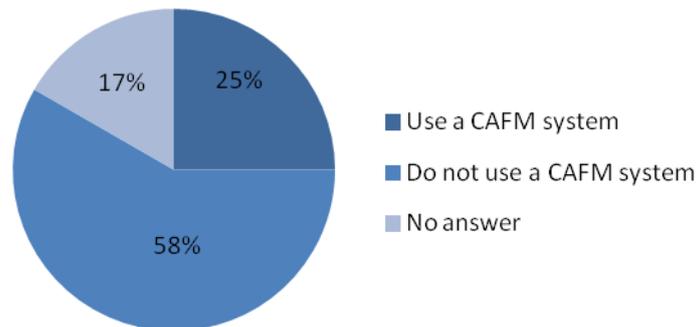


Fig 50. Percentage of companies with CAFM system

Although not many companies use this system, the study analyzed the processes that are usually covered with CAFM. As shown in Fig 51, the most mentioned are inventory, maintenance, cleaning and drawing management, legal compliance and application planning. The results are consistent with those obtained in 2014, where maintenance was the most often quoted, followed by those mentioned above.

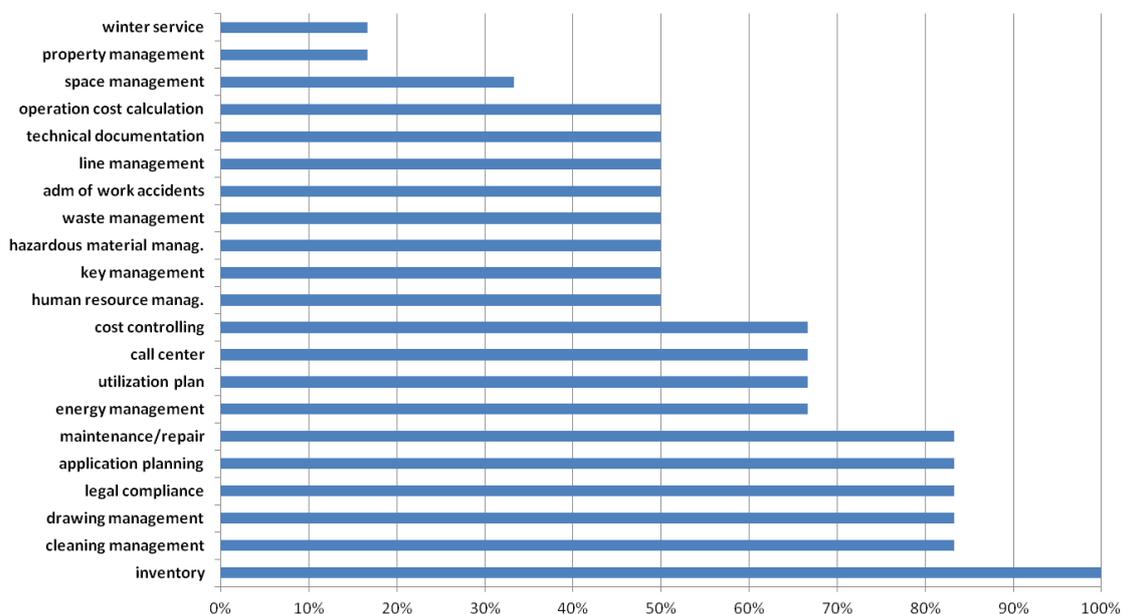


Fig 51. FM processes covered with CAFM system

On the other hand, regarding the ERP system in Fig 52, it can be seen that most companies use it.

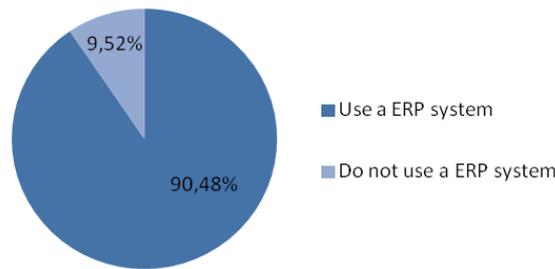


Fig 52. Percentage of companies with ERP system

With regard to the type of ERP that is normally used in business, SAP R/3 is the most used in Spain as Fig 53 shows.

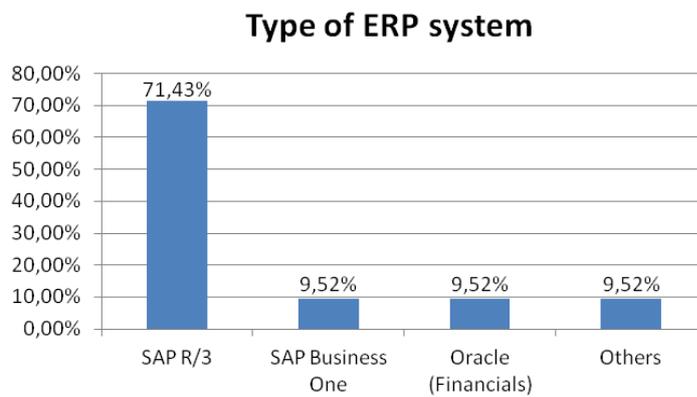


Fig 53. Type of ERP system used by companies

Finally, after analyzing the different business processes that can be covered with ERP system, it has been observed that the most used in Spain are financial accounting and cost accounting or controlling. It is worth pointing out that both processes were the most mentioned in 2014. Fig 54 shows more accurately this information.



Fig 54. Business processes covered with ERP system

## 5.2 FM Spanish market compared to European countries

After having studied the evolution of FM discipline in Spain, the next important step is to compare it with other European countries in order to place Spain in the global market and identify similarities and differences between countries. The ones that have been used for this comparison are Austria (2014/2015), Romania (2013/2014), Bulgaria (2008) and Germany (2007), as recent information was available.

### 5.2.1 Basic data of the company

As mentioned through the project, the results were obtained from the Top 500 companies. Fig 55 shows the proportion of the number of employees that these companies have in each country. Results clearly indicate that Romania is the country with the lowest proportion of workers per year, whereas in Spain 42% of companies have more than 1.000 workers.

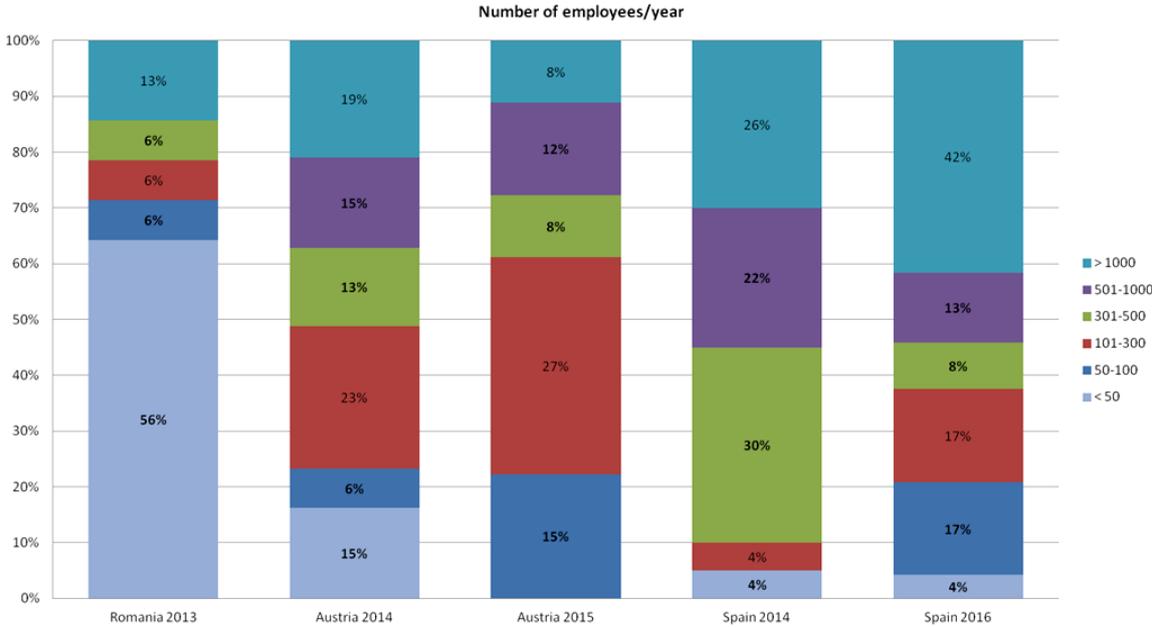


Fig 55. Comparison of the number of employees between different European countries [14]

### 5.2.1 Organization

It is important to mention that the data obtained for studying the evolution of FM discipline in Spain has been calculated on the basis of the replies received for each question. In contrast, the data used to compare with other European countries is based regarding all companies surveyed (always 24).

In terms of organization, we have studied the proportion of companies that have a separate FM department or person responsible in each country. The data in Fig 56 indicates the trend in Bulgaria, Romania, Austria and Spain.

Countries are consolidating this ratio around 80% except Bulgaria, which still had a much lower percentage in 2008. Furthermore, Austria continues to be above the rest reaching a proportion of 88% in 2015.

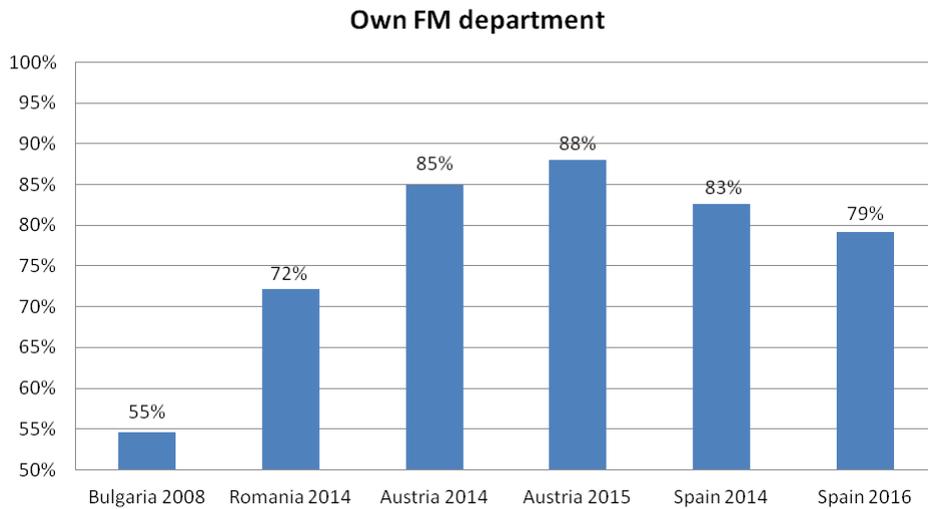


Fig 56. Portion of companies with a separate FM department [14]

Regarding the number of workers who are part of the FM department, Fig 57 presents a comparison between different countries. The results show a strong similarity between Spain and Austria, which have a close percentage when there are between 3 and 10 workers, with 63% and 52% respectively. Surprisingly, Germany has a high percentage when there are more than 100 employees dedicated to this department.

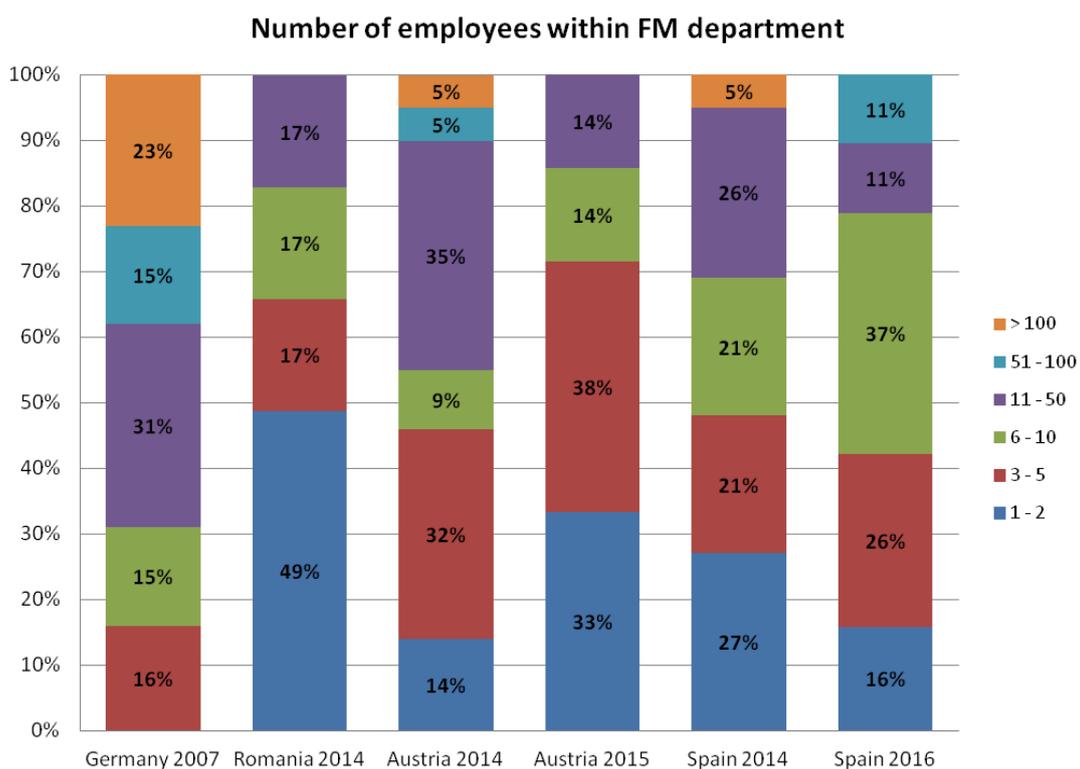


Fig 57. Comparison of staff members in FM departments [14]

On the other hand, there is a clear difference between Spain and the other European countries in regard of the hierarchical level of the organizational structure. Fig 58 shows that in the case of Spain, contrary to the rest, the FM department is an administrative department of the management (staff unit).

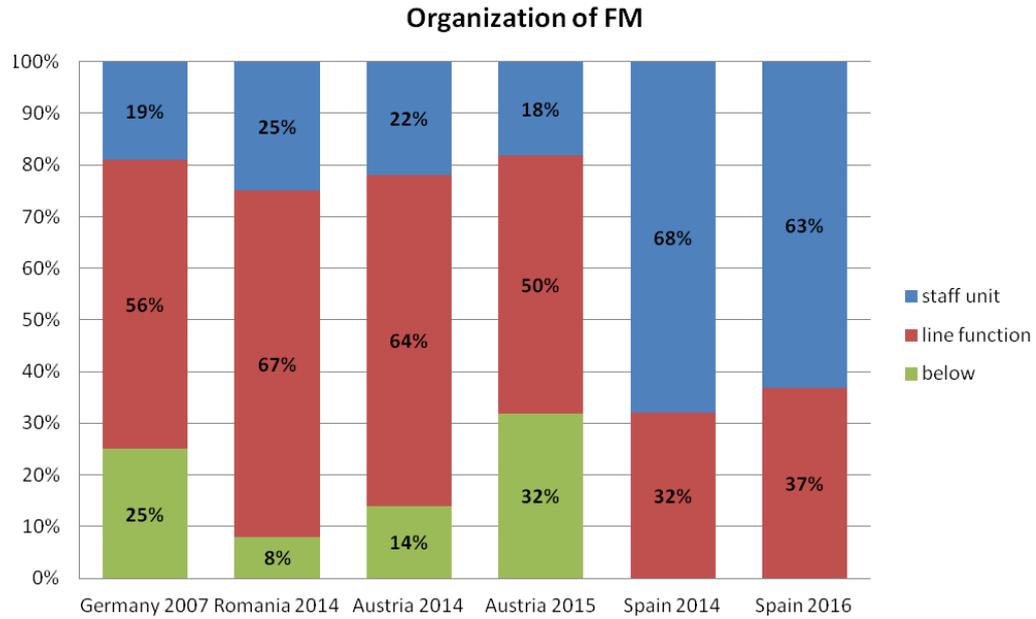


Fig 58. Comparison of the hierarchic level of FM department [14]

As discussed throughout the project, the strategies of the FM department are essential for its subsequent good performance. Overall, the results are very similar as most countries are aiming for cost reduction. It should be noted the importance that Spain and Romania give to outsourcing with respect to Austria, which has only 23%. Moreover, the importance of the centralization and production process in a timely manner has increased in Spain relatively strong compared to other countries. (See Fig 59).

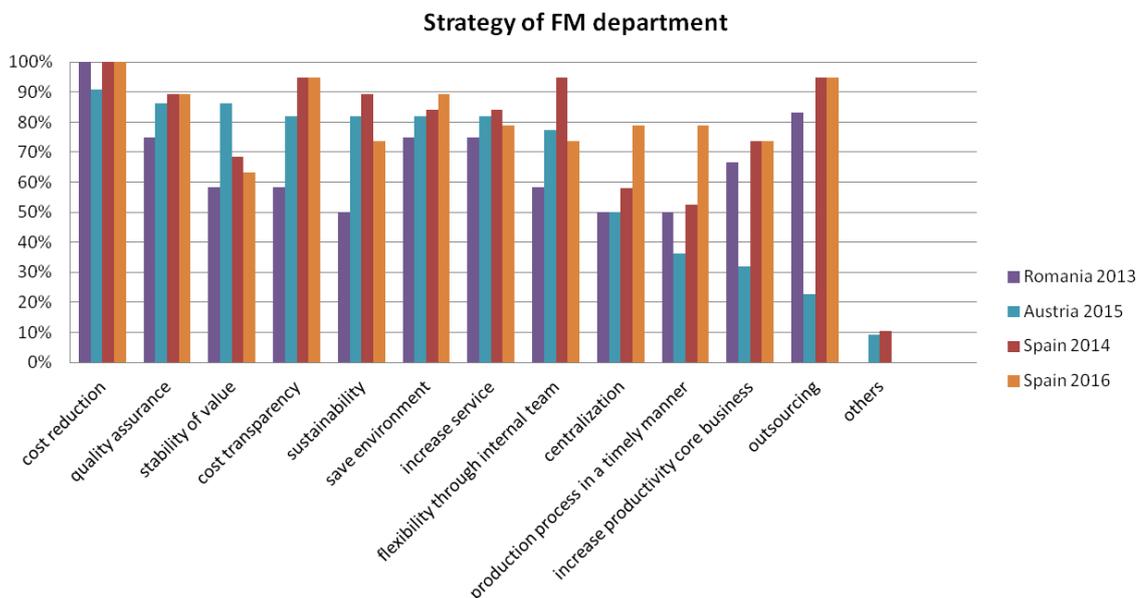
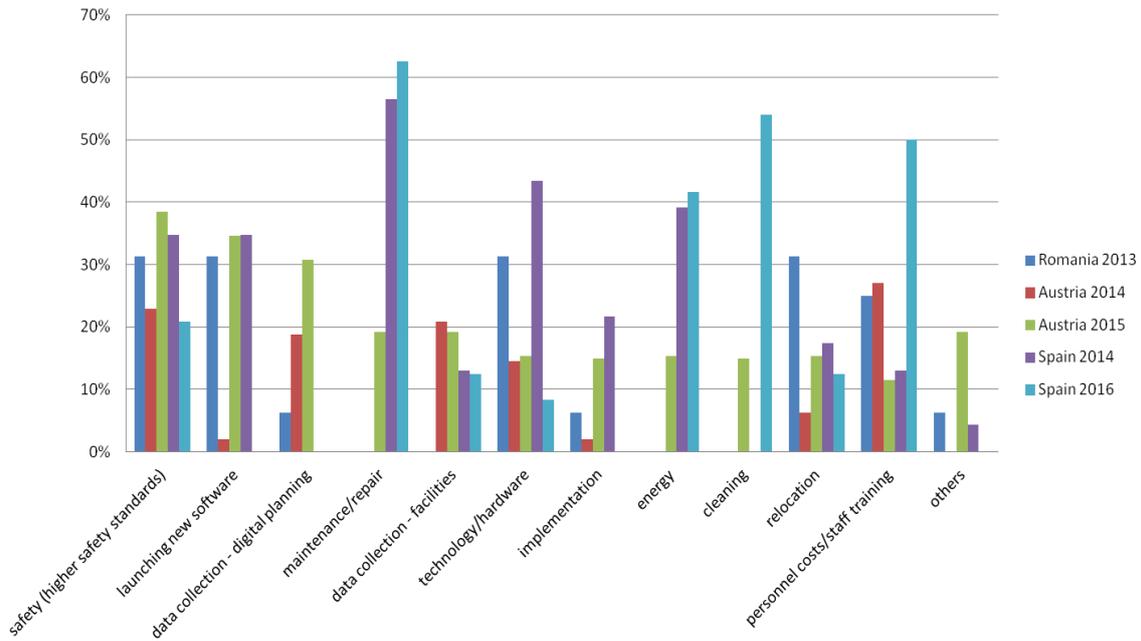


Fig 59. Main goals of FM departments [14]

With respect to the biggest problems or cost drivers in the field of real estate, notable differences have to be considered (See Fig 60). In Spain mainly maintenance or repair and cleaning stands out. Moreover, an increase in personnel costs in contrast to other countries should be highlighted. In addition, implementation and launching new software are no longer cost drivers while in Austria this has sharply increased. In general the biggest problems in FM are different between Spain and the rest of Europe due to the fact that each one prioritizes different factors.

Fig 60. Main cost drivers that FM departments have [14]



On the other hand, Fig 61 presents a comparison in relation to the estimated savings in three different areas. It can be noted that both Austria and Spain have the biggest savings in energy, followed by cleaning. Romania has lower percentages in all areas but follows the same pattern as the two previous.

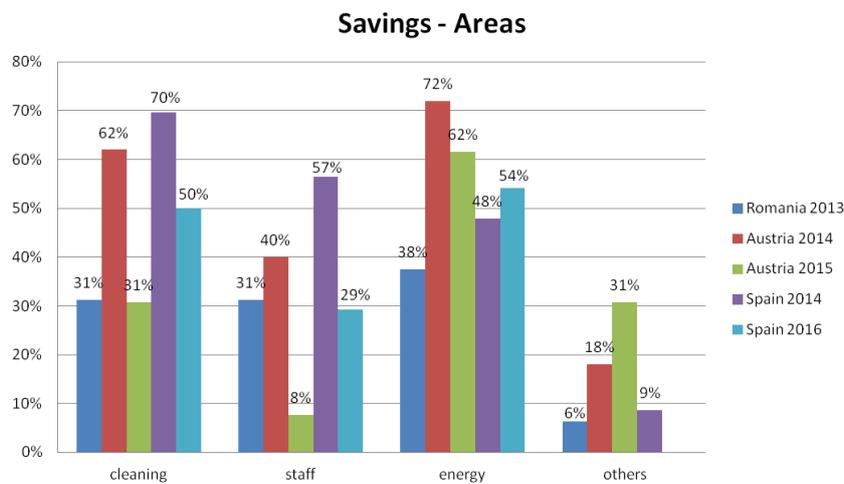


Fig 61. Fields with biggest savings through the use of FM in Romania, Austria and Spain [14]

The main areas to increase productivity are maintenance, staff and administration. Fig 62 shows that the number of mentions obtained in 2014 of Austria and Spain were much higher than the current ones of Austria 2015 and Spain 2016. Moreover, these new values, along with Romania, are within the same range for each sector.

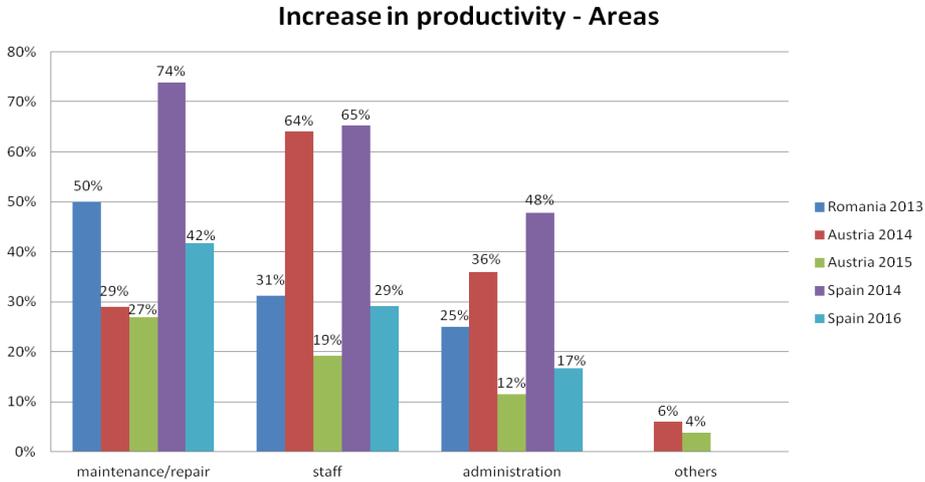


Fig 62. Fields with biggest increases in productivity in Romania, Austria and Spain [14]

**5.2.2 Outsourcing**

At this point it is known that outsourcing is an important aspect in the Spanish objectives and, therefore, should also be compared with other European countries. Initially, regarding the number of external service providers, Fig 63 shows that the proportions are similar between them. However, Spain has a lower percentage concerning the option of more than 10 external suppliers.

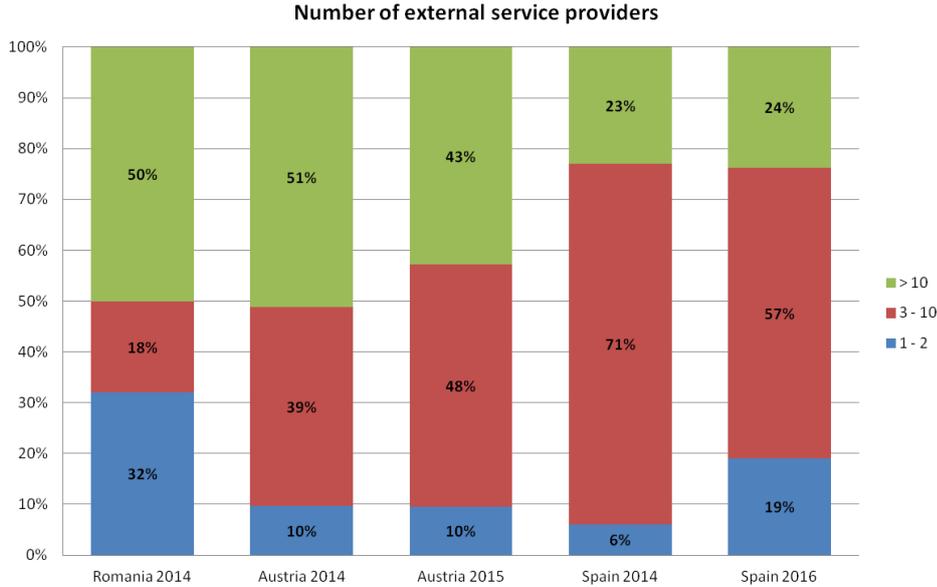


Fig 63. Number of external service providers in Romania, Austria and Spain [14]

Fig 64 presents the various areas that can be outsourced. It can be seen that different countries agree with the majority of them. Even so, it should be noted that winter service is very low in Spain due to different weather conditions, whereas the postal service is much higher.

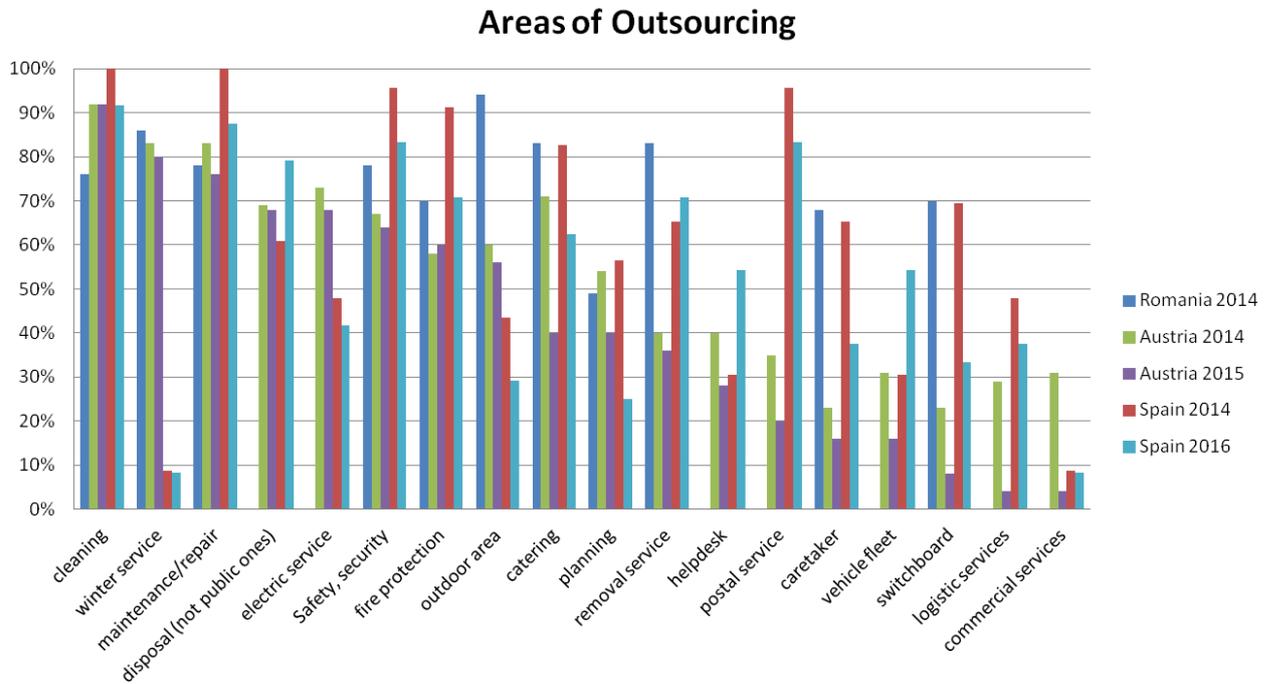


Fig 64. Most outsourced facility services in Romania, Austria and Spain [14]

Finally, Fig 65 and Fig 66 present the contract type that companies apply to their external service providers. With regard to infrastructure, results obtained are quite varied among all countries. In Romania, contracts for employment predominate, unlike in Spain where the majority outsource by service contract. In terms of technical services, the results obtained follow the same pattern as mentioned above.

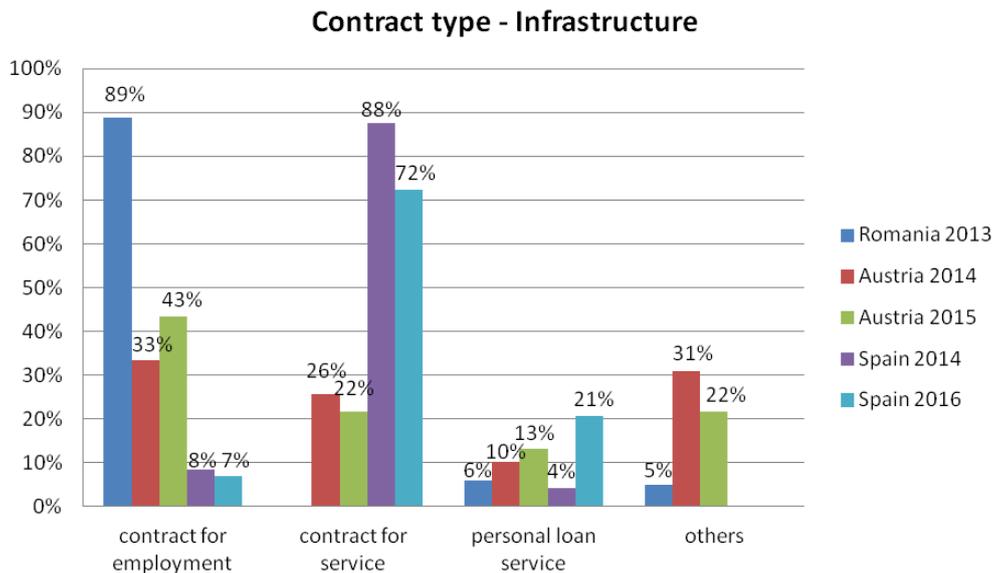


Fig 65. Comparison of contract type for infrastructure between European countries [14]

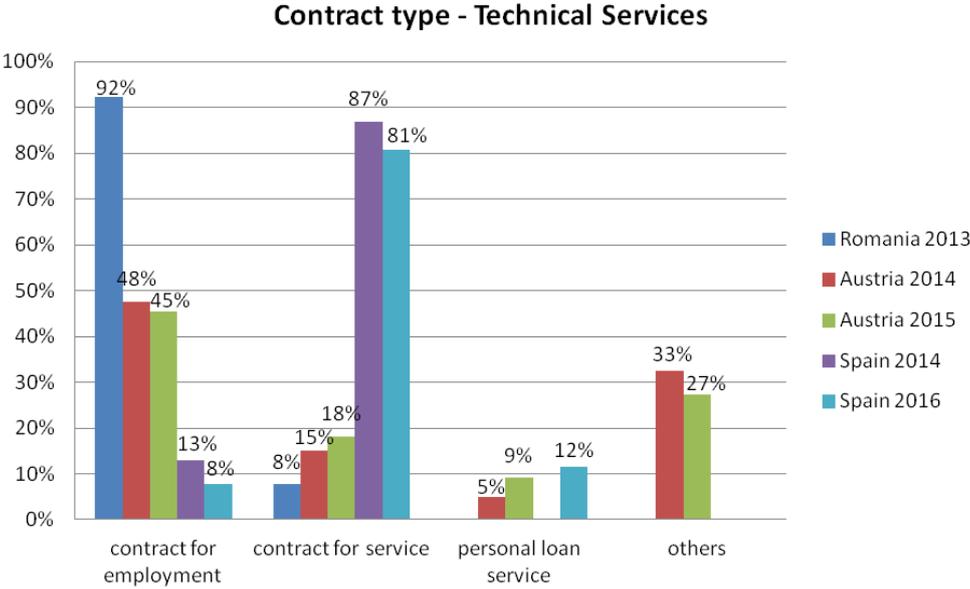


Fig 66. Comparison of contract type for technical services between European countries [14]

### 5.2.3 IT Support

Regarding IT support, it is interesting to compare the two main systems that FM departments use. Fig 67 presents the proportion of companies that use a CAFM system. The results show that most companies do not use this system and most of those who used it in previous years, have stopped doing so.

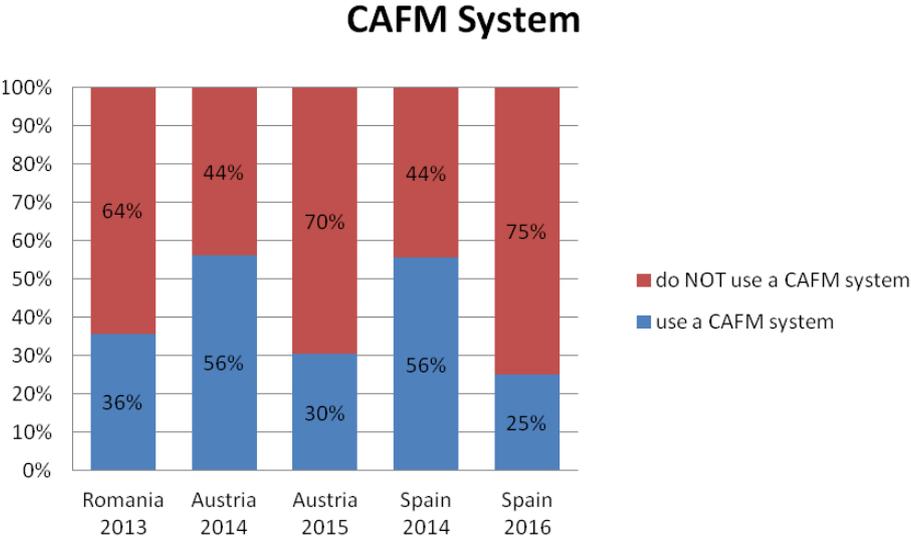


Fig 67. Percentage of companies with CAFM system in different European countries [14]

The processes that companies cover with this system coincide between Austria, Spain and Romania, the *inventory*, *maintenance* and *utilization plan* being the most frequently mentioned (See Fig 68).

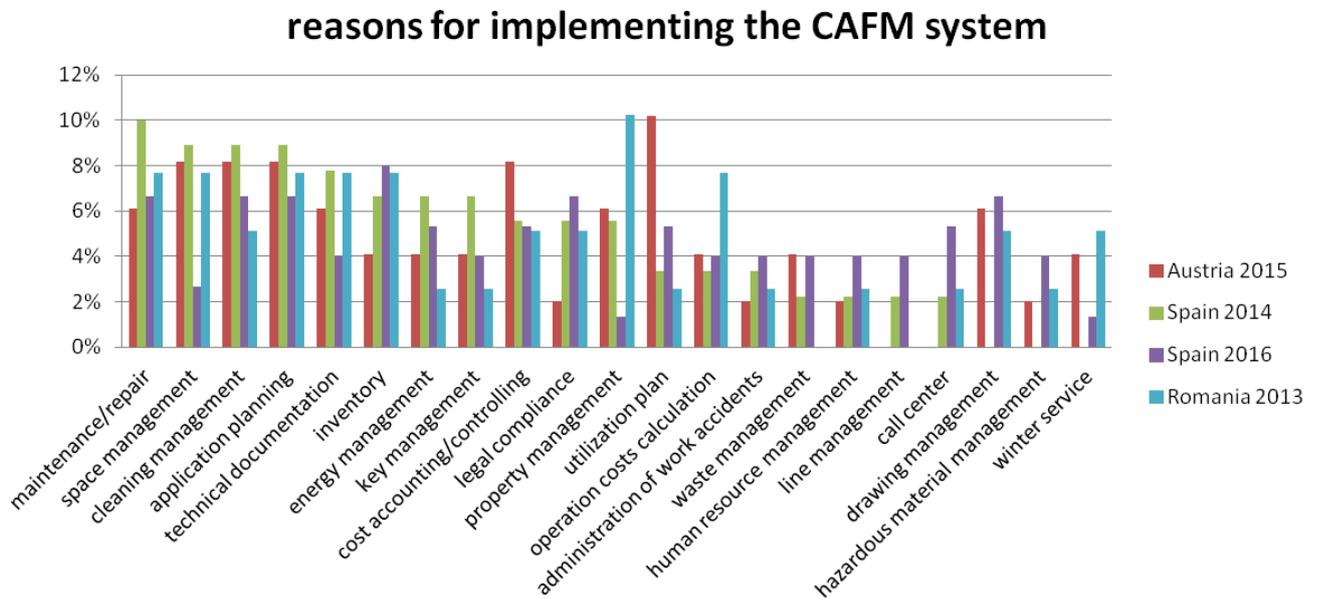


Fig 68. Processes covered with CAFM system in different European countries [14]

On the other hand, Fig 69 shows that most companies, about 80%, from all countries surveyed use an ERP system. Moreover, Spain is the one with the highest proportion despite having slightly declined since 2014.

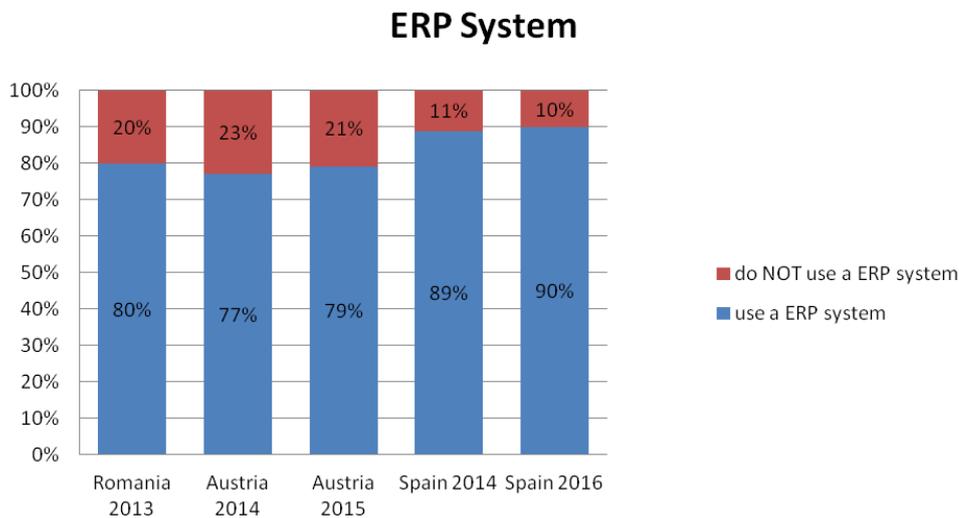


Fig 69. Percentage of companies with ERP system in different European countries [14]

The main processes covered by ERP are similar among the three countries surveyed (See Fig 70). Additionally, we should point out the high value obtained by Romania in *call center*.

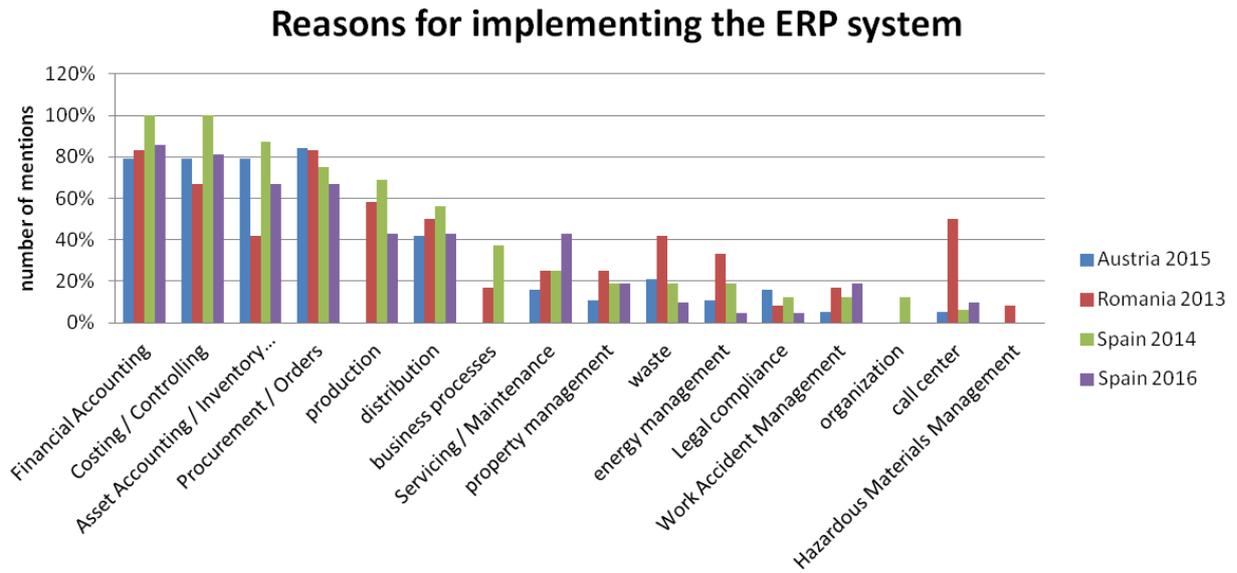


Fig 70. Processes covered with ERP system in different European countries [14]

## 6. Conclusions and recommendations

A comprehensive analysis of data with the aid of appropriate statistical techniques as well as its interpretation was undertaken in Chapter Five. The focus of this chapter is on the presentation of results and discussions arising from there. The chapter is arranged in consonance with the objectives set at the start of the study.

As discussed throughout this project, FM is nowadays a growing sector. Currently in Spain, a high percentage of companies have a person in its structure that is responsible for the work of FM. Nevertheless, not all types of companies have incorporated FM in its structure. Throughout the research, a more in-depth evaluation was carried out to conclude that this activity is not yet widespread among small and medium enterprises. As it has been mentioned before, in this type of companies remains the director of general services, who has acquired responsibilities in areas such as space management or assets.

One of the main goals of the project was to study the current state of FM in Spain in both qualitative and quantitative terms. Replying to the first question raised and having analyzed the various components of facility management such as support services, business development, strategies and biggest cost drivers, the findings showed that the main reason for companies to incorporate this department is the added value provided, not only as cost savings but also as it increases productivity. To this end, the added value of FM should be studied in an organized, systematic, participatory and creative way. The Facility Manager will have to reformulate or design the product or service that he manages with the strictly necessary functions and at the lowest possible cost, while ensuring the essential and sufficient quality.

It has been concluded that it is essential to provide the FM department with information of an economic nature, in addition to the strictly technological and technical one. Moreover, the FM department has to work in an interactive and participatory manner with the rest of the company. Finally, the current design of the processes should be questioned, so that innovation can achieve the economies generated from FM.

As mentioned before, according to the statistical analysis based on the data of the studies an own FM department has positive effects on savings and productivity. Precisely, the biggest savings through the use of FM in Spain are linked to the areas of cleaning, staff and energy. As IFMA Spain said, with good management Spanish companies could save, on average, between 10 and 20% in year one and from 20 to 30% at the end of the first three years.

Following the third objective established at the beginning of the Thesis, companies have increased their level of awareness about FM, devoting more employees to this department and setting and assigning to specific people the tasks to be performed.

Furthermore, there is a higher percentage of companies that currently use IT support to facilitate the activities to be performed. We should point out that the ERP system is used by most companies, concretely around 90%, in contrast to CAFM system that is used only by 30%.

Concerning the outsourcing in Spain, a large number of companies decide to outsource some services. In fact, almost 80% of companies outsource more than 50% of the tasks in the FM area. Cleaning, maintenance or repair and security continue to be the most outsourced facility services in Spain and the main reasons are price and its relation with performance, quality and know-how of external service providers. This is usually because outsourcing services enable large companies to get a number of advantages. On the one hand, it provides the foreign company to manage it much more effectively. On the other hand, it has a number of strategic agreements with suppliers, based on volume with multiple clients to achieve more economic costs.

With respect to the evolution of the FM market in Spain over the last years, a general trend of growth in most areas has been observed, emphasizing an increase from 2 to 3% expected in the forthcoming years in sectors such as cleaning, catering and maintenance. The disclosure sector has certainly been real estate, doubling the investment of previous years and reducing unemployment rate. On the other hand, areas such as security, residues or fleet management have stabilized after a period of crisis. Finally, we should point out that the decline in energy and email and messaging sectors has been confirmed. Therefore, in general, it can be said that the evolution of this discipline in Spain is being very positive and it is expected to continue in the coming years.

In addition, a comparison of this study with similar ones from other European countries has helped to gather more information about this research field. Primarily, Spain has been compared with Austria and Romania. Austria has been taken as the main reference as it is considered a developed market of FM.

In terms of organization, different countries mostly agree on issues such as cost drivers, biggest savings and increases in productivity. However, Spain has a lower portion of companies that have an own FM department due to the fact that its market of FM is still emerging. Contrary to Austria, one of the main strategies of Spanish companies is outsourcing. This fact highlights the importance that it has in Spain though it is difficult to know whether the FM Spanish market is more successful in this area or not. Finally, regarding IT Support, the results indicate that all countries follow the same structure.

In view of the findings from this research work, the following implications for FM might be applicable to be fully developed in Spain: [17]

- The State must rely on plans of public-private partnerships and these should be developed.
- Mixed recruitment figures should exist in the Contract Law.

- A labor framework should be established to develop a common social dialogue with all disciplines and professions.

Finally, it must be stressed that the ten most productive countries in the world are, curiously, the ten countries that invest more in Facility Management.

## 7. References

- [1] Saxon, R. (2005): *Be Valuable, a guide to creating value in the built environment*. CBE Constructing Excellence in the built environment, Be Useful report. pp. 12.
- [2] <http://www.eurofm.org/index.php/what-is-fm> (accessed on 09.03.2016)
- [3] <http://www.euroinmo.com/noticia/123047/firmas/facility-management-una-disciplina-clave-en-tiempos-de-crisis> (accessed on 09.03.2016)
- [4] <http://ifma-spain.org/noticias-facility-management/> (accessed on 19.06.2016)
- [5] <http://www.facilitymanagementservices.es/actualidad-y-novedades/actualidad-fm-s> (accessed on 14.03.2016)
- [6] FAMASE Facility Management and Services, (2016): *El volumen de negocio del Facility Management en España supera los 70.000 millones de euros*. Informe Marzo 2016, IFMA España.
- [7] Ashworth, S. (2013): *Added Value of FM Know-how*, MSc, Institute of Facility Management ZHAW, Switzerland.
- [8] Jensen, A (2015): *Added value of FM – a critical review*. EuroFM Research Papers 2015, Technical University of Denmark, pp. 8-10.
- [9] KPMG LLP (2015): *KPMG 2014 Global Real Estate & Facilities Management (REFM) Outsourcing Pulse Survey, 2014 REFM Outsourcing Pulse Report / April 2015*, pp. 14-17
- [10] <http://www.efempresas.com/noticia/la-externalizacion-de-servicios-crecera-en-espana-entre-un-4-y-un-5-al-ano/> (accessed on 12.04.2016)
- [11] <http://www.restauracioncolectiva.com/es/?pag=nota&id=2736&cid=23> (accessed on 12.04.2016)
- [12] Kavrov, D. Board Member at BGFMA (2015): *Top 10 Key Performance Indicators in Facility Management*.
- [13] IFMA España, Comisión de Research, (2016): *Grandes cifras del FM, 2º Edición*.
- [14] Redlein, A., Zobl, M. (2014): *Facility Management in West- and Eastern Europe*, Vienna University of Technology, IFM.
- [15] Saunders, M., Lewis, P., & Thornhill, A. (2009): *Research Methods for Business Students (5th Edition ed.)*. Harlow, UK: Pearson Education Limited.
- [16] Octavio, A. (2014): *Facility Management Market in Spain*. Bachelor Thesis, Real Estate and Facility Management department TU Wien.
- [17] FAMASE Facility Management and Services, (2016): *Facility Management: hasta un 30% de mejora en la cuenta resultados empresarial*. Informe Junio 2016, IFMA España.
- [18] IFMA España, Comisión de Research, (2015): *Grandes cifras del FM, 2º Edición*
- [19] BS EN 15221-1 (2006): *Facility Management - Part 1: Terms and definitions*. British Standards.
- [20] BS EN 15221-4 (2011): *Facility Management - Part 4: Taxonomy, Classification and Structure in Facility Management*. BSI Standard Publication.