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|  | <p>STUDY OF FACILITY MANAGEMENT<br/>IMPLEMENTATION IN SPAIN</p> | <p>CONSTRUCTION<br/>TECHNOLOGY</p>             |
| <p>COLLABORATION</p>   | <p>Marta Ramon-Centelles, Núria Forcada-Matheu</p>              | <p>Industrial and Commercial<br/>Buildings</p> |

## ESTUDIO SOBRE LA IMPLEMENTACIÓN DEL FACILITY MANAGEMENT EN ESPAÑA

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| <p>Marta Ramon-Centelles, Núria Forcada-Matheu</p>  |  |
| <p>Universitat Politècnica de Catalunya. Dpto Ingeniería de Proyectos y Construcción. C. Colom, 11 – 08222 Terrassa. Tfno: +34 937 398153. <a href="mailto:nuria.forcada@upc.edu">nuria.forcada@upc.edu</a></p>   |  |
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### STUDY OF FACILITY MANAGEMENT IMPLEMENTATION IN SPAIN

#### 1.- INTRODUCTION

Facility Management (FM) is a discipline that integrates various processes within an organization in order to maintain and develop the agreed services which provide support and improve the effectiveness of its core activities [1].

Until the 1970s, the FM term was unknown for most professionals and those who were engaged on FM tasks were not able to correctly identify their job. The first step occurred in 1978 when Herman Miller Research Corp., organized the "Facility Influence on Productivity" conference in Ann Arbor, Michigan, USA and the three founders of the International Facility Management Association (IFMA) met. It was not until 1998 when the FM became a professional discipline in Spain. This profession began to gain importance in leading organizations, especially in the telecommunications and the banking sectors. In 2001, Thanks to the efforts of some professionals, the IFMA Spanish division was born [2].


In the beginning, the FM covered concierge, maintenance and cleaning services. In 1980 facilities management services like lighting and air conditioning were included. Later, the administrative support services and logistics became a part of the FM tasks. In 2010, energy services and waste management were also integrated in FM services. Currently, the FM functions are the development of corporate strategies related to real estate resources, optimization of spaces policies, coordination of construction projects, renovation and relocation, recruitment of all products and services related to the correct operation of the facilities, conservation and maintenance of facilities and engineering [2].

It is estimated that in 2014 the FM sector represented a turnover of 50.500 million euros. In the year 2016 it already exceeded 70.000 million euros, which implies a 6.47% of the GDP [3]. The turnover of this sector in Spain is above Holland and Portugal, but far from United Kingdom, which reached 135,000 million euros.

This paper presents the results of a survey on the implementation of the FM in the Top 500 Spanish companies. The results of this survey are compared with two previous surveys from 2014 and 2016 with the objective of analyzing the evolution of the implementation of the FM in Spain.

The scope of the survey includes information concerning to:

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- The existence of a specific department of FM within the company and its organization.
- The objectives of the FM departments and the problems that these departments face.
- The FM areas with higher cost and the areas with higher savings.
- The relevance of the outsourcing of services and the most outsourced areas.
- The software that FM companies use most.

## 2. MATERIALS AND METHODS

Taking into account that the study population are the Spanish companies included in the Top 500 turnover national ranking, a confidence level of 95% and an error of 20%, the sample size should be 23 companies. In order to analyze the evolution of the FM in Spain the questionnaire survey and the adopted methodology is the same as two previous studies:


- Analysis of the FM market in Spain in 2014 [4]. In this study, 23 of the Top 500 companies participated in the survey.
- Analysis of the FM market in Spain in 2016 [5]. In this study, 24 of the Top 500 companies participated in the survey.

Both surveys were conducted by email and phone to those people responsible for the FM. The majority of the surveyed companies were from the chemical industry, goods and services and banking. More than 80% of the surveyed companies were large companies with more than 1.000 employees.

The survey is structured in 4 main areas (See Appendix 1):

1. Organization:  
This part of the survey includes questions about the existence or non-existence of a specific FM department, the number of employees in that department and its organizational structure (staff unit or line function).
2. Added value:  
This section includes questions about the main objectives of the FM department; their problems; the FM services with higher benefits and those with higher productivity and; the potential savings through the FM.
3. Outsourcing:  
This part of the survey includes questions about the number of external service providers; the percentage of outsourced services; and the reasons for the selection of external providers.
4. Support of Information Technologies (IT):  
This part of the survey includes questions on whether the FM department uses Computer-Aided Facility Management (CAFM) systems to manage the facilities, assets and spaces of the company; the processes covered by the CAFM and reasons for implementing these systems.

During September and October, 2018, 160 FMs plant managers or general services managers of the Top 500 Spanish companies were contacted through LinkedIn. In addition, the IFMA Spanish division also distributed the survey among its partners. 24 answers were received.

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### 3. RESULTS

In order to present the analyzed data in an organized manner, this chapter is structured into five sections: Companies' basic data, organization, added value, outsourcing and IT support.

#### 3.1.- BASIC DATA

Of the 24 surveyed companies, 40 % have between 1.000 and 5.000 employees, 47% less than 1.000 and 13% more than 5.000. These companies are mainly from the food, construction, telecommunications, car, chemistry, services, distribution and fashion industries. Table 1 shows the data of the companies that participated in the surveys in 2014, 2016 and 2018.

| Year of the survey | Sector (%)     |                   |                                 |         | Number of workers (%) |        |
|--------------------|----------------|-------------------|---------------------------------|---------|-----------------------|--------|
|                    | Pharmaceutical | Food and Services | Infrastructure and Construction | Banking | <1000                 | > 1000 |
| 2014               | 17.4           | 21.7              | 17.4                            | 17.4    | 17%                   | 83%    |
| 2016               | 12.5           | 25.0              | 21.0                            | 16.6    | 12%                   | 88%    |
| 2018               | 8.0            | 13.0              | 25.0                            | 17.0    | 47%                   | 53%    |

*Table 1: Characteristics of the surveyed companies in the different studies.*

#### 3.2.- ORGANIZATION

The majority of the respondents (87%) do have a specific FM department which represents a slight increase (5%) in relation to 2014.

Those respondents that have a FM department integrate and coordinate their services reducing costs and consequently improving the performance of the company. A FM department simplifies the structure of roles and responsibilities related to services, improving procedures of both internal and external resources.

Most of the respondents' FM departments have less than 10 workers (43%), while 33 per cent are between 11 and 50 and 24% more than 50 workers.

The number of employees of the FM departments has grown over the past few years. In 2014 [4] only 21% of FM departments had more than 10 workers, while in 2018 this percentage higher than 50%.


More than 90% of the FM departments are integrated in the company with a staff structure (as a consultancy department). In the last four years the staff structure has increased by more than 20%.

#### 3.3.- ADDED VALUE

The main objectives of the FM department are the reduction of costs and the quality assurance (Fig.1).

The functions of the FM range from the property strategy, to the company's integral management, and resources and services management.

In relation to previous years, the reduction of costs remains the main objective of the FM department although in previous years more disperse objectives were considered.

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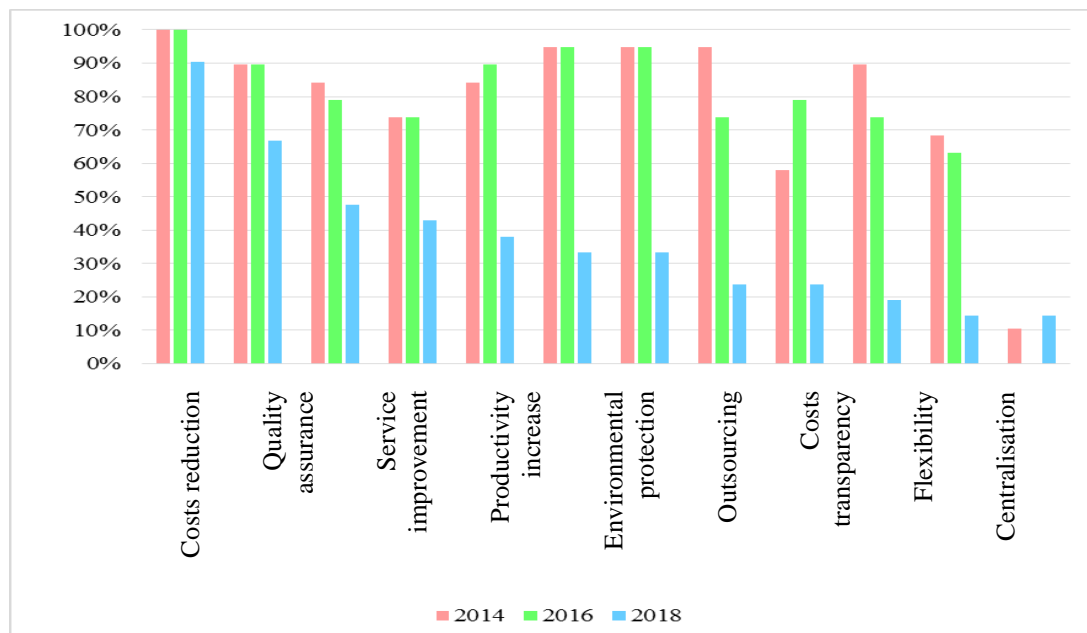



Fig. 1: Objectives of the FM department in the years 2018, 2016 and 2014.

In relation to the problems facing the FM department, the change that involves the introduction of a new philosophy and the complexity in the data collection (60%) are the highest difficulties, followed by the complexity in the implementation of this new philosophy and the management between the services and providers.

In recent years, an increase in the number of FM-related problems that companies face is detected. Although the FM is greatly implemented in Spain, the problems due to the complexity of introducing a new philosophy have only reduced 20% in relation to 2014 (see Fig.2). On the other hand, the FM services have increased, including space management, energy management, security management, etc. [10]. This situation creates a greater need for information related to buildings, facilities, etc. This is the main reason why the problem of data collection has increased by more than 30% from 2014 to 2018. There is no data from 2016.

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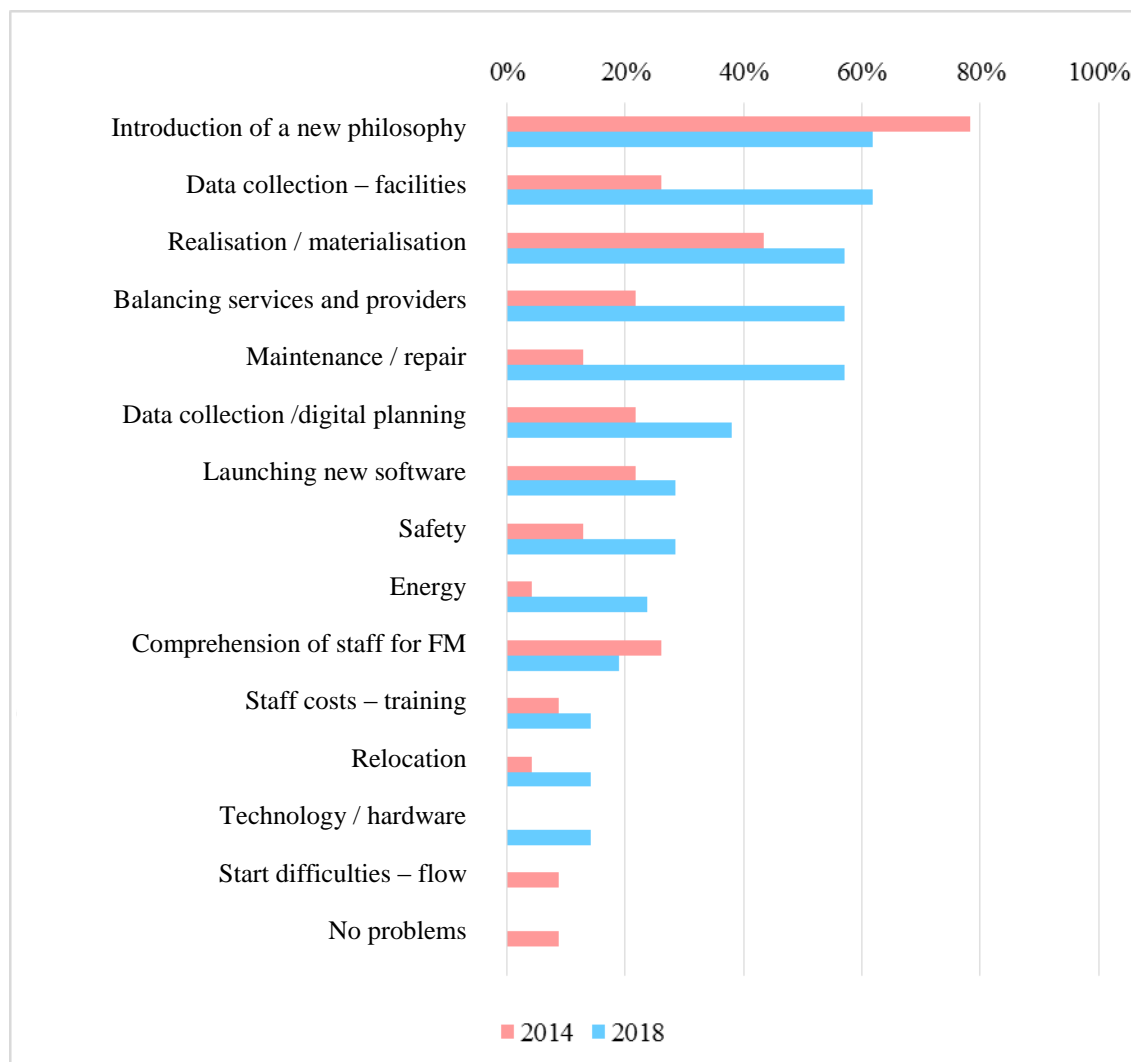



Fig. 2: Problems facing FM departments in 2014 and 2018.

On the other hand, according to the respondents, the biggest cost driver in the field of FM are the maintenance/repair, the implementation and integration of the FM services and data collection of the installations (Fig.3).

It is worth noting the significant decrease in costs related with technology (37%) and energy (26%). In general, large companies are aware of the need of an integrated FM model and are incorporating the different areas of maintenance, purchasing, consumption, spaces, etc. within the FM department. Many companies that previously had separate systems for inventory management and maintenance (Computerized Maintenance Management System, CMMS), for the space management (Integrated Workplace Management System, IWMS), facilities management (Building Monitoring System, BMS), etc. have already integrated them into a in the Computer-Aided Facility Management (CAFM) systems and, therefore, the costs associated with the technology are less important. Although the technology exists, human resources management and the acquisition of the required data remains a challenge for the majority of the companies. There are no data from 2016.

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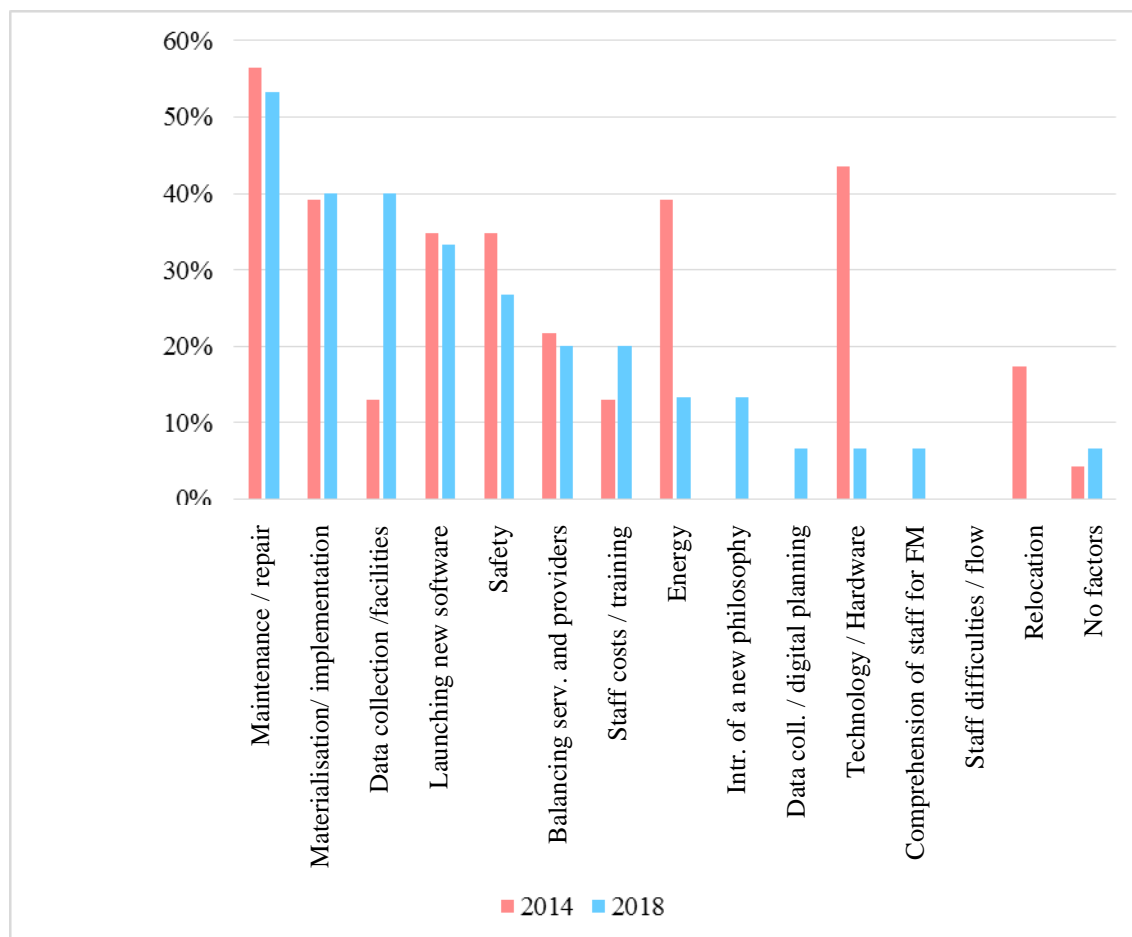



Fig. 3: Biggest cost drivers FM departments face in 2014 and in 2018.

Respondents consider that the FM services with bigger savings and productivity, are cleanliness, energy and maintenance (Fig.4).

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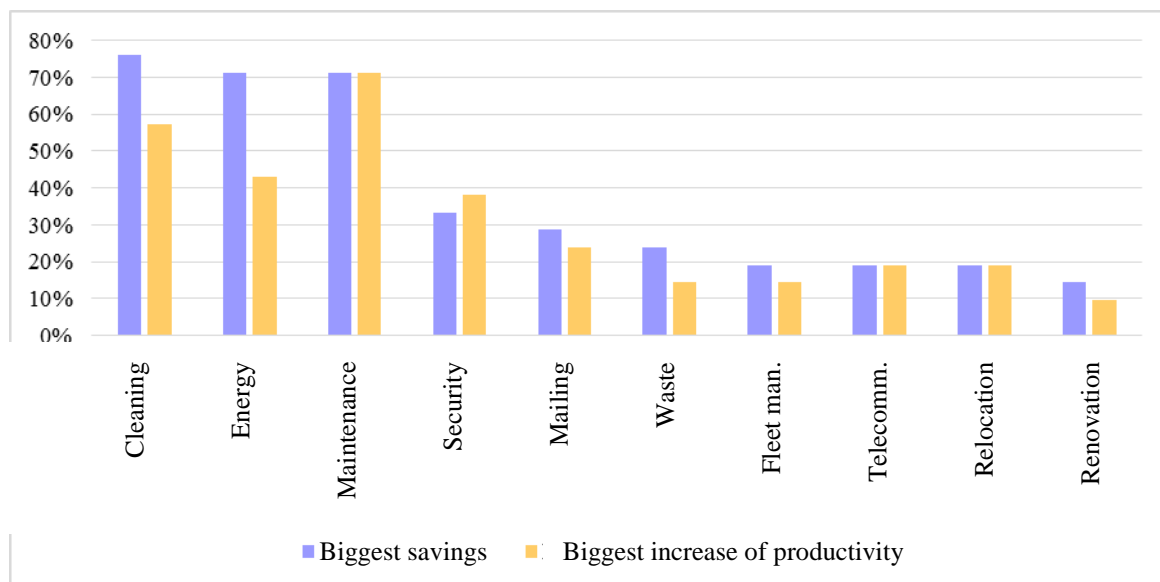


Fig. 4: Services with biggest savings thanks to FM.

The survey results show that almost 50% of the companies have annual savings between 10 and 19% and 21% of the respondents even higher. Comparing the annual saving of 2014 with 2018, 10% of companies have increased by 10% their savings thanks to the FM.

The maintenance management is undergoing a transformation in both the proliferation of projects related to renovation, rehabilitation, etc. and in the preventive maintenance. The change from corrective maintenance to preventive maintenance is based on the fulfilment of both safety and health and energy regulations to increase end user satisfaction, the quality of services and at the same time save costs [11]. On the other hand, energy management policies are also changing. In this sense, FM are responsible for managing the air conditioning system, analyzing the feasibility of incorporating renewable energy, smart meters, detectors, free-cooling, replacing old equipment, etc. These actions are aimed at energy saving, but without harming end users' comfort and satisfaction. Increasingly, companies are implementing the ISO 5001 [14] for improving their buildings' energy management.


Security and surveillance is also considered an area with potential savings and increased productivity. This area is growing and is addressing processes linked to the protection of buildings and remote cyber security.

### 3.4.- OUTSOURCING

The decision of a company to outsource a particular service to an external supplier is based on the need to improve its performance. The benefits of outsourcing include the reduction of costs, the access to new technologies or the improvement of performance in certain processes.

Outsourcing allows the company to focus on its main business activity, core business. Scale economies allow the reduction of costs of certain services and access to specialized technology whose investment and risk is assumed by the outsourced company [13].



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On the other hand, outsourcing can damage company's image in the case of providing poor services and loss of control with respect to the activities carried out by the outsourcing company.

The outsourcing implies a reduction in costs and a professionalization of services. To analyze the outsourced services, all respondents outsource at least 25% of its services, and generally between 75% and 100% of their services.

Although many Small and Medium-sized Enterprises (SMES) consider outsourcing reduces the control of processes, large companies have a wider view and opt for outsourcing, as shown by the results of the survey.

The results of the survey show that the number of outsourced providers is increasing. Currently, 52% of companies had more than 10 providers, while in the year 2014 and 2016 companies only had one or two providers. Cleaning and protection against fire are the most outsourced services with almost 90% of companies outsourcing this service. In recent years, cleaning has always been the most outsourced service because it is a completely independent service. This ensures a good quality and disregard for the recruitment. On the other hand, the main reason to outsource the fire protection is basically to ensure compliance with regulations and control and security inspections. It is worth noting, the reduction of outsourcing services such as call center, planning (construction) and electrical services (Figure 5).



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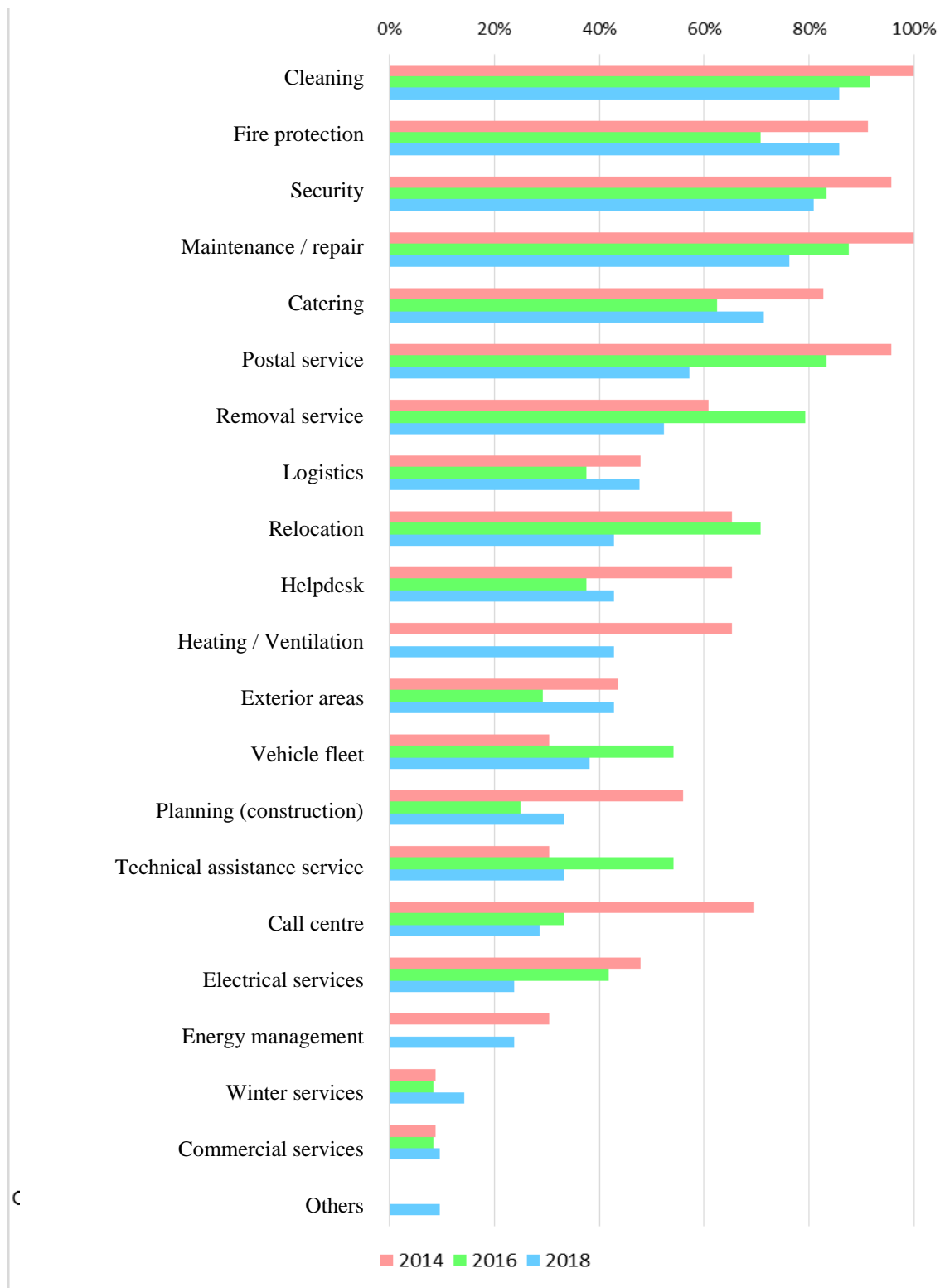



Fig. 5: Outsourced services in the years 2018, 2016 and 2014.

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According to the respondents, the most important aspects when selecting a provider are: the price-to-performance (86%), quality (67%) and competition/know-how (52%). Other relevant aspects are: the offered services (48%), flexibility (38%), price (29%), coordination (29%), communication/feedback (19%), training (10% cooperation) and impression/references (10%).

### 3.5.- IT SUPPORT

IT play a very important role in the FM by allowing the processes automation and managing a vast amount of data. Enterprise Resource Planning (ERP) and CAFM are the most used software in 76% and 86% of the surveyed companies.

Four years ago only 44% of the companies had implemented a CAFM. CAFM systems can cover many of the processes of the company such as maintenance (76%), cleaning (48%), and energy management (48%). There is an increase in the percentage of almost all the processes covered by the CAFM system, especially in the case of maintenance that has increased from 40% of Spanish companies to almost 70%.

Beyond the CAFM there is the BIM (Building Information Modeling) in which through a graphic model of the building not only all areas of FM can be integrated but also throughout the life cycle of the building. This source of accurate and coordinated building information can be exploited to optimize multiple processes and tasks such as pace management, rehabilitation, asset management, predictive maintenance, preventive and corrective maintenance, risk analysis, simulations, energy management, etc. The advantages are multiple, but the cost and difficulties obtaining the necessary information necessary to get the most benefit of BIM tools are high [9]. The Spanish companies are beginning to implement BIM in the design and construction phases, but for the moment, not in the operation phase.


The reasons to implement a CAFM system are basically the reduction of complexity of the FM tasks and the increase in productivity.

### 4.- DISCUSSION

The results of this study show that the FM is increasingly implemented in the big Spanish companies. Although the number of companies with FM department remains stable in recent years, the number of employees in this department has been steadily increasing. This is mainly due to the progressive integration of more processes within the FM and to an increase in the complexity of its management, requiring greater professionalization and consequently higher number of professionals. This results also confirm that FM departments are currently integrated in the structure of the company given that 94% of the respondents integrate their FM departments within a staff structure.

Although FM departments are getting bigger, the results of this survey clearly show that the big Spanish companies are also increasing the outsourcing of some FM services to focus on their business activities and reduce the cost of support activities.

According to the Report on the Evolution of Outsourcing in Spain, by GrupoUno Ctc, the percentage of companies that outsource FM services in 2007 was 35.2 %. Currently, 90% of the larger companies outsource some of their tasks, and in the case of SMEs this percentage decreases to 75% [7]. The outsourcing of services has two main reasons: tactical and strategic. Within the tactical reasons, the cost reduction is achieved by reducing the production costs and from supplier scale economies. With regard to the strategic reasons, the

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quality of services improves because companies focus on activities that differentiate them from their competitors [8]. These are the main reasons why more than a 60% of companies outsource between 75 % and a 100 % of their services.

This study also found that the number of providers is increasing in recent years. This trend means that companies opt for flexibility of smaller bids and with more providers. Cleaning, security and fire protection are remaining the most outsourced services thanks to the number of specialized companies which improves its quality. In general, both the cleaning, security and fire protection services are totally independent of the business activity [10]. The professionalization of services and costs reduction are therefore the main reasons to outsource these services. The call center service is reduced on account of technological changes and Internet.

Information technologies play a very important role in the FM by automatizing processes and managing large amounts of data [12]. Many companies are already implementing integrated management systems such as CAFM. However, there are many other technological systems that may improve decision making. BIM provides information related to the structural characteristics of the building and its facilities, improving inventory and maintenance management, space management, simulations, etc. Although implementing a new technological system implies a significant change in the entire company. outsourcing enables the transition to the new system, training and the management of the new platform. It is therefore a type of outsourcing with a clear technological orientation.

On the other hand, the results of this survey show that FM can revert to high savings in the company. Almost half of the respondents have an annual savings of between 10 and 19%. According to Sanz, the FM can reduce the costs of the company between 20% and 30%, generating a positive impact on the results of between 6% and a 9% [6].

## 5.- CONCLUSIONS


FM is a discipline that has become essential and has involved a change of philosophy within companies. It started in the 1970s focusing on maintenance management. Currently, FM includes areas such as asset management, energy management, security management, among others.

This study has shown the current situation of the FM implementation in large companies in Spain and has analyzed its evolution in the last 8 years. The results confirmed that the majority of Spanish companies have a specific FM department. In the last few years this department is getting bigger due to the increase of required processes within this area.

This study highlights that the added value of the FM is cost reduction and quality assurance of those support activities of the company. Although different processes are being integrated within the FM department, maintenance management remains the most relevant one.

This study has also confirmed the trend of companies to outsource services to reduce costs and improve services thanks to the degree of specialization with the outsourcing of some services such as cleaning and security.

In relation to TI, the implementation of the CAFM systems within large companies in Spain is high ( 86%) and has increased considerably in recent years. The processes that these systems mostly cover are the maintenance, cleaning and energy management. The enormous benefits of these systems has led to realize the need for data

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and information on the buildings and facilities. Currently, there are systems such as the BIM that are probably going to impact strong in the evolution of this sector. Thus, similar surveys over the next 10 years would be crucial to evaluate the evolution of the technological systems implementation within the scope of the FM.


In conclusion, the FM is increasingly implemented in major Spanish companies. Future steps will focus on analyzing the influence of the size of the company in the degree of FM implementation and the degree of outsourcing.

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## APPENDIX 1. SURVEY

Activity:

Nº of employees:

Organisation

¿Does your company have a Facility Management department?

Yes

No

¿How many employees does this department have?

1 or 2

From 3 to 5

From 6 to 10

From 11 to 50

More than 50

¿Which is the structure of the FM department?

Staff unit

Line function

¿Which are the core objectives of the FM department?

Cost reduction

Service improvement

Externalisation

Environmental protection

Flexibility

Productivity increase

Costs transparency

Centralisation

Quality assurance

Others

Sustainability

¿Which are problems when implementing the FM department?

Introduction of a new philosophy

Security

Materialisation / Implementation

Maintenance / Repairs

Data collection – facilities

Start difficulties - flow

Comprehension of staff for FM

Staff costs - training

Data collection – digital planning

Relocation

Launching new software

Energy

Balancing services and providers


Technology / hardware

No problems

¿What are the biggest cost drivers when implementing a FM department?

Introduction of a new philosophy

Security

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Materialisation / Implementation

Data collection – facilities

Comprehension of staff for FM

Data collection – digital planning

Launching new software

Balancing services and providers

Maintenance / Repairs

Start difficulties - flow

Staff costs - training

Relocation

Energy

Technology / hardware

¿Which are the services with biggest savings thanks to FM?

Cleaning

Human resources

Energy

Maintenance

General services

Logistics

¿Which are the services with biggest productivity increase thanks to FM?

Cleaning

Human resources

Energy

Maintenance

General services

Logistics

¿Which are the potential annual savings thanks to FM?

Less than 10%

Between 10 and 19%

Between 20 and 29%

Between 30 and 39%

More than 40%

Outsourcing

¿How many service providers does your Company have?

1 or 2

Between 3 and 10


More than 10

¿Which percentage of services are outsourced?

From 0 to 24%

From 25 to 49%

From 50 to 74%

|  |   |  |
|--|---|--|
|  | <p>STUDY OF FACILITY MANAGEMENT<br/>IMPLEMENTATION IN SPAIN</p> | <p>CONSTRUCTION<br/>TECHNOLOGY</p>             |
| <p>COLLABORATION</p>   | <p>Marta Ramon-Centelles, Núria Forcada-Matheu</p>              | <p>Industrial and Commercial<br/>Buildings</p> |

From 75 to 100%

¿Which areas are outsourced?

|                              |                         |
|------------------------------|-------------------------|
| Cleaning                     | Heating / ventilation   |
| Maintenance / repairs        | Catering                |
| Postal services              | Removal services        |
| Logistics                    | Relocation              |
| Helpdesk                     | Exterior areas          |
| Vehicle fleet                | Planning (construction) |
| Technical assistance service | Call centre             |
| Electrical services          | Energy management       |
| Winter services              | Commercial services     |
| Others                       |                         |

¿Which are the reasons when selecting a service provider?

|                          |                       |
|--------------------------|-----------------------|
| Price to performance     | Competency / Know-how |
| Quality                  | Price                 |
| Flexibility              | Coordination          |
| Communication / feedback | Training              |
| Impression / references  |                       |

IT support

¿Does your Company have any CAFM?

Yes

No

¿Which processes include the CAFM?

|                         |                       |
|-------------------------|-----------------------|
| Maintenance / repairs   | Standards' fulfilment |
| Space management        | Room booking          |
| Cleaning management     | Inventory management  |
| Planning                | Energy management     |
| Technical documentation | Costs management      |
| Asset management        |                       |

¿Which are the reasons for implementing a CAFM?

|                       |                      |
|-----------------------|----------------------|
| Complexity reduction  | Modernisation        |
| Standardising         | Interoperability     |
| Costs reduction       | Control of processes |
| Productivity increase | Automation           |