Von:	Jake Smithwick [Jake.Smithwick@uncc.edu]
Gesendet:	Dienstag, 09. Jänner 2018 16:11
An:	Eva Stopajnik
Cc:	Alexander Redlein; Barbara Gatscher; Steve Lockwood
Betreff:	RE: IFMA WWP Europe 2017 - Proof of Conference Proceedings

Eva and Alex:

Please accept my sincere apologies for the delay in responding. Details are below:

Current Labour Market Situation and Upcoming Trends in the European Facility Service Industry (WWP Europe Conference Proceedings)

- ISBN/ISSN: the conference proceedings do not have a ISSN / ISBN
- Peer review: All published WWP Europe Conference proceedings were completed by a double-blind review process
- Page numbers: 34 – 42
- Publisher: IFMA Foundation

The Development of the Outsourced Facility Service Industry in Europe (*JFMER* journal, Volume 1, Issue 1)

- Electronic ISSN: 2474-6630
- Peer review: All published articles in the *Journal of Facility Management Education and Research* were completed by a double-blind review process
- Page numbers: 1 – 5
- Publisher: Allen Press, Inc.
- Article DOI: 10.22361/jfmer/73879

Please let me know if you have any other questions.

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Subject: IFMA WWP Europe 2017 - Proof of Conference Proceedings

Dear Prof. Smithwick,

Prof. Redlein and me published the articles "Current Labour Market Situation and Upcoming Trends in the European Facility Service Industry" and "The Development of the Outsourced Facility Service Industry in Europe" in JFMER conference proceedings and journal.

We need to add those publications to our list and we need further information for that:
- The ISBN/ISSN numbers
- A confirmation that this is a double-blind review process
- The page numbers
- The publisher

IFMA World Workplace Europe

Academic and Research (A&R) Track

Stockholm, Sweden

30 May 2017

Conference Proceedings

IFMA World Workplace Europe
A&R Track Conference Proceedings
30 May 2017

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Current Labour Market Situation and Upcoming Trends in the European Facility Service Industry

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Introduction

Industry 4.0, the ongoing automation and digitalization will lead to enormous changes on the labor market. The changes will affect different industries differently. Which industry is affected to which extend is not yet completely clear (Bowles 2014). Studies show different scenarios. However, experts agree that the world of employment is not going to stay the same and shifts ins skills are needed (World Economic Forum 2016). This also accounts for the Facility Service (FS) industry. In order to be prepared for future, to make sure that the necessary skills on demand and supply side of the labor market meet, certain steps have to be undertaken. The first step is to assess the size of the FS industry in terms of labor market. Only by knowing how many people will be affected by changes, government and industry can take actions to enable employees to prevent unemployment and to make sure companies can find well-trained employees.

The number of employees in FS is unclear until now. With the aim of creating transparency in and awareness for the FS market, there have been many attempts to estimate the size of the FS sector in the EU, but rather in monetary terms such as turnover and not employees. (Jensen 2010, EuroFM 2011). Besides, those studies rather focus on national markets. This article provides an answer to this question and builds the base for further analysis and future-action plans.

One reason why the size of the FS sector is so unclear, is that FS contain many different services and there are different opinions on which services really belong to FS. (Thomzik et al. 2010)

FS are defined as "support provision to the primary activities of an organization, delivered by an internal or external provider" (British Standards 2007). FS are a support business, which is not separately presented in the statistical classification of economic activities in the European Community (NACE Rev.2) (European Commission/Eurostat 2008). Structural business statistics by the European Commission and the national statistical institutions in the EU offer reports on employment, but are based on this structure. (Statistik Austria 2016). So the FS industry is not separately presented in those reports. The statistical classification of economic activities of 2002 still listed FM in the description of the activities as a part of "Management of real estate on a fee and contract basis" (European Commission/Eurostat 2002). However, in Germany's version of this NACE structure this position did not even include the important Facility Services "cleaning" and "maintenance" in contrast to the European structure. (Statistisches Bundesamt 2003). This demonstrates the different views on what counts into Facility Services and shows that the understanding of FS in 2002 and 2003 really does not reflect todays definition.

In 2002 a European Norm for Facility Management (FM) was created to make cross-border benchmarking possible. In this norm FM was defined and further norms about FM-agreements, quality, taxonomy and measurements were developed. The technical Committee CEN/TC 348 "Facility Management" also published the EN 15221-4:2011 that lists which services and activities are considered FS. They are bundled in Facility products. This way FS can be trans-nationally compared (Jensen 2010, Österreichisches Normungsinstitut 2012). For this study, the activities of the EN-15221-4:2011 are matched with the industries of the structural business statistics by the European Commission to determine the number of employees in FS.

Based on this approach this paper provides results for the four biggest national economies of Europe (measured by GDP) and the EU as whole. The study includes the outsourced services for all types of buildings and infrastructure (e.g. business buildings, private housing). The pace of the predicted changes in the labor market caused by industry 4.0 is also unclear. Some experts suggest, that it will be a slow transformation, that has already started, some predict rapid changes (Brzeski, Burk 2015, World Economic Forum 2016). Therefore, the development from 2008 until 2014 is analyzed, as long as the data base is sufficient.

Method

In a first step, the relevant services for FS were identified to assess the number of employees in FS: The relevant activities from the EN 15221-4 were used for this identification, in order to provide a widely accepted, European-wide picture of the FS industry. Those activities from the EN 15221-4 were compared to the statistical classification of economic activities in the European Community (NACE Rev.2) (European Commission/Eurostat 2008). Then the relevant industries for the usage and operation of buildings were selected from NACE. The relevant industries were assigned to two different groups:

- Typical Facility Services for the operation of business and residential buildings
- General Facility Services and other relevant industries

Typical Facility Services according to EN15221-4 include services such as cleaning, maintenance, janitorial services, security services, landscape service activities and other services. This list was mapped with the NACE structure on the most detailed level. Then the identified items, which are selected parts of the NACE industry codes D35, F43, H53, I56, L68, N80, N81 were included.

General Facility Services and other relevant industries consist of relevant industries for building and infrastructure operation out of the NACE which cannot be assigned clearly to EN15221-4 services. From the NACE structure parts of the industries water supply, sewerage, waste management and remediation activities (section E), office and administrative and support services (N82) and repair and installation of machinery and equipment and furniture (C33 and S95) are included in this group. Those two groups (typical and general FS and other relevant industries) are added up for the category "Facility Services in total".

The second step consisted of an analysis on the availability of data sources and the selection of the most suitable and reliable data. To ensure comparability for European countries the Annual detailed enterprise statistics for industry, services, trade and construction were selected. They are published online by the European Commission in structural business statistics (European Commission/Eurostat 2017). Structural business statistics present structure, behavior and performance of economic activities on the most detailed level of the statistical classification. It covers the NACE sectors B-N and S95, the European Commission uses the term business economy for those sectors (European Commission/Eurostat last

modified 2015). Agriculture and personal services are not part of it. Those statistics include a huge amount of data and ratios such as turnover, value added at factor cost, employees, investment rate etc. The National Statistical Institutions collect the data from enterprises (European Commision/Eurostat 2015). The data represents the market producers of the industries B-N and S95 (Statistik Austria 2016). The financial sector (K) is only recorded from 2013 onwards and even in 2013 and 2014 there is data (partially) missing in certain countries. So the financial sector is excluded because it would provoke a break in time series and would negatively influence the comparability of the countries.

The number of employees in the FS industry and the number of employees in the industries defined by the European Commission are presented in percent of all employees B-N, S95 excl. the financial sector K, to make the comparison between different industries and countries easier.

The four largest economies of the EU measured by GDP (Germany, United Kingdom, France and Italy (Statista 2016)) are selected.

Discussion of Data Availability and Quality

In order to receive reliable results only countries are included in the analysis which have less than four missing values in the relevant data set. For performing plausibility checks other data from Eurostat was additionally used, mainly value added at factor cost, because the relation between employees and value added is a good indicator for data validation. "Value added can be calculated from the gross operating surplus by adding personnel costs." (European Commission/Eurostat last modified 2013). Minimum, maximum, average and median of the number of employees and of value added at factor cost per employee of the single countries are examined. The industries behave very consistently over the examined timeframe. So the checks were performed for the EU for all available years and for the other countries only for 2013. Outliers and their causes were investigated carefully. The plausibility checks showed that all data could be used for the calculation, only the financial sector has to be omitted. In the sectors central banking, other monetary intermediation and insurances data is also missing in many countries and for the EU. As it is very important to have the same point of reference for a comparison over time and for different countries, the financial sector is excluded.

Results

The first graphic shows the number of employees of all industries and the FS sector in the EU from 2011 to 2014. The time series is restricted to this time frame because data for the EU is only provided from 2011 on. In the EU in 2011 two subcategories for FS are missing, that explains why the FS sector is lower in 2011. The graph shows that wholesale and retail trade is the most important industry, followed by manufacturing. In terms of employees the FS sector is even the third largest in the EU. Compared to the whole business economy there is a slight constant downwards trend in the industries wholesale and retail trade, manufacturing and construction. The FS sector, accommodation and food service activities, information and communication, real estate and administrative and support services have been increasing slightly in the past years relatively to non-financial business economy. Unfortunately, it is not possible to say if changes in industries were due to automation, because there are too many other influencing factors, such as investments. However, this graph shows quite clearly, that the FS industry is very large and that changes due to industry 4.0 will affect many employees. The FS sectors employs almost 14.5 million people. This shows that it is absolutely necessary to analyze the foreseen changes for this sector even more and to take action to make the employees in FS ready for the future.
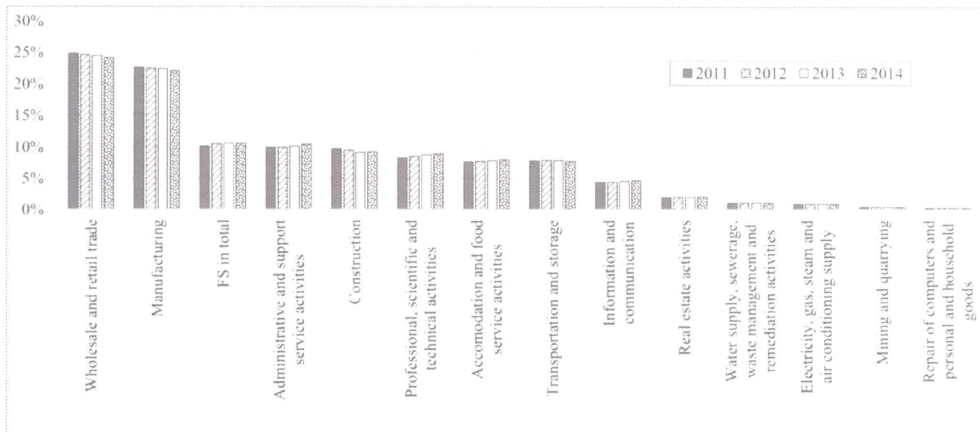
Figure 1: EU (28 countries), number of employees of the industries as a percentage of all employees NACE B-N, S95 excl. K, own calculation on the base of annual detailed enterprise statistics (European Commission/Eurostat last modified 2017)

Figure 2 shows the number of employees in business economy B-N, S95 excl. K (financial sector). In terms of employees, economy in Germany has been increasing year by year, while economy in Italy has been constantly going down. The economic crisis in 2009 doesn't show in the number of employees. Only in the UK employment is a little lower in 2010, 2011 and 2012. Analyzing such a time series using value added at factor cost shows the economic crisis in 2009 very well in the UK, in Italy and in France.
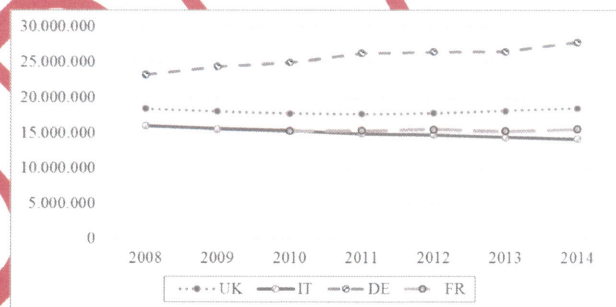

Figure 2: Number of employees, non-financial business economy (NACE B-N, S95, excl. K), own calculation on the base of annual detailed enterprise statistics (European Commission/Eurostat last modified 2017)

Figure 3 shows employees in FS in total by absolute numbers. In Germany the number of employees in FS is increasing constantly same as the whole non-financial economy. In Italy the number of employees increased very slightly in 2009, followed by a continuous downwards trend. Due to missing values, the time series in the FS sector in France and the UK are incomplete and cannot be interpreted very well. The data of earlier years and 2014 in the UK and France show that there were no drastic changes. Figure 3 shows that there have not been dramatic losses of jobs in FS until now, only in Italy there is a decrease, which goes along with the rest of economy.
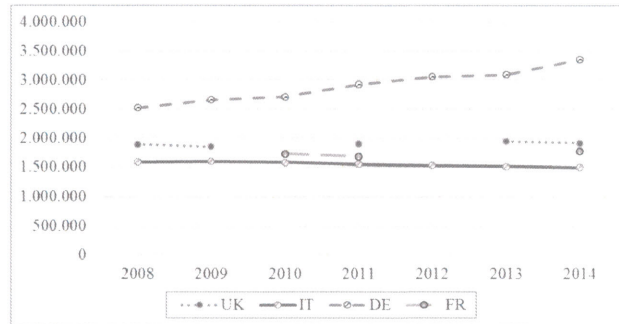
Figure 3: Number of employees, FS in total, own calculation on the base of annual detailed enterprise statistics (European Commission/Eurostat last modified 2017)

The total number of employees for business economy (B-N, S95, excl. K) in 2014 is 135,601,377. Figure 4 shows the development of the FS sector compared to the whole economy. Employees in FS are presented as a percentage of all employees in the non-financial business economy from 2008 till 2014. Due to missing values the time series of the EU, the UK and France are not complete and values in 2011 in the EU and France are a bit low. Still the graph can be examined very well and shows an interesting development. In the whole EU, in Germany and in Italy the percentage of employees in FS is increasing compared to the whole business economy year by year. It must be noted that the number of employees includes part-time and full-time workers.
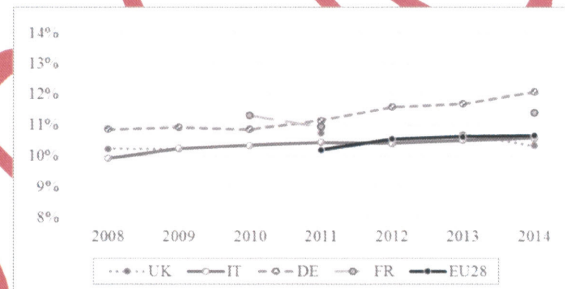

Figure 4: Employees in FS in total as a percentage of employees of NACE B-N, S95, excl. K, own calculation on the base of annual detailed enterprise statistics (European Commission/Eurostat last modified 2017)

Impact of Digitalization on FS (Literature Review)

Many studies have been published on employment change. In 2013 Frey and Osborne published a study, in which they showed their results on how susceptible different jobs were to computerization in the US. The basis was an analysis of technological progress in machine learning, mobile robotics and labor economic literature. On this basis they determined the probability of computerization for 702 different occupations. They estimated that 47% of jobs would probably be substituted by computers. Furthermore, they discovered that low-wage and low-skills jobs are more likely to be affected. They also included a list of occupations and their probability to be computerized. A look at the different occupations shows that typical FS activities are at very high risk: E.g. Installation, maintenance, repair work has a 50%

probability to be automatized, janitors and cleaners have a probability of 66%, and first-line supervisors of housekeeping and janitorial workers show a probability of 94%. (Frey, Osborne 2013).

Bowles extended the study by Frey and Osborne and applied their data to the European market. A translation from the Standard Occupational Classification (SOC) used for the US to a system used in the EU, (International Standard Classification of Occupations (ISCO), used by the International Labor Organization (ILO)), was necessary. The result showed that 54% of jobs in the EU are at risk to be computerized. (Bowles 2014).

The study by Grey and Osborne was also transferred to Germany. Due to the differences in the classification systems and the restricted availability of labor market data, adaptions had to be made. Results showed that 59% of jobs are at risk in Germany. Administrative activities like secretaries have the highest risk, followed by unskilled workers. (Brzeski, Burk 2015).

The world economic forum published a report on the future of jobs in January 2016. They predict that in the countries covered by the report 5.1 million jobs will be lost between 2015 and 2020. The report covers 15 major developed and emerging economies in the world, in Europe France, Italy, Germany and the United Kingdom are included. The study predicts that 7.1 million jobs will be lost and 2 million jobs will be created. Two thirds of the jobs lost will affect office and administrative workers. The jobs gained will be in areas like computer- and mathematical-, architecture- and engineering-related fields. The report also shows that the labor market will demand for different skills in future. In 2020 the top skill is complex problem solving, followed by critical thinking and creativity. Emotional intelligence and cognitive flexibility will also be more important. Coordination with others, people management, quality control and active listening are examples for tasks that will be less important. In Italy 48% of core skills will change, in France 38%, in Germany 39% and in the UK 28%. (World Economic Forum 2016)

Buildings can provide information on usage and condition over smart technologies. Sensoring and robotics are being used more and more. Important FS providers are very aware of those changes. E.g. ISS and IBM have a global partnership for digitalization of FS. Granderath explains that sensoring has been getting really cheap in the past years and so international FS-companies have to get ready to apply this technology, to be able to provide modern services for customers. This includes investment in sensors for buildings. Big-Data-Sensors are of a high potential and could change FM completely. Many intelligent systems are already in use and Granderath explains that in future many more employees, who are able to handle those systems, are needed. (Granderath, Bilski-Neumann 2016)

Conclusion

In terms of employees the outsourced FS industry is very important: it is even the third largest sector in the EU. Compared to the whole non-financial business economy there is a very slight constant downwards trend in the largest industries wholesale and retail trade and manufacturing. The FS sector, accommodation and food service activities, information and communication, real estate and administrative and support services have been increasing very slightly in the past years relatively to non-financial business economy. It is not possible to say if changes in industries were due to automation. Literature review shows that changes due to industry 4.0 are going to affect many employees in FS. Therefore, it is absolutely necessary to analyze the foreseen changes for this sector further and to take action to enable employees in FS.

The FS industry is the third largest in the EU in terms of employees. Considering that services, which are made in house, are not even included, it gets more than clear, that a huge number of employees will be affected and that now is the time to take action.

In the whole EU, in Germany and in Italy the percentage of employees in FS is increasing compared to business economy year by year. While in Germany the whole business economy is constantly growing, in Italy it is continually going down.

Furthermore, it must be noted that services around buildings and infrastructure cannot be off-shored. This study only includes the outsourced services, internally produced services are excluded.

There is still further research necessary in this field: It is necessary to examine the foreseen changes further and apply it to the FS sector and it is important to take action to enable employees in FS. Besides, it would be interesting to evaluate the structure of employment within the FS sector and to compare the different areas of FS to get even more insights.

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