

## FACILITY MANAGEMENT– TREND FOR MANAGEMENT OF SUPPORTING BUSINESS PROCESSES AND INCREASING OF COMPETITIVENESS

<sup>a</sup>PAULA KAMODYOVÁ, <sup>b</sup>MAREK POTKÁNY, <sup>c</sup>JANA KAJANOVÁ

<sup>a</sup>*Matej Bel University of Banská Bystrica, Faculty of Economics, Tajovského 10, 975 90 Banská Bystrica, Slovakia*

<sup>b</sup>*Technical University in Zvolen, Faculty of Wood Sciences and Technology, T. G. Masaryka 24, 960 01 Zvolen, Slovakia*

<sup>c</sup>*Comenius University in Bratislava, Faculty of Management, Odbojárov 10, 820 05 Bratislava, Slovakia*

email: <sup>a</sup>paula.kamodyova@gmail.com, <sup>b</sup>potkany@tuzvo.sk, <sup>c</sup>Jana.Kajanova@fm.uniba.sk

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**Abstract:** The search for the potential for cost savings, gaining more time for the core business, but also increasing the quality of outsourced activities is offered through coordinated management of facility management support processes. Facility management is a vital part of successfully operating a companies, because joins people, processes, the building and technology. The aim of this article is to provide the basis for the creation of an information base explaining the essence of facility management and point to the various dependencies and potential benefits from using facility management in the Slovak business environment. The methodology used a questionnaire survey and selected statistical tools for assessing the representativeness of the sample and evaluating the tested dependencies. Our research questions did not confirm a significant relationship between the capital structure of the company and increasing interest in these services by a growing number of customers. Our research was focused on pointing out the current level of offer of facility services in the Slovak business environment. The methodology used a questionnaire survey and selected statistical tools for assessing the representativeness of the sample and evaluating the tested dependencies. Our research questions did not confirm a significant relationship between the capital structure of the company and increasing interest in these services by a growing number of customers.

**Keywords:** Cost savings, facility management, facility services, outsourcing.

### 1 Introduction

In the recent years, the search for approaches and opportunities to reduce costs in many companies has focused on the management of support processes. The use of outsourcing principles in the implementation of facility management is becoming a certain trend solution. Awareness of facility management is growing and is being used more and more every year in the terminology of the European business environment. An interesting fact is that the issue of facility management is not only in Slovak and Czech Republic, but we dare to say that it has not yet been comprehensively processed in world literature. It contains several studies published in available worldwide databases. On the one hand, the region of Central and Eastern Europe is considered an area where the level of facility management is only in the beginning of realizing its potential compared to the countries of Western Europe. On the other hand, many companies in the region are increasingly focusing on streamlining the coordination of the management of ancillary business processes to create the potential to increase their competitiveness. For this reason, there is space in companies for the introduction and use of coordinated management of auxiliary and service processes, the so-called facility management.

Available research studies in the field of facility management currently deal with many areas related to the concept of facility management, especially with its use based on the principles of outsourcing. Ikediashi et al. (2013) present empirical testing of a structural equation model for the analysis of risk factors associated with the outsourcing of equipment services. In the paper of Lok & Baldry, (2016) it is possible to get acquainted with the solutions of the structure of the category of outsourcing relations between clients and service providers in terms of facility management. In his study, Bröchner (2017) deals with the determination of a method that is suitable for measuring direct productivity in relation to facility management providers, while Roper (2017) evaluates the progress in the management of auxiliary and service processes in the company. Vetráková et al. (2013) point to the potentials of facility management for the

competitiveness of companies in a specific sector of companies in the forestry timber complex. To retain or even increase competitiveness of companies the use of coordination approach of supporting business processes in terms of using outsourcing principles is used. Based on the above, the paper focuses on the presentation of the basic classification of the level of the current offer and the trend of the service facility portfolio in the Slovak business environment with an assessment of their dependence on the capital structure and duration of the provider's market.

### 2 Literature review and current market situation of facility management in the Slovak business environment

Currently, the facility management is considered one of the fastest growing technical and operational disciplines worldwide. Frost & Sullivan (2016) predict that by 2025, the global facility services market will exceed \$ 1 trillion using outsourcing principles. Facility management is becoming increasingly established in the terminology of the European business environment. It is a promising managerial approach, which seeks a detailed approach to the management of supporting business processes in order to increase the level of their quality, reduce risks, in order to create the potential to increase the competitiveness of the company. In his research, Sari (2018) states there is a significant difference in the development of facility management in Western European countries compared to Eastern and Central European countries. FM industry, however, is being a relatively new, which provides a huge opportunity for development, however research on this subject is still perceived as limited.

In his study, Štrup (2014) states that the very concept of facility management is considered from a terminological point of view to be a relatively new field which can be known in a simpler form from ancient times. These were food preparation services, home cleaning, or transport to the facilities needed for life. The form of security has gradually changed from slavery to today's commercial customer service. Kuda et al. (2012) and Vagner & Bartošová (2016) state that the term facility management is dated to the 1970s in the United States. Facility services were first associated with the field of cleaning and janitorial work, and gradually this management system expanded with its development. The portfolio of services has been gradually expanded

Worldwide, facility management did not begin to develop until the 1990s, when the International Facility Management Association (IFMA) was founded, which supports more than 24,000 members in more than 100 countries. The role of IFMA is to help with professional growth through various programs, training courses, conferences, and support for the implementation of research that enhances the knowledge and skills of facility managers (IFMA, 2018..

The definition of FM's substance has historically undergone many modifications. We provide at least a few comparisons in the overview. As Pitt & Tucker (2008) emphasizes, facility management is the integration and harmonization of non-core processes, including those related to the space needed to operate and maintain businesses to support an organization's core objectives. Noor & Pitt (2009) emphasize that FM can create a surroundings that is unified for the management of a company's primary operations, adopting and integrating a view of services in order to increase the quality of defined core processes. According to Dvořáček & Tyll (2010), FM represents a special form of outsourcing and is focused primarily on the support activities of the organization in order to reduce their costs and increase their quality. In their work, Junghans & Olsson (2014) discuss FM as a new scientific discipline, considering it as integrated workplace management to improve organizational performance. However, the main part is the IFMA definition, which defines FM as a discipline involving several disciplines to

ensure the functionality of the built surroundings by integrating people, place, processes and technologies. Somorová (2017) state that according to this definition FM is characterized by the interconnection of the three areas - axis of facility management (Fig. 1). Later, a fourth area was added - technologies that provide the technical background of the company, the functionality of business processes and make it easier for employees to perform their duties.

Figure 1: Axis of Facility Management



Source: Potkány et al. 2015.

The form of facility management and their coordination can be solved by using the principles of insourcing, outsourcing or a combination of them. (Potkány, 2015). However, each of the available forms requires a coordinated approach at the level of defining the competencies and powers of the facility manager. However, the most common form is outsourcing, which, with the right setting and compliance with the conditions of the service-level agreement, creates a great potential for positive effects of facility management. It is about saving costs, gaining more time and attention to managing the core business, increasing the quality of processes with the transfer of risk to the service provider. Similar arguments in their work presents Choi et al. (2019); Kim et al. (2018); Redlein & Jensen (2017); Hitka et al. (2017); Lahiri (2016); Hitka et al. (2016) and Olsovska et al. (2016).

In theory, it is possible to encounter several possible classifications of service facilities. For example, Kuda et al. (2012) propose classification in two respects. One concerns space and infrastructure and the other people and organizations. The subject standard STN EN 15221-4: 2012 states that the categorization structure should be closely linked to business processes so that user access to information is managed intuitively. Petty (2016) in his work presents the classification of facility services to the hard services (related to the object where the services are used) and soft services (associated with employees and the conditions of their work). For our needs, we will use the categorization of supporting business processes, in which the application of facility management principles is possible, according to the Slovak Association of Facility Management (SAFM). This classification consists of 3 main groups, namely technical services, support services and business services. For better clarity, we present a more detailed specification of the portfolio of offered service facilities:

- technical services: technical administration and maintenance, control engineering, energy management, HVAC (heating, ventilating, air-condition) external structures, repair and regular service, CAFM (Computer-Aided FM) and other technical services,
- support and soft services: data services, cleaning, cleaning, including special and external, security services, waste management, catering, vending, canteen management, reception, postage, printing, garden and landscaping, fleet management, fire protection, parking services, event, workshop and other support services,
- entrepreneurial (Business) so-called administrative services: accounting, controlling, training, health care, other education, property management, planning, use of

premises, design, purchasing, insurance, and other FS Business services (SAFM, 2018).

The results of the SAFM study in cooperation with Interconnection Consulting (2018) focused on a comprehensive analysis of the facility management market in the Slovak business environment show that the annual performance increased from 1.211 billion. € to 1.271 billion €. As can be seen from Fig. 2 soft and support services have a dominant share in the market of 21.10% in 2018. The second most frequently used facility management services are technical services in shares of 39.50%. The assumption of using this type of services by 2021 is with a forecast of overrun of 40%. With the lowest level of representation are entrepreneurial or administrative services with a share of 8.40% in 2018. However, even here the future potential for their growth is expected (Fig. 3).

Figure 2: Percentage distribution of the facility management

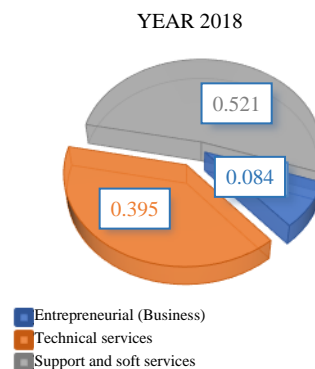
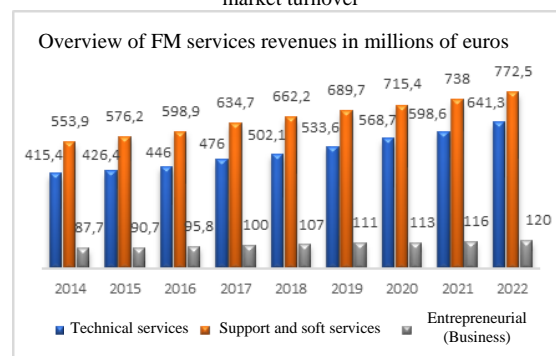


Figure 3: Forecast of the development Facility Management market turnover



Source: Own processing according to SAFM Guide (2018, 2019).

### 3 Research objective and methodology

This paper uses data from a questionnaire survey, which was focused on micro, small and medium-sized enterprises providing facility management services in the Slovak business environment. We specifically addressed all 100 companies associated in SAFM with a return of 52%, which took part in the survey. According to the organization's professional representatives create a decisive share of the service facility market. It is not known how many other companies operate in the market, but according to expert estimates, these are only a few micro and small companies with minimal supply and a negligible share of total turnover. The survey was conducted between September and October 2019 through the virtual support of Google Forms questionnaire - <https://forms.gle/pjWnsQnW8ReDTWhe7>.

For this paper, we focused on the following research tasks:

Is there a statistically significant relationship between the capital structure of a company and the complexity of offering a portfolio

of facility management services? Is there a statistically significant relationship between the length of activity of facility service providers in the market and the growing interest in these services by the number of customers? We were also interested in question: do facility service providers prefer some potential facility management customers benefit?

To evaluate the classification of enterprises we used classification by European Commission Recommendation 2003/361 / EC of 6 May 2003, as follows Medium-sized enterprises, small enterprises and micro enterprises by staff headcount.

Depending on evaluation research task we used statistical tools for evaluation, as Fisherov exaktný test, Spearmanov Rho test a McNemar test.

Ostertagová (2012) states that Fisher's exact test verifies the null hypothesis, which states that the shares of the two basic sets are the same, i.e. the variables are independent. The P-value of the Fisher test expresses the probability that, assuming the equality of the proportions of the basic sets, we will select random samples whose absolute value of the difference in the proportions is equal to or greater than our finding. If the P-value is small (most often less than 0.05), we reject the null hypothesis and consider the variables to be statistically dependent.

Hanák (2016) claims that the Spearman Rho test, which is based on the order of variables and gives a statistical dependence of the so-called correlation between two quantities. Unlike Pearson's coefficient, we can also apply it to non-normally distributed data, and it can capture other than just a linear relationship between variables. At the same time, it is not as sensitive to extreme values (outliers) as Pearson's correlation coefficient. In the results of the statistical analysis, the abbreviation CORR is used for this coefficient.

McNemar test uses a paired test of two dependent selections for two binary (alternative) variables, where 1 means the presence and 0 the absence of a character. Kaščáková et al. (2010) state that the null hypothesis of agreement of abundances on the secondary diagonal in the  $2 \times 2$  contingency table is tested:

$$H_0: \pi_{12} = \pi_{21} \text{ oproti } H_1: \pi_{12} \neq \pi_{21}. \quad (1)$$

If the condition  $n_{12} + n_{21} > 25$  applies and if the null hypothesis is valid, the following statistic has an approximately  $\chi^2$  distribution with one degree of freedom.

$$Q_M = \frac{(|n_{12} - n_{21}| - 1)^2}{n_{12} + n_{21}} \quad (2)$$

During the test of representativeness of the sample, we used Pearson's chi-square test of compliance, while the representativeness was verified on the sample of the scope of the providers of facility services in the relevant region of Slovakia. The relation for  $[\chi^2]^2$  test of good agreement with  $(k-1)$  degrees of freedom can be quantified according to relation 3. If the relation  $\chi^2 > \chi^2_{1-\alpha}(k-1)$  will apply, then it is possible to determine the assumption at the level of significance  $\alpha$  reject. Thus, if the assumption is formulated so that the difference between the baseline and the sample is statistically insignificant, by rejecting this hypothesis, we can argue that the difference between the baseline and the sample is unlikely to be due to random selection.

$$\chi^2 = \sum_{i=1}^n \frac{(n_i - np_i)^2}{np_i} \quad (3)$$

Where:  $n_i$  - observed frequency of occurrence,  $np_i$  - expected numbers of research objects.

#### 4 Results and discussion

The survey addressed companies associated in SAFM, which participated 52 companies of the total 100 companies. Pearson's chi-square test of goodness of fit, which was used for the representativeness test, is presented in Tab. 1. Representativeness was verified on a selection feature of the scope of service providers in the relevant region of Slovakia, while some of the companies offered their services in different regions of Slovakia.

Tab. 1: Pearson test of good conformity according to the regional affiliation of the companies

Region of Slovakia	$np_i$		$n_i$		$(n_i - np_i)^2$	$(n_i - np_i)^2 / np_i$
	number	%	number	%		
Bratislava region	40	20.41	25	21.00	0.35	0.017
Region of Banská Bystrica	20	10.20	18	15.13	24.30	2.38
Region of Trnava	21	10.71	15	12.61	3.61	0.34
Region of Prešov	18	9.18	15	12.61	11.76	1.28
Region of Košice	22	11.23	14	11.76	0.29	0.03
Region of Žilina	21	10.71	13	10.92	0.05	0.00
Region of Nitra	28	14.29	10	8.40	34.69	2.43
Region of Trenčín	26	13.27	9	7.57	32.49	2.45
Total	196	100	119	100		8.927

Source: Own processing.

Based on the input data of the Pearson Test, it can be stated that the value of  $\chi^2$  at the significance level  $\alpha = 0.05$  at 9 degrees of freedom  $(10-1)$  is 16.919. As the results of our testing show, the value of  $\chi^2$  is at the level of  $8.927 < 16.919$ . Based on this test, we state that our sample can be considered as representative based on the sample.

In the first research question, we tested the existence of a dependence between the capital structure of the company and the complexity of the offer of the portfolio of facility management services. We assumed that with the increasing share of foreign capital, the breadth of the offer portfolio of the service facility will also increase adequately. We verified the obtained results by means of Fisher's exact test at the level of significance  $\alpha = 0.05$ . The test result was p-value = 0.193 (Table 2). This means that we were unable to verify the statistical dependence between the capital structure of the company. Within our sample, we can state that there is no dependence between the capital structure of the company and the complexity of the offer of the portfolio of facility management services. This statement is positive towards companies with domestic capital, whose portfolio of facilities services is thus fully competitive with companies with foreign know-how in the field of facilities management. Practice firms confirms, that soft cleaning and tidying services, security services, catering and vending, as well as technical management and maintenance services for buildings have a dominant share. Other types of services are less represented in the offer, but their growth potential is expected. Complexity of Offered FM'Services in the Slovak Business Environment in their study dealt Potkány & Kováč (2015). Unfortunately, this statement of ours cannot be compared with the results of similar studies by other authors, because analyzes of similar research are not published in the available databases. But the relationship of the capital structure was investigated, for example, by Stryckova (2017) in dependence between the key indicators of business competitiveness: leverage and corporate performance. Also Chadha & Sharma (2015) presented the impact of capital structure and firm performance of Indian companies, as well as Bayaraa (2017) which pointed out the influence of capital structure to the financial performance determinants of Mongolian companies.

Tab. 2: Chi-Square Tests

	Value	df	Asymptotic Significance (2 sided)	Monte Carlo Sig. (2 sided)		Monte Carlo Sig. (2 sided)			
				Sig.	99% Confidence Interval		Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound		Lower Bound	Upper Bound
Pearson Chi- Square	68.152 <sup>a</sup>	36	.001	.075 <sup>b</sup>	.068	.081			
Likelihood Ratio	31.144	36	.699	.330 <sup>b</sup>	.318	.343			
Fishe's Exact Test	48.839			.193 <sup>b</sup>	.182	.203			
Liner-by- linear Assoc	6.573 <sup>c</sup>	1	.010	.010 <sup>b</sup>	.007	.012	.009	.007	
N of valid Cases	52								

a. 49 cells (94.2%) have expected count less than 5. The minimum expected count is .02.  
 b. Based on 10000 sampled tables with starting seed.  
 c. The standardized statistic is 2.564.

Source: Own processing.

In another research question, we assumed a statistically significant relationship between the length of operation of facility service providers in the market and the increasing interest in these services by the number of customers. Our assumption was based on the fact that the longer the company operates in the market, the greater the interest in providing its services. This is reflected in the increasing number of customers in relation to its performance. A similar dependence but following the impact of the insurance costs on the competitiveness of food industry enterprises in the context of the existence on the market dealt in their study Shirinyan & Arych (2019). Also, Kusumastuti & Sutoyo (2019) tried to point to obtaining law protection attempt for SMI in Indonesia in inter alia, depending on the length of the market existence. This assumption was the logical result of the fact that all the important companies in the given market, which we analyzed, participated in our survey. Using the Spearman test, we found at the level of significance  $\alpha = 0.05$  and the resulting p-value of 0.091 (Table 3), our assumed dependence was also not confirmed.

Tab. 3: Spearman's Rho Tests

		Existence on market	Interest in services
Spearman's Rho Tests	Existence - Correlation Coefficient Sig. (1-tailed) N	1.000 52	-.091 .276 52
	Interest - Correlation Coefficient Sig. (1-tailed) N	-.091 .276 52	1.000 52

Source: Own reaserch.

Within our sample, we can state that there is no relationship between the duration of the service facility providers in the market and the growing interest in these services with a growing number of customers. This finding is quite interesting also due to

the fact that the scope of the facility of companies on the Slovak market exceeded 10 years. The argument for our statement was mainly the fact of the increasing share of revenues in the given segment and, in fact, the stable number of providers of these services in recent years. The question remains whether the dependence would not be confirmed by expanding the sample of respondents, because at the level of significance level of 10% the statement could be accepted.

We were also interested in the research task, which of the potential benefits of using facility management services based on the principles of outsourcing is considered important by providers of facility services. Businesses had a choice of several options logically based on the arguments they make in their outsourcing work (Edvardsson & Teitsdóttir 2015; Iqbal & Dad 2013; Ikediashi et al. 2013; Dvořáček & Tyll 2010; Di Gregorio et al. 2009). Potential benefits from the use of facility management services are presented in Tab. 4. The order of response preference was determined by the McNemar test.

Tab. 4: Potential benefits of using facility management services

As part of the offer of your services, which of the potential benefits for your customers do you consider important?	n	%	Average ranking
Cost savings	42	26.9%	5.33
More time to solve the main subject of business	35	22.4%	4.86
Improving the quality of activities performed	31	19.9%	4.59
Increasing the company's performance and profit	22	14.1%	3.98
Transfer of risk to the service provider	12	9.0%	3.44
Gaining expert know-how from outsourced activities	10	6.4%	3.17
Other	2	1.3%	2.63
$\Sigma$ sum of answers	156	100%	
Friedman test	p-value = 0.000		

Source: Own processing.

The results of the McNemar test at the significance level  $\alpha = 0.05$  and the resulting p-value of 0.000 identified the 3 most important potential benefits that should influence the opinion of customers in favor of the application of outsourcing principles in the use of facility management services. These include cost savings, gaining more time to manage the core business as well as improving the quality of activities performed and increasing the company's performance. This also confirms the results of many studies (Iqbal & Dad 2013; Vetráková et a. 2013; Jyoti et al., 2015; Lopez 2014; Rainborn et al. 2009), which deal with the use of outsourcing principles in the management of enterprises in connection with increasing the performance and competitiveness of the analyzed enterprises.

**5 Conclusion**

If a company wants to be successful in the market and maintain its position in the competition, it should, in addition to revealing potential reserves in costs, also monitor current management trends. The issue of management trends in companies is also dealt with by the authors Dobrovič, Kmeco, Gallo, Gallo jr. (2019), who emphasize the use of the most comprehensive management tools that evaluate and improve the overall performance of the company and thus is a model of excellence EFQM.

The part of economy also includes SMEs operating in markets, which must be competitive with large companies, which causes managers to look for solutions to the progressive development of the company and build a competitive position. One such method is operation within group purchasing organizations. The analysis of Zimon (2018) found that the selection of a suitable

organization for group purchases has a great impact on the financial situation of the company - the dynamics of revenues, costs, liquidity and profitability and can thus become competitive. Increasing customer satisfaction and achieving more reliable production are among the next steps to achieve high competitiveness. The paper by Hajda, Andrejkovič, Mura (2014) shows the proposed experiments as a method of reducing errors in order to improve business processes, reduce costs and thus improve market position and the subsequent opportunity to offer the customer a lower selling price.

Another of the possible popular worldwide managerial approaches is the use of coordinated management of supporting business processes through facility management using the principles of outsourcing. In this document, we present the available classification and the current level of service facilities in the Slovak business environment with an indication of their possible future growth. We also examine the dependence of the breadth of the facility's portfolio of services on the capital structure of Slovak companies providing these services, as well as the possible dependence of the length of operation on the provider's market and the growing number of customers. This is an initial survey in this area, which has not yet been carried out to such an extent.

In our case, we used the question survey and this paper utilizes 52 facility service companies that are associated in SAFM. Despite the first impression of the low number of companies in the sample, their representativeness is verified through Pearson's test of good agreement according to regional affiliation. However, the basic set consists of only a little more than 100 companies and is a certain limit of this contribution, which we did not manage to fulfil, despite great efforts. The dependence of the monitored variables was not confirmed by the selected tools of statistical analysis. The reason is probably only the short operation of companies in the market (mostly less than 10 years) and the effort to constantly expand the portfolio of services as well as raising awareness of the effects and principles of FM in the professional public. Through the survey, we pointed out the current level and growth potential of selected types of services in the classification of technical, soft and support as well as business services, which currently generate more than €1.27 billion in market turnover. Positively and with practical significance, we have revealed that the most preferred potential benefits of FM implementation are cost savings, gaining more time to manage the core business and improving the quality of activities performed. It is certainly possible to direct these positive effects towards increasing the performance of companies. The proposal of the methodology of how it would be possible to measure the increase in performance using the principles of outsourcing in management is provided by the work of Potkány et al. (2016). This applied procedure can eliminate the risk of side effects or ideas of FM implementation to an acceptable level, at least in the area of not achieving the required cost savings. The research results will be subsequently used in the analytical part of the dissertation „Perspectives of Facility Management in small and medium-sized enterprises” and will be complete questionnaire survey from other side – demand of facility management.

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**Primary Paper Section: A**

**Secondary Paper Section: AE**