

**THE ACADEMY OF ECONOMIC STUDIES OF MOLDOVA**

By title of manuscript  
**C.Z.U.: 005.6:338.46(043)**

**LITVIN EUGENIU**

**THE PARTICULARITIES OF FACILITY MANAGEMENT IN THE  
PROVISION OF SERVICES**

**SPECIALTY: 521.03 – ECONOMY AND MANAGEMENT IN THE FIELD OF ACTIVITY  
(Social and Economic Sciences)**

**Summary of the doctoral thesis in economics**

**CHIȘINĂU, 2023**

**The thesis was developed within the AESM Doctoral School,  
“Management and entrepreneurship” department, Academy of Economic Studies  
of Moldova**

**Scientific supervisor:**

**SOLCAN Angela**, dr. of economics, Associate Professor, AESM

**Committee for the public defense of the doctoral thesis:**

- 1. President – COTELNIC Ala**, dr. hab. of economics, Professor, AESM
- 2. Scientific supervisor, secretary – SOLCAN Angela**, dr. of economics, Associate Professor, AESM
- 3. Official reviewer - PERCIUN Rodica**, dr. hab. of economics, Associate Professor, AESM
- 4. Official reviewer - ALBU Ion**, dr. of economics, Associate Professor, TUM
- 5. Official reviewer - TODOS Irina**, dr. of economics, Associate Professor, USCH
- 6. Official reviewer - ŞARGU Lilia**, dr. of economics, Associate Professor, USEM

The public defense will take place on the 21th of December 2023, at 11:00, in the meeting of the Commission for the public defense of the doctoral thesis of the Academy of Economic Studies of Moldova, G. Bănulescu-Bodoni St., 61, MD-2005, Block A, third floor, Senate Hall.

The PhD thesis and the abstract can be consulted at the Scientific Library of the Academy of Economic Studies of Moldova and on the website of ANACEC ([www.cnaa.md](http://www.cnaa.md)).

The abstract was sent to \_\_\_\_\_2023.

**President of the Commission  
of the PHD thesis:**

dr. hab. of economics,  
Professor, AESM

COTELNIC Ala

**Scientific adviser:**

dr. of economics,  
Associate Professor, AESM

SOLCAN Angela,

**Author:**

LITVIN Eugeniu

© LITVIN Eugeniu, 2023

## CONTENTS

<b>1. Conceptual milestones of the research .....</b>	<b>4</b>
<b>2. The content of the thesis .....</b>	<b>8</b>
<b>3. General conclusions and recommendations .....</b>	<b>24</b>
<b>4. Bibliography .....</b>	<b>28</b>
<b>5. List of the author's publications on the topic of the thesis .....</b>	<b>30</b>
<b>6. Annotation (in Romanian, Russian and English) .....</b>	<b>32</b>
<b>7. Printing data sheet.....</b>	<b>33</b>

## CONCEPTUAL MARKINGS OF THE RESEARCH

**The actuality and the importance of the research topic.** Facilities management is an essential component in the functioning of contemporary organizations, having a significant impact on how they operate and achieve their goals. The main reasons that underline the importance of studying this field are: Operational efficiency, Quality of services, Health and safety, Saving resources, Planning and design, Technology and innovation, Compliance with regulations, Career development, Increasing competitiveness. Facilities management involves the analysis, documentation and optimization of all significant processes, from the point of view of costs, that occur in different real estate objects, taking into account the jobs and the interests of the building owner. At the same time, we are talking not so much about reducing costs in the short term, but about developing premises for reducing costs in future periods. Thus, facilities management can be interpreted as a strategic concept for the organization, management and efficient use of all material resources inside and outside the building. Overall, the study of facilities management is essential to ensure an efficient production process, quality services and a safe and comfortable working environment, having a significant impact on the success and sustainability of organizations. Facilities management, which integrates the fields of real estate development, construction and services, is however viewed by researchers as evolving in tandem with sustainable development management. In today's context, the link between facility management and sustainability is more important, as concern for environmental impact and social responsibility become increasingly relevant. sustainable facilities management aims to use resources responsibly, reduce the ecological footprint and create a healthy and sustainable environment for employees, customers and the community. There is increased interest among facility managers and building owners in integrating sustainability measures into the management of built assets. Facilities managers can also create long-lasting value for an organization by developing, implementing and maintaining sustainable practices. In addition, existing research suggests that implementing sustainability measures in facilities management activities can bring benefits such as reducing energy consumption and waste, while increasing productivity and profits. Previous studies have identified a shortage of human resources, who would have the necessary capacities and skills to implement the sustainability of facilities management. Issues regarding the ability to achieve sustainability in facilities management have been highlighted in several existing research studies as crucial challenges that need to be addressed to promote sustainability. In addition, the following aspects were also highlighted: lack of knowledge on sustainability, refusal of staff and organizations to adopt new business practices to implement sustainability. In this context, it is necessary to better understand the need to improve the capacities/competencies of the personnel in the field of facilities management. Capabilities and competencies are considered key factors in addressing an organization's sustainability efforts. Currently, research focusing on such sophisticated aspects as human resource capabilities and competencies in the field of sustainability of facilities management is scarce. Therefore, it is beneficial to explore issues related to human resource capabilities in the field of facilities management sustainability, thus ensuring sustainability and quality in different service sectors. For example, in the education sector, research shows that in the field of "facilities management" there is a deficiency of knowledge, skills and practices. It is vital to discuss key capacities in the field of sustainability to support academic programs in order to shape professional profiles and "produce" specialists capable of supporting the sustainable development agenda of facilities. In the field of business management, Hind et al. suggested that organizations should develop leaders who possess the necessary competencies to develop and lead sustainable organizations. They emphasized that the understanding and practice of responsible management can be improved by integrating social and environmental considerations into business decision-making processes.

**Identification of the research problem.** The issue of limited capacity to achieve sustainability goals in the facilities management sector has been highlighted as a barrier to be overcome by researchers Hodges et al. This situation has led to better managed efforts towards sustainable development, where the involvement of facilities management functions is necessary, especially in

activities with an environmental and economic focus. For this reason, facilities managers need to understand how the growing importance of sustainability impacts how they fulfill their roles and responsibilities. Sustainability researchers have emphasized the importance of personnel and organizational capabilities in achieving sustainability goals. According to scholar Gloet, to support a sustainability agenda in an organization, there are four key areas of capabilities that need to be developed, namely: learning, roles, responsibilities and strategy. These capabilities are important to ensure that sustainability ideas are part of management's priorities. Van Kleef and Roome also identified the specific areas of capabilities needed to encourage businesses to implement more sustainable practices. These include: systems thinking capabilities, learning and development capabilities, business integration capabilities, social and environmental problem solving capabilities, capabilities in developing alternative business models and methods, networking capabilities and also capabilities to build collaboration. These capacities are essential to strengthen staff competence in managing the issues and challenges of the sustainability agenda. The role of human resources in efforts to implement a sustainability agenda in an organization was also considered by Jeston and Nelis, who noted that the most important components of any business innovation are organizational change management, associated with the impact of human resources and the promotion of staff with the skills and ability to ensure the performance of workplace tasks to a high standard. People within the organization must have the knowledge and skills to be able to continuously improve business processes, as well as to measure and manage business in a way that leads to the success of the organization. Boudreau, Ramstad, Jabbour and Santos argued that more attention should be paid to the contribution of the human resource field to the successful integration of environmental management in an organization, as it has a crucial role in stimulating the achievement of the organization's sustainability goals. According to Govindarajulu and Daily, human resource dimensions play an important role in ensuring the effectiveness of an environmental management system, along with the necessary technical aspects. Therefore, environmental and sustainability management efforts in an organization are a complex process that requires support from human resources and the development of human resources capabilities and skills to guarantee the success of its implementation. In addition, the service industry is known as a labor-intensive sector due to the dependence on the capabilities and skills of workers in their operations and activities. So, we can say that it is necessary for managers in the service sector to consider the knowledge, capabilities, skills and behaviors of staff that contribute to ensuring superior performance both at the individual and at the organizational level. The issue of capabilities in achieving sustainability goals in the facilities management sector has been highlighted by Shah, Shafii, Hodges as a challenge that needs to be addressed. They suggested key steps in developing a sustainability strategy for facilities management. In addition, Elmualim et al. conducted several case studies and developed a platform to exchange best practice on sustainability in facilities management. However, these studies have been limited, focusing on tools and techniques rather than human resource capabilities and skills. Furthermore, the focus of these studies has been mainly on short-term benefits rather than the long-term benefits that can be achieved through changes in human resources. Therefore, there is a research gap in the specifics of facility management in service delivery. The involvement of the MF function is necessary in all aspects, with a special focus on environmental, social and economic activities. Therefore, MF staff and service organizations

**The purpose of the doctoral thesis** The purpose of the doctoral thesis consists in the development and formulation of a conceptual framework regarding the management of facilities in the provision of services focusing, in particular, on the analysis of human resources capabilities and their impact in ensuring the sustainability of this field.

**To achieve the proposed goal, the following objectives are put forward:**

- The complex approach to the concept of facilities management by highlighting both the theoretical and the applied aspect
- Revealing the practices of applying sustainability in the efficiency of facilities management.

- Identification and generalization of international and national experience in the field of facilities management.
- Elaboration of the study on the perceptions of local organizations in the field of facilities management.
- Elaboration of the study on the role of human resources in promoting the sustainability of facility management.
- The application of the interpretive structural model, in the process of determining the skills/capabilities of human resources, necessary to ensure the sustainability of the management of facilities in the provision of services.
- Elaboration of recommendations regarding the implementation of the sustainability of facilities management in the provision of services.

**The research hypotheses emerged from the established objectives and consist of:**

1. Specific capacity factors/competencies will help staff promote sustainable facilities management practices.
2. The use by facilities managers of the identified capacity factors will ensure sustainability in the practice of facilities management in services.

**The novelty and scientific originality of the work consists in:**

1. Development of the concept of facilities management and facilities manager.
2. Defining the notion of "facility management" and "facilitator manager".
3. Determining the particularities of facilities management in the provision of services.
4. Identify the knowledge, capabilities and skills of human resources that would promote sustainability in facilities management.
5. Examining and identifying potential human resource capacity factors, for the implementation of sustainability in the context of the MF.
6. Identify critical factors impacting the gap between human resource capabilities and sustainability in facilities management practices.

**The scientific problem consists in:** substantiating a sustainable practice in facilities management and determining the capacity/competence factors of facilities managers, necessary to implement these practices. Involvement of the facilities management function is required in all aspects, with a particular focus on environmental, social and economic activities. Understanding the drivers of human resource capacity contributes to the establishment of an interpretive structural modeling mechanism that enables human resources to develop new visions to enhance sustainability performance. This research also lays the groundwork for future research, taking a people-centred approach to building capacity and competence in advancing the sustainability agenda.

**The scientific results submitted for support are:** 1. The concretization of the fundamental and specific approaches regarding the notion and particularities of facilities management in the provision of services. 2. Structuring and generalizing international experience in the field of facility management. 3. Identification of facilities management within organizations in the Republic of Moldova (determining, based on the questionnaire, the knowledge and presence of facilities management in domestic enterprises). 4. Formulation of the particularities of facilities management in the provision of services. 5. Development of new methodologies in facility management (use of interpretive structural model and identification of human resource capacity factors in sustainable facility management). 6. Elaboration of recommendations regarding the practical implementation of facility management in the Republic of Moldova.

**Synthesis of research methodology and justification of chosen research methods.** Fellows and Liu state that: "Researchers must decide on the methodological approach to find solutions to the research problem." A study should contain a detailed research design, which can be used as a framework for data collection and observations. In this context, the research thesis topic implies a plan to guide the researcher in using appropriate research methods. Trochim and Donnelly stated that the research project is used to structure the research, display the functions of the major parts of the research

project, and explain the contribution of each part to addressing the central research questions. The likelihood of a research project's success is greatly enhanced when the "start" is properly defined as an accurate statement of objectives and rationale. After accomplishing this, it is easier to identify and organize the sequential steps required to write and then successfully execute the research paper. The type of research used in this doctoral thesis is explanatory. The explanatory nature of the research is demonstrated in investigating the meaning and interrelationships between facilities management in service delivery and human resources. Questionnaire was the main data collection technique used in the research. In this study, two questionnaires were applied, one of which aimed to determine how well-known facilities management is within organizations in the Republic of Moldova. Subsequently, a comparison study was used to explore the views of facilities management professionals regarding the relationship between the critical factors determined by the second questionnaire. Then, the interpretive structural modeling technique was used to analyze the relationships between human resource capability factors and to understand the dependence and power of action of each factor. Also, during the research, a system of methods, procedures, techniques, rules, principles and suitable tools was applied to carry out the research, such as: the principle of causality, the principle of observability, complementarity to provide explanations and make predictions, to build images, ideas, conceptions, hypotheses and theories. For the complete elucidation of the researched topic, the methodology was used that included fundamental and specific approaches regarding the notion, role and essence of facilities management in the provision of services and human resources in ensuring sustainability. During the research, the dialectical method was used with its fundamental elements, such as: analysis, synthesis, induction, deduction, the interconnection of economic facts and their interdependence, but also the methods inherent in economic disciplines, such as: observation, comparison, selection and grouping. The direct support of the investigations to the present research theme is based on the researches of international and national authors in the field.

**The theoretical significance of the work consists** in the presentation of a theoretical and conceptual material of facilities management, as well as its particularities at the level of services.

**The applicative value of the work.** The results of this scientific approach can be used in facilities management organizations and in higher education institutions as theoretical and practical material in management courses.

**Approval of scientific results.** The results of the study were implemented within the "VERIFRUCT" Cooperative of Entrepreneurs. (recommendations regarding the correct management of cold storage and fruit drying were implemented.) and the Center for Innovation and Technological Transfer, ASEM.

## THESIS CONTENT

**Chapter I** with the title "**THEORETICAL FOUNDATIONS OF FACILITY MANAGEMENT**" refers to the analysis of the evolutionary development of facility management, its particularities in the provision of services are determined, its areas of application are identified, the connection between facility management and sustainability is presented

For the first time, facility management began to be used in the 1990s in Europe in such countries as: France, Great Britain, Benelux and the Scandinavian countries. About five years later, this term spread to German-speaking countries. Each of these countries has established its own association for facilitated management [2]. One of the first countries in Europe to establish a national branch of the International Facilitative Management Association (IFMA) was England. It operates in companies that offer a wide range of facility management services. It focuses on building management, asset management, space planning and design, maintenance, labor protection, relocation for various organizations and cleaning services [1].

The first research in the field of studying the evolution of facilitating management in Europe was carried out by Maliene, Alexander and Lepkova in 2008. They mention that, in the case of France, there is no complex concept of facilitating management and the profession of facilitating manager is not described in specifically. [3]

Researchers Bartosova Viera, Valaskova Katarina in their paper "Facilitated management in a global society" mention that the French facility management market focuses on the provision of real estate services, while Italian facilitated management is based on innovation and dynamism. [4]

In the early 1990s, foreign investors operating in Hungary organized the first facilitated management knowledge transfer for the management of Hungarian buildings. It was a prerequisite to found the first Hungarian facility management association in 1991. Currently, Hungarian facility management is mainly focused on service provision.

Scandinavian countries use different definitions and forms of facility management depending on the country's organization and objectives. Management and service organizations use their own definitions of management facilitation in the field of marketing and promoting services in local markets. Interestingly, asset management is usually included in the services of facilitated management. Based on the research carried out by Bartosova Viera, Valaskova Katarina, it can be stated that each Scandinavian country has its own peculiarities regarding the organization of facilitated management, as a consequence of local laws and traditions. [4]

Of all the Scandinavian countries, in Norway the facilitated management is the least developed, but at the same time, for many Norwegian companies the quality of services is of major importance.

Sweden has the second largest share of facilitated management (Denmark is the first in the ranking) according to its degree of development. In recent years there has been a significant leap of development in facilitated management. Many globally known organizations did not join the Finnish or Norwegian markets but merged with Swedish companies.

A few years later, facilitative management spread to surrounding countries. The first country in the ex-communist space, in which the facilitating management association was established, was Hungary. Here, in 1998, the National Union of Facility Managers (HUFMA) was created. A little later, in the year 2000, the Czech Republic joined the IFMA association, which in 2018 had about 18,000 members in 60 countries around the world, with about 130 directorates.

In the Czech Republic, the offer of separate, individually specialized services, such as



protection, repairs, cleaning, catering, was promoted. But over time, providers offering complex facility services appeared on the Czech market. These services were quite close to integrated facilitated management.

Referring to the history of the emergence of facility management, according to the opinion of Vyskočil & Kuda, 2011, "facility management, as a field, has links with the history of the development of individual secondary activities services." [5]. (Table 1.).

**Table 1. Evolution of facility management**

1970-1980	1980-1990	1990-1995	1996-1998	2000-prezent
<b>Own sources</b>	<b>Contracted services</b>	<b>External sources</b>	<b>Integrated facility management</b>	<b>Infrastructure management</b>
cleaning	Cleaning, Watch, catering, Ground maintenance.	contracted services + postal services telecommunications IT, print, FM administration	external services + education Property, project management, consultant	capital construction, equipment accountancy Integrated FM.

Source: [1,5].

According to the opinion of researcher Somorova V., facility management in the Czech Republic is at the third stage of development (external sources), since many providers on the market provide facility services at high quality and at a favorable price level. Most companies, which provide facility services, turn into integrated facility management companies. Czech companies prefer to order a full service [6].

The development of facility management in Slovakia has been closely linked to the Slovak Institute for Technical Standardization, which issued a new facility standard "STN EN 15221 Facility Management" in 2007. The standard consists of two parts: "STN EN 15221-1 Terms and Definitions" and "STN EN 15221-2 Instructions" for preparing management arrangements. Since then, the application of the European Standard "STN EN 15221 Facility Management" in practice has allowed companies and organizations to provide facility management services to increase their competitiveness both domestically and in the European market, streamline primary and support processes and improve the quality of services provided. The single European standard of facility management is an important factor for the future development of facility management in the European Union.

In general, in the author's view, facility management can be considered a multidisciplinary science, which includes knowledge from such managerial sciences as: project management, service management, planning management, human resources management, operational management and real estate management.

Regarding global facility management, we mention that it is included in: business continuity, real estate management and design, strategy and leadership, quality control, human factor and technologies and employee safety.

Management schools looked at facility management from different points of view. For example, the Russian school assumes that facility management is the science that deals with the maintenance and repair of both real estate and production machinery. Whereas European schools attribute to facility management a much wider scale of activity, this is the basis for developing a

business. Thus, according to the European schools: facility management deals not only with the record of the physical part of the enterprise, but also with the health and motivation of employees.

The main purpose of facility management is "Keep Alives", which would mean "to preserve lives", it is taken into account that the strategies implemented by the company must be based on this purpose not only through a rigorous record of safety systems, but also through lighting, workplace placement, cleaning services, so that the risk of affecting the health of employees inside the company is reduced to 0 [7].

As mentioned before, being a relatively new science, where there are no monopolies on its market of activity and a close collaboration with technologies, facility management operates on a market where freedom is present in the field of development, by implementing new technologies, by applying solutions that are viewed from a different point of view, by adopting non-standard decisions. Thus, staff safety is achieved, real estate maintenance costs are reduced, the risk of equipment wear and tear avoided, continuous development of services related to the fields of activity of enterprises.

At international level, facility management is continuously developing, but there is a need to analyze how it is implemented and how competitive it is on the national market. This will be presented in chapter two of this scientific approach. Therefore, facility management is a profession that incorporates multiple disciplines to ensure building functionality by integrating human resources, workplace, processes and technology. Facility management, too, is a process with which an organization integrates its people, work process, and physical assets to meet its strategic goals.

In recent decades, facility management has been viewed as an integrated professional approach to assist a lot of businesses, educational institutions, and government departments in effectively managing real estate facility and providing a high degree of support services. However, the rapid development of this profession suffers from an identity crisis. Researcher Nutt [9] pointed out that facility management operates with ever-expanding growth in an undefined field of activity.

Many schools and industry associations have proposed definitions to illustrate the goals and purposes of Facility Management. It is worth mentioning that the definition of facility management has not reached a consensus. In Table 2 we present the definition of Facility Management in the view of scientists in the field.

**Table 2. The definition of Facility Management in the view of several authors**

Becker	Facility management is responsible for coordinating all efforts related to the planning, design, and management of buildings and their systems, equipment, and furnishings to enhance the organization's ability to compete successfully in a rapidly changing world.
Nourse	The Facility Management unit is rarely aware of the company's overall strategic planning and has no focus on the bottom line.
NHS Estates	The practice of physically coordinating the workplace with the people and work of an organization; integrates principles of business administration, architecture, behavior and engineering science.
Alexander	The scope of the discipline covers all aspects of property, space, environmental control, health and safety and support services.
Then	The Facility Management practice is concerned with providing the work environment at the workplace - the optimal functional space that supports business processes and human management.
Hinks and MeNay	... common interpretations of the term Facility Management; maintenance management; space management and accommodation standards; project management for new construction and improvements; general management of the building;

	administration of associated support services.
Varcoe	... a focus on managing and delivering results for both entities (the real estate sector and the construction industry), namely the productive use of building assets as jobs.
Nutt	The primary function of Facility Management is the management of resources at the strategic and operational support level. The generic types of central resource management for the FM function are: financial management, physical resource management, human resource management and information resource management.

Source: developed by the author

Analyzing each definition, the author mentions that, in reality, they complement each other. Another thing that was deduced by the author from the information presented in Table 2 is that facility management actually refers to the correct management of resources, both material and human, the first place being human resources.

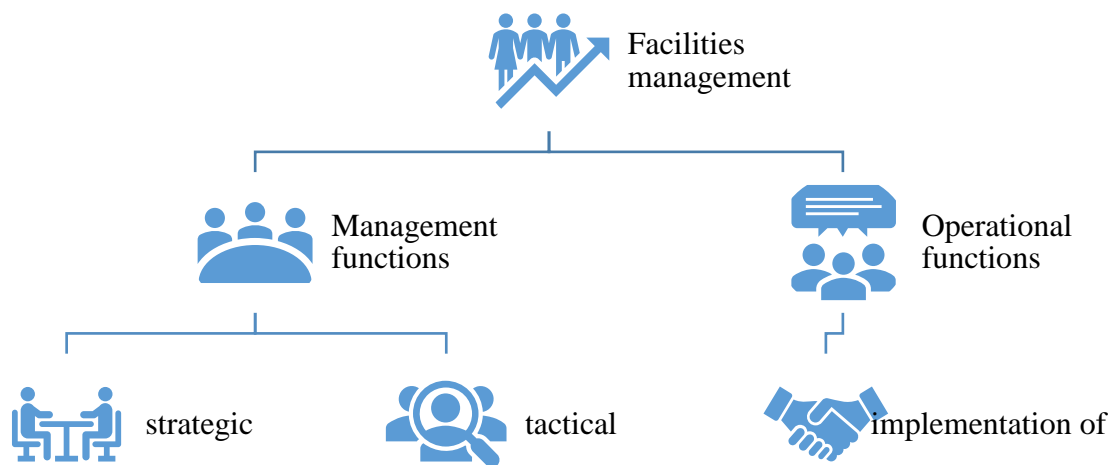
Analyzing the multitude of definitions expressed by different scientists, the *author* presents his own opinion on the notion of Facility Management: Facility management is the science that includes the coordination by human resources of all activities related to the efficient management of the functionality of a building and ensuring safe, comfortable and ergonomic working conditions for employees.

The basic document that regulates the activity of Facility Management and determines as a science, the main definitions and terms in the field is the EN-15221 standard, which, as mentioned, has been approved at the country level in particular.

According to the notion described by the Slovak standard SIST EN 15221-4:2011, the facility manager is a responsible person of the facility management organization, is the only point of contact for the customer at the strategic level, leads the MF organization, ensures quality and continuous improvement, and conducts strategic projects and tasks.

*The author* agrees with this notion, however, considers that a concretization is necessary, namely: "The facility manager is the person who possesses and applies the knowledge in the field of facility management in practice, ensuring the proper functioning of buildings, in general, and efficient working conditions, job security, in particular."

As a result of the analysis of the exposed material, the author comes up with a concretization regarding the way of carrying out facility management within an organization, illustrated in Figure 1.



**Fig. 1. The process of achieving facility management within organizations**

Source: authored based on source [9]

Therefore, support activities in facility management can provide both short- and long-term

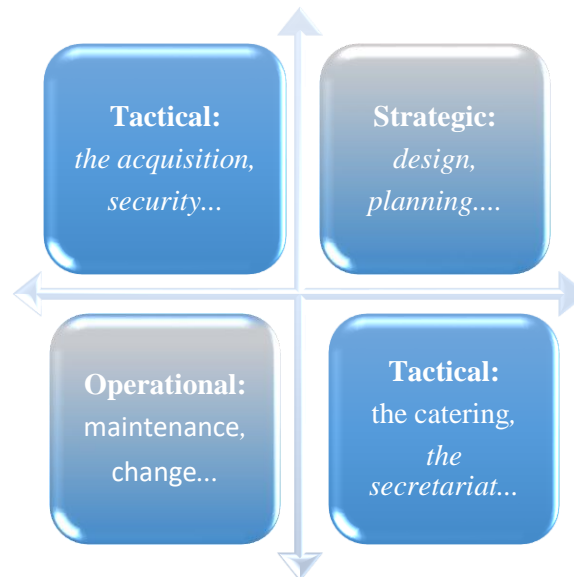
assistance, the performance of specific tasks at operational level and the design of projects and plans.

Kincaid (1994) classified facility management activities into operational and strategic links and determined three main directions of integrated activity [12]:

Property management: strategic activities.

Maintenance and maintenance activities: operational functions.

Office administration: tactical activities.



**Fig. 2. Tasks and activities of facility management, classified according to function and characteristics of its activity**

Source: authored from works by Kincaid (1994) [12]

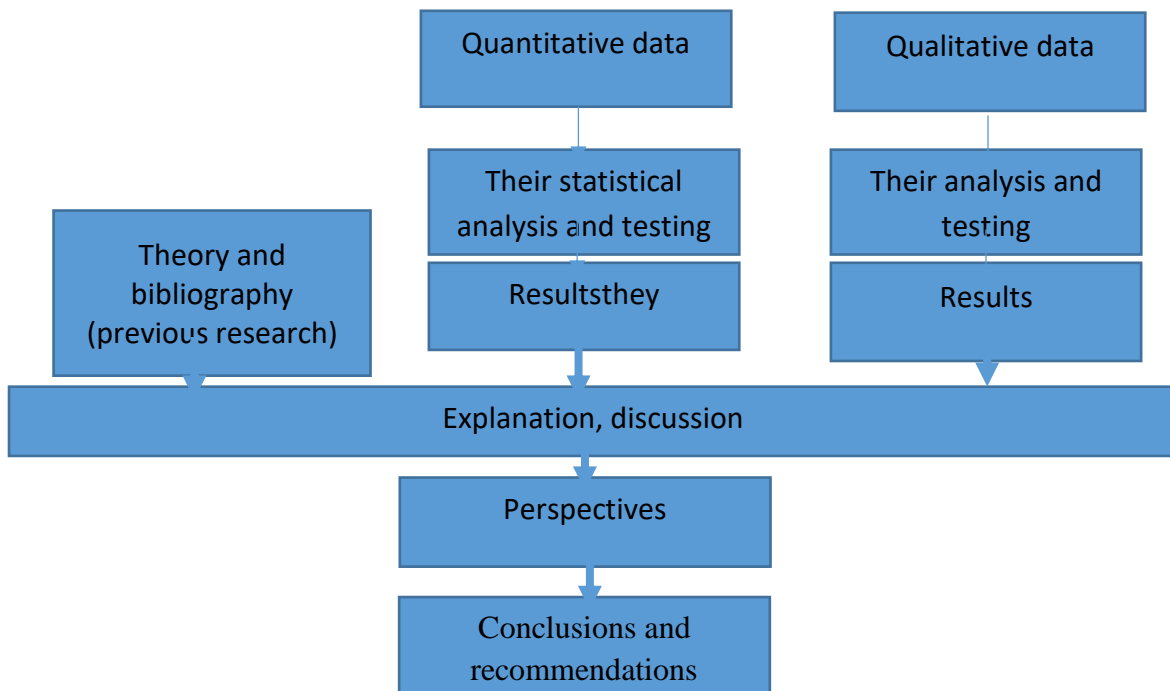
Kincaid concluded that these three sets of complementary activities can only be effectively integrated with an impressive array of very different skills, a vast intelligence base, and a full range of management covering everything from routine operations to long-term strategy [12].

Previous research has suggested that sustainable practices in MF can bring substantial benefits, such as: reducing energy consumption and waste, while increasing productivity, financial return and position in the community, which is in line with sustainable development. The need for sustainable practices focused on developing new ways of working to meet sustainability criteria and guide facility managers in performing tasks in a qualified manner is increasingly important. Nielsen et al. stated that "there is growing interest in integrating sustainable measures into services as more facility managers and building owners show interest in sustainability issues" [30].

**Chapter II "Analysis of facility management within organizations in the Republic of Moldova"** is intended to describe the research paradigm and philosophy.

The selection of research methodology is based on problems and justifications. Types of approaches depend on the nature of the study, for example, qualitative, quantitative studies and mixed methods. In addition, research methodology refers to addressing the main paradigms of the research problem (qualitative and quantitative approaches) or operational research techniques (Delphi approach, questionnaire-based survey, case study and interview). Therefore, appropriate approach and techniques are needed to ensure that research objectives can be achieved. In general, the three broad classifications of research strategies found in the literature are quantitative, qualitative, and mixed-method strategies [31,32].

The strategy, based on mixed methods, is supported by the pragmatic paradigm. Thus, because they use two or more research techniques, qualitative and quantitative approaches can be used to reduce or eliminate the disadvantages of each individual approach, while obtaining the advantages of both. According to Gephart, qualitative and quantitative data can generate a more complete picture of the phenomenon. This approach incorporates inquiry strategies involving data collection, either simultaneously or sequentially and creates a better understanding of research issues. Data collection for this method involves collecting both numerical and textual information. Thus, the final result is quantitative information, but also qualitative information [33]. Figure 3. illustrates how quantitative and qualitative data can be combined to investigate research questions and make conclusions.



**Fig. 3. Triangulation of qualitative and quantitative data**

Source: adapted from [85]

In line with the research problem and the objectives set, the proposed research goal is to identify significant factors of human resources capacity in promoting the measure of sustainability in the provision of MF services. Of the four paradigms described above, pragmatism is the most relevant paradigm in this research, as it focuses on the problem and gaining knowledge about the problem to establish a solution. A mixed method strategy, involving sequential collection of quantitative and qualitative data, is best suited to the pragmatic paradigm.

In this research, an approach based on mixed methods is adopted, consisting of 2 quantitative questionnaires, a paired comparative study and a qualitative case study.

To answer research questions and achieve research objectives, this research begins by using a questionnaire survey to determine the level of knowledge of the term "facility management", after which a questionnaire was also used to investigate critical people capacity factors that can support the promotion of the sustainability agenda in MF practices. Then, the identified critical factors were processed using interpretive structural modeling (MSI) technique to analyze relationships between people's ability factors and understand the dependence and driving power of each factor.

According to Bryman and Bell, when the researcher designs his research, he must clarify, for

himself, how data will be collected and analyzed to answer research questions. The researcher should identify the most appropriate methodological approach to find solutions to the research problem or research questions addressed. A detailed research design is required for a framework for collecting data and observations, as well as for connecting topics. The research project is used to structure research, display the functions of major parts of the research project, and explain each party's contribution to addressing central research questions. Therefore, the research project must consider research questions and determine what data is needed and how the data should be analyzed.

In accordance with the detailed research objectives and questions formulated and presented by us in the introduction, this research requires a combination of quantitative and qualitative methods and the use of primary and secondary data. The quantitative technique is used to identify previous problems regarding facility management and to determine the attributes of capability theory to confirm its relevance in addressing facility management development measures in the service sector. The qualitative technique is used to collect rich contextual information, seek information on good practices in the service sector, identify the best possible solutions, and gain a comprehensive understanding of issues related to facility management and people capacity.

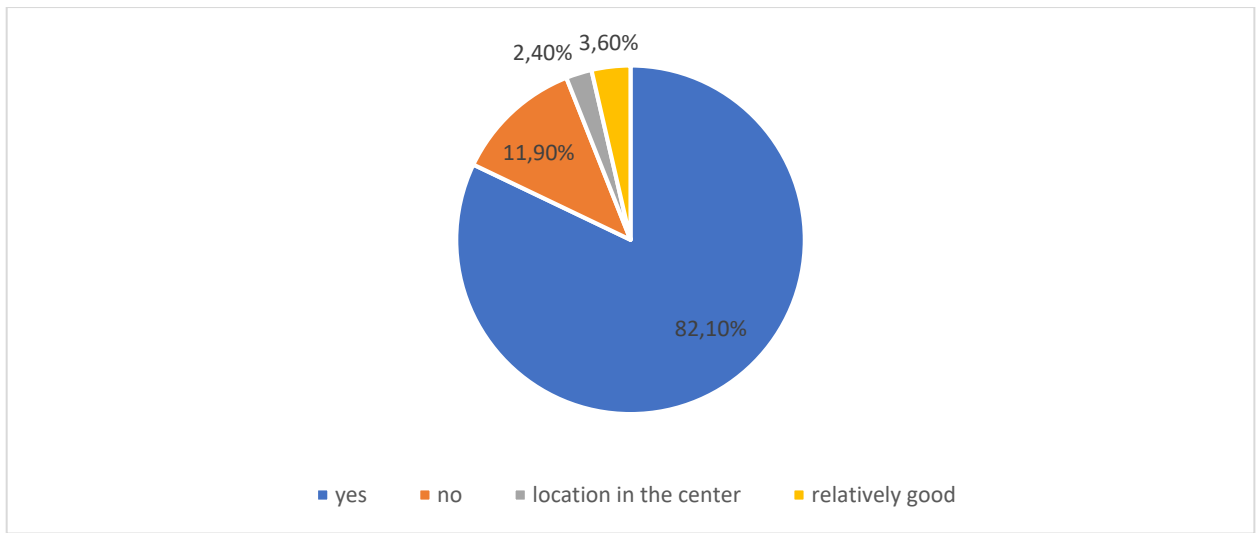
The specific research methods for collecting, analyzing, and interpreting data have been carefully chosen after determining the research approach. Research methods are driven by the research approach as well as participant integration. According to Cavana et al., research is determined by the method used and is essentially classified as quantitative or qualitative. Many scientific endeavors use multi-class methods, as suggested by Dainty, who argued that designing multi-strategy research or "multiple methodology" creates a better understanding of the complex network of relationships that shape service practice.

As mentioned, this research adopts the mixed method research approach, therefore, both quantitative and qualitative methods are needed.

The developed questionnaire was directed to several economic agents, service providers, from different fields. More responsive and involved were those in the banking services sector, especially employees of different branches of BC "Eximbank" S.A. Thus, we were determined to focus on the analysis of facility management within real estate owned by commercial banks, in order to record equity in the analysis. We invited other banks to participate in the research, but we were refused, "commercial secrecy" being one of the justifications. This did not prevent us from analysing, however, whether or not a department is present within x banking company that would provide facility management services. For this, the organizational charts of commercial banks of the Republic of Moldova were analyzed, information published on their official website. The questionnaire itself was conducted during 2021-2022, on a sample of 75 economic agents (who accepted participation in the research). Below we present the results of the questionnaire responses.

It was not surprising to learn that no bank has such a department in its composition. Following discussions with employees of these organizations, it was concluded that most services related to the field of facility management are usually provided by such departments as Logistics, etc.

The ergonomics of the workplace or office is one of the tasks of facility management. Respectively, one of the questions in the questionnaire referred to this aspect: "Is the location of the office a good one"? This question aimed to reveal how important it is to implement the principles of facility management right from the initiation of the business, namely, at the stage of choosing the rental or construction space of the office.

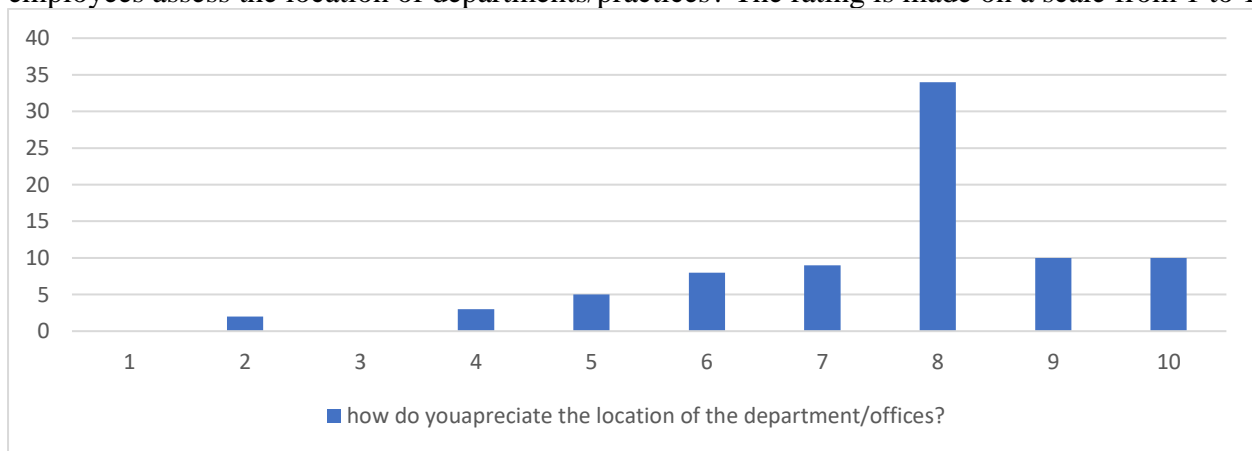


**Fig. 4. Determination of the quality of the location of the enterprise**

Source: elaborated by the author based on the questionnaire

According to figure 4, we find that 82.1% of respondents mentioned that the location of the office of the company where they work is a good one. The quality of the location was assessed considering the access to public transport, the possibility of parking the personal car, access to shops, etc. Negative answer was presented by 11.9% of respondents, stating that they do not consider the location of the enterprise a good one.

For a good functioning within the enterprise, a significant role is also played by compliance with ergonomic requirements for the internal location of subdivisions. The second question is how do employees assess the location of departments/practices? The rating is made on a scale from 1 to 10.



**Fig. 5. Assessment of the location of subdivisions within the organization**

Source: elaborated by the author based on the questionnaire

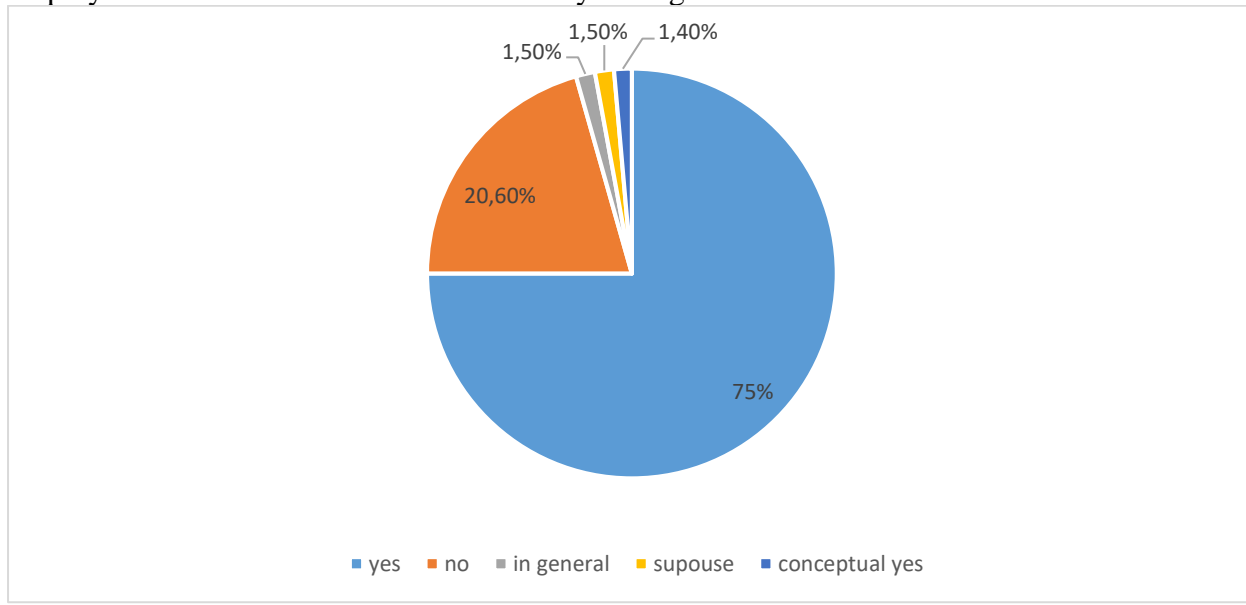
The purpose of this question is to analyze how efficiently departments are located in terms of communication and cooperation with each other. Whether this location represents a hindrance or advantage in the work of employees. As we can see from the data fig. 5, most employees rated the location of the subdivisions with eight points, which means that the situation is not satisfactory, although there are still reservations.

We were also tempted to find out how employers appreciate cleanliness in the workplace, common relaxation space and, in general, the building. At the same time, we asked their opinion on the level of security (security, fire protection systems, etc.) of the workspace, we analyzed whether they are informed about the state of security systems and how should they act in case of exceptional situations? If there is a department that keeps daily records of the state of safety systems, cleanliness, stability of communication between departments, from a technical point of view, questions addressed

to study participants were also included.

These types of questions confirm the need to apply adequate facility management, because maintenance is one of the basic obligations of such correct management, being an important factor that ensures efficiency in the work process. In fact, the main purpose of facility management is to keep employees safe.

At the end of the questionnaire were specified the questions that allowed us to find out if employees are familiar with the term "facility management".

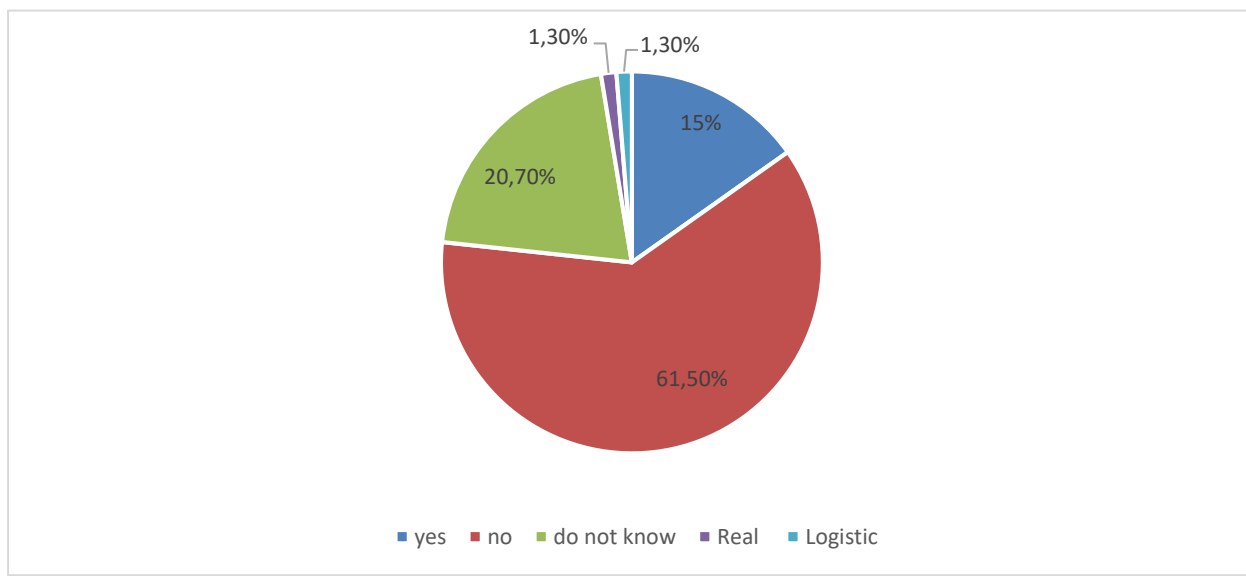


**Fig. 6. Level of knowledge of the notion of facility management**

Source: elaborated by the author based on the questionnaire

To our great surprise, 75% of respondents answered that they were familiar with this notion and only 21% of respondents were not aware of this term.

We also asked respondents about the presence of a department responsible for facility management within the company in which they operate.



**Fig. 7. The presence of the Facility Management department within organizations**

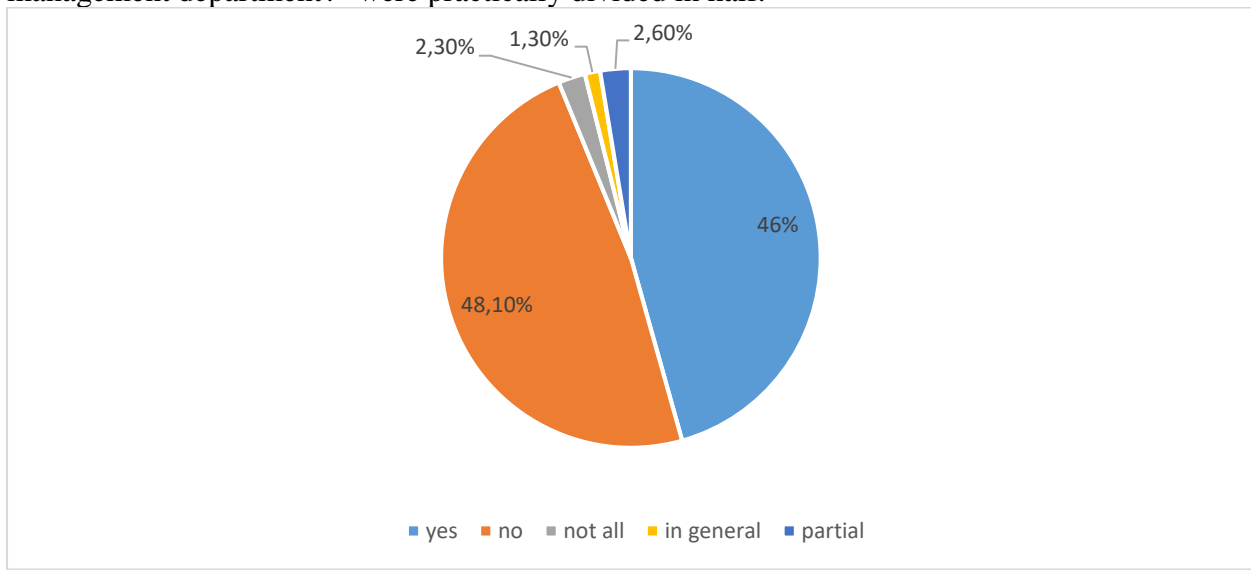
Source: elaborated by the author based on the questionnaire

According to figure 7, 61.5% of respondents said that there is no such department within their



organizations, and 15% of them confirmed the presence of such a department.

Respondents' answers to the question: "Do you know the responsibilities of a facility management department?" were practically divided in half.



**Fig. 8. Level of knowledge of department responsibilities Facility Management**

Source: elaborated by the author based on the questionnaire

As we can see from the data of figure 8, 48% do not know what the responsibilities of such a department are, while 46% of them know these obligations.

**Chapter 3 "Human Resource Capacities to Promote Sustainability in Facility Management Practices"** presents the concept of human resource capabilities in the context of the effort to promote a sustainability agenda in FM practices. This research is intended to adopt this concept to overcome the challenges and issues faced by MF stakeholders in their efforts to embrace a sustainability agenda in their practices.

The importance of human resources in economic and social success has attracted the interest of many organizations and motivated them to emphasize human resources capabilities. There is clear evidence that effective labour management leads to substantial returns, such as: increased productivity, quality and market share, increased profit, sales and capital [34].

Many organizations seek to maximize their dynamic capabilities by leveraging employees' stock of knowledge and expertise to work with collaborating organizations and deliver value to customers. According to Nahapiet and Ghoshal, an essential ingredient for an organization that will bring it success is its ability to optimize its human capital [33].

According to the objectives set, the *author* formulated a set of human capacities necessary to promote the sustainability agenda in MF. Opportunities to implement sustainable practices in MF can potentially be unlocked by identifying and integrating crucial capacity factors of individuals who can support its execution. In this context, a literature review was conducted to obtain a holistic view of HR capacity issues in promoting sustainability and forty-two relevant factors were identified. These components contribute to the environmental, social and economic objectives of sustainable development.

In order to better analyze the peculiarities of human resources in the field of facility management, in the author's view it is necessary to develop a comprehensive understanding of people capacity factors by understanding the interrelationships and influences between these factors. Interpretive structural modelling (MSI) has been used to develop a hierarchical model that provides further evidence on motor competences among all identified factors.

MSI is a well-established interactive management tool that assists research by imposing order and direction on the complex relationship between elements of a system [33,35]. The MSI process is

able to transform unclear and poorly articulated mental models of systems into a visible and well-defined pattern. In the MSI technique, sets of different and directly related elements are structured in a comprehensive systematic model.

MSI methodology is "interpretive" because the group's decision decides whether and how variables are related, it is "structural" because, based on relationships, a global structure is drawn from the complex set of variables, and it is "modeling" because specific relationships and general structure are portrayed in a graphical form. This technique is mainly intended as a group learning process, but individual researchers can also apply it to identify structure in a system of related elements.

In this research study, out of the total number of 42 factors, 23 critical capacity factors of individuals were identified. The capacity factors of the identified individuals are presented in Table 3.

**Table 3. Human resource capacity/competency factors regarding the promotion of sustainability in facilities management practices**

N/o	Human resource capability/competence factors
1.	Understanding CCV and CTR technique
2.	Understanding the concept of lifetime value
3.	Ability to work in all areas
4.	Developing good relationships with the organization's top management
5.	Elaboration of a perspective plan
6.	Understanding the organization's financial strategy
7.	Ability to motivate other stakeholders
8.	Self-motivation
9.	Understanding the meaning, purpose and issues of sustainable development
10.	Identify the short-term and long-term consequences of any decision/plan
11.	Ability to optimize building and equipment management
12.	Understanding design and construction issues related to MF practice
13.	Familiarization with the construction system manual
14.	The vision for a better future
15.	Development of the organization's sustainability strategies
16.	The ability to communicate
17.	The ability to collaborate
18.	Ability to plan and implement sustainability
19.	Identify direct and indirect consequences on people and ecosystems
20.	Ability to monitor and maintain equipment efficiency
21.	Ability to specify energy and environmental objectives to associated suppliers and contractors
22.	Understanding the big picture of the significant aspect of sustainable development
23.	The courage to make changes

Source: elaborated by the author based on the questionnaire

The "pairwise comparison" study was conducted to understand the relationship between the 23 HR capacity/competency factors. The paired comparison adopted in this study is an effective way to assess the priority and relative importance of each element within the complex network of human resource capability/competence factors. In this context, the element being compared is nothing but the interrelationship and influence of each critical HR capability/competency factor. There are different ways to formulate priorities, such as: trade-off methods, ratings, rankings, verbal statements and pairwise comparisons. However, the paired comparison method allows decision makers to express their priorities more clearly. This is because pairwise comparison of factors has the potential to eliminate problems related to inconsistencies between expert opinions [33].

Thus, the experts were asked to compare and complete 253 pairwise comparisons. Based on these comparisons, the author developed the self-interaction structural matrix. During the identification

of the contextual relationship between the factors of capacity/competence of human resources to support sustainability in MF practices, as mentioned, five experts were involved in the study. Existing research has often discussed the minimum number of experts and how to decide on the ideal size of an expert group involved in MSI processes, but no consensus has been reached. To ensure the consistency of the information, the experts, who were involved in this study, were selected from among the respondents to the questionnaire.

**Table 4. Structural self-interaction matrix**

Fact	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1		X	V	A	A	X	A	A	X	X	V	X	A	V	X	A	A	X	V	X	V	A	X
2			V	A	V	X	A	A	X	V	V	A	A	A	X	A	A	A	V	V	X	X	A
3				A	A	A	A	A	X	X	A	X	X	A	X	A	X	A	A	A	A	A	A
4					X	X	X	X	A	A	A	A	A	X	X	A	A	X	X	A	A	A	X
5						A	A	X	X	X	X	X	A	X	X	A	A	A	A	X	X	X	X
6							V	A	A	X	X	A	A	X	A	A	A	A	X	A	A	X	A
7								A	X	A	A	A	A	X	X	A	A	X	X	A	X	A	A
8									V	V	X	X	X	X	X	X	X	X	X	A	A	A	V
9										X	X	X	A	X	V	A	A	V	A	V	V	X	V
10											V	A	A	A	V	X	A	V	X	V	V	A	X
11												A	A	A	A	A	A	A	A	A	A	A	A
12													X	X	V	A	A	X	X	X	V	A	V
13														A	V	A	V	V	V	V	V	V	V
14															V	X	V	V	V	V	V	V	V
15																A	A	X	X	V	V	A	A
16																	X	V	A	A	A	A	X
17																		X	A	A	A	A	X
18																			A	X	X	X	A
19																				X	X	X	A
20																					X	X	A
21																						A	A
22																							V
23																							

Source: elaborated by the author based on the questionnaire

The result of the structural similarity index presented in Table 4 shows respondents' views on comparing two factors. Their opinions are used to indicate the existence and nature of relationships between the 23 factors of people's ability. The following description explains each category of V, A, X, and O relationships in the SSIM:

1. The relationship between factor 1 and factor 11 is V. This means that Factor 1 ("Understand CCV and CTP technique") will help achieve Factor 2 ("Ability to optimize building space and equipment operations").

2. The relationship between factor 1 and factor 5 is A. This means that factor 5 ("Take a long-term perspective") will help achieve factor 1 ("Understand CCV technique and CTP").

3. The relationship between Factor 1 and Factor 6 is X. This means that factor 1 ("Understand CCV and CTP technique") and factor 6 ("Understand organizations' financial strategy") will contribute to each other's realization.

4. The relationship between factor 1 and factor 7 is O. This means that factor 1 ("Understand CCV and CTP technique") and factor 7 ("Ability to motivate other stakeholders") are not related.

The next step in our research is to develop the Accessibility Matrix, based on the analyzed factors. So the ISIM was then transformed into a binary matrix called the initial accessibility matrix.

After the transformation of the ISSIM into the original accessibility matrix was completed according to substitution rules, then any transitive link that might exist between different variables had to be investigated. Transitivity of relations is a basic assumption according to the MSI method, which states that if factor i influences factor j and factor j influences factor k, then factor i should influence factor k. Transitive bonding applies to factors that have no relationship (O).

Generalizing research in facility management and human resources, next we will present how these two areas intersect and influence each other.

Recall that facility management is a multidisciplinary field that involves the effective planning, organization and management of all aspects of infrastructure, spaces and facility in an organization. This includes: management of buildings, equipment, support services, safety, security, maintenance and efficient use of resources. While human resources refer to all employees or personnel of an organization and their management, which involves recruiting, selecting, training, developing, motivating, evaluating and managing employee performance in order to achieve the organization's objectives and create a productive and healthy work environment.

Based on the above, we can highlight the intersection between Facility Management and Human Resources. The intersection of facility management and human resources is manifested in the mutual influence that these two fields have on the efficiency and quality of organizational operations.

In essence, close collaboration between these two areas can lead to a more efficient, productive and enjoyable work environment, which in turn can influence the quality of service provided and customer satisfaction. So, human resources are an essential factor in the success of any service-based business. Investing in recruitment, training, motivation and employee development can have a significant impact on the quality of services offered and customer relationships, ultimately contributing to increasing the profitability and reputation of the organization.

Considering this fact, we conclude that it was logical and correct to analyze the factors of competence of human resources in supporting and ensuring the sustainability of facility management. The interpretative structural model of human resources capacity factors, theoretically presented in chapter 1 of the thesis and in point 3.1 of the thesis, from a practical point of view, confirms our research hypotheses.

Identifying critical human capacity factors was the first step, followed by another challenge: to mold these complex, unclear and poorly articulated problems into a visible, well-defined overall structure. Therefore, it was necessary to determine priorities and relationships between factors by arranging them in a hierarchy of factors. When the hierarchy of factors is known, factors to be prioritised and paid attention to can be identified.

The results of MSI analysis demonstrate the relationships between components and provide insight into human capacity factors. The interpretive structural model (Figure 3.4 in the thesis) suggests that top leadership lies in strategic capacity factors. There are two factors identified at this level, namely: "understand design and construction issues related to MF practice" and "familiarity with the building system". Since these two factors in the category of strategic capabilities emerged as having maximum leadership power in the interpretative structural model, they must be considered as the root of the hierarchical structure of this model.

The challenges in implementing sustainability during the operation and maintenance phase are closely related to poor decision-making regarding the materials chosen, the design or positioning of the building space, the installation of equipment and so on during the design and construction phase.

Therefore, a contractual strategy integrated into projects has been introduced, such as: design-build-finance-maintenance and design-build-finance-operate lifecycle contracts to engage MF roles from the early stage of project development. Such an approach gives MF staff the opportunity to consult and discuss their ideas, especially on sustainability issues.

So, in line with this function of MF, the ability to understand design and construction issues related to MF practice and to be familiar with building systems are adapted to address key issues of sustainability implementation and enable strategy transitions to sustainable practices.

The findings of this study reflect existing literature, indicating that in an effort to support sustainability in the MF sector, most of the critical HR capacity factors are factors that can contribute to technical and strategic aspects, such as: familiarity with the building system, understanding the organization's financial strategy, and the ability to monitor and maintain equipment efficiency.

Secondly, the conclusions of this study indicate that initiatives for the MF sector to expand into

sustainable practices should be supported by the willingness and willingness of practitioners in the field to improve their knowledge, improve their capabilities and skills, and adopt a new mindset and new attitudes, as acknowledged by many interviewees. Interviews in this study included discussions of the significant capabilities needed to pursue sustainability, which provided in-depth insights from MF staff and verified theoretical assumptions. Finally, the people capacity factors needed to promote sustainability effort in MF were identified and prioritized from multiple perspectives, including strategic, anticipatory, interpersonal, and systems thinking aspects.

This research also adds new information to the existing knowledge support. The interrelation and influence between people capacity factors is evidenced through the development of a structural hierarchy model that outlines factors with leadership power (e.g., familiarity with the building system and understanding design and construction issues related to MF practices), linkages (e.g., communication skills, taking a long-term perspective, and understanding the concept of lifetime value), and dependent variable (e.g., ability to work interdisciplinary and ability to motivate other stakeholders).

## GENERAL CONCLUSIONS AND RECOMMENDATIONS

Following the research and analysis of the peculiarities of facility management in the provision of services, we present the following **conclusions**:

Facility management is an essential component in service delivery, having a significant impact on customer experience and organizational performance. This type of management develops quite dynamically. Many companies refuse their own support services in favor of professionals, so that they can only take care of their core activities. The trend in recent years on the European market is that companies prefer large providers of facility, due to the greater offer of services they are able to offer.

Most experts in the field noted that up to 90% of manufacturing companies use facility management outsourcing. This allows them to make great savings.

Currently, the most common situation is when companies implement facility management in full operation. The facility manager takes support services from current providers and optimizes their functions. Facility management focuses on supporting activities aimed at the following: reducing costs, increasing management efficiency and improving quality. Integrating interdisciplinary approaches into facility management can bring significant benefits by combining expertise from fields such as *engineering, architecture, economics and psychology*.

The conducted research allowed us to establish that the market of the Republic of Moldova is not known with the term of facility management. The obligations that the Facility Management department normally fulfills are performed by 2-3-4 other departments or are provided by the owners of real estate in which organizations rent offices, which leads to additional expenses or risks of duplication of contracts or employee safety. Interviewing employers about the implementation of facility management, we concluded that national entrepreneurs need to be educated to fearlessly orient themselves towards new development opportunities.

Innovative strategies in facility management, such as using digital technologies, implementing sustainability concepts and creating adapted work environments, can help improve service quality and efficiency. Facility management has a significant impact on organizational performance, helping to reduce operational costs, optimize resource utilization and increase productivity. Customer experience is strongly influenced by the quality of facility and associated services. Through effective facility management, organizations can provide customers with a comfortable and safe environment that meets their needs and exceeds their expectations.

Facility management plays a significant role in service enterprises as it ensures efficient management of premises, buildings, equipment and resources needed to deliver quality services. In this context, below we present an analysis of the place and role of facility management.

*Optimization of spaces and resources.* In service undertakings, premises are often used for

interactions with customers or for carrying out service-specific activities. MF helps plan and organize spaces to maximize use and streamline workflow.

*Quality of services offered.* Facility management contributes to increasing the quality of services offered. A well-maintained work environment and the right equipment can positively influence how employees deliver services and how they are perceived by customers.

*Customer satisfaction.* Facility management plays an essential role in creating a pleasant and comfortable environment for customers. Clean, well-lit and well-maintained spaces can contribute to positive customer experience and satisfaction.

*Operational efficiency.* MF helps to efficiently manage assets and equipment, ensuring they are in good working order. This can reduce downtime and costs associated with maintenance and repairs.

*Risk management and safety.* In a service-delivery environment, customer and employee safety is a priority. MF can help identify and manage safety risks and implement measures to prevent accidents.

*Adaptability to change.* MF must be flexible and adapt to changes in the requirements and needs of the organization. This is particularly important for services that can evolve rapidly or are influenced by technological change.

*Cost management.* MF plays a role in managing costs related to premises, equipment, maintenance and resources. It can help identify ways to make spending more efficient and reduce waste.

*Sustainability and social responsibility.* In the current context, organizations are increasingly concerned about their impact on the environment and community. MF can help implement sustainable practices and reduce the ecological footprint.

In conclusion, facility management occupies an essential place within service providing enterprises. It contributes to operational efficiency, quality of service, customer satisfaction and resource management. Through careful facility management, organizations can provide superior service and better respond to ever-changing customer and market needs.

As a result of the research, the author comes up with the following **recommendations**, which would ease the process of implementing facility management within the economy of the Republic of Moldova:

*For organizations.*

- **Develop an integrated facilities management strategy** that includes close collaboration between relevant departments and adopting a cross-functional approach.
- **Use of digital technologies and dedicated software** solutions for effective facility management and monitoring, such as building management systems.
- **Implementation of sustainability and energy efficiency concepts in facility management** through the use of renewable energy sources, optimization of water and energy consumption and responsible waste management.

*For research institutions.*

- **Carrying out periodic research and analysis on customer satisfaction and their needs** in order to identify and implement improvements in facilities and services.

*For MEC:*

- *to be introduced in the Nomenclature of professional training fields and specialties in higher education, the facility management specialty and, respectively, the qualification – facilities manager, who would possess the skills and abilities described in chapter 3 of the thesis.*

*For educational institutions:*

- **Development of specialized academic and continuing education programs in facilities management** to ensure adequate understanding of the principles and practices of effective facilities management.

- **The inclusion of a new subject in the curriculum** of economic and engineering specialties – **Facilities Management.**

These general conclusions and recommendations can serve as a starting point for approaching and developing *further research* in the given field, which concerns:

- The impact of facility management on the sustainable development of organizations.
- Determination of the functions of facility management for different areas of the economy of the Republic of Moldova.
- Determining the factors of human resources capacity in ensuring the sustainability of facility management in different areas of the economy of the Republic of Moldova.

## BIBLIOGRAPHY

1. ВЫСКОЧИЛ, В.К., ШТРУП, О., Вспомогательные процессы и сокращение накладных расходов (Facility менеджмент). Professional Publishing, Прага, 2003. ISBN 80- 86419-45-2.
2. ВЫСКОЧИЛ, В.К., ШТРУП, О., PAVLIK, M., Facility management a Public Private Partnership, Praha : Professional Publishing, 2007, 262 p., ISBN: 978-80-86946-34-4
3. MALIENE, V., ALEXANDER, K., & LEPKOVA, N. Facilities management development in Europe. International Journal of Environment and Pollution, 35(2), 2008,172-184.
4. BARTOSOVA ,V., VALASKOVA, K., Facility Management in the Globalized Society, Management Studies, Sep.-Oct. 2018, Vol. 6, No. 5, 358-366 p. DOI: 10.17265/2328-2185/2018.05.004
5. ВЫСКОЧИЛ, В.К., KUDA, F., Management of supporting processes: facility management. Collective monographs, Praha: Professional Publishing. 2011, 492 p., ISBN 9788074310461
6. SOMOROVÁ, V. Facility management: Metóda efektívneho spravovania budov. STU v Bratislave SvF, 2006. ISBN 80-227-2445-9
7. PATANAPIRADEJ, W., The scope of Facility management, Business, 75-89 pp., 2012, Disponibil: <https://www.semanticscholar.org/paper/The-Scope-of-Facility-Management-Patanapiradej/d716af112b57a1125e18e8101d2e0e3ae22a9e0d>
8. CHOTIPANICH, S., Positioning facility management:Informed by Case investigations in Thailand, teza de doctor în filosofie, 2011, Disponibil: <https://discovery.ucl.ac.uk/id/eprint/1348983/1/435190.pdf>
10. NUTT, B., MCLENNAN, P., Facility Management Risks and Opportunities, Blackwell Science Ltd., London, 2001, 278 p., ISBN-978-0632057979
11. GRIMSHAW, B., Professional Development in FM, International Facility Management Association (IFMA), 2002, Disponibil: <https://www.ifma.org/publications/ifmas-fmj/>
12. MCLENNAN, P. and NUTT, B. (1992), "Facilities Management Research Initiatives", Facilities, Vol. 10 No. 7, pp. 13-17. ISSN: 0263-2772. <https://doi.org/10.1108/EUM0000000002196>
13. KINCAID, D., "Integrated Facility Management", Facilities, Vol. 12 No. 8, 1994,pp. 20-23. ISSN: 0263-2772. <https://doi.org/10.1108/02632779410062353>
14. MARK, P. M., GIULIA, N., JENNIFER, K., HERMAN, B. KOK, KEITH A.. FM Innovation in Science and Practice, EuroFM Research Papers, 2015 DOI:10.13140/RG.2.1.1314.7687 . Disponibil: [https://www.researchgate.net/publication/275041633\\_Facilities\\_Management\\_Innovation](https://www.researchgate.net/publication/275041633_Facilities_Management_Innovation)
15. LITVIN , E., Facilities management and its areas of application, "Competitiveness and sustainable development", international conference (4; 2022; Chişinău). The 4th Economic International Conference "Competitiveness and sustainable development", 3rd-4th November 2022, pag. 133-140, ISBN 978-9975-45-872-6 ,DOI: <https://doi.org/10.53486/icspm2023.18>
16. BARRETT, P., FINCH, E., Facilities management: the dynamics of excellence, – Third edition. Publisher Wiley-Blackwell , 2013, 336 pag. ISBN 978-0-470-67397-3
17. BARRETT, P.S.Y. ZHANG, J. MOFFAT and K.KOBBACY (2012). "An holistic, multi-level analysis identifying the impact of classroom design on pupils' learning." Building and Environment, Vol59, pp678-689. <http://dx.doi.org/10.1016/j.buildenv.2012.09.016>

18. ZHANG, Y., BARRETT, P. "Factors influencing occupants' blind-control behaviour in a naturally ventilated office building", *Building and Environment*, 54, pp137-147. (2012)
19. BARRETT, P. *Case studies of the Chinese Arts Centre, Manchester and Mind the Gap*, Bradford, CABE, London, 2009, .[www.cabe.org.uk/casestudies.aspx](http://www.cabe.org.uk/casestudies.aspx)
20. BARRETT, P., *International Examples of Service-driven Innovation in Construction*, NESTA, London 2007, <http://www.nesta.org.uk/assets/Uploads/pdf/Research> (this report supported the development of the five sector NESTA / DBERR policy reports on service-driven and "hidden" innovation).
21. GOULDING, J., SEXTON, M., ZHANG, X., KAGIOGLOU, M., AOAUD, G., BARRETT, P.S., *Technology adoption: breaking down barriers using a virtual reality design support tool for HybridConcrete*, *Construction Management and Economics*, Vol 25, Issue 12, pp1239-50.
22. JOHNSON, G., SCHOLES K., WHITTINGTON R.. *Exploring corporate strategy* Pearson Education Limited, 659 pag., ISBN: 978-0-273-71191-9. Disponibil la: <http://www.mim.ac.mw/books/Johnson%20and%20Scholes%20Exploring%20Corporate%20Strategy.pdf>
23. THOMSON, T., "The essence of facilities management", *Facilities*, 1990, Vol. 8 No. 8, pp. 8-12. <https://doi.org/10.1108/EUM0000000002119>
24. NIK-MAT, N.E.M., S.N. KAMARUZZAMAN, M. PITT. *Assessing The Maintenance Aspect of Facilities Management through a Performance Measurement System: A Malaysian Case Study*, *Procedia Engineering*, Volume 20, 2011, Pages 329-338, <https://doi.org/10.1016/j.proeng.2011.11.174>
25. MCLENNAN, P. *Service operations management as a conceptual framework for facility management*, *Journal Facilities*, Vol. 22 No. 13/14, pp. 344-348, Emerald Group Publishing Limited, 2004, ISSN:0263-2772, <https://doi.org/10.1108/02632770410563040>
26. MCGREGOR, W., 'The Future of Workspace Management', In: McLennan, P., Nutt, B., and Kincaid, D., (ed) *Future in Property and Facility Management*, 24-25 June, FM exchange, University College London, London, 1999, pp.63
27. LITVIN, E. *Particularities of service management and their role in the economy of the Republic of Moldova = Particularitățile managementului serviciilor și rolul lor în economia Republicii Moldova*. In: *Strategii și politici de management în economia contemporană* [online]: conf. șt. intern., ed. a 6-a, 26-27 mar. 2021. Chișinău: ASEM, 2021, pp. 209-218. ISBN 978-9975-155-20-5 (PDF). Disponibil: <https://irek.ase.md/xmlui/handle/123456789/2138>
28. LITVIN, E. *Study regarding the evolution and scope of facilities management, pointing out aspects of facility management in agriculture*. In: *Management, economic engineering in agriculture and rural development: Scientific Papers Series*. București. 2022, vol. 22(1), pp. 379-385. ISSN 2284-7995.
29. LITVIN, E. *Prezența managementului facilităților în organizațiile prestatoare de servicii din Republica Moldova*. *Revistă științifico-didactică Economică*, an.XXXI, nr.3(125) septembrie 2023, Editura ASEM, Chișinău-2023, pag. 55-66, ISSN 1810-9136, <https://doi.org/10.53486/econ.2023.125>,
30. NIELSEN, K., RANDALL, R., YARKER, Jo., BRENNER, S., *The effects of transformational leadership on followers' perceived work characteristics and psychological well-being: A longitudinal study*, January 2008, *Work & Stress* 22(1): pag.16-32, DOI: 10.1080/02678370801979430, disponibil: [https://www.researchgate.net/publication/240238745\\_The\\_effects\\_of\\_transformational\\_leadership\\_on\\_followers'\\_perceived\\_work\\_characteristics\\_and\\_psychological\\_well-being\\_A\\_longitudinal\\_study](https://www.researchgate.net/publication/240238745_The_effects_of_transformational_leadership_on_followers'_perceived_work_characteristics_and_psychological_well-being_A_longitudinal_study)
31. FEURAȘ E., PÎȘCHINA T., *Metodologia și etica cercetării economice : Manual pentru studii universitare la ciclul II – masterat*, Cartier, Chișinău, 2020, 213 p., ISBN: 978-9975-86-405-3



32. CRESWELL, J.W. Research design: Qualitative, quantitative, and mixed methods approaches: Sage Publications, Inc. 2009.
33. SARPIN, N. and YANG, J. Interpretive Structural Modelling of People Capability Factors to Promote Sustainable Facility Management Practices. *The Social Sciences*, Vol. 11(12) pp. 3005–3016 (2016).
34. NORMAN, R. - "Service Management Strategy and Leadership Service Business", New-York, John Wiley and Sons, 1990
35. MANDAL, A., Deshmukh, S.G. Vendor selection using interpretive structural modelling (ISM). *International Journal of Operations & Production Management* 14 (6): 1994. p.52-59.

## LIST OF AUTHOR'S PUBLICATIONS ON THE TOPIC OF THE THESIS

### 1. Articles in scientific journals

#### 1.1. in Web of Science and SCOPUS database journals

1. FETESCU, C., LITVIN, E. **Qualitative assessment of the performance of LPA management in the Republic of Moldova with a view to bringing internal reserves into line with the imperatives of rural development.** In: *Management, economic engineering in agriculture and rural development: Scientific Papers Series.* Bucharest. 2022, v ol. 22(1), pp. 223-231. ISSN 2284-7995.
2. LITVIN, E. **Study regarding the evolution and scope of facility management, pointing out aspects of facility management in agriculture.** In: *Management, economic engineering in agriculture and rural development: Scientific Papers Series.* Bucharest. 2022, vol. 22(1), pp. 379-385. ISSN 2284-7995.
3. LITVIN A., FETESCU C., LITVIN E. **General characteristics of the rural space in the Republic of Moldova – essential factor for the purpose of performance registration by the management of the local public administration.** In: *Management, economic engineering in agriculture and rural development: Scientific Papers Series.* Bucharest. 202 3, vol. 2 3(2), pp. 387-398. ISSN 2284-7995. Available: <http://managementjournal.usamv.ro/index.php/scientific-papers/current>.
4. LITVIN, E., **The presence of facility management in service providing organizations in the Republic of Moldova.** Scientific-didactic journal *Economica*, year. XXXI, no.3(125) September 2023, ASEM Publishing House, Chisinau-2023, p. 55-66, ISSN 1810-9136, <https://doi.org/10.53486/econ.2023.125>

### 2. Articles in the proceedings of conferences and other scientific events

#### 2.1.in Web of Science and SCOPUS database journals

5. LITVIN, E. **Theoretical reflections on the essence and role of facility management.** In: *iScience, Журнал Актуальные научные исследования в современном мире.* Выпуск 5(37) Часть 2, Май 2018 г. ISSN 2524-0986.

#### 2.2.in the works of scientific events included in other databases accepted by ANACEC

6. LITVIN, E. **Particularities of service management and their role in the economy of the Republic of Moldova.** In: *Management strategies and policies in contemporary economy* [online]: conf. șt. intern., 6th ed., 26-27 Mar. 2021. Chisinau: ASEM, 2021, pp. 209-218. ISBN 978-9975-155-20-5 (PDF). Available: <https://irek.ase.md/xmlui/handle/123456789/2138>
7. LITVIN, E. **The impact of facility management on the quality of services. = The impact of facility management on service quality.** In: *Perspectives and achievements within European Integration of Moldova:* conf. șt. intern., 1-2 October 2020, Ed. 1. Chisinau, 2021, vol. 2, pp. 8-12. Available: [https://ibn.idsi.md/ro/vizualizare\\_articol/173411](https://ibn.idsi.md/ro/vizualizare_articol/173411)
8. LITVIN, E. **Facility management and its areas of application.** In: *Competitiveness and sustainable development: The 4th Economic International Conference, 3rd-4th November 2022.* Chisinau: Tehnica-UTM, 2022, Ed. 4, pp. 133-139. ISBN 978-9975-45-872-6 (PDF) DOI: <https://doi.org/10.52326/csd2022.23> Available: [https://ibn.idsi.md/ro/vizualizare\\_articol/171129](https://ibn.idsi.md/ro/vizualizare_articol/171129)

#### 2.3.in the works of national scientific conferences (Republic of Moldova)

9. PETRASCU, S., LITVIN, E. **The impact of investments in the economic development of the country.** In: Innovation: factor of social and economic development: assoc. prof. national, 6th edition, December 17, 2021. Cahul, 2021, p.31-36, ISBN 978-9975-88-086-2. Available: <https://www.usch.md/wp-content/uploads/2022/10/Materialele-Conferintei-IFDSE-17.12.2021.pdf>

## ADNOTARE

**Litvin Eugeniu. Particularitățile managementului facilităților în prestarea serviciilor.**  
**Teză de doctor în științe economice. Specialitatea: 521.03 – economie și management în**  
**domeniul de activitate. Chișinău, 2023**

**Structura tezei:** introducere, trei capitole, concluzii generale și recomandări, bibliografie din 113 titluri, 6 anexe, 100 de pagini de text de bază, 30 de figuri și 11 tabele. Rezultatele obținute sunt publicate în 9 lucrări științifice, 8,4 c.a.

**Cuvinte-cheie:** managementul facilităților, prestare, servicii, sustenabilitate, resurse umane, întreprindere.

**Scopul lucrării:** dezvoltarea și formularea unui cadru conceptual cu privire la managementul facilităților în prestarea serviciilor concentrându-se, în special, pe analiza capacităților resurselor umane și impactul acestora în asigurarea sustenabilității acestui domeniu.

**Obiectivele cercetării:** 1. Abordarea complexă a conceptului de management al facilităților prin evidențierea atât a aspectului teoretic cât și a celui aplicativ; 2.Relevarea practicilor de aplicare a sustenabilității în eficientizarea managementului facilităților. 3.Identificarea și generalizarea experienței internaționale și naționale în domeniul managementului facilităților. 4. Elaborarea studiului privind percepțiile organizațiilor autohtone în domeniul managementului facilităților. 5.Elaborarea studiului privind rolul resurselor umane în promovarea sustenabilității managementului facilităților. 6.Aplicarea modelului structural interpretativ, în procesul de determinare a competențelor/capacităților resurselor umane, necesare pentru asigurarea sustenabilității managementului facilităților în prestarea serviciilor. 7.Elaborarea recomandărilor cu privire la punerea în aplicare a sustenabilității managementului facilităților în prestarea serviciilor.

**Noutatea și originalitatea științifică a lucrării** rezidă în următoarele: Dezvoltarea conceptului de managementul facilităților și manager de facilități. Definirea noțiunii de "managementul facilităților" și "manager facilitar". Determinarea particularităților managementului facilităților în prestarea serviciilor. Identificarea cunoștințelor, capacităților și abilităților resurselor umane care ar promova sustenabilitatea în managementul facilităților. Examinarea și identificarea potențialilor factori de capacitate a resurselor umane, pentru implementarea sustenabilității în contextul MF. Identificarea factorilor critici care au impact asupra decalajului dintre capacitățile resurselor umane și sustenabilitate în practicile managementului facilităților.

**Rezultatele obținute care contribuie la soluționarea unei probleme științifice importante** constau în: 1. Concretizarea abordărilor fundamentale și specifice privind noțiunea și particularitățile managementului facilităților în prestarea serviciilor. 2. Identificarea și generalizarea experienței internaționale în domeniul managementului facilităților. 3. Identificarea managementului facilităților în cadrul organizațiilor din Republica Moldova (determinarea, în baza chestionarului, a cunoașterii și prezenței managementului facilităților în întreprinderile autohtone). 4. Formularea particularităților managementului facilităților în prestarea serviciilor. 5. Dezvoltarea de noi metodologii în managementul facilităților (utilizarea modelului structural interpretativ și identificarea factorilor de capacitate a resurselor umane în gestionarea sustenabilă a facilităților). 6. Elaborarea recomandărilor privind implementarea în practică a managementului facilităților în Republica Moldova.

**Semnificația teoretică** constă în prezentarea unui material teoretic și conceptual al managementului facilităților, precum și a particularităților acestuia la nivel de servicii.

**Valoarea aplicativă a lucrării:** rezultatele acestui demers științific pot fi utilizate în cadrul organizațiilor din domeniul managementului facilităților și în cadrul instituțiilor de învățământ superior, ca material teoretic și practic în cadrul cursurilor de management.

**Implementarea rezultatelor științifice:** rezultatele studiului au fost implementate în cadrul Cooperativei de Întreprinzători "VERIFRUCT". (s-au implementat recomandările cu privire la gestionarea corectă a depozitului frigorific și uscătoriei de fructe.) și Centrului de Inovare și Transfer Tehnologic, ASEM.

## АННОТАЦИЯ

**Литвин Евгений. Особенности фасилити менеджмента в предоставлении услуг.**  
**Докторская диссертация по экономике. Специальность: 521.03 – экономика и менеджмент в сфере деятельности. Кишинев, 2023**

**Структура диссертации:** введение, три главы, выводы и рекомендации, библиография из 113 наименований, 6 приложения, 100 страницы основного текста, 30 рисунков, 11 таблиц. Полученные результаты опубликованы в 9 научных статьях.

**Ключевые слова:** фасилити менеджмент, предоставление, услуги, устойчивость, человеческие ресурсы, предприятие.

**Цель диссертации:** разработка и формулирование концептуальной основы фасилити менеджмента и анализа потенциала человеческих ресурсов в обеспечении его устойчивости.

**Задачи исследования:** 1. Комплексный подход к концепции «фасилити менеджмент» с выделением как теоретических, так и прикладных аспектов; 2. Выявление практик применения устойчивости в эффективности управления объектами. 3. Выявление и обобщение международного и отечественного опыта в области фасилити менеджмента. 4. Разработка исследования мнений отечественных организаций в сфере фасилити менеджмента. 5. Разработка исследования о роли человеческих ресурсов в обеспечении устойчивости фасилити менеджмента. 6. Применение интерпретационной структурной модели в процессе определения навыков/возможностей человеческих ресурсов, необходимых для обеспечения устойчивости фасилити менеджмента. 7. Разработка рекомендаций по обеспечению устойчивости фасилити менеджмента в практику.

**Новизна и научная оригинальность работы** заключается в следующем: Разработка концепции фасилити менеджмента и фасилити менеджера. Определение понятия «фасилити менеджмента» и «фасилити менеджер». Определение особенностей фасилити менеджмента при оказании услуг. Определение знаний, способностей и навыков человеческих ресурсов, которые будут способствовать устойчивости фасилити менеджмента. Изучение и выявление потенциальных факторов потенциала человеческих ресурсов для реализации устойчивости в контексте фасилити менеджмента. Выявление критических факторов, влияющих на разрыв между возможностями человеческих ресурсов и устойчивостью фасилити менеджмента.

**Полученные результаты, способствующие решению важной научной проблемы, состоят из:** 1. Конкретизация принципиальных и конкретных подходов относительно понятия и особенностей фасилити менеджмента при оказании услуг. 2. Выявление и обобщение международного опыта в области фасилити менеджмента. 3. Выявление объектов управления внутри организаций Республики Молдова (определение на основе анкеты знаний и наличия фасилити менеджмента на отечественных предприятиях). 4. Формулирование особенностей фасилити менеджмента при оказании услуг. 5. Разработка новых методологий управления объектами (использование интерпретирующей структурной модели и определение факторов кадрового потенциала в фасилити менеджментом). 6. Разработка рекомендаций по практическому внедрению фасилити менеджмента в Республике Молдова.

**Теоретическая значимость** состоит в изложении теоретического и концептуального материала фасилити менеджмента, а также его особенностей на уровне услуг.

**Прикладная ценность работы:** результаты данного научного подхода могут быть использованы в организациях в сфере фасилити менеджмента и в высших учебных заведениях, как теоретический и практический материал в курсах по менеджменту.

**Внедрение научных результатов:** Результаты научной работы внедрены в Кооператив предпринимателей «ВЕРИФРУКТ». (выполнены рекомендации по правильному ведению холодильного хранения и сушки фруктов.) и Центр инноваций и трансфера технологий АЭЗМ.

## ANNOTATION

**Litvin Eugeniu. The particularities of the facility management in the provision of services.  
PhD thesis in economics. Specialty: 521.03 – Economics and management in the field of activity.  
Chisinau, 2023**

**Structure of the thesis:** introduction, three chapters, conclusions and recommendations, bibliography of 113 titles, 6 appendices, 100 pages of basic text, 30 figures, 11 tables. The obtained results are published in 9 scientific papers.

**Keywords:** facility management, provision, services, sustainability, human resources, enterprise.

**The purpose of the paper:** the development and formulation of a conceptual framework regarding the management of facilities in the provision of services focusing, in particular, on the analysis of human resources capabilities and their impact in ensuring the sustainability of this field.

**Research objectives:** 1. The complex approach to the concept of facility management by highlighting both the theoretical and the applied aspect; 2. Revealing the practices of applying sustainability in the efficiency of facility management. 3. Identification and generalization of international and national experience in the field of facility management. 4. Elaboration of the study on the perceptions of domestic organizations in the field of facility management. 5. Elaboration of the study on the role of human resources in promoting the sustainability of facility management. 6. The application of the interpretive structural model, in the process of determining the skills/capabilities of human resources, necessary to ensure the sustainability of the facility management in the provision of services. 7. Elaboration of recommendations regarding the implementation of the sustainability of facility management in the provision of services.

**The novelty and scientific originality of the work reside in the following:** Development of the concept of facility management and facility manager. Definition of the notion of "facility management" and "facility manager". Determining the particularities of facility management in the provision of services. Identifying the knowledge, capabilities and skills of human resources that would promote sustainability in facility management. Examining and identifying potential human resources capacity factors, for the implementation of sustainability in the context of FM. Identifying critical factors impacting the gap between human resource capabilities and sustainability in facility management practices.

**The results obtained that contribute to the solution of an important scientific problem consist of:** 1. The concretization of the fundamental and specific approaches regarding the notion and particularities of facility management in the provision of services. 2. Identification and generalization of international experience in the field of facility management. 3. Identification of facility management within organizations in the Republic of Moldova (determining, based on the questionnaire, the knowledge and presence of facility management in enterprises). 4. Formulation of the particularities of facility management in the provision of services. 5. Development of new methodologies in facility management (use of interpretive structural model and identification of human resource capacity factors in sustainable facility management). 6. Elaboration of recommendations regarding the practical implementation of facility management in the Republic of Moldova.

**The theoretical significance** consists in presenting a theoretical and conceptual material of facility management, as well as its particularities at the level of services.

**The applicative value of the work:** the results of this scientific approach can be used within organizations in the field of facility management and within Higher Education Institutions, as theoretical and practical material in management courses.

**Implementation of scientific results:** the results of the study were implemented within the "VERIFRUCT" Cooperative of Entrepreneurs. (recommendations regarding the correct management of cold storage and fruit drying were implemented.) and the Center for Innovation and Technological Transfer, AESM.

**LITVIN EUGENIU**

**PARTICULARITĂȚILE MANAGEMENTULUI FACILITĂȚILOR  
ÎN PRESTAREA SERVICIILOR**

**SPECIALITATEA: 521.03. – ECONOMIE ȘI MANAGEMENT  
ÎN DOMENIUL DE ACTIVITATE  
(Științe sociale și economice)**

**Rezumatul tezei de doctor în științe economice**

---

Aprobat spre tipar:	1/16	Formatul hârtiei 60x84
Hârtie ofset. Tipar ofset.		Tiraj 30 ex.
Coli de tipar.:		Comanda nr.

---

Serviciul Editorial-Poligrafic al Academiei de Studii Economice din Moldova  
mun. Chișinău, MD-2005, str. Gr. Bănulescu-Bodoni, 59  
tel.: 022 402 936