

THE POTENTIAL FOR CLUSTER IMPLEMENTATION IN THE ROMANIAN HEALTHCARE SYSTEM

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ABSTRACT

The healthcare system is a key element for health and has the role of promoting, maintaining and improving the health of the population. In recent years, the concept of cluster has become very popular, and can be used as a way to improve the quality of healthcare system. In this regard, this article aims to identify the current level of openness to the concept of cluster and to highlight the potential for cluster implementation in the Romanian healthcare system. Survey data were collected from the 292 employees in healthcare system in Romania. The main results show the degree of familiarity of the respondents to the concept of cluster, the extent to which the health units collaborate with other institutions and underline the major advantages of belonging to a cluster, as well as the main barriers in creating and developing clusters. The findings of this study have theoretical implication by highlighting the peculiarities of the cluster concept in healthcare system. Moreover, the practical implications are the usefulness of these results for the decision makers in the healthcare system as well as for other institutions (universities, research and development institutions) which can collaborate in order to implement clusters.

KEYWORDS: *collaboration, cluster, healthcare employees, healthcare system, quality.*

1. INTRODUCTION

By analyzing the quality of the healthcare system in Romania, evaluated from the perspective of the employees in this field, Gora et al. (2019) underline that the main influence factor in terms of improving the quality of healthcare system is the available resources, while the main difficulty consists of the limited resources. Moreover, among the possibilities for improving the quality of the Romanian healthcare system a major component relates to building partnerships between health care organizations and the accredited training institutions in the region (Gora, et al., 2019). These findings suggest that a potential mean of increasing the quality of the healthcare system in Romania is represented by the association of different types of healthcare organizations with other institutions in the form of clusters.

The use of clusters, as means to enhance an activity sector, to develop a country or region has been identified in other studies as well. In this regard, Maskell (2001) state that over time related firms' clusters contributed to economic growth and Aziz and Norhashim (2008) point out that the creation of clusters is one of the strategies for creating economic growth. Porter (1998) argues that belonging to a cluster leads to increased productivity within a company, country, region or domain, and Crass, Rammer and Aschhoff (2016) notice that geographical clustering of economic activities can bring positive innovation outcomes for companies involved in such clusters. Moreover, Prokhorova et al. (2018) consider that the cluster policy supports the introduction of innovation activities in economy and in conditions of inconsistent policy of the state and insufficient resources, the clusters allow

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solving the social problems of the country or region. Given the highlighted issues, the following research questions were formulated:

- RQ1. How familiar is the concept of cluster within the Romanian healthcare organizations?
- RQ2. What are the advantages of belonging to a cluster, applicable to the Romanian healthcare system, and to what extent are these known by the employees from the health industry?
- RQ3. What are the main impediments to the creation and development of clusters in the healthcare system in Romania, and how are these perceived by the employees from the health industry?

In this context, this paper aims to identify the current level of openness to the concept of cluster, along with highlighting the potential for cluster implementation in the Romanian healthcare system. Therefore, the main objectives of the paper are, as follows:

- O1. Firstly, this article aims to identify the degree of collaboration of the healthcare units in Romania with other companies / universities / research and development institutes in the same region and, moreover on what type of actions and projects they have collaborated in before, as well as determining the extent to which the employees in the healthcare system are familiar with the concept of cluster.
- O2. Secondly, the paper aims to highlight whether the employees in the Romanian healthcare system are aware of the potential for the cluster implementation in their industry, referring to the level of awareness on the advantages of belonging to a cluster, as well as whether there are differences of perception between the employees of cluster members organizations and the employees of non-cluster members organizations.
- O3. Thirdly, the current paper aims to determine which are the barriers on the way to creating and developing clusters in the healthcare system in Romania and to identify the differences of perception that exist between the respondents employed by cluster members organizations and the respondents employed by non-cluster members organizations.

In the following section, the theoretical framework specific to this study is presented. This section is followed by the research methodology section in which the data collection tool, its structure and the research sample are presented. The main results of the research are analyzed and illustrated below. The final section summarizes the major findings, presents the conclusions and also the research limitations and future directions of research.

2. BACKGROUND AND THEORETICAL FRAMEWORK

2.1 The concept of cluster

As mentioned in other studies, the concept of cluster must be well known in order to be able to use it and to benefit as much as possible from its positive impact that relates to improving the scientific, economic and technological performance of countries or regions (Vlăsceanu, 2014). According to Porter (1998), clusters are concentrations of interconnected institutions and companies in a particular field and many clusters include governmental institutions and other institutions – for example universities, trade associations, vocational training providers – that offer information, education, specialized training, research and technical support.

European Commission (2008) considers the cluster as a group of companies and institutions located close to each other and having the opportunity to develop specialized expertise, resources, services, skills and suppliers. European Cluster Observatory (2014) notices that a cluster is a reflection of cross-industry linkages and defines a cluster as a regional concentration of activities in related industries, linked through several types of links. The cluster includes organizations of different

types, service providers, suppliers, producers of final services and products, and innovation actors such as specialized government agencies, research and educational institutions, financial actors, etc. Mads Bruun Ingstrup (2013) highlights that a cluster must be perceived as an inter-organizational configuration that allows the pooling of resources and the sharing of activities in order to achieve a common goal, between a large number of actors to gain positive spillovers. Mesquita (2007) mentions that a cluster facilitator can be individuals, dependent organizations, governmental agencies that leverage their reputation, knowledge and skills to help create opportunities. Moreover, clusters are perceived as a way of sustaining innovation, economic growth and competitiveness. Clusters cannot be created but developed to respond to a market opportunity supported by the business knowledge and strengths within a region (European Cluster Alliance, 2009).

As the European Commission (2008) also observe, the multiple definitions of the concept of cluster share the appearance that they represent a concentration of one or more sectors in a particular region and the fact that clusters emphasize on networking and cooperation between institutions and companies.

The cluster policy pursues multiple objectives, and the European Observatory for Clusters and Industrial Change (EOCIC, 2019) identifies that in Europe the major objectives are to reinforce the cooperation structures of different stakeholders, to grow internationalization activities and to increase the competitiveness. Also, a EOCIC Report (2019) shows that in Europe, at the national level, the cluster programs have the following features (EOCIC, 2019):

- In general, most cluster programs aim to achieve various objectives, but some countries develop and implement cluster focused on a single specific objective.
- 20 out of the total of 29 European sample countries implement and develop cluster policies using dedicated cluster programs.
- Some countries receive cluster support through one specific program, and other countries have various and multiple supporting programs based on specific targets.
- Annual budgets to support clusters are different; France, United Kingdom and Hungary report the largest budgets.
- Cluster programs are addressed to cluster organizations and/or other public and private actors (associations, research, business).
- In general, cluster support is related to R&D support, technology and innovation policies, competitiveness and business development, with a particular focus on SMEs (Small and Medium-sized Enterprises) support.

2.2 Advantages/benefits and barriers of cluster implementation

Over time, different advantages of the cluster approach have been identified, their knowledge and awareness bringing benefits for each member of the cluster. The advantages that a company can obtain from cluster membership depend to a large extent on the endowments of the cluster to which it belongs. Thus, the companies located in developed clusters are more likely to gain benefits by attracting the skilled workforce, by obtaining high quality information, by increasing the company's reputation (Steinfeld, LaRose, Chew, & Tong, 2012).

From the extensive diversity of recognized benefits of belonging to the cluster or implementing a cluster, Porter (1998) states that belonging to a cluster leads to increased productivity of a company, country, region or domain because it offers (Porter, 1998): (1) better access to suppliers and employees; (2) access to specialized information; (3) complementarities (products complement, marketing complementarities based on enhanced reputation, on extended variety of joint marketing mechanisms, etc.); (4) better motivation and measurement and (5) access to Public Goods and Institutions.

In another study, Porter (2000) states that the cluster affects competition and identifies 3 other benefits of a cluster: increasing the productivity of industries or member firms in the cluster,

increasing the capacity of clustered firms for productivity growth and innovation, and stimulating and encouraging the formation of new businesses that support innovation and develop cluster. The firm co-located in regional clusters can have similar advantages including: the pooling of resources, knowledge spillovers, access to multidisciplinary competences, access to skills and social and cultural relationship (Damvad, 2015).

Iordache, Ciochină and Asandei (2000) consider that a cluster brings benefits as a result of reducing the individual costs of the companies in the cluster, increasing the turnover of clustered firm by offering joint products, foreign savings achieved; determining the collection of a large amount towards the local / central budget; development of the national, regional economy. Moreover, in their study, Steinfield, LaRose, Chew, & Tong (2012) find that a company could gain the following benefits when becoming a member of a cluster: creating and maintaining relationships with partners from outside the region, access to business-relevant information, access to knowledge exchange between the members of the cluster and information exchange with customers.

At the European level there are some National Cluster Programs that present a number of objectives that can be taken into account as well as the benefits of clusters (EOCIC, 2019): (1) increasing cooperation between companies, between science/research and industry; (2) increasing competitiveness of SMEs; (3) expanding the clusters' visibility ; (4) promoting technology development and implementation and R&D activities; (5) supporting cluster members; (6) strengthening and increasing innovation in specific regions; (7) growing internationalization activities; (8) fostering entrepreneurship, spin-offs and start-ups; and (9) promoting social economy. Also, Solvell, Lindqvist and Ketels (2003) have identified some cluster initiative objectives which can highlight the benefits of the cluster, as: establish networks among people and clustered firms, allows the development of existing companies, promote new technologies and facilitate innovation, create brand and attract new organizations and talent to region, provide business support and management training, improve firms' cluster awareness, etc.

Crass, Rammer and Aschhoff (2016), quoting Marschall (1890), state that producers in a cluster can reap the benefits by sharing the costs of common resources, by learning from each other and by gaining access to skilled labor and specialized suppliers. According to Mesquita (2007), the main purpose of the cluster facilitators (or trust facilitators in his word) is to benefit from multiple relationships in the cluster to help clustered firms build and grow trust, promote cooperation in order to gain advantages and help them increase their efficiency and reach higher levels of competitiveness.

2.3 Clusters' particularities in healthcare system

By analyzing the implementation of cluster in Russia, Prokhorova et al (2018) identify new types of clusters that aim to contribute to the growth of the health. The implementation of these clusters will allow: bringing the level of development of pharmaceutical, medical industry and healthcare to the world level; reducing the price of consumer for drugs; changing the budget health expenditures structure; growing the competitiveness of pharmaceutical products and domestic medical; changing the sanitary standards and norms; compliance of medical standards with international requirements; increasing the quality of education and changing labor remuneration structure.

EOCIC (2019) suggests that in European Union and in COSME countries there are 30 National Cluster Programs, while 3 of them are in Romania. Some of these Cluster Programs have as specific sectorial or technological focus the health sector. As Estonia has developed the Cluster Program "Support for cluster development", focused as well as on the Healthcare technology and services, Romania has put in motion the Cluster Program "Organization and development of innovative cluster" and "POC 2014-2020 Axis 1, Action 1.1.1, Type project: Innovative clusters" which are focused among others on the Health sector (EOCIC, 2019).

Also, at the European level, there are 51 Sectoral Clusters in Romania presented in European Cluster Collaboration Platform (ECCP) (2019a). This platform is a service facility that aim to provide cluster members with modern tools that allows to use efficiently the networking instruments, to develop trans-nationally and internationally collaborations, to access the quality information on cluster development, to improve the performance of clustered firms and their competitiveness (ECCP, 2019b).

In Romania there is an association called "The Romanian Association Cluster" (Clustero), being the representative body in the field of clusters in this country and the main platform of exchange of information, cooperation and support for the development of the national cluster landscape focused on internationalization and innovation (Clustero, 2019). According to Clustero (2019), in Romania exist 74 national cluster initiatives to develop a cluster, and 42 of them are the most active Romanian cluster in different fields such as: renewable energy, textiles, agrofood, etc. Out of the total of active cluster, 5 of them are in the healthcare system, as shown Table 1.

Table 1. The Romanian clusters in healthcare system members to Clustero

No.	The name of cluster	Location
1	Imago Mol	Iași
2	Innovative Cluster for Health	Galați
3	Lifetech City	Târgu-Mureș
4	Rohealth Cluster	Bucharest
5	Rovest Cluster	Timișoara

Source: Created by authors based on information provided by Clustero (2019)

Analyzing Table 1 it can be stated that the 5 clusters in the Romanian healthcare system are part of 5 different development regions of Romania: North – East (Imago Mol), South – East (Innovative Cluster for Health), West (Rovest Cluster), Center (Lifetech City) and Bucharest – Ilfov region (Rohealth Cluster).

3. RESEARCH METHODOLOGY

The degree of openness to the concept of cluster and the potential for cluster implementation in the Romanian healthcare system were analyzed from the perspective of the employees in this field. Thus, the data collection was conducted among employees in the Romanian healthcare system, and a questionnaire on the cluster concept was used.

The questionnaire was elaborated based on previous research and literature references and included close-ended questions to provide answers to the three research questions formulated in this paper. It contained different types of questions, such as: grid questions with only one possible answer, questions with several possible answers, which allowed to identify all the answers relevant to the employees in the health system, questions in the form of 5-point evaluation scales, where 5 meant that the respondents totally agree with that statement and 1 that they do not agree at all, etc.

In addition to the demographic data, referring to the geographical area, to the unit in which the respondents are employed, a series of questions were included in the questionnaire which allowed to identify the different aspects related to the cluster concept. Therefore:

- the degree of collaboration of the healthcare units: in this respect there were a series of questions that allowed the identification of the extent to which the respondents' employers collaborate with other institutions, as well as the detection of the types of actions taken in that specific collaboration context;

- the degree of familiarity to the cluster concept: this section of the questionnaire included questions that allowed the identification of the knowledge degree of respondents related to the cluster concept;
- cluster advantages or benefits: this part of questionnaire contained a series of questions that referred to the recognized cluster advantages or benefits, applicable to the Romanian healthcare system, and included the following 6 items: "Improving the quality of health services"; "Enhancing the human resource"; "Increasing the competitiveness of the cluster members"; "Expanding the resources, capacities and boosting the efficiency of the clustered organizations"; "Increasing the innovative potential in the health field, of the members" and "Building a common know-how base and members' common access to it".
- barriers in creating and developing clusters: the questionnaire sought to identify what are the main barriers perceived by respondents on the way to creating and developing clusters in the health sector in Romania and included 8 items: "Legislative framework in the field of the Romanian healthcare system"; "Specific strategies and policies in the field"; "Underfunding of the domain"; "Ignorance about the concept of cluster", "Resistance to change"; "Infrastructure", "Lack of experts in the field (at the unit management level)" and "Insufficient information related to cluster implementation / development".

The questionnaire was applied from November 2018 to January 2019 and was distributed in the online environment, facilitating access to respondents from all over the country, from different geographical regions. As a result, 311 questionnaire replies were obtained. Subsequently, following preliminary analyses, 19 responses were eliminated from the total of the 311 received answers. Finally, there were 292 valid questionnaires collected from the employees of the Romanian healthcare system. Regarding the sample structure, the main information is illustrated in Table 2.

Table 2. Sample structure

Geographic area / Development regions (N=292)		Health unit type (N=292)	
Bucharest-Ilfov	52.05%	Hospital	50.34%
North-West	2.74%		
South-West Oltenia	2.05%		
Centre	4.11%	Pharmacy	17.47%
North-East	11.64%	Private medical practice	13.70%
South-East	20.55%	Medical center/ Polyclinic	15.07%
South -Muntenia	6.16%	Other	3.42%
West	0.68%		

Source: Created by the authors based on survey results

Table 2 indicates that regarding respondents' development region or geographical region, the information gathered came from respondents employed in health units from all 8 development regions of Romania. Analyzing this information, it can be observed that over half of the respondents (52.05%) belong to the Bucharest-Ilfov region. The next two geographical regions, sorted by number of respondents, are South-East (20.55%) and North-East (11.64%).

Also based on the information provided in Table 2, regarding the type of health unit in which the respondents carry out their activity, it can be noticed that most of the respondents (50.34%) are employed in a hospital. The following types of health units depending on the number of respondents working in them are: Pharmacy (17.47%), Medical center / Polyclinic (15.07%), Private medical practice (13.70%) and Other (3.42%) (such as laboratory analysis, drug factory, etc.).

4. ANALYSIS, RESULTS AND DISCUSSIONS

The search for an answer to the first research question, and more precisely in order to determine the degree of familiarity to the cluster concept of the employees from the Romanian sanitary units, the idea that this concept emphasizes the collaboration between institutions and companies and networking was considered. In this regard, firstly, the extent to which the health units in Romania, based on their employees' answer, collaborated with other units, companies, universities, research and development institutes from the same region was analyzed. Thus, the results show that out of the total of the 292 respondents, 62.33% of them are employed within a health unit in Romania that collaborates with other institutions and the remaining 37.67% are part of units that do not cooperate with other types of institutions.

Moreover, Figure 1 illustrates the types of actions taken within the health units in collaboration with other institutions.

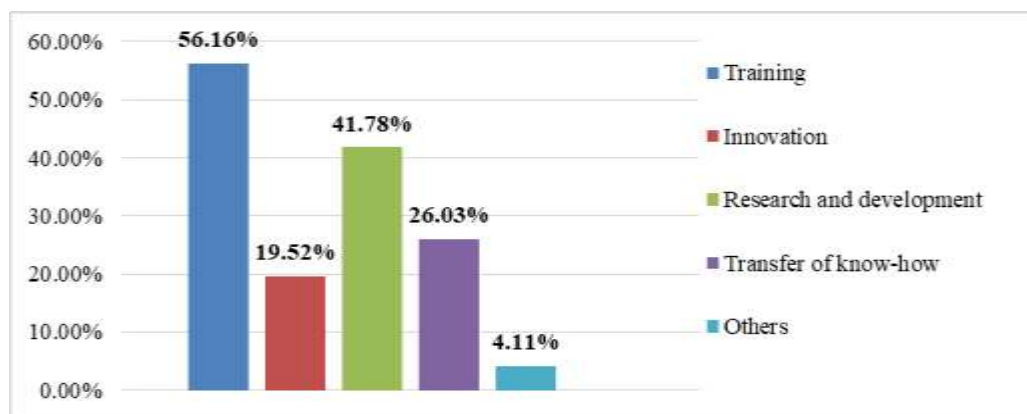


Figure 1. Types of actions carried out by the healthcare units in collaboration with other institutions

Source: Created by the authors based on survey results

Based on the information provided by Figure 1, one may see that most of the respondents (56.16%) have chosen training as the main type of action carried out in collaboration with other units, universities, companies, research and development institutes. Another type of action appreciated by 41.78% of the respondents as being used in collaboration with other institutions is represented by research and development. The transfer of know-how is considered by 26.03% of the respondents as being used in the collaboration process of the Romanian healthcare units. According to the respondents' responses, innovation (19.52%) was detected as another type of action performed in the collaboration of the health units with other institutions. Moreover, 4.11% of the respondents mentioned other possible types of actions for achieving the collaboration, including: clinical studies, service provision, etc.

Considering the share of respondents who are part of units from the healthcare system in Romania that collaborate with other units, companies, universities, research and development institutes in the same region and the types of actions through which the collaboration is carried out, it can be observed that there would be a potential for cluster implementation, based on existing collaborations.

Finally, looking at the extent to which respondents are familiar with the concept of cluster, the results show, however, that 63.70% of the respondents are not familiar or are very unfamiliar with this concept, 22.9% of the respondents are somewhat familiar and only 13.40% of all the respondents are familiar with the concept of cluster.

Concerning the second research question, the opinions of the respondents regarding the advantages of belonging to a cluster, applicable to the healthcare system in Romania, was investigated and it

was sought to determine the extent to which the employees in the health units know about these advantages.

On this respect, out of the total of the 292 respondents, 33.7% of the them know to some extent or enough advantages generated by belonging to a cluster in the health field, 18.80% of them do not know very well the advantages of such a membership and the remaining 44.5% state that they are not at all familiar with the benefits generated by belonging to a cluster.

Moreover, in addition to determining the extent to which respondents know and appreciate the benefits of belonging to a cluster, this research aimed to study also whether the employees in the Romanian health units are differently aware of these advantages depending on their employer belonging to a cluster.

Thus, analyzing the extent to which respondents work in healthcare units that are members in a cluster, it was found that only 21.20% of them belong to a healthcare unit member in a cluster and 78.80% of respondents work in non-cluster units. By comparing the share of respondents who are part of units in the Romanian healthcare system that are members in a cluster (21.20%), with the share of respondents who are employed within a unit that collaborates with other institutions (62.33%), it can be observed that there is still untapped potential for setting up a cluster or joining an existing cluster in the region.

Table 3 illustrates the recognized advantages of belonging to a cluster, applicable to the healthcare system in Romania, depending on the membership of a cluster.

Table 3. Healthcare workers' opinion on the advantages of belonging to a cluster, applicable to the healthcare system in Romania

Advantages of belonging to a cluster in healthcare system	Cluster members (N = 62)		Non-cluster members (N = 230)		Total (N = 292)	
	M	SD	M	SD	M	SD
Improving the quality of health services	3.66	1.25	3.46	1.21	3.50	1.22
Enhancing the human resource	3.71	1.18	3.39	1.21	3.46	1.21
Increasing the competitiveness of the cluster members	3.31	1.22	3.03	1.22	3.09	1.23
Expanding the resources, capacities and boosting the efficiency of the clustered organizations	3.65	1.15	3.37	1.23	3.43	1.22
Increasing the innovative potential in the health field, of the members	3.74	1.14	3.29	1.24	3.39	1.23
Building a common know-how base and members' common access to it	3.81	1.11	3.43	1.23	3.51	1.21

Source: Created by the authors based on survey results

Analyzing the results provided by Table 3, it can be observed that overall, the respondents consider the following recognized advantages of belonging to a cluster, applicable to the healthcare system in Romania, as the most important: "Building a common know-how base and members' common access to it" (M=3.51, SD=1.21), "Improving the quality of health services" (M=3.50, SD=1.22) and "Enhancing of the human resource" (M=3.46, SD=1.21). On the other hand, the respondents

consider that the least important advantage offered by belonging to a cluster is "Increasing the competitiveness of cluster members" (M= 3.09, SD =1.23).

The comparative approach of the extent to which the respondents are aware of these advantages, depending on the membership of the sanitary units to a cluster, shows that the employees in cluster members healthcare units are more aware of the benefits of belonging to a cluster. Thus, the importance given by them to each of the advantages listed in Table 2 achieves an average higher than the average obtained by the respective advantages if the respondents are employed in the non-cluster units.

The biggest difference in awareness level on the benefits brought by a cluster between cluster and non-cluster units is obtained for the advantage "Building a common know-how base and members' common access to it" with an average of M = 3.81 and a standard deviation SD = 1.11 for cluster member units and a M = 3.43 and SD = 1.23 for non-cluster member units. Also, for the benefit "Increasing the innovative potential in the health field, of the members" there is a big difference in the extent to which the respondents appreciate and acknowledge this advantage based on their unit's cluster membership or non-membership. By analyzing these benefits, it can be observed that they refer to know-how and innovation, the two concepts being identified and appreciated by the respondents as types of actions carried out by their health unit in collaboration with other institutions. This aspect suggests that performing collaborative actions between different types of institutions also allows a great awareness of the advantages brought by belonging to a cluster.

Also, through this research the aim was to identify the main barriers in creating and developing clusters in the sanitary field in Romania and to determine the way in which these barriers are perceived by the employees from the sanitary units. Table 4 illustrates the healthcare workers' perception regarding the main blockage sources, presenting also the comparative approach of the measure of awareness of these impediments according to their unit's belonging to a cluster.

Table 4. Respondents' opinion on the barriers identified in the creation and development of clusters in the Romanian healthcare system

Barriers in creating and developing clusters in the sanitary field	Cluster members (N = 62)		Non-cluster members (N = 230)		Total (N = 292)	
	M	SD	M	SD	M	SD
Legislative framework in the field of the Romanian healthcare system	3.68	1.29	3.57	1.21	3.59	1.23
Specific strategies and policies in the field	3.58	1.22	3.45	1.24	3.48	1.23
Underfunding of the domain	3.69	1.313	3.45	1.26	3.50	1.28
Ignorance about the concept of cluster	3.65	1.23	3.45	1.23	3.49	1.26
Resistance to change	3.68	1.27	3.50	1.25	3.54	1.26
Infrastructure	3.92	1.12	3.55	1.18	3.63	1.18
Lack of experts in the field (at the unit management level)	3.55	1.36	3.42	1.30	3.45	1.31
Insufficient information related to cluster implementation / development	3.65	1.28	3.57	1.25	3.59	1.25

Source: Created by the authors based on survey results

By analyzing Table 4, it can be noticed that in total, the 292 respondents identify the following most important barriers in clusters creation and development: "Infrastructure" (M=3.63, SD=1.18), "Insufficient information related to cluster implementation / development" (M=3.59, SD=1.25) and

"Legislative framework in the field of the Romanian healthcare system" (M=3.59, SD=1.23). On the other hand, the least important barrier in clusters creation and development is represented by "Lack of experts in the field (at the unit management level)" (M=3.45, SD=1.31). This aspect could reinforce the potential for cluster implementation in the Romanian healthcare system because it suggests that this domain could identify specialists in the field of cluster implementation.

The approach of these barriers based on the respondents' unit's cluster membership emphasizes that the healthcare workers perceive to a greater extent all the 8 barriers as standing in the way of creating and developing clusters if their sanitary unit belongs to a cluster. In this sense, depending on the membership in a cluster of the health unit of which the respondents belong to, the biggest difference in perception and awareness of these barriers is obtained for the barrier "Infrastructure", with an average difference between respondents' responses of 0.37. This barrier has also been identified as the most felt in the development and creation of clusters in Romanian healthcare field.

5. CONCLUSIONS

The previous research and literature references suggested that the clusters can be used as means to enhance an activity sector, to develop a country or region. The aim of this study was to identify the particularities of the concept of cluster and more precisely to determine the current level of openness to the concept of cluster of the employees in the Romanian healthcare system and to highlight the potential for cluster implementation in healthcare system. The data collection was conducted among employees in the Romanian healthcare system, and a questionnaire on the cluster concept was used.

Starting from the idea that the concept of cluster emphasizes the collaboration between institutions and organizations and networking, the main results proved that out of the total of 292 respondents, 62.33% of them are employed within a healthcare unit in Romania that collaborates with other institutions and the main type of action carried out in collaboration with these institutions is considered "the Training".

On the other hand, the findings established that only 21.20% of the respondents belong to a healthcare unit member in a cluster. By comparing this share with the share of respondents who are employed within a unit that collaborates with other institutions (62.33%), it can be stated that there would be potential for setting up a cluster or joining an existing cluster in the region.

Concerning the advantages of belonging to a cluster, applicable to the healthcare system in Romania, the results showed that the most recognized advantages of this membership are "Building a common know-how base and members' common access to it", "Improving the quality of health services" and "Enhancing of the human resource". On the other hand, the respondents identified the following barriers in clusters creation and development: "Infrastructure", "Insufficient information related to cluster implementation / development" and "Legislative framework in the field of the Romanian healthcare system". Moreover, the approach of the advantages and the barriers of cluster, based on the respondents' unit's cluster membership, emphasized that the healthcare workers perceive to a greater extent these aspects if their sanitary unit belongs to a cluster.

The findings of this study could have theoretical and practical implications. From a theoretical point of view, the results highlight the peculiarities of the cluster concept in healthcare system. From a practical perspective, the information provided by this study can be useful to the decision makers in the Romanian health system, as well as to other institutions (companies, universities, research and development institutes) which can collaborate in order to implement clusters in sanitary system.

During this research, a number of limitations were identified and taken into account. Firstly, a limitation of this study is the lack of information on the Romanian clusters in healthcare system. Secondly, the existence of analysed population at the level of all the development regions of Romania, has made the data collection process difficult. Thirdly, the large number of employees in

the healthcare system in Romania compared to the number of respondents limited the research sample and made it not representative at national level.

The findings identified through this research opened up the possibility of future research directions. Thus, it is envisaged to carry out new research among several respondents from the Romanian healthcare system so that the results can be extrapolated to the whole country.

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