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ROLE OF REAL ESTATE MANAGEMENT FIRMS TOWARD SUSTAINABILITY IN INDIA

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Abstract

Today, sustainable real estate management is an essential and timely issue. Real estate is one of an enterprise's most valuable assets, and its appropriate management is a prerequisite for attaining a competitive edge. Modern real estate management should incorporate aspects that reflect market demands, environmental issues, the user wants, and the business environment sustainably. This study studies and analyses the elements influencing sustainable real estate management practises in India. This study acquired primary data from both residents/users of real estate and market actors. The research employs a combination of qualitative and quantitative methodologies, including case studies of the real estate management market and literature reviews on sustainable real estate management, as well as structured observation and surveys with closed-ended questions. The data indicate that the environmental element, which is the least developed among Indian real estate management firms, has the greatest influence on the overall sustainability of real estate management organisations. This should be the focus of the proposals, allowing real estate management businesses to highlight their environmental sustainability practises as the foundation for adopting of the idea of sustainable real estate management in India.

Keywords:

Sustainable;
Real estate;
Management;
Indian real estate;
Environmental.

1 Introduction

Since the formation and development of market relations in the country, private ownership of the means of production, and the emergence of the real estate market, real estate as a specific object of management, which has a significant socio-economic impact and the particulars of market circulation, has appeared and been developing in the economy. Several things that once comprised fixed assets have acquired a new property: the ability to circulate on the commodities market as a specific product — real estate — and on the stock market as an entrepreneurial asset [1]. This requires a fundamentally different method of operation for businesses and organisations [2]. Moreover, numerous challenges surrounding the improvement of real estate management efficiency as a specialised object of market interactions with high consumer, cost, and social relevance. At the development of the current stage of the real estate market, one of the issues is the creation of an integrated real estate management system that ensures the unity and high efficiency of the processes of creation, use, development, and circulation of real estate and aims to increase the profitability of its owners and users.

Given the present economic climate and the need for economic development, many of the current solutions to this issue must be changed. Unresolved is the question of developing circumstances to draw savings from the public, businesses and organisations, institutional investors in real estate finance, and the engagement of state and local authorities in these processes. These are the enterprise functions for managing a particular product or asset. COVID-19 has had a substantial impact on real estate choices, expectations, and values [3]. In certain instances, existing tendencies are accelerating. Among these are the digitalization of labour, the alteration of habits, and the so-called ESG (Environmental, Social and Governance) measures, which measure environmental, social, and governance sustainability [4]. Along with conventional economic and financial criteria, these aspects are now a vital component of real estate management. Sustainability is no longer solely the duty of non-governmental or so-called "green" firms but a requirement of any management, including real estate. Companies are increasingly focused on ensuring that their investment and management plans are no longer based

solely on profit but also on the application of best practises and processes in the field of ESG according to the ISO 26000 sustainability standard [5]. Sustainability is a growing trend in real estate management, as mentioned by Deloitte [2].

CO_2 emissions from the real estate industry amounted for 30 % of yearly emissions documented by UNEP-UN Environment Program in 2015, while energy consumption in the real estate sector was close to 40% of the worldwide level. This largely led to the execution of the Paris Agreements of 2015, the first legally binding worldwide deal on climate change with the goal of lowering CO_2 emissions by 77 percent by 2050, as well as raising awareness of the significance of climate change [6]. Another study [7] explains about reducing CO_2 emissions, sustainable architecture designs [8], using alternative construction and management techniques for cost cutting to build low-rise buildings in the Middle East. Thus, the reversal in real estate, which has resulted in more environmental responsibility and the beginning of a positive sustainability and ESG dynamic. However, if environmental elements are more readily identifiable, the interaction between them and social and governance aspects becomes more complicated. Buildings have a social purpose; they are a part of society and are utilised by individuals who demand a high-quality, contemporary, and efficient environment; thus, the sustainable management of real estate is a complex system that must be analysed from all angles [9].

Conscious consumerism and environmental stewardship have resulted in a continuous growth of environmental stakeholders, particularly in the context of implications on human health and well-being. Effectiveness enhancements can result in considerable financial benefits for both building owners and tenants. Among the steps that will have the biggest impact are the installation of energy-efficient lighting, the improvement of HVAC (Heating, ventilation, and air conditioning) systems. The implementation of utilities, the reduction of water use, and the improvement of waste management. The characteristics listed in Table 1 [10].

Table 1: Aspects of sustainable real estate management [10].

Environmental	Social	Governance
Energy management	Tenant satisfaction	Director independence
Water management	Tenant health and wellbeing	Executives' pay for performance
Waste management	Human capital management	Diversity
Climate change adaption	Community relations	Shareholder rights

The framework for the sustainable management of corporate real estate should address three primary factors: environment, governance, and social. According to the authors, the corporate real estate management strategy must focus on the specific aspects that can be combined into three main groups, and each of these groups has various sustainability measurements that management companies must focus on and evaluate when assessing the performance of the company [11].

It must be realised that high-quality, sustainable property management cannot be offered at the lowest possible price. Simultaneously, the worldwide trend toward the implementation of ESG principles in the economy has already resulted in a substantial revolution in the development and administration of commercial real estate. Modern green office complexes are created not only to ensure a low environmental effect and satisfy high requirements in the domains of energy conservation and resource conservation, but also to encourage its tenants to adopt ESG business practises. Also, the regulations governing the relationship between the building owner and the tenants are changing, and one of the most significant responsibilities of the developer is to ensure that the workers of the businesses located there can communicate effectively [12].

Based on the information supplied in the above literature, it is possible to assert that the issue of sustainable real estate management is both timely and significant in the current environment. Therefore, the purpose of this study is to investigate the elements that influence sustainable real estate management practises in India. This objective is based on India's recent introduction of ESG reporting for listed firms [13] and its focus on the significance of sustainability in all parts of the economy [14].

2 Research methodology

In this study, a survey was performed of real estate management companies in India. Based on the author's expertise, Bond Builders and Consultants of Trivandrum, Kerala, have been selected. Google Forms was used to distribute the survey to their partners, including engineers, project managers, contractors, supervisors, clients, architects, etc., who are also involved in real estate management

operations. There were 67 responses out of a total of 110 forms distributed, which is 60.9 % of the total population [15]. The response rate is impressive, as it exceeds fifty percent of the population. The survey has three main components.

The first section of the survey focused on the demographic information and real estate management experience. In the second section of the survey, respondents were asked to evaluate the significance of each facet of sustainable real estate management listed in Table 1 and rank its significance on a Likert scale ranging from 1 to 5, where 1 is nearly not significant and 5 is extremely important. Additionally, comparable features were requested to be rated on a similar Likert scale in terms of their growth in India. This time, the Likert scale varied from 1 (not developed) to 5 (very developed). The third part of the study was the examination of the sustainability of the operation and management of real estate, as well as four aspects on a comparable scale: internal operations, economic, environmental, and social.

The author started by performing a reliability analysis of the collected data. Cronbach Alpha was implemented (SPSS: reliability analysis). A normal distribution test was applied to observe the correlation study between the link between sustainability and all four of its criteria. From the obtained result the Spearman Rho for the relationship analysis was performed. Finally, a linear regression model was developed to detect the impact of aspects on sustainability.

In summary, the research methodology used in this study was well-structured and robust, with the use of Likert scales and statistical tests to evaluate the importance of sustainable real estate management practises and their development in India. The results of this study can provide valuable information for the development of sustainable real estate management practises in India.

3 Results and discussion

The investigation reveals the findings of the respondents' evaluations. In the section devoted to evaluating the responses on the many facets of sustainability and their level of development in India. The findings of both scales indicate that the level of dependability exceeds 0.70, which may be regarded as sufficient and trustworthy data that can be used for the study:

- Scale: importance of various factors of sustainability – 0.808
- Scale: development level of various factors of sustainability in India – 0.786

It can be shown from Table 2 that water management and human capital management are the least essential sustainability considerations. Additionally, the total rating is above the norm of three points, indicating that respondents regard the sustainability features to be rather essential.

Table 2: Results of the importance of various factors of sustainability.

Descriptive statistics					
Factors	**N**	**Minimum**	**Maximum**	**Mean**	**Std. deviation**
Water management	67	2.00	5.00	4.0000	.87039
Waste management	67	2.00	5.00	3.8955	.80027
Climate change management	67	2.00	5.00	4.0597	.93551
Tenant satisfaction	67	2.00	5.00	4.0299	.92064
Tenant health and wellbeing	67	2.00	5.00	3.9552	.82449
Human capital management	67	2.00	5.00	3.9403	.90253
Community relations	67	2.00	5.00	3.8507	.89195
Director independence	67	2.00	5.00	4.0149	.89599
Executive’s pay performance	67	2.00	5.00	3.9851	.86151
Diversity	67	2.00	5.00	3.9104	.94918
Shareholder rights	67	2.00	5.00	3.7761	.88456
Valid N (listwise)	67				

Fig. 1 shows the graphed results, and it can be seen that shareholder rights and waste management are deemed the most important. The government also proposes and supports the management of climate change, as well as community relations and energy management, which follow these significant factors.

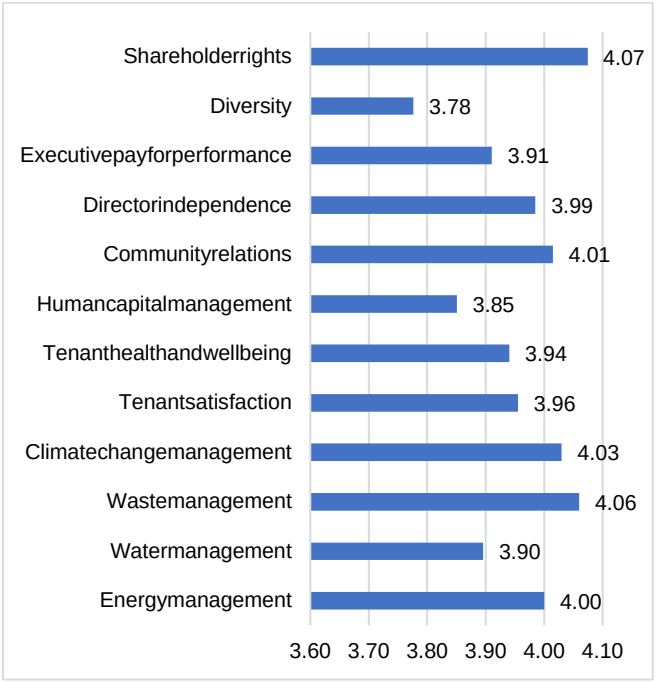

Fig. 1: Rating of the importance of various factors of sustainability.

Table 3 displays the findings of the development level of comparable sustainability criteria in the India. Noting that the total rating is substantially lower than the significance rating is important.

Table 3: Results of the development level of various factors of sustainability in India.

Descriptive Statistics					
Factors	**N**	**Minimum**	**Maximum**	**Mean**	**Std. deviation**
Water management	67	2.00	5.00	3.9104	.86570
Waste management	67	2.00	5.00	3.4925	.85941
Climate change management	67	2.00	5.00	3.3433	.80814
Tenant satisfaction	67	2.00	5.00	3.3582	.94871
Tenant health and wellbeing	67	2.00	5.00	3.4627	.92652
Human capital management	67	2.00	5.00	3.3433	.84481
Community relations	67	2.00	5.00	3.4627	.87609
Director independence	67	2.00	5.00	3.4925	.99046
Executive’s pay performance	67	2.00	5.00	3.3881	.86961
Diversity	67	2.00	5.00	3.4179	1.15666
Shareholder rights	67	2.00	5.00	3.2687	.93066
Valid N (listwise)	67				

Fig. 2 depicts the results graphically, and it is seen that the best development in India has added an energy management element and a shareholders' rights feature.

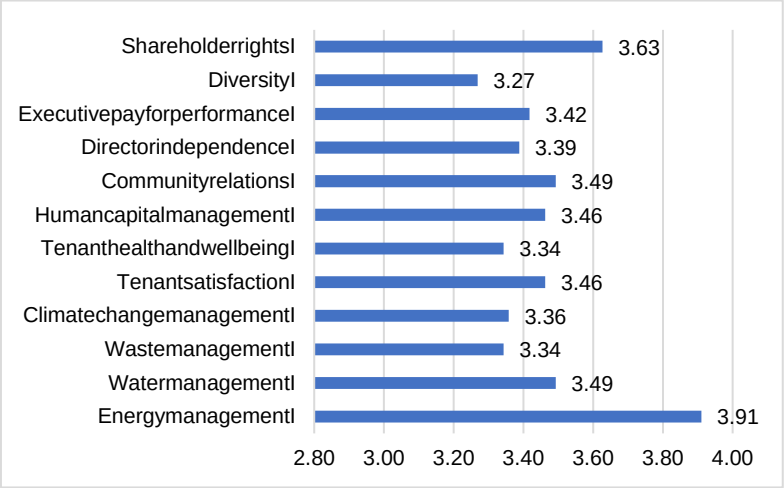

Fig. 2: Rating of development level of various factors of sustainability in India.

The anticipated performance outcomes Gap by assessing the difference between expectations or, in the case of research, the significance of sustainability factors, and performance, which in the case of research would be the level of development of the same sustainability factors. Table 4 displays the results, which indicate that all elements of India are comparatively undeveloped. Waste management and climate change management are the areas with the greatest disparity; director independence and tenant health and well-being should also be considered.

Table 4: Results of the performance/expectations gap.

Factors	Gap
Energy management	-0.09
Water management	-0.40
Waste management	-0.72
Climate change management	-0.67
Tenant satisfaction	-0.49
Tenant health and wellbeing	-0.60
Human capital management	-0.39
Community relations	-0.52
Director independence	-0.60
Executives' pay for performance	-0.49
Diversity	-0.51
Shareholder rights	-0.45

The comparison of the three scales is shown in Table 5. It is mentioned that the findings of the sustainability of internal operations and economic elements are developed, and the evaluation is relatively comparable. The environmental component is the last to be developed, in the opinion of the staff of the real estate management business.

Table 5: Descriptive statistics of overall sustainability evaluation.

Parameters	N	Minimum	Maximum	Mean	Std. Deviation
Internal operation	67	1.56	4.56	3.0252	.58416
Economics	67	1.80	4.20	3.0209	.63545
Environmental	67	1.75	4.50	2.8993	.64117
Social	67	1.83	4.17	2.9531	.66120
Valid N (likewise)					

Furthermore, it was determined to conduct a correlation study between the link between sustainability and all four criteria. To determine which relationship analysis should be used in Table 6, the author ran a normal distribution test, which revealed that none of the scales are normally distributed, and that the significance level is more than 0.05. Only the evaluation of operation sustainability is generally distributed. As a result, the author chose to employ the Spearman Rho for the relationship analysis as show in Table 7.

Table 6: One-sample Kolmogorov-Smirnov test.

Parameter		Sustainability	Internal operations	Economic	Environmental	Social
N		67	67	67	67	67
Normal parameters [ab]	Mean	3.1119	3.0252	3.0209	2.8993	2.9531
	Std. Deviation	.63854	.58416	.63545	.64117	
Most extreme differences	Absolute	.236	.095	.088	.115	
	Positive	.137	.071	.066	.098	
	Negative	-.236	-.095	-.088	-.115	
Kolmogorov-Smirnov Z			1.935	.778	.717	.939
Asymp. Sig. (2-tailed)			.001	.580	.683	.342
a. Test distribution is normal.						
b. Calculated from data.						

The association between overall sustainability and extremely questionable is presented in Table 7. All the characteristics are strongly associated, but the association between the environmental aspect and sustainability is the strongest, indicating that the more a firm develops a reminder to the last practicel, the greater the sense of sustainability among employees.

Table 7: Correlation analysis.

Parameters			Sustainability	Internal operations	Economic	Environmental	Social
Spearman's rho	Sustainability	Correlation coefficient	1.000	.549**	.615**	.689**	.646**
		Sig. (2-tailed)	.	.000	.000	.000	.000
		N	67	67	67	67	67
	Internal operations	Correlation coefficient	.549**	1.000	.630**	.682**	.760**
		Sig. (2-tailed)	.000	.	.000	.000	.000
		N	67	67	67	67	67
	Economic	Correlation coefficient	.615**	.630**	1.000	.614**	.631**
		Sig. (2-tailed)	.000	.000	.	.000	.000
		N	67	67	67	67	67
	Environmental	Correlation coefficient	.689**	.682**	.614**	1.000	.783**
		Sig. (2-tailed)	.000	.000	.000	.	.000
		N	67	67	67	67	67
	Social	Correlation coefficient	.646**	.760**	.631**	.783**	1.000
		Sig. (2-tailed)	.000	.000	.000	.000	.
		N	67	67	67	67	67
	**. The correlation is significant at the 0.01 level (2-tailed).						

In contrast, the element of internal operations had the lowest correlation, indicating a somewhat biased evaluation, even though the size of internal operations was also rated on the sustainability scale. The final section of the study was devoted to the linear regression model developed to determine the

influence of sustainability factors. Table 8 displays the model's final results after the author has eliminated unimportant coefficients. The dependant variable in this linear regression was the sustainability assessment, and the independent variables were all elements. During the process of developing the model, it was determined that the social and internal operations factors are insignificant; hence, the final model comprised two independent variables: environmental and economic variables. Notably, the model exhibited an acceptable level of collinearity, and the *R*-square value of 0.593 is acceptable for the short sample size, indicating that the sample can predict 59 % of the population.

Table 8: Linear regression model.

Model	*R*	*R* Square	Adjusted R^2	Std. Error	Durbin-Watson
1	.770a	.593	.580	.41391	1.489
a. Predictors: (constant), environmental, economic					
b. Dependent variables: sustainability					

As a result, Table 9 demonstrates that the model's significance level is 0.00, which is below the standard threshold of 0.05.

Table 9: ANOVA results.

Model		Sum of square	*df*	Mean square	*F*	Sig.
1	Regression	15.946	2	7.973	46.538	.000[b]
	Residual	10.965	64	.171		
	Total	26.910	66			
a. Dependent variables: sustainability						
b. Predictors: (constant), environmental, economic						

Based on the unstandardized coefficients, Table 10 presents the regression findings, which indicate that the environmental component has the greatest influence on the sustainability rating, with a score of 0.562, compared to the economic aspect, which has a score of 0.276.

Table 10: Regression results.

Model		Unstandardized coefficient		Standardized coefficient	*t*	Sig.	Collinearity statistics	
		B	Std. error	Beta			Tolerance	VIF
1	Constant	.649	.266		2.439	.018		
	Economic	.276	.104	.275	2.641	.010	.589	1.698
	Environmental	.562	.104	.564	5.427	.000	.589	1.698
a. Dependent variables: sustainability								

A similar study conducted in the EU reveals that despite the fact that more and more real estate companies are expressing an interest in sustainable development, there is still a significant gap between their stated intentions and their actual actions. The majority of them lack the necessary strategy, culture, and tools to implement their sustainability commitments [16]. The essence of the concept of sustainability is to enhance commercial real estate through environmental, social, and economic considerations. This research [17] demonstrates, that property owners limit the implementation of sustainability to energy and resource efficiency measures, which are heavily focused on economic elements and have limited application to sustainability's overarching goals. Therefore, this narrow focus on cost minimization is not a new phenomenon in the real estate market; it has simply been repackaged as sustainability to reap the benefits of cost minimization and, as a result, to make the marketing of the properties appear more socially responsible.

It is concluded that the environmental element, which is the least developed among Indian real estate management organisations, is the most significant aspect of the total sustainable practises of real estate management companies. This should be the focus of the proposals, allowing real estate management businesses to highlight their environmental sustainability practises as the foundation for introducing the whole sustainable real estate management idea in India**.**

4 Conclusion

The environmental issue, which is the least developed among Indian real estate management firms, has the greatest influence on the overall sustainable practises of real estate management organisations. This should be the focus of the proposals, allowing real estate management businesses to highlight their environmental sustainability practises as the foundation for the adopting the idea of sustainable real estate management in India. The construction and real estate industries have assumed a central role in the discussion of environmental sustainability, which has been approached from a various angle, including the need to restrict territory usage through incentive programmes, the greening of existing buildings, and/or the redevelopment of urban areas. Over time, the notion of sustainability has extended to include social, financial, and economic concerns in addition to environmental ones. The highest association is shown between the environmental component and sustainability, indicating that the more a firm develops this practise, the more positively its employees regard its overall sustainability. Least correlated is the element of internal operations, which is a somewhat biased evaluation although the internal operations scale was also rated on the sustainability scale. The author has eliminated irrelevant coefficients. The dependant variable in this linear regression was the sustainability assessment, and the independent variables were all elements. During the process of developing the model, it was determined that the social and internal operations factors are insignificant; hence, the final model comprised two independent variables: environmental and economic variables. According to the unstandardized coefficients, the environmental factor has the biggest influence on the judgement of sustainability with a value of 0.562, followed by the economic factor with a coefficient of 0.276.

In summary, the findings of this research are crucial for the development of science and practice in the field of sustainable real estate management, particularly in India. The importance of environmental sustainability practices cannot be overstated, as they have the most significant influence on overall sustainable practices. The study's methodology and findings provide valuable insights for real estate management businesses to focus on improving their environmental sustainability practices and adopt sustainable real estate management practices for a more sustainable future.

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References

[1] SANCHANIYA, R. - GEIPELE, I.: The Role of Entrepreneurship Activity in Economic Development. 22nd Int. Sci. Conf. Economic Sci. Rural Dev. 2021, Latvia University of Life Sciences and Technologies, Vol. 55, 14 May, 2021, pp. 388–395, doi: 10.22616/esrd.2021.55.039.

[2] DA CUNHA, F. - BELCHIOR COIMBRA, F.: The Impact of Social Good. Real Estate Predict, 2021, pp. 2–6.

[3] SANCHANIYA, R.: The Effect of Covid-19 on the Real Estate Industry in India. Balt. J. Real Estate Econ. Constr. Manag., Vol. 9, No. 1, 2021, pp. 122–129, doi: 10.2478/bjreecm-2021-0010.

[4] LEV, H.: Identifying ESG Metrics that Matters.

[5] SANCHANIYA, R. PRANEETH, S. - GEIPELE, I.: Investment Attraction Strategies for Indian Real Estate Management Firms. No. September, pp. 125–136, 2022.

[6] PRI, Sustainable real estate investment: Implementing the Paris climate agreement - An action framework. No. February, 2016, pp. 1–75.

[7] ALHAMMADI, S. A.: Influencing Factors of Cost Control and Environmental Sustainability in Saudi Arabia for Low-Rise Building Construction. Civil and Environmental Engineering, Vol. 18, Iss. 2, 2022, pp. 408–423, doi: 10.2478/cee-2022-0038.

[8] MOHAMMADIAN, Z. - SHAHBAZI, M.: Study of the effect of sustainable architecture on the design of residential buildings (Case study: Qazvin Pardis complex). Civil and Environmental Engineering, Vol. 14, Iss. 2, 2018, pp. 91–98, doi: 10.2478/cee-2018-0012.

[9] DE PAOLA, P. - TAJANI, LOCURCIO, M. - DI LIDDO, F.: Sustainable Real Estate and Resilient Cities: Management, Assessment and Innovations. Sustain, Vol. 14, No. 15, 2022, pp. 1–6, doi: 10.3390/su14158984.

[10] RYAN, K.: The Sustainability Edge in Real Estate Investing. 2019, https://www.3blmedia.com/news/sustainability-edge-real-estate-investing.
[11] FAUZI, N. S. - ZAINUDDIN, A. - NADIAH, S. - ALI, M. - NAWAWI, A. H. A preliminary framework for corporate real estate sustainable management. MATEC Web of Conferences, Vol. 00062, 2016, doi: 10.1051/matecconf/20166600062.
[12] KANE, K.: Four Reasons Commercial Real Estate Leaders Should Commit To ESG. 2021, https://www.forbes.com/sites/forbesbusinesscouncil/2021/12/27/four-reasons-commercial-real-estate-leaders-should-commit-to-esg/?sh=6c5993bd1a46.
[13] JOEY, M. U. - LEE, C. Y.: India Imposes New ESG Reporting Requirements on Top 1,000 Listed Companies. 2021, https://www.eyeonesg.com/2021/06/india-imposes-new-esg-reporting-requirements-on-top-1000-listed-companies/.
[14] BI INDIA PARTNER: No TSustainability in India is not just about 'going green' but also topped with societal needs like equality, inclusiveness, and wellbeing: Reportitle, 2021, https://www.businessinsider.in/advertising/brands/article/sustainability-in-india-is-not-just-about-going-green-but-also-topped-with-societal-needs-like-equality-inclusiveness-and-wellbeing-report/articleshow/87298794.cms.
[15] CHRISTIAN, D. A. - PARSONS, L. M. - DILLMAN, N. L.: Designing Scalar Questions for Web Surveys. SAGE Journals, Vol. 37, Iss. 3, 2009, https://doi.org/10.1177/0049124108330004.
[16] IONAŞCU, E. - MIRONIUC, M. - ANGHEL, I. - HUIAN, M. C.: The involvement of real estate companies in sustainable development-An analysis from the SDGs reporting perspective. Sustain, Vol. 12, Iss. 3, 2020, doi: 10.3390/su12030798.
[17] WARREN-MYERS, G.: Sustainable Management of Real Estate: Is It Really Sustainability? J. Sustain. Real Estate, Vol. 4, Iss. 1, 2012, pp. 177–197, doi: 10.1080/10835547.2012.12091833.