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CHALLENGES RELATED TO ENVIRONMENTAL SUSTAINABILITY IMPLEMENTATION IN PUBLIC SECTOR CONSTRUCTION PROJECTS IN PAKISTAN

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Abstract

Construction projects are most prominent and fast moving industry in Pakistan. If modern procedures are timely adopted construction can play important role in the GDP of Pakistan. This study aims to find the gap in the knowledge body and challenges to implement sustainable practices in construction projects in Pakistan. Sustainability is often limited by the natural laws that govern the natural system. The methodology used for this research is quantitative. Questionnaires were used for collecting the data for quantitative of this study. SPSS was used to run analysis on quantitative data gathered via questionnaires. Three independent variables were discovered during this study which were "Sustainable Building", "Circuiton Sequel" and "Competitiveness Factor. "Sustainability Implementation" was considered as dependent variable. Pearson Correlation and Regression Analysis were used to check the dependency of this variable and also the strength of these variables on each other. Keeping in view the results and finding suggestions and recommendations were made to fill the gap in knowledge body and suggestions were made for the project managers in the respective field.

Keywords: Sustainability Implementation, Pre-Bidding, Competitiveness Factor, Sustainable Building, Exploratory Sequential Method, Ecological Effects

INTRODUCTION

The notion of sustainability, as articulated by the World Commission on Environment and Development, is the utilization of resources to address the needs and necessities of the present without compromising the capability of future generations in meeting the needs of their own (Gelderman, Semeijn and Vluggen, 2017). Public organizations have increasingly been incorporating social and environmental aspects in their overall strategic agendas (Gelderman, Semeijn and Vluggen, 2017). Additionally, the paradigm of sustainability also includes the assurance that these public funds are used for achieving project goals as well as the betterment of the community (Pūlmanis, 2014).

Among all other sectors in Pakistan, construction business is said to be the most prominent and fast-moving industry in the country. The capacity of construction has transformed enough since the establishment of One Belt One Road program; however the construction sector is still not performing at its fullest (Ali et al., 2020). The billion dollar projects related to construction are afoot as a result of being affiliated with OBOR program in Pakistan. So

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far, we know very little about the obstacles mounted in the way of sustainable development, thus resulting in impeding the performance of construction businesses.

Social Responsibility refers to a way of doing competitive business, through which companies incorporate policies and practices aligned to their business and for the benefit of their shareholders, employees, the community, the environment and their value chain, guaranteeing in this way the preservation of the current conditions for future generations (Soomro and Zhang, 2011). To guarantee the sustainability of the construction sector and strengthen the positive impacts that are generated at the individual level, companies seek to generate alliances at the sector level. Testimony of this is the creation of various sector sustainability guides (Sourani, 2013).

Some of the actions suggested by the companies of the sector to strengthen the integration of CSR in the value chain of the construction sector, as well as its sustainability, are the creation of sustainability policies based on international references, the creation of committees of business sustainability (Wahid, 2014), the self-assessment of impacts generated by the company (and its value chain) in environmental, social and economic issues, awareness workshops with company employees.

Within the specific context of Pakistan, there is dearth of literature and scientific evidence with respect to sustainable construction. The primary rationale for this study is thus to explore state of art literature regarding sustainable construction in Pakistan as well as to contribute towards scientific evidence in literature. The study aims to explore the challenges towards implementation of sustainable construction because it is critical to address challenges to enhance performance of construction sector in Pakistan in short and long term.

Sustainability has been turning into a definite challenge for companies due to its high cost (Gelderman, Semeijn and Vluggen, 2017). Also, there is a range of challenges faced by Pakistan among which one of the most important is sustainable development. For example, severe energy crisis is one the most important issues in Pakistan that affects not only the business sector but also consumers. Since construction sector is an important pillar in the economy, therefore sustainable construction is one of the common factors in Pakistan. Green building practices can reduce demand for energy and enhance resource efficiency.

The main problem in this study is the gap in literature as there are very few studies that explore challenges and obstacles towards sustainable construction in Pakistan. It will lead towards filling a considerable gap found in the body of knowledge as well as the identification of recommendations that can be used by the policymakers and managers in mitigation of the challenges related to sustainable implementation.

The main purpose behind proposing this study is to critically analyze the challenges pertinent to sustainability implementation in public sector projects. As per the key aim, the following objectives are proposed:

- To explore the concept of sustainability and in construction projects and collect reliable empirical evidence with respect to sustainable construction in Pakistan

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- To identify the main challenges in sustainability implementation in Pakistan and assess their impact on sustainability performance of public sector projects in Pakistan
- To evaluate the perceptions of managers in the public sector regarding the influence of the challenges related to sustainability implementation on the overall construction industry in Pakistan
- To provide plausible recommendations to the managers and policymakers within the public sector and offer them a suitable framework for sustainability implementation in the public sector projects

The study attempts to evaluate the challenges linked to the environmental sustainability implementation in the construction projects of public sectors. The study focuses on the construction projects that are specifically relates to the public sector. The study also focuses on the mixed research approach for this research which provides the thorough and critical analysis of the research objectives. The scope of the study includes the participants that are project managers of the public sector construction project through the interviews and questionnaire conducted. The scope is limited in terms of the number of respondents for the research hence the future researches can consider larger sample.

LITERATURE REVIEW

Environmental Effects of Commercial Activities

Human activities impact directly on the environment. These activities can lead to the degradation, pollution and depletion of areas that have suffered from human action and climate change on the planet. One of the human actions that most impact the environment in the construction industry and for this reason it is one of the driving forces for meeting sustainable development goals (Huang, Wu, and Yan, 2015).

Looking at the situation only in the developing countries, MENG, et al., (2015) found that there is still a large portion of the population lives for less than USD 1 per day which is under the extreme poverty line. Eradicating this is one of the goals of the 2000 Millennium Declaration, the United Nations strategy to improve the development of developing countries. Keiner, Koll-Schretzenmayr, and Schmid, (2016) mentioned several reports stating that the impacts of human actions are responsible for climate change and that if this trend does not change the scenario will be catastrophic. According to Praticò and Vaiana, (2012) so far few sustainability-promoting plans have included strategies to mitigate the impacts of climate change or to promote adaptive capacity.

Sustainable development

The term sustainable development was the result of evolving concerns originated in the 1970s with the energy crisis. At that time there was concern about the excessive exploitation of the environment by man. The focus of the discourse was focused solely on the energy aspect, but

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it was when it was realized that the world and economic growth was limited by the availability of environmental resources (Joss, 2011).

In 1987, the Norwegian Prime Minister Gro Harlem Brundtland headed a report commissioned by the World Commission on Environment and Development. This report was named Our Common Future but is commonly called the Brundtland Commission. This report defines sustainable development as the social and economic development process which also meets the consumption needs of current generations without having a significant adverse impact on the potential of consumption needs of future generations (Miralles García and García-Ayllon Veintimilla, 2013). According to Pincetl, (2012) this definition established a benchmark on which all other sustainability definitions that followed it were based. It was realized that it was necessary to expand the notion of sustainability further by dealing with three interacting concepts: physical environment, social organizations and economic processes.

Sustainable Construction

It can be observed that Agenda 21 has been beginning to observe by various economic sectors but it is tailored to meet their own specific needs and contexts at local and sectoral levels. Within the context of the construction sector, some of the important interpretations of Agenda 21 include the Habitat II Agenda in 1996, the CIB Agenda 21 on Sustainable Construction in 1999 and Agenda 21 for Sustainable Construction in Developing Countries 2002 (Dhakal and Chevalier, 2017). Sustainable Construction is achieved when the principles and notion of sustainable development are integrated into the entire construction lifecycle. It can only be achieved through a multidisciplinary process that aims to restore and maintain harmony between the built environment and the natural environment. It also must create adjustments to reaffirm that human dignity is maintained while economic equality is achieved (Newell, et al., 2013).

Considering that the project is the starting point of a building's life cycle, it is expected that most of the solutions that minimize its environmental impacts will come from the architects responsible for this stage (Voytenko, et al., 2016). The building interacts with the environment at different points in time in its life cycle. There are different agents involved in the production chain of the construction of a building.

There are concerns regarding the three dimensions of the concept of sustainability that should be considered in the entire life cycle. According to Childers, et al., (2015) by pursuing sustainable construction processes and projects the firm can add more value, with less pollution, and more sustainable use of scarce resources. Sustainable construction refers to achieving a balance between having economically viable firms that can continue their businesses activities and address the limitations of the environment while meeting the social needs for buildings (Hiremath, et al., 2013).

In the Social Dimension, there is a need to ensure economic justice in the society and ensure that equal development opportunities are provided to all communities. For this demand to be met firms must respond to the consumers' needs and involve social groups in the life cycle of

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the construction projects. They also need a high level of satisfaction which can be achieved through close relationships with suppliers, customers, communities, and employees (Dawson, et al., 2014).

Sustainable Development and Urban Sustainability

In Kammen and Sunter, (2016) view, urban contradictions must be addressed through a transformation of the structural sources of urbanization processes. Creutzig, et al., (2016) conceives the urban environment as a complex social organization governed by uncertainty and possibility, built by a set of relationships that are established between its parts, which are not restricted only to the relations between their measurements and their materials, but also encompass values and meanings arising from those established in the urban environment with its surroundings and inhabitants. Thus, urban sustainability is the result of the dynamics of cities in their micro and macroenvironments, represented by the surroundings of cities, the natural world and the built-in a single integrated system of cooperative and conflicting forces.

The construction sector stands out nationally for its continuous process of expansion, being directly responsible for the construction of the urban structure, promoting social changes in the conditions and quality of life in cities, while at the same time posing threats to their sustainability to occupy spaces that can impact the natural environment and the quality of life of the population. Besides, it uses many natural resources and generates a significant amount of solid waste that impacts the environment (McCormick, et al., 2013). The term sustainable development often used erroneously and indiscriminately, has practical applications and has a broad concept applicable to all scenarios of human life. It is, therefore, a concept under construction that fits the intended objectives and the characteristics of the geographic space investigated (Jennings, Larson, and Yun, 2016).

Sustainability Intervention Areas in Buildings

The definition of construction and its approach, being so general, allows for several interpretations. As such, approaches to sustainable construction and priorities set vary considerably (Nesticò and Pipolo, 2015). Most countries have a definition of sustainable construction and the most widely adopted one is Kibert in 1994, although some of them have nationally adopted official definitions (Nicolae and George-Vlad, 2015). The term Sustainable building is based on a different approach than durable buildings and has different priorities (Gibberd, 2015). Often in sustainable construction the elements of underdevelopment and poverty and social equity are ignored or overlooked which are essential elements (Pearce and Ahn, 2017).

The essential elements relate with the population features such as density, national economy, demographics, geography, standard of living, human and natural hazards, energy supply, food, water, the industry structure of construction sector and the quality of existing stock of building (Pearce and Ahn, 2017). According to the research conducted by Bernardi et al., (2017) discussed that strategic decision making has been identified as the most essential and powerful evaluation instrument tool that helps to implement effective measures for environmental assessment instruments for sustainable construction. The most useful

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approaches to sustainable construction have been strategic environmental assessment (in terms of plans), environmental impact studies (in terms of projects) and materials in the life cycle (Bovea and Powell, 2016).

3. RESEARCH METHODOLOGY

This study developed a self-administered questionnaire. There are various sections in the questionnaire. The first section contains questions related to demographic characteristics of participants which include gender, age group, professional experience, etc. in the second section the researcher formulated statements particularly related to competitiveness factors of time, cost and quality and related challenges. In the third section the questions and statements are focused on business model focusing on resource consumption, emissions and health, and biodiversity. The fourth section of the questionnaire contains questions regarding quality of life, social equity and sustainable development. The fifth and last section was focused on implementation of sustainability within specific context of public sector construction projects. The most commonly used sampling method in non-probability sampling is convenience sampling technique, in which participants can be recruited within the nearest vicinity of researcher (Bryman, 2016).

The target population in this study is construction project managers in public sector. Although there are also other relevant populations such as project team members, suppliers, policy makers, etc. yet the researcher assumed that project managers are the central point of communication in any research project and thus they possess the most comprehensive knowledge about challenges that curtail implementation of sustainability in construction projects in public sector.

For the quantitative data gathered through questionnaires the researcher used statistical techniques for data analysis. Firstly, the researcher analyzed the trends in the opinions of participants regarding each statement in the questionnaire through frequency analysis technique. This technique enabled the researcher to clearly identify participants' perceptions about research variables and phenomenon. Furthermore, in order to analyze the relationship between variables, this study used Pearson's correlation technique also. This technique explored how changes in each variable affect each other and particularly challenges in each of the variable on the implementation of construction projects in public sector. Finally, the researcher developed a regression model to analyze the impact of each variable on implementation as a dependent variable. This model presents predictive analysis for this study.

RESULTS

CORRELATION ANALYSIS

In this part of quantitative analysis, the researcher is aiming to identify the correlation between the variables, that is, the relationship between the dependent and independent variables. For the present study, the dependent variable is identified to be sustainability

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implementation whereas the independent variables are sustainable building, competitor factors or competitiveness factor and outcomes.

Table 4.1 Correlation Analysis

Correlations

		Competetiveness Factors	Sustainable Building	Outcomes	Sustainability Implementation
Competetiveness Factors	Pearson Correlation	1	.803**	.829**	.836**
	Sig. (2-tailed)		.000	.000	.000
	N	171	171	171	171
Sustainable Building	Pearson Correlation	.803**	1	.972**	.960**
	Sig. (2-tailed)	.000		.000	.000
	N	171	171	171	171
Outcomes	Pearson Correlation	.829**	.972**	1	.990**
	Sig. (2-tailed)	.000	.000		.000
	N	171	171	171	171
Sustainability Implementation	Pearson Correlation	.836**	.960**	.990**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	171	171	171	171

**. Correlation is significant at the 0.01 level (2-tailed).

The above table represents all the independent and dependent variables of the topic. The table is aimed at analysing the inter-relationship of competitiveness factors, sustainable building, outcomes and independent variable that is sustainability development. The correlation between competitiveness factors and sustainable building is 0.803 which means it has a strong positive relationship. Similarly, the correlation between competitiveness factors and outcomes is 0.829 which also indicates a positive and strong relationship. The relationship between competitiveness and sustainability development is also positive and strong because the Pearson correlation coefficient is 0.836.

The next variable that to be analysed is sustainable development. The correlation factor of the relationship of sustainable development and outcomes is found to be 0.972. This indicates that the relationship is very strong and positive because the value is near to +1. Similarly, the relationship of sustainable building and sustainability implementation has a correlation coefficient of 0.96 which also indicates a positive and a very strong relationship.

Outcomes is the third variable under analysis. The relationship of outcomes with sustainability implementation is 0.990 which indicates that both the variables have a very strong and positive relationship. Conclusively it can be said that the relationship between all the dependent variables and the independent variables are strong and positive. All of the coefficients ranged between 0.800 and 1 which depicts a very strong and positive relationship. The results of this study are in lined with the study conducted by Cheng et al., 2018 that also showed that the sustainability implementation has a strongly positive

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relationship with the dependent factors such as competitiveness factors, sustainable building and outcomes.

Regression Analysis

The researcher has also used regression analysis in the present study. The reason to use regression analysis is to evaluate the strengths of independent variables on dependent variable. As in the present study the independent variables are competitiveness factors, sustainable building and outcomes and dependent variable that is sustainability implementation. Therefore, by using the technique of correlation analysis, the researcher can ascertain the impact of competitiveness factors, sustainable building and outcomes on sustainability implementation. The results obtained from regression analysis are presented in the table below.

Table 4.2 Regression Analysis

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Outcomes, Competetiveness_Factors, Sustainable_Building[b]	.	Enter

a. Dependent Variable: Sustainability_Implementation

b. All requested variables entered.

The variables that have been entered or removed during the test conducted for the present research are represented in the above table. It can be analyzed in the above table for conducting regression analysis all the variable of the study is included or no variable is removed.

Table 4.3 Regression Analysis R Square

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.990[a]	.981	.980	.12628

a. Predictors: (Constant), Outcomes, Competetiveness_Factors, Sustainable_Building

In the model summary presented in the table above, it is observable that value of R Square is 0.990, which postulates that among the variables of the research, there is 90% interdependence. This is another imperative value in the table is the value of R Square, which depicts the extent to which the independent variable can predict the value of dependent

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variable. The value of R Square is 0.981, which postulates that ccompetitiveness factors, sustainable building and outcomes can predict the value of sustainability implementation.

Table 4.4 ANOVA Analysis

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	134.575	3	44.858	2812.897	.000[b]
	Residual	2.663	167	.016		
	Total	137.238	170			

a. Dependent Variable: Sustainability_Implementation

b. Predictors: (Constant), Outcomes, Competetiveness_Factors, Sustainable_Building

ANOVA stands for analysis of variance. The variance between the variables along with the reliability level through which the data along with the regression test can be shown is explained by ANOVA table. The fitness of the model used in the research is shown by ANOVA. The table of ANOVA contain two imperative values, such Sig. value and F value. The fitness of a model is considered as high by the greater value of F, whereas for the purpose of findings the significance of the model, the Sig. value is used. The result of present research indicates that the value of F is 2812.897, which is greater in number, thereby, it can be deduced that fitness of the model is very high. Besides, there is 0.000 value of significance, which does not exceed the value of alpha (0.05), therefore, the model of the present is significant.

Table 4.5 Coefficients

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.044	.026		-1.692	.092
	Competetiveness_Factors	.053	.022	.047	2.414	.017
	Sustainable_Building	-.035	.041	-.039	-.858	.392
	Outcomes	.986	.049	.990	20.186	.000

a. Dependent Variable: Sustainability_Implementation

In the above presented table, the coefficient of the research is shown. The results of regression analysis are explained by coefficients that whether there is a significant influence of predictors on the dependent variable with the help of Sig. value. The Beta value of unstandardized coefficients is another imperative value in the table that postulate that change in dependent variable of the research is caused by change independent variable. It can be analyzed in the above presented table that the significance value of competitiveness factors is 0.017, while the values of sustainable building and outcomes are 0.392 and 0.000 respectively. These results indicate that sustainable building have insignificant impact on

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sustainability implementation, whereas outcomes and competitiveness factor has a significant impact on sustainability implementation.

DISCUSSION AND CONCLUSION

Discussion

The major aim of the study was to determine the challenges which are being faced in the public sector projects with regards to implementing sustainability. Therefore, the study explores the concept of sustainability in the construction project and gathered valid empirical evidence regarding sustainable construction in Pakistan. Moreover, the major objective of the study was to identify the challenges which exist in implementing sustainability in the construction project of Pakistan and focuses on assessing their effect on the sustainability performance of the public project.

The quantitative finding of the study was based on frequency analysis, correlation and regression analysis. Thus, through frequency analysis, it has been revealed that the wrong perception of individual regarding sustainability that it increases duration and cost of the project is not identified as the major issue as most of the participant does not view the wrong perception as the major challenge. The finding of the correlation analysis revealed that there is a significant and positive relationship between sustainability implementation and sustainability building. Thus, it can be said that sustainability building can significantly lead to an increase in sustainability implementation. Moreover, the last relationship investigated in the correlation analysis was between sustainability implementation and outcomes. Therefore, the finding of the correlation analysis revealed that there is a significant relationship between the outcomes and sustainability implementation. Thus, it can also be asserted that an increase in the practices of its outcomes would lead to an increase in sustainability implementation. Lastly, the regression analysis was performed to evaluate the strengths of independent variables on the dependent variable. The technique was used so that the researcher can ascertain the impact of competitiveness factors, sustainable building and outcomes on sustainability implementation. The results indicate that competitiveness factors and outcomes have a significant impact on sustainability implementation, whereas outcomes also have a significant impact on sustainability implementation. Thus, the overall finding of the study showed significant results.

Conclusion

It can be stated that the construction activities pursued by the businesses and it mainly includes the features of operations, maintenance, innovation, that carry the potential of levying a significant impact on the environment appropriately. Moreover, at the culmination of this respective research, it has also been found that there exist many opportunities as well as challenges in within the construction practices implemented by organizations. It has been found that the mentioned country i.e. Pakistan has significant amount of potential in terms of

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implementing sustainable procedures that realizes the purpose of achieving industrialization considering the sustainable procedures appropriately.

A century or more appears to be the minimum time for preparing, executing, and reviewing S&T initiatives for sustainability (Sun et al., 2020). Therefore, the new contract for research and engineering that is asked for in many debates on basic infrastructure to be used not only for studies or ventures but also for entire professions as a fundamentally progressive contract (Awais et al., 2019).

In light of the aforementioned point, it can be further stated that after subjecting the findings into a suitable analysis, it has been found that the said country i.e. Pakistan has been trying to allocate their due focus in recognising the potential in according sustainable business practices to realize the purpose of their infrastructure that fulfils the basic tenets of sustainability development goals respectively. Throughout the course of their respective journey; it can be further stated that the country of Pakistan has been facing numerous amounts of challenges such as poverty, lack of resources to support the infrastructure etc. However; the respective country has been found to tackle the twin effects of both poverty as well as climate change in order to suffice the demands of according sustainable business practices respectively.

Recommendations

In light of the facts mentioned in the respective research, it can be mentioned that in terms of recommendations that can be accorded to realize the purpose of according betterment to the scope of the respective research is firstly; businesses should accord changes in their business operations (Olawumi et al., 2018). It can be further stated that the businesses should implement changes in their business operations that is in tandem with the construction practices being accorded on a global that seems to suffice the basic tenets of sustainability respectively (De Souza et al., 2017). Adding on the prior stated objective, it can be further mentioned that to ensure that the construction practices are in tandem with the sustainable construction practices, the businesses should realize the purpose of according a comprehensive amount of evaluation of the construction practices that includes devising policies that is deemed pertinent for the purpose of ensuring that the businesses are following sustainable construction processes (Wirtz et al., 2019).

The biggest obstacle to sustainable development is the awareness deficit in environmental sustainability comprehension. Many organizations/building businesses have an acquisition liability that is a misconception as one calculates the existence of a project (Samie et al., 2020). The advantages of sustainable construction cannot be discussed in full without training / schooling. There is also a shortage of training for environmental architecture in Pakistan building, which represents one of the main challenges faced by the sector. The demand shortfall and considerably higher prices contribute to consumer awareness (Nizam et al,2020). In here, the advantages of sustainable building are not known at the micro level because of the lack of knowledge and understanding. Lack of state funding for the Pakistani building industry is one of the biggest obstacles (Murshed et al., 2020). In order to encourage

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sustainable development, state must have certain monetary incentives in both industrial and residential areas. Green development in the Pakistan sense ensures that we use our human environment effectively, adequately and affordably, thus reducing climate change weaknesses (Nawaz, S.M.N. and Alvi, 2018).

Following on, it can be mentioned that in terms of recommendations, it can be signified that the businesses should ensure that their corporate strategy should hold the objectives that includes sustainable construction practices respectively (Çelik et al., 2017). It can be stated that due to the knowledge transfer of sustainable business operations, the organisations raise the probability of the business operations to be fulfilling the basic tenets of sustainability as well as sufficing the efficacy of the ecological demands of the respective environment (Zolfani et al., 2018). Moreover, the preceding authors further mentions that besides ensuring that the sustainable business practices are practiced, it can also be constituted as a recommendation that the projects that are handled by the company should be executed by forming an alliance with more businesses that practice sustainability procedures. This increases the probability of the business to attain a more viable transfer of knowledge, deemed fit for implementation within their organisations respectively.

Under the indicated heading, it can be further mentioned that; with regards to the future scope that exists for the topic of the research; it can be stated that in the long run, there stands a better possibility of the businesses in the global context to develop a better understanding of the policies as well as the practices that are required to be implemented for construction purposes..

Furthering on, it can be stated that with the findings of this respective study, there stands a significant amount of possibility that realizes the purpose of according sustainable construction practices in the business operations of the organizations. However, there exists a standing possibility that the sustainable business practices along with the policies that will be directing them will not be implemented in its entirety. Following on the preceding mentioned point, it can be further stated that the businesses in the longer run may completely ignore the technical requirements required for obtaining sustainable construction practices (Martins et al., 2019) The prior mentioned objective can be indicative of the fact that the businesses may withhold to conduct such operations citing additional investments to be required in the businesses respectively.

REFERENCES

Ali, Y., Saad, T.B., Sabir, M., Muhammad, N., Salman, A. and Zeb, K., 2020. Integration of green supply chain management practices in construction supply chain of CPEC. Management of Environmental Quality: An International Journal.

Badey, A., Barateau, A., Delaby, N., Fau, P., Garcia, R., De Crevoisier, R. and Lisbona, A., 2019. Overview of adaptive radiotherapy in 2019: From implementation to clinical use. Cancer radiotherapie: journal de la Societe francaise de radiotherapie oncologique, 23(6-7), pp.581-591.

Bernardi, E., Carlucci, S., Cornaro, C. and Bohne, R.A., 2017. An analysis of the most adopted rating systems for assessing the environmental impact of buildings. Sustainability, 9(7), p.1226.

The Seybold Report
ISSN 1533-9211
DOI 10.5281/zenodo.6800966

Binninger, T., Mohamed, R., Waltar, K., Fabbri, E., Levecque, P., Kötz, R. and Schmidt, T.J., 2015. Thermodynamic explanation of the universal correlation between oxygen evolution activity and corrosion of oxide catalysts. Scientific reports, 5(1), pp.1-7.

Bovea, M. D., and Powell, J. C. 2016. Developments in life cycle assessment applied to evaluate the environmental performance of construction and demolition wastes. Waste Management, 50, 151-172.

Bryman, A. 2016. Social research methods. Oxford university press.

Creutzig, F., Agoston, P., Minx, J. C., Canadell, J. G., Andrew, R. M., Le Quéré, C., ... & Dhakal, S. 2016. Urban infrastructure choices structure climate solutions. Nature Climate Change, 6(12), 1054.

Dawson, R., Wyckmans, A., Heidrich, O., Köhler, J., Dobson, S., and Feliu, E. 2014. Understanding Cities: Advances in integrated assessment of urban sustainability. Centre for Earth Systems Engineering Research (CESER), Newcastle University.

De Souza Dutra, C.T., Rohan, U., Branco, R.R., Chinelli, C.K., de Araujo, A.J.V.B. and Soares, C.A.P., 2017. Barriers and challenges to the sustainability requirements implementation in public procurement of engineering works and services. Open Journal of Civil Engineering, 7(1), pp.1-13.

Dhakal, K. P., and Chevalier, L. R. 2017. Managing urban stormwater for urban sustainability: Barriers and policy solutions for green infrastructure application. Journal of environmental management, 203, 171-181.

Gibberd, J. 2015. Measuring capability for sustainability: the built environment sustainability tool (BEST. Building Research & Information, 43(1), 49-61.

Hiremath, R. B., Balachandra, P., Kumar, B., Bansode, S. S., and Murali, J. 2013. Indicator-based urban sustainability—A review. Energy for sustainable development, 17(6), 555-563.

Huang, L., Wu, J., and Yan, L. 2015. Defining and measuring urban sustainability: A review of indicators. Landscape ecology, 30(7), 1175-1193.

Jennings, V., Larson, L., and Yun, J. 2016. Advancing sustainability through urban green space: Cultural ecosystem services, equity, and social determinants of health. International Journal of environmental research and public health, 13(2), 196.

Joss, S. 2011. Eco-cities: The mainstreaming of urban sustainability–key characteristics and driving factors. International Journal of Sustainable Development and Planning, 6(3), 268-285.

Kammen, D. M., and Sunter, D. A. 2016. City-integrated renewable energy for urban sustainability. Science, 352(6288), 922-928.

Martins, V.W.B., Rampasso, I.S., Anholon, R., Quelhas, O.L.G. and Leal Filho, W., 2019. Knowledge management in the context of sustainability: Literature review and opportunities for future research. Journal of cleaner production, 229, pp.489-500.

McCormick, K., Anderberg, S., Coenen, L., and Neij, L. 2013. Advancing sustainable urban transformation. Journal of Cleaner Production, 50, 1-11.

Nesticò, A., and Pipolo, O. 2015. A protocol for sustainable building interventions: financial analysis and environmental effects. International Journal of Business Intelligence and Data Mining, 10(3), 199-212.

Newell, J. P., Seymour, M., Yee, T., Renteria, J., Longcore, T., Wolch, J. R., and Shishkovsky, A. 2013. Green Alley Programs: Planning for a sustainable urban infrastructure?. Cities, 31, 144-155.

Nicolae, B., and George-Vlad, B. 2015. Life cycle analysis in refurbishment of the buildings as intervention practices in energy saving. Energy and Buildings, 86, 74-85.

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Olawumi, T.O., Chan, D.W., Wong, J.K. and Chan, A.P., 2018. Barriers to the integration of BIM and sustainability practices in construction projects: A Delphi survey of international experts. Journal of Building Engineering, 20, pp.60-71.

Pearce, A. R., and Ahn, Y. H. 2017. Sustainable buildings and infrastructure: paths to the future. Routledge.

Pincetl, S. 2012. Nature, urban development and sustainability–what new elements are needed for a more comprehensive understanding?. Cities, 29, S32-S37.

Praticò, F. G., and Vaiana, R. 2012. Improving infrastructure sustainability in suburban and urban areas: Is porous asphalt the right answer? And how?. WIT Transactions On The Built Environment, 128, 673-684.

Sourani, A. 2013. Enabling sustainable construction in UK public procurement.

Voytenko, Y., McCormick, K., Evans, J., and Schliwa, G. 2016. Urban living labs for sustainability and low carbon cities in Europe: Towards a research agenda. Journal of Cleaner Production, 123, 45-54.

Wahid, S. N. A. 2014, June. Developing Sustainable Procurement Framework for Malaysia Public Construction. In FIG Congress 2014 Engaging the Challenges, Enhancing the Relevance Kuala Lumpur, Malaysia (pp. 16-21).

Wirtz, B.W., Weyerer, J.C. and Geyer, C., 2019. Artificial intelligence and the public sector—applications and challenges. International Journal of Public Administration, 42(7), pp.596-615.

Zolfani, S.H., Pourhossein, M., Yazdani, M. and Zavadskas, E.K., 2018. Evaluating construction projects of hotels based on environmental sustainability with MCDM framework. Alexandria engineering journal, 57(1), pp.357-365.