

Green and sustainable construction practices impact on Organizational Development

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Received: 30/08/2020

Revised: 01/10/2020

Accepted for publication: 02/10/2020

Published: 26/10/2020

Abstract

Green Marketing plays important role in the organizational performance irrespective to the industry and the type of project. However green construction research lacks in the field of construction project. Basic purpose of this work was to highlight the impact of modern techniques such as green construction on the organizational performance through the adoption of sustainable practices in business strategies in construction industry. Data was collected from 132 organizations, working on different construction projects located within the city of Rawalpindi and Islamabad, through online questionnaire survey in two strata in terms of consultant and contractors. Data was analyzed through different tests, included Pearson's correlation coefficient as well as regression using IBM SPSS Statistics Version 20. Study indicated that green construction has a strong correlation and positive impact on organizational performance, and this correlation partially mediated by the sustainable development. The research findings have practical implications both in organizational and project manager's perspectives. This research was limited to specific geographic area due to time and cost constraints. Future researchers may opt to conduct the study in other geographic areas of Pakistan and in different industries. Moreover, additional or different mediating variables can also be used in the future work.

Keywords: Sustainable Development; Organizational Performance; Green Construction; Environment Protection; Project Success.

1. Introduction

Worldwide, construction industry contributed approximately 9% in GDP with 7% employment rate. The industry contributed significantly to socio-economic development and open different avenues of common interest for different stakeholder to work together. The Asian policies also have tended to keep construction industry busy as governments spend on infrastructure as a way of protecting jobs and boost the economy. (Saenz & Brown, 2018). Heavy civil engineering have built infrastructure of country through the construction of highways, bridges, tunnels and other national or international level construction project. Population have increased due to gradual increase of birth rate which have created burden on economy, resulting in the increase in the demand of houses with the passage of time. (Zampese, Moori, & Caldeira, 2016) Increment in population not only disturbed economy but also imposed burden on urban infrastructure through the migration of people due to lack of resources in rural areas. (Farooqui & Ahmed, 2008). However Gradual change in infrastructure development involves complexities such as, required extensive area of intervention and excavation service are large construction work generators. It is important to change strategies to reduce environmental impacts on construction stage in development of urban infrastructure. Hence, in modern development construction with less environment degradation preferred (Bedrunka, 2020).

Pakistan is a developing country having construction as the second largest sector in Pakistan's economy after the agriculture. Construction Industry have contributed 13.1% in industrial sector and 2.74% in GDP. Roughly 30-35% in employment sector are directly or indirectly affiliated with the construction sector. (Malik & Wahid, 2014). In construction industry, protection of environment is a major challenge, and an alarming situation towards sustainable development in which waste management is a big issue. It is not possible to control the fully waste while reuse of recycling and waste. Gradual change in climate and deposition of waste pollutants affect our environment very badly as well as our agriculture production, quality of life and tourism. (Huang et al., 2017) Industries and companies of such good production are more responsible as compared to any other sector, being environment vulnerable and need quick action to more towards green practices. Product consumption and effectiveness depends on consumer through

market value, the market behavior including consumer demand and consumer awareness, appreciate the companies practices towards “Green” (Biasutti & Frate, 2017).

Green marketing has influenced the organizational performance quite strongly. However, there is gap in the literature about the impact of green construction on organizational performance and research lack in the field of construction project (Zampese et al., 2016). According to Zampese et al. (2016) every construction project either residential or commercial have broader impact on the organizational and industrial performance after its completion. Impact can be either as a good practice or bad, particularly by examining the project impact related to environment by studying companies’ legal, economic and technological skills aspect which may also cause deep impact on industry. Though, literature is available about green marketing but it weakens the relationship between supply chain management and company’s performance. Construction project performance directly affect the organizational and industrial performance. In construction industry it is important to understand the pitfalls and challenges which can be incorporated. This paper highlighted the importance of green construction project with the adoption of sustainability techniques and their impact on organizational performance. Basic purpose of this study is to examine the impact of green construction project in organizational performance by analyzing empirically the different factors such as reuse of old material, reduce waste production and environment preservation. Other purpose is to find out either any positive impact may occur in construction industry by considering the mediating role of sustainability techniques includes environment protection, climate change and sustainable urbanization which may help to enhanced the organizational performance.

Many researchers highlighted the positive impact on organizational performances. A study done by Shi, Zuo, Huang, Huang, and Pullen (2013) in China which explored the positive impact of sustainable construction on community and environment through the properly management of overheads, time and availability of sustainable materials which can enhance the organizational performances and also reduces the industry barriers. Another USA based study by Riley (2004) on Toyota Motor Corporation (TMC) real estate expansion project found that, green building popularity evolving worldwide in construction sector which involve quick change in design stages but also found that construction organizations can play important role through the adoption of sustainable practices in their business strategies.

The implementation of green concept in company’s strategies can bring significant positive changes in profitability, marketing values and cost performance through the facilitation in consumption, production, promotion sector and also resolve ecological problems. In construction industry, organization have to deal

with different operation on regular basis, industry have diverse characteristics such as high fragmentation, vision of project, instability and mainly dependence of work force with high level of uncertainty. In this industry, mostly project relate to the on-site production and directly expose with environment. (Huang et al., 2017). Green Supply chain management including green construction, green product, and corporate practices towards sustainable development directly linked with organizational performance. (Rego & Figueira, 2017). Climate change, and environment protection policies' implementation, were the great moderator to increase organizational performance. Researcher studies the exploratory model for the better understanding with companies and industries in which they operate and particularly examine the impact of environmental by studying their legal, economic and technological skills of companies. (Zampese et al., 2016)

Developing countries as like Pakistan do not have strong construction industry, major challenges faced by organizations in Pakistan construction industry were found to be lack of expertise, resources, poor team management, employee's commitment, quality, safety and risk management. Significant changes may occur with the strong coordination, teamwork, training and awareness, can improve organization performance as well as industry performance. Proceeding Section, relates the previous research and literature on the organizational performance, sustainable development, and green construction followed by the hypothesis before the methodology part described in section 3, while results and analysis shown in the section 4, Conclusion, discussion and limitations in section 5 respectively.

2. Literature Review

In this section, detailed review of previous research is expressed with respect to the variables of this study including green construction, sustainable development and organizational performance followed by the hypothesis according to the objectives defined from the gap for this research study.

2.1 Organization Performance

Organization performance is depended on the successful completion of the project while next allocation of project or contract mainly based on the organization performance related to previous project. (Gunasekaran et al., 2017). In construction industry, emerging concept of "green" that means to adopt such strategies at organization level which make project sustainable through less environment degradation, better economic impact and preserve natural resources. Purpose of the strategies to enhances organization

performance and fulfil current demands in a better way without compromising future demands. According to Darko and Chan (2016), in construction industry, organizational performance evaluated through various factors included: sale increment, market share, corporate image, water consumption building, energy efficient building parameter, reuse of old building material, increment in revenue, risk reduction factor and financial result. (Zampese et al., 2016).

2.2 Green Construction Project

Construction build urban and rural infrastructure by providing developmental facilities through the execution of different commercial, residential or any kind of development projects. Green construction consists of six main factors such as; management of construction, protection of environment, conservation of material, water, energy and land utilization. (Shi et al., 2013). Every construction project involves through five basic aspects which is necessary for completion, including manpower, machine, material, method and environment Project success of any project mainly depend on the successful completion of project to meet triple triangle constrains including cost, scope, schedule and quality (Lin, 2015). Green construction involves on-site practices which reduces environmental impact of construction. These practices mainly related to contractor, and sub-contractor but modern researchers claim it is more responsibility of designer to introduce such practices so that alternative can be adopted during construction such as use of prefabrication structure which is time saving and environment friendly but it is more responsibility of designer to introduce such alternative in market which can be adopted by contractors. (Fawaz et al., 2016). Green construction involve; less waste production during construction on site, replacing toxic substances such as paints solvents etc., less liquidated waste, alternative energy efficient sources, and use of efficient sustainable practices. (Yigitcanlar, Kamruzzaman, & Teriman, 2015). The benefits of green construction project can be summarized as: enhanced quality of life, improved safety of residents, improved health and aesthetics, reduced household expenditures, creation of new employment opportunities and enhanced neighborhood vitality. (Bedrunka, 2020)

2.2.1 Impact of Green construction on organizational performance.

According to the Darko, Zhang, and Chan (2017), green construction mainly relates with green supply chain management process and involves three areas: importance, corporate practices, green design and operation. These areas involve saving resources, improving productivity and control waste production.

These practices may be more reactive if adopted in strategies in form of rules and regulations, or proactive, and proper ban harmful practices. Through this way integration of environmental activities was the scope of business strategies. (Huang et al., 2017). According to Darko and Chan (2016) green construction practices are the source of cost efficiency and profitability, it not only increase in market share but also reduces extra rework and engage logistics through optimizing resources. Latest innovation strengthens the organizational market values with their strategies and profit values without considering their size and capital. Researchers including Wei and Miraglia (2017) reported that, in Chinese manufacturing practically found that there is positive relationship exist between environmental management and organizational economic performance, while other researcher's including, Lin (2015) found significant positive changes between corporate green practices and industrial financial performances through the implementing of green practices in electronic industry of Taiwan.

2.3 Sustainable Development Practices

This basic concept of sustainable development covered three important features include, economical, environment friendly and preserve natural resource for future generation. Interpretation of sustainable development vary with industry such as sustainable construction, sustainable business, sustainable technology, sustainable agriculture, sustainable economic etc. (Bedrunka, 2020). In Project Management scenarios, sustainability techniques brought positive impact in different dimensions of project which built interest of researchers and professionals towards sustainable project management which inter link multiple prospective such as social, environmental and economical. (Bocchini, Frangopol, Ummenhofer, & Zinke, 2014) As per literature the concept of Sustainable development is to meet present challenges without compromising future demands (Holden, Linnerud, & Banister, 2014).

2.3.1 Impact of Green construction in Sustainable development

In last five years, climate change awareness rises through various sources of medium either educational or cultural; Researcher Johns-Putra (2016) highlighted the awareness of climate through the medium of literacy including novel, theater and other media sources. There has been a growing trend, too, of climate change poetry, known as ecopoetry which exhibits the social and ecological awareness towards the environment degradation. Human interaction with environment poses sever risk on natural climate system. Although many impacts are already observed for the climate action in terms of toxic gases in air, rapid

melting of glacier, rise in sea level and ocean degradation since 1950s. However more scientific evidence is required to respond climate changes. (Linnenluecke, Birt, & Griffiths, 2015).

According to Pedersen (2018) the united nation sustainable development goals, climate change mainly related with the environment protection policy which practically relate with construction industry development. The environment or climate protection regards the development of an awareness about alternative resources, mainly depend on the physical environment, and how human activity and decisions affect it, with a commitment to factoring environmental concerns into social and economic policy development including preservation of natural resources, climate change, rural development, sustainable urbanization, disaster prevention and mitigation (Ricart, Olcina, & Rico, 2019). Before implementation into construction industry, it's important to introduce alternative resources with their social economic impact. (Zampese et al., 2016). Researchers including Secinaro, Brescia, Calandra, and Saiti (2020), also emphasizes on the adoption of climate mitigation sustainable practices at business level by indicating that international level firms adopted environmental practices in their business strategies to reduce the environment risk and bring significantly result in terms of increment in profit and organizational performance.

Climate change practices mainly relate with protection of environment while construction project activities directly expose with environment and major cause of environment contamination through toxic gases, and increment in temperature which causes rise of earth temperature and depletion of ozone (Huang et al., 2017). Modern concept of green building through green construction is a major alternative source to deal with climatic changes. In design phase, architecture is the main source of greenhouse gas control and important constituent to deal with climatic change. Green buildings formulated after the green construction are energy efficient with low emission of toxic gases with less conservation of natural resources and make environment healthy. Hence, green construction practices make environment healthy and build better climate through environment protection with less degradation. (Darko & Chan, 2016)

2.3.2 Sustainable development and organizational performance

Process of sustainable development depends on the organizational hierarchy mainly internal polices, assessment criteria, strategies plan and their operational implementation. According to Bedrunka (2020), Environmental management system bound the organizations to formalize the policies in such a way that they can assess effect of their activities on environment, interaction of project with climate and find out

alternatives to cater the climatic challenges through different operational activities which causes less environment and natural resource degradation. Organizational performance mainly depends on the successful completion of project with good practices. (Biasutti & Frate, 2017) Every project causes social, environmental and economical after the completion, following these parameters, researchers found that sustainable product development through different alternative practices bring positive impact not only in organizational development but also at industrial level as a good lesson for other developers. We focus on climate change protection factor mainly include, environment protection policy and economic affect.(Gunasekaran et al., 2017).

2.4 Mediation role of sustainable development practices

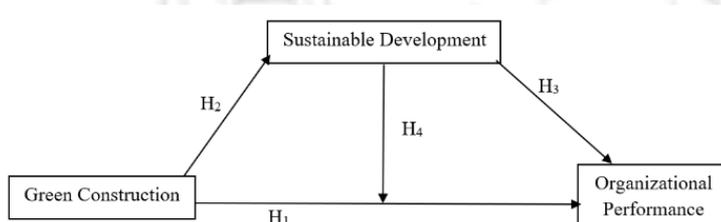
Researchers including, Yee, Ismail, and Jing (2020), indicated the, adoption of environment protection and sustainable policies with their implementation bring significant effect at industrial level with their significant social and economic impact. Organizational development or performance basically deal with the parameter how can an organization achieve success by defining their milestone, performance indicators, and certain limitations, which based on their production. (Akram, Goraya, Malik, & Aljarallah, 2018). Social and economic challenges relate the organizational performance which cater by the sustainable practices by adoption of alternatives strategies at organizational level which not only enhance the organization performance but also help to introduce latest modern practices in the industry. This is a step towards joint organizational and industrial revolution with the help of sustainable development. (Sormunen & Kärki, 2019). In order to preserve environment, it's important to formulate policies at organizational level which cater these industrial challenges which may create disastrous effect for future generation. New research related to the sustainable development and their application introduce many alternatives of materials, which are energy saving and promote green building materials, standardization, high energy consumption construction to develop low energy consumption, effectively cope with climate change. It has been commonly accepted that green construction through sustainable development focuses on prevention of unnecessary consumption of natural resources (especially non-renewable ones) and mitigation of harmful emissions. (Bedrunka, 2020). Green construction resource material mainly seems limited to waste, toxic gases, industrial waste etc., but at broader level it involves coal, steel, electricity and chemical industry such as industrial waste can demolish natural resources. Mega project involves huge amount of resources while sustainable techniques preserve the environment by providing alternative tools

and techniques. (Rahmawati, Utomo, Anwar, Setijanti, & Nurcahyo, 2014). The emerging modern concept of “green building” in sustainable development, directs itself towards creation and use of models which are intended to be healthier as well as a more resource efficient. These models include construction, operation, renovation, maintenance and finally demolition (Holden et al., 2014).

2.5 Summary of Literature

Through the literature studies we have studied about the green construction practices in the field of environment and economic which play vital role in organizational development. If there are strong green construction practices adopted on site during the construction project, it causes better organizational and industrial performance, hence sustainable development can play important role to strengthen the relationship. In this study we used organizational development and natural resource-based view theory to study the overall relationship between variables. Hypothesis and conceptual framework for this research study listed as;

Fig. 1. Conceptual framework of research model



Source – developed by the authors

- H₁:** Green construction has positive significant impact on organizational performance.
- H₂:** Green construction has positive impact towards sustainable development.
- H₃:** Sustainable development has positive impact in organizational performance.
- H₄:** Sustainable development mediates the relationship between green construction and organizational performance

3. Method

Research was carried out to find how the impact of green construction relate with the organizational performance of the construction companies. From literature questionnaire selected which cover all

variables. A five-point Likert scale was utilized to judge the severity indices of different criteria adopted for the respondent selection evaluation and further descriptive analysis (Armstrong, 1987). Employees working in construction industry either as a consultant, contractor, designer, or builder or in any other relevant department was selected

3.1 Research design and data collection

In this research study the population was the organizations employees working in the construction field either as a consultant, client, government, or contractor related to any project such as residential or commercial project located in urban areas across the twin cities Rawalpindi and Islamabad. Sample selected by using the G-Power software and found 120 organizations across the population of 507 organizations as listed by the Pakistan Engineering Council. Non-Probability (proportionate convenient sampling) was used, data respondent includes, individual organization such as single employee for single organizations. We stratified our research study into two strata's consultant and contractor and according the statistics of Pakistan Engineering council (PEC). We proportionate the questionnaire and then distributed conveniently. 12% questionnaire distributed with contractors while 88% distributed with consultant's working in twin cities of Rawalpindi and Islamabad. 250 questionnaires circulated out of which 30 questionnaires shared with contractors and 220 shared with the consultant. During the survey, unit of analysis was the employee per organization working on public or private construction project from Islamabad and Rawalpindi. In this study, data collected from the companies working closely with the construction project related to either commercial or residential mainly including Housing project shopping complexes or any similar project. Organizations either currently working or done such projects in recent or in last two years were selected for this study. For describing analysis, a five-point Likert scale, was used for measuring the response (Boone & Boone, 2012). Questionnaire selected from literature such as; organizational performance and green construction (Zampese et al., 2016) and sustainable development practices (Biasutti & Frate, 2017) respectively.

3.2 Data Analysis

After the collection of data, 132 responses were recorded, as per our stratified methodology and on the basis of responses we have 14 questionnaires from Contractor while remaining 118 respondents was consultant as per the defined percentage. Out of 132 (125 respondents were related to the construction and

planning sector of construction industry working in different organization while other 7 was related to the other sectors of construction). For analysis and interpretation of data and hypothesis we used statistical software IBM SPSS. Analysis of data including, distribution frequency demographics, reliability, correlation, linear and multiple regression. Multiple Regression is used to check the indirect path in overall total effect. It often provides better and easy approach over simple linear regression. Overall multiple regression highlights the influence, strength and contribution of more than one variable and overall contribution of variables in total effect. Furthermore, in multiple regression data was analyzed by using regression and process by Andrew F. Hayes model 4, with data coded according to an analysis framework based on a literature review, the questionnaire guide, and experience from similar research. The analysis was conducted by the authors in Statistical Package for the Social Sciences (SPSS) and checked with key actors. The survey was made clear and simple in order to encourage the participants so that they could respond quickly. Furthermore, the survey questionnaire was designed on the basis of existing literature of researchers.

4. Result

Research survey questionnaire attached with the demographic scale such as the Gender, Age, Qualifications and Experience of the respondents. 96% respondent was male, 62% respondent holding bachelor degree, 79% respondent have experience between 1 and 5 years, and 95% respondent working on Planning and execution of construction projects. Reliability test for the selected scale found as Green construction (0.824). sustainable development (0.745) and organization Performance as (0.898) respectively which is above 0.70. Descriptive Analysis give the detail about the mean, standard deviation, skewness and kurtosis of data extracted from the questionnaire survey which help to defined the normality parameter. After analysis the results shows the mean of Green Construction (GC) is 2.0038, Sustainable Development (SD) is 1.9970, and organization Performance is 2.1341.

According to Gronemus et al. (2010), the data is considered to be normal if Skewness values lies in the range of +2 and Kurtosis in range +7. The results of Skewness & Kurtosis respective to each variable independently green construction, sustainable development and organizational performance are, Skewness as, 0.668, 0.277, 0.049, and kurtosis are -0.037, -0.570, -0.601 respectively, which fall in the defined range. In order to validate the scale, According to the Hair Jr, Sarstedt, Hopkins, and Kuppelwieser (2014),.

acceptable range of validity is 0.30. All of our question factor loading value is above 0.30 and no one question found less than 0.45 which lies within acceptable ranges.

4.1 Variable Relationship

Correlation analysis was led to discover the variables – independent, dependent and mediator or moderator variables mutually related with each other or not and to find out the strength of this relationship in quantitative terms. Correlation relate the intensity of the relationship between different variables used for the analysis which are listed below:

Table 1. Correlation Analysis

		GC	SD	OP
Green Construction (GC)	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	132		
Sustainable Development (SD)	Pearson Correlation	.207*	1	
	Sig. (2-tailed)	.017		
	N	132		
Organization Performance (OP)	Pearson Correlation	.522**	.319**	1
	Sig. (2-tailed)	.000	.000	
	N	132	132	132

Source – developed by the authors

The relationship between Green construction and organization performance found strongly positive relationship as Pearson correlation value is positive 0.522 with the highly significance level 0.000 (Less than 0.05). The relationship between Sustainable development and the Organization performance found moderate and positive relationship at value 0.319 at high significance level. Similarly, relationship between green construction and sustainable development is positive at 0.20 and statistically significant at 0.017 (less than 0.05). Therefore, summarizing the correlation analysis, it is concluded that strong positive correlation exists between the predictor and outcome variables as well with the mediator variable.

4.2 Linear Regression

The regression analysis is used to understand the causal relationship of the predictors and outcome variables and the form of these relationships. The analysis is used to test the established hypothesized

relationship to determine the causality direction and quantitative magnitude between the model's variables. Linear Regression indicate about the direct relationship path between independent and dependent variable

Table 2. Linear Regression:

Model	R	R Square	Adjusted R Square	Std. Error EST
1	.522 ^a	.272	.267	.51919

a. Predictors: (Constant), GC

Source – developed by the authors

Table 3. ANOVA Test:

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	13.113	1	13.113	48.647	.000 ^b
Residual	35.043	130	.270		
Total	48.157	131			

a. Dependent Variable: Organizational Performance (OP)

b. Predictors: (Constant), Green Construction (GC)

Source – developed by the authors

In first step analysis carried out to control the influence of demographics on the relationship between variable while in second step the regression analysis (ANOVA test) was carried out. According to the statistical result of analysis it is found that one-unit increase in IV i.e. green construction will tends to increase in the DV i.e. organizational performance by the 0.522 units while total effect is 0.445. F test value also above the 4.0, in our case we have 48.647 which indicate the acceptance of our hypothesis. The value of “Adjusted R Square” indicate the value of relationship between IV and DV. In our study variation exist between the Green construction and organization performance is 26.7% (0.267). Adjusted R square has smaller value as compared to R square. Standard error of estimates how much change is not elaborate by the model and for this model its value is 0.51919.

Table 4. Coefficient of ANOVA Test

Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
	B	Std. Error			
Constant	1.242	.136		9.153	.000
Green Construction	.445	.064	.522	6.975	.000

a. Dependent Variable: OP

Source – developed by the authors

Table 4, indicate the result of linear regression analysis for Independent and outcome variable. Result indicate the positive relationship between the Green construction and organizational performance. After analysing results, it is clear that independent variable significantly impacts dependent variable. Hence all above result of ANOVA test of linear regression lies under the defined ranges which indicate that, Green construction (IV) bring positive significant changes in Organization Performance (DV). We can narrate as the one-unit change of green construction can bring 0.445 unit positive and significant change in organizational performance. First hypothesis of this research study or direct path relationship in conceptual framework is accepted.

4.3 Multiple Regression for Mediation

4.3.1 Impact of IV on Mediator

Table 5. Model Summary of IV on Mediator

R	R-sq	F	df1	df2	p
.2071	.0429	5.8243	1.0000	130.000	.0172

Source – developed by the authors

Result indicate the Multiple regression for indirect path as defined in conceptual framework, Indirect path further have two direct patches from IV to Mediator and from Mediator to DV. Initially for direct relationship of Green construction (IV) and Sustainable Development (Mediation) without consideration of outcome variable (organizational performance) statistical result as follow: significance level $p=0.172 < 0.05$, Variable variation $R\text{-sq}=.0429$ (4.2 percent). Since value of p is less than 0.05 and F test value lies above 2.0, therefor overall model is significant.

Table 6. Result of impact on Mediator

	Coeff	Se	T	P	LLCI	ULCI
Constant	1.6243	.1638	9.9169	.0000	1.3002	1.9483
GC	.1860	.0771	2.4134	.0172	.0335	.3385

Source – developed by the authors

Result highlighted the Impact of independent variable (Green construction): Per unit variable change or coefficient (beta value) = 0.1860, T model test (t) = 2.4134, (Above 2.0), Significance level $p = .00172$ (Less than 0.05), Boot value are non-negative, Null fall outside the strapping value so confidence interval also lies between Non-Zero. Hence; for every 1-unit increase in Green construction, we get a 0.186-unit increase in sustainable development. Hypothesis –II; Accepted.

4.3.2 Direct effect on Outcome Variable

Table 7. Model Summary of organizational performance

R	R-sq	MSE	F	df1	df2	P
.5648	.3190	.2542	30.2135	2.0000	129.0000	.0000

Source – developed by the authors

Table 7, indicated the Direct effect from independent variable and Mediator variable on Outcome variables. Analysis result shows as, significant value $p < 0.05$, variable change R-Sq=.3190 (31.9 percent) variance exist due to two predictors. Since value of p is less than 0.05, and F test value is above 4.0, therefore overall model is significant.

Table 8. Model of organizational performance

	Coeff.	se	t	P	LLCI	ULCI
constant	.9010	.1746	5.1599	.0000	.5555	1.2465
GC	.4063	.0634	6.4106	.0000	.2809	.5316
SD	.2098	.0706	2.9740	.0035	.0702	.3494

Source – developed by the authors

Table 8, shows the overall result on outcome variable which is organizational performance from the sustainable development and Green Construction. The impact of Green construction (IV) as; Per item change through coefficient (beta value) = 0.4063, T Model test value, $t = 6.4106$, (Above 2.0) Significance value, $p = .0000$ (Less than 0.05), Confidence interval also lies between Non-Zero from upper limit and lower limit interval

Secondly, mediation Sustainable Development impact on outcome variable as; Coefficient (beta value) = .2098, T Model test value, $t = 2.9740$ (above 2.0), Significant value, $p = 0.0035$ (Less than 0.05), and Confidence interval also lies in positive ranges and No Zero exist between interval. Hence; for every 1-unit increase of Green construction, we get 0.4063-unit increase, and 1-unit increase of Sustainable development, we get 0.2098-unit increase in overall outcome value. Hypothesis III accepted.

4.4 Role of Mediating variable:

Role of Mediation analyzed through the indirect effect of Multiple Regression Model of Andrew Hayes and Preacher. Mediating variable presence indicate that overall strengthen or weaken the relationship. For Analysis Model 4, used and mediation role indicated by the Indirect path or effect from X to Y. Statistically result indicate as; confidence interval from positive boot strapping value interval as Zero falls outside the confidence interval, (.0021 and .0948) hence the relationship is Signification. Effect indicate the beta value which means, change of 1 unit of mediator (Sustainable Development) brings .0390-unit change in the relationship between IV (Green Construction) and DV (Organization Performance). Overall relationship has 0.4063 direct effect without mediation and 0.0390 indirect effect on outcome variable through the mediating variable.

Table 9. Indirect effect of X on Y

	Effect	Boot SE	BootLLCI	BootULCI
SD	.0390	.0238	.0021	.0948

Source – developed by the authors

Table 10. Direct effect of X on Y

Effect	SE	T	P	LLCI	ULCI
.4063	.0634	6.4106	.0000	.2809	.5316

Source – developed by the authors

Table 11: Total Effect

Effect	SE	T	P	LLCI	ULCI
.4453	.0638	6.9747	.0000	.3190	.5716

Source – developed by the authors

Table listed above, indicated the result of mediating variable which is sustainable development in our research study. From the results of analysis, overall, with the mediation the effect is .4453 within the significant level ($p=0.000<0.05$) and lies under positive confidence interval (Non zero). Total effect of direct path through linear regression (ANOVA) remains same from as through the multiple regression

Hence, from the mediation test it is concluded that the mediating variable which in this study is sustainable development is affecting the relationship of Green construction and organizational performance to 8.75 % with (0.0390) per item change. Therefore, in the light of the observation we conclude that there is partial mediation exist between the model, Sustainable development practices partially mediate the impact of green construction on organizational performance.

5. Discussion

In this section, we relate our finding with the theoretical literature support. The current study tested the direct and indirect relationship between the green construction and organizational performance with mediating variable sustainable development practices.

5.1 Green construction impact on organizational Performance.

This study is supported by some of the previous researches which also contributed the same results toward the organizational development in the construction industry. Fahimnia, Sarkis, and Davarzani (2015), Green construction mainly divided into two parts green design and green operation which means

planning and execution of green practices such as less production of waste and reuse of old material. The field which focus on the importance of corporate practices related to green construction focused on the preservation of natural resources, reuse and recycling of old building material. The adoption of such practices by the organization at corporate level help to reduce their expenses such as overheads and increase market share through the better business strategies with modern techniques. Green construction involves the review of project life cycle and analyze project phases and convert them in to less economical and less environment degradation factors such as reverse logistics and network design in planning phase which involve review of policies and change the strategies while in execution phase involve waste management such as less use of pollution sources and material which can easily recycled. (Brunner & Rechberger, 2015)

According to the Chakraborty (2010), green practices at corporate level are the major source of cost efficiency, profitability, market share, preservation of resources and less causes for rework during the construction which enhance the organization performance by developing new market opportunities with higher profit and good practices for others in industry. Statistical result of our research study also added in the favor of argument that adoption of green practices at construction industry bring positive consequences on the organizational performance.

5.2 Green construction impact towards sustainable development

Somehow green construction is the part of sustainable development while sustainable development is a vast field of knowledge and vary with respect to the working industry. Although it is a new emerging concept but it grows very rapidly in the construction sector in different country across the globe and bring significant results. (Pedersen, 2018) Sustainable development covers three main aspects as per the definition, preservation of natural resources, less cost consumptions resources and meet current demands without compromising future generation demands. In our study we focus on the environment and climate protection policy and result statistically indicate that green construction is helpful to protect the environment and climate protection while scientifically also sustainability techniques have been introduced across the globe which causes the less environment degradation. Adoption of that tools and techniques during the construction causes the less degradation such as the variation of material used for the construction i.e. fabrication, steel and many others. These materials not only save the cost, and time but also causes less degradation which is helpful to preserve the natural resources. Researchers including

(Sarkis & Zhu, 2018) indicate the role of less waste production through the green construction process which is the biggest relief in the environment protection. As construction industry is the major source of environment degradation and waste deposition is the emerging issue which is hard to control while new latest practices adopted during the green construction such as use of plywood which can easily reuse and recycle rather than the use of framework of natural wood which originated from the tree cutting. Researchers also indicate the other green practices such as the reuse of old building material in partition or low load bearing structure in the form of solid aggregate is quite helpful from the financial aspect. Our statistical research added in terms of green construction can bring significant positive changes in the sustainable development.

5.3 Sustainable development impact on organizational development

Sustainable development and environment protection is major emerging challenge for the world. Organizational have to deal with it during the project lifecycle and somehow their projects are the cause of this environment degradation due to lack of sustainable business practices. Researcher (Awadh, 2017) defined the concept of sustainable institute. World certified institute for green mark, known as Leadership in energy and environmental design (LEED) from USA, other institute of France emphasizes on their organization to develop and adopt green business strategies which based on the preservation of natural resources, long lasting and economical structure. On the other side organizations following the LEED standard are strictly bound to adopt and implement the sustainable practices in terms of less carbon production in environment which also lead to the heavy penalty. Other researcher including Song, Zhao, and Zeng (2017) report the significant changes and positive relationship between environment management and the financial performance of the manufacturing companies located in China. Research study found the significant evidence between green practices at corporate level and economical performances in electronic industries located in Taiwan. Implementation of sustainable practices is the responsibility of government stakeholder working at national and international project in terms of protection policies and penalties. Government and organizations designed the alternative parameters and result shows that adoption of green practices not only enhance productivity and causes less degradation but also built standards for other industry at national and international practices. Our research also strengthens the argument that adoption of sustainable development practices can bring positive change on organization performances.

5.4 Sustainable development relationship between green construction and organizational performance.

Project quality mainly based on the project designing team at the initial phases while financial performance based on the execution phase mainly and both play important role in the overall organization and project performance. Green construction highly depends on the efficiency of the project designing team. As the sustainable development and green construction practices as well is the modern emerging concept and growing very rapidly, organization top management, and stakeholder must show their interest and update their business and HR development strategies towards the sustainable development. According to the Awadh (2017) there are various sustainable material introduces for the construction industry which use as the alternatives and their result show as the good practices for others industry, such as the steel structure which save the time, cost and overhead of the organization and also control the amount of rework.

Organization working on the construction sector are the part of policy maker and agreed that long term degradation exerted in terms of usage of alternative resources such as HVAC system, and pre-fabricated structure instead of concrete structure which rises the temperature of earth. Researchers (Tariyan, 2016) indicated that adoption of green practices not only enhance productivity and causes less degradation but also built standards for other industry at national and international practices. Moreover, existing of sustainable development policy such as environment policy causes the better environment friendly green construction which also causes the organization to change their existing business strategies which ultimately enhance their productivity in terms of good practices, market share and project performances (Nilsson, Griggs, & Visbeck, 2016). Result of our study also strengthen the argument that sustainable development positively mediates between the relationship of green construction and employee performance.

6. Conclusion

Finding of this study indicate that Green construction and organizational performance are associated with each other positively. There is positive relation exist between the factors of Green construction such as reuse and recycling of material and the factors of organizational performance such as the market share, and productivity. Moreover, research result also indicates that mediator which is sustainable development including environment protection policies partially mediate the relationship which means organization working in construction industry can enhanced their performance through the formalization and adoption

of environment protection strategies during the construction projects. This research study filled the research gap about the sustainable development and green construction practices role in organizational performance. Research focus on the organizations working in construction industry on twin city projects since last two years which to develop the better understanding about the relationship between Green construction and organizational performance through the mediation of sustainable development.

Research has managerial and theoretical implications in the field of construction industry. Green construction is the modern sustainable development and important for the organization to enhance its performance and meet international standards. Organization top management must change their business practices and adopt knowledge sharing technique to enhance employee performance. Moreover, this research gives a pleasant input toward s the enhancement of organizational performance Change in construction process and standards is a long-time consumption and huge dispersion of competitive conditions such as company capital, standards, and technology advancement. This study helps to develop the understanding about the impact of green construction on the organizational performance and as well as the adoption of sustainable development policies in organization business strategies.

It has been proven from findings that there is ample room for further research. One possible attempt could be studying the dependent variable which steam performance as dependent variable. And further studying the impact of green construction on the organization performance. Basically, the analysis of the relationship between different can only be studied. Further carried out research in longitudinal concept with different region (location) and projects (residential or commercial). Increment in sample size and change in the sustainable development assessment factor such as economy may bring more significant changes in the mediating role. Research can also have carried out as per emerging concept of green marketing which mainly depend on the organization and consumer relationship in better environment. The study can also be conducted on the relationship between sustainable development practices and green construction where green construction can be considered as a dependent and sustainable development as Independent variable instead of a mediation variable, and an additional variable playing a moderating role, can also be introduced in the conducted study to broaden the scope of the research. Considering all of the possibilities that this area of research lacks, one could conclude that there is always still a lot to discover in the following field.

This research study has certain limitations, there was a shortage of time to conduct this research study. The questionnaires survey was limited to the employees working in construction based organized located

in the twin cities of Rawalpindi and Islamabad. So, time consuming questionnaires would not have been affordable. Data was filled on the basis of their previous two-year projects. Secondly, the study has been only conducted on the basis of employee working with last two-year project. This again does not represent the whole part of the population targeted initially.

Conflict of Interest:

There is no conflict of interest

Acknowledgement:

Author express his gratitude and thanks to SZABIST for their supervision, technical support and guidance in this research. In addition, also thanks for providing partial institutional support.

Funding:

This research based on the academic point of view and receive no funding from any organization or institution.



Appendix A

Table 12: Items of Questionnaire

<i>In the last 2 years, the company has adopted the following practices in work execution</i>	
Green Construction	Reduce waste of materials in construction site Reusing materials on construction site Replacing, reducing or minimizing the use of toxic substances (eg paints and solvents) Actions to reduce liquid waste (e.g., leak containment or flushing with water) Reduce energy use at the construction site Actions to improve supply chain environmental efficiency (e.g. Cooperation to reduce packaging, economic transport, technological synergies)
<i>Please indicate the extent of your agreement/disagreement with the statements</i>	
Sustainable Development	When people interfere with the environment, they often produce disastrous consequences Environmental protection and people's quality of life are directly linked Biodiversity should be protected at the expense of industrial agricultural production Building development is less important than environmental protection Environmental protection is more important than industrial growth
<i>In the last 2 years, there was an improvement in company's performance</i>	
Organizational Performance	Sales increase Market share increase Corporate image improvement Environmental performance improvement in related businesses or buildings regarding to the reduction of water consumption Environmental performance improvement in related businesses or buildings regarding to energy efficiency Environmental performance improvement in related businesses or buildings regarding to the use of materials Financial results improvement Revenue increase Reductions of risk of environmental legal penalties Improvement in company operation (e.g., building efficiency indicators)

Source – developed by the authors

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