



TECHNIUM
SOCIAL SCIENCES JOURNAL



Vol. 58/2024
A New Decade for Social Changes

PLUS
COMMUNICATION



International
Communication & PR

Economic and Social Benefits and Challenges in the Infrastructure Projects Implementation in a Component City in Negros Occidental

Rogelio Raymund I. Tongson, Jr. ^{1*}, Merlita V. Caelian²

¹Local Government Unit of Himamaylan, Negros Occidental, Philippines, ²University of Negros Occidental-Recoletos, Bacolod City, Philippines

mayorrtongson2019@gmail.com

Abstract. Implementation of infrastructure projects is a critical aspect of achieving sustainable development, especially in archipelagic countries like the Philippines. Hence, this study determined the extent of economic benefits (employment, income, and food security) and social benefits (health, education, safety, security, and environmental protection) from infrastructure projects. It also compared the differences in benefits when communities are grouped based on sectoral divisions and geographical locations. Additionally, the study explored challenges faced by implementers. The research design was descriptive-comparative, with 440 respondents selected through stratified random sampling. A researcher-made questionnaire, validated and reliability tested using Lawshe's content validation ratio and Cronbach's alpha method, assessed the economic and social benefits. Data analysis involved descriptive statistics and non-parametric tests (Kruskal Wallis). Overall, the economic benefits received a very high rating, with income being the highest-rated attribute. Social benefits were also highly rated, with environmental protection receiving the highest score. Notably, the differences were observed based on geographical location and sectoral groups. Despite challenges, the study suggests that local government units can effectively manage large-scale infrastructure projects, contributing to inclusive and sustainable industrialization. The emphasis on environmental protection underscores the growing concern for climate change resilience.

Keywords. Economic and social benefits, infrastructure, sustainable development, government agencies, descriptive-comparative, Philippines

1.0 Introduction

One of the indicators to achieve the sustainable development goal of the United Nations is infrastructure that can withstand the environmental challenges to promote comprehensive and wide-ranging industrialization and cater to modernization [1]. Infrastructure projects contribute to the economic growth and social development. However, there is an infrastructure gap globally that needs the attention of international bodies, governments, the private sector, and international investors for funding driven by a focus on climate change and global urbanization [2,3,4].

The ASEAN countries recognize that economic growth will decline due to the global crisis; thus, they formulated the ASEAN Framework Agreement on Services (AFAS) to remove

various kinds of barriers to the provision of services in the form of infrastructure such as roads, water, sanitation, hospitals, clinics, schools, and communication networks. These infrastructure investments will contribute to the improvement of the social and economic welfare of a nation in a sustainable manner [5].

Since the Philippines is an archipelagic country, infrastructure is seen as both a challenge and an opportunity. The significant gap in the country's infrastructure poses a challenge, but resolving these deficits will by itself be a main driver of growth because the current administration pledged to the "golden age of infrastructure" by building more roads, railroads, and bridges simultaneously [2]. The challenge faced by the Philippines in its infrastructure system is weak connectivity that limits trade and economic integration because the location of infrastructure is an essential factor in designing targeted policies, which extends beyond the reduction of transport costs [6].

Negros Occidental has identified four areas for investments in the next three years, with infrastructure development as the priority, along with tourism, technology, and agriculture [7]. Projects include the construction of irrigation canals and the dredging of major waterways. The component city will finance major infrastructure projects, including the acquisition of equipment for dredging the coastal areas and flood control projects and for insurgency-cleared barangays [8]. The inclusion of the component city in large infrastructure projects (irrigation canals, dredging of major waterways, flood control projects) from 2018 to 2020 inspired the conduct of this study.

Studies reviewed included those of Khanani et al. [9] on the impact of road infrastructure, Dimitriou and Field [3] on mega infrastructure projects as agents of change, Wang et al. [10] and the Asian Development Bank [11] on the impact of transportation infrastructure on sustainable development, Gomez-Cabrera et al. [12] on rural roads and its contribution to and participation in markets, and Barron [13] on the benefits from public markets. In the Philippines, Francisco and Helble [6] focused on the impact of improved transport connectivity, while Komatsuzaki [14] looked into the macroeconomic effects of improving public infrastructure. A dearth of studies is seen in Negros Occidental on the implementation of infrastructure programs and projects focused on the economic and social benefits on communities of a component city, which this study has provided.

Thus, this research aimed to determine the extent of economic benefits of infrastructure projects implemented in a component city in Negros Occidental during 2018-2020 in terms of employment, income, and food security as assessed by community leaders, implementers, and residents. Also, it looked into the social benefits of infrastructure projects in terms of health, education, safety and security, and environmental protection. Likewise, it identified the challenges in the implementation of infrastructure projects encountered by the national and local implementers were investigated. It also compared the difference in the extent of economic benefits of the implementation of infrastructure projects in terms of employment, income, and food security relative to sectoral groups and geographical location of communities.

It also investigated on the difference in their extent of social benefits of implementation of infrastructure projects in terms of health, education, safety and security, and environmental protection when respondents are grouped according to sectoral groups and geographical location. The findings were used as the basis of a strategic plan to enhance the implementation of infrastructure projects. This strategic plan will be integrated into other development plans of the component city, such as the Comprehensive Development Plan (CDP), Local Development Investment Plan (LDIP), and the Executive-Legislative Agenda (ELA).

2.0 Framework of the Study

The study theorized that the implementation of infrastructure projects would contribute to the economic and social benefits of the communities and improve the living conditions of the people. Sectoral groups and geographical locations influence the implementation of infrastructure projects. When a policymaker is aware of the needs of the people, specifically on projects that lead to economic and social development, implementation will be successful in both economic and social aspects. This was anchored on the good governance theory of the World Bank [15]. This serves as an anchor of the study. It also explains that good governance is participatory, consensus-oriented, accountable, responsive, efficient, effective, equitable, inclusive, and follows the rule of law [16]. Good governance involves an efficient public service, a legal framework to enforce contracts, and responsible administration of public funds [17]. This theory is very relevant as its principle aided in understanding the study and was used as indices to measure the implementation of infrastructure projects necessary to make far-reaching suggestions for improvement and respond to implications for policy and practice on governance.

Meanwhile, the good governance principle of being participatory and consensus-oriented are demonstrated in the conduct of consultation with the sectoral groups on their economic and social benefits from the implementation of infrastructure projects. While responsiveness is revealed in the implementation of projects as expressed by residents, accountability is shown by the conduct of public bidding; efficiency, effectiveness, and equitability can be revealed in the reactions of elected and appointed officials in project evaluation. The challenges encountered by the implementers show all other principles of good governance, especially the rule of law. These principles were employed to explore the economic and social benefits of the implementation of infrastructure projects in communities of a component city. These were determined in the conduct of surveys.

3.0 Methods

This study employed the quantitative research design particularly the descriptive-comparative approach. The descriptive approach was used to describe the existing conditions in the field of study, particularly the economic and social benefits of infrastructure projects to the respondents. This also identified the challenges in the implementation. Meanwhile, the comparative approach was used to compare the differences of the benefits when communities were grouped according to sectoral groups and geographical locations. The respondents were 60 implementers at the national and local levels, and 380 sectoral representatives identified using stratified random sampling.

Table 1. Demographic Profile of the Respondents

Variable	F	%
Location		
Coastal	139	36.7
Upland	165	43.3
Mainland	76	20.1
Sector		
Farmers	46	10.5
Fisherfolks	41	9.3
Senior Citizen	182	41.4
Businessmen/Professionals	8	1.8
Indigenous People	103	23.4
Implementers	60	13.6
Total	440	100.0

The researcher used a researcher-made survey questionnaire based on the provisions of the Philippine Development Plan (PDP) and the Local Government Code of 1991. Items for the economic benefits were responded using the scale from very poor to very great extent ratings. In terms of the social benefits, it was rated using the scale from never to always. Relative to the challenges, checklist was employed.

Since the instrument was a researcher-made, it was subjected to validity and reliability tests. The content validity ratio (CVR) by Lawshe [18] was used to establish and quantify the content validity by ten experts and yielded a valid score of 0.62. The instrument was likewise subjected to a reliability test by the administration on 30 participants who were not included in the actual data gathering. The researcher utilized the Cronbach Alpha test to generate the results. The Alpha coefficient result was 0.900, implying that the instruments were reliable.

In data analysis, the descriptive-comparative analyses were used to analyze and interpret the data. The descriptive problems on the economic benefits in terms of employment, income, food security, and social benefits in terms of education, health, safety and security, and environmental protection of infrastructure projects were analyzed using the mean and standard deviation. Frequency count and percentage distribution were used for the profile of the respondents and challenges encountered. Meanwhile, the Kolmogorov-Smirnov test was used to determine the normality of the variable. The normality test revealed that the income [KS=0.278, p=0.000], food security [KS=0.272, p=0.000], employment [KS=0.276, p=0.000], economic [KS=0.205, p=0.000], health [KS=0.253, p=0.000], education [KS=0.273, p=0.000], safety and security [KS=0.293, p=0.000], environment protection [KS=0.329, p=0.000], and social [KS=0.233, p=0.000] were not normally distributed. Since variables were not normally distributed, Kruskal Wallis (non-parametric statistics) were used for inferential questions.

Lastly, the researcher addressed the general principles of respect to person, justice, and beneficence to fully guarantee the ethical soundness of the study in line with the guidelines established by the Philippine Health Research Ethics Board (PHREB).

4.0 Results and Discussion

Extent of Economic Benefits of Infrastructure Projects

Table 2 presents the extent of economic benefits of infrastructure projects in a component city in terms of employment, income, and food security as assessed by implementers and residents. The extent of economic benefit as a whole (M=4.58, SD=0.51) is very great. When grouped according to location, coastal (M=4.53, SD=0.53), upland (M=4.65, SD=0.46), and mainland (M=4.50, SD=0.56) all rated very great extent. In terms of sector, farmers (M=4.53, SD=0.53), fisherfolks (M=4.46, SD=0.55), senior citizen (M=4.65, SD=0.49), businessmen/professionals (M=4.86, SD=0.22), indigenous people (M=4.55, SD=0.52) and implementers (M=4.57, SD=0.51) all rated very great extent.

The finding of a very great extent of economic benefits as a whole in terms of employment, income, and food security implies that the economic benefits are very significant, which indicates that the government has provided a substantial contribution to the general welfare of their constituents. It demonstrates that the government, as policymakers, understands that infrastructure is the driving force behind economic growth, contributes to higher productivity, facilitates trade and connectivity, and promotes economic inclusion. It has contributed to the increase in their income, provided employment, and had lasting economic, social, and environmental impacts.

This finding finds support in the study of Kadarisman et al. [19] who agreed that there is a need to bridge the global infrastructure gap. However, the study of Vana et al. [20] negates the finding of the very great extent of economic benefits, having found that in the Philippines, the effect of infrastructure projects on the socio-economic status of farm families is only fair.

In terms of the variables, income was rated the highest (M=4.62; SD=0.52), while the next highest was employment (M= 4.59; SD=0.57), and food security was rated the lowest (M=4.52; SD=0.63), all interpreted very great extent which means that economic benefits to respondents are very significant. The finding that income was rated highest suggests that infrastructure projects help reduce poverty by expanding earning opportunities through access to markets. It likewise demonstrates that infrastructure projects promote economic growth, support economic development, increase income, and increase employment. Both employment and food security are also very great extent which indicates that the implementation of infrastructure projects by the local government revealed their consciousness that infrastructures in whatever form will redound to the sustainable development of the local government.

The findings affirmed the studies of Kumar et al. [1], Hine et al. [21], and Wang et al. [10], who concluded that transport infrastructure directly promotes economic growth, while Rachmawati et al. [22] confirmed that infrastructure support economic and social development. The findings of Komatsuzaki [14] likewise align with the findings that addressing the large infrastructure gap is needed to raise potential growth and reduce poverty but negate the findings of Vana et al. [20] that the effects of infrastructure projects are only fair in terms of increase in household income, among others. In terms of employment, the finding is supported by studies of Lee [23], who found that transport infrastructure is influential in the growth of employment and leads to an increase in economic performance and development, and Kadarisman et al. [19] and Banerjee et al. [24] who revealed that road infrastructures are the main trigger for the growth of new jobs causing mobilization of human capital. Other studies affirming the findings are those of Sawada [25], Gomez-Cabrera et al. [12], Sieber and Allen [26], and Barron [13], who claimed that market infrastructures provide job creation and economic benefits by creating value-chain linkages. In terms of food security, the finding of a very great extent is confirmed

by study of Kumar et al. [1]. It is substantiated by the findings of Kankwamba and Kornher [27] as well as of Nyo [28].

When grouped according to location, coastal (M=4.53, SD=0.53), upland (M=4.65, SD=0.46), and mainland (M=4.5, SD=0.56) all rated very great extent which means that regardless of location, residents believe that infrastructure projects have very significant impact on their income, employment, and food security. This finding indicates that infrastructure projects have contributed to the welfare and well-being of the residents, which is in consonance with the finding of Limon et al. [29] that people generated earnings in waste management infrastructure, although these are not sufficient. The finding of very great extent is underlined in the study of Oliveira and Turra [30] that in coastal cities in Brazil, waste is properly disposed of in landfill sites. This finding underlined the studies of Singh [31], Avidov et al. [32], Mukama et al. [33], and Kumar et al. [1] on the difficulties of putting up infrastructure projects due to location and technical issues.

In terms of sector, farmers (M=4.53; SD=0.53), fisherfolks (M=4.46; SD=0.55), senior citizens (M=4.65; SD=0.49), businessmen/professionals (M=4.86; SD=0.22 indigenous people (M=4.55; SD=0.52); implementers (M=4.57; SD=0.51), all rated very great extent. The finding that sectoral groups all rated very great extent economic benefits means that they observed very significant contribution of infrastructure projects to their income, employment, and food security which affirmed the governments' building more roads, bridges, and railroads simultaneously [2].

The finding of very great economic benefits in the implementation of infrastructure projects validates the studies of Lee [23] and Ismail and Mahyideen [34] that farmers benefited from road infrastructure. It also strengthened the findings of Hardaker [35], which articulated the views and opinions of different stakeholders on the role of infrastructure in the success of a residential development project. The finding also reinforces that of the United Nations Development Program [36] that road infrastructure positively affects market growth. While the finding is congruent with Wu et al. [37] that green infrastructure is beneficial to the elderly (senior citizens) as it was rated very great extent of economic benefits, it is partly in discord with the finding of Otsuki et al. [38] that infrastructure projects seldom benefit the marginalized communities although they agreed that the voices of the poor are not heard in the planning of infrastructure projects.

Table 2. *Extent of Economic Benefits of Infrastructure Projects*

Variable	Income			Food Security			Employment			Economic		
	M	SD	Int	M	SD	Int	M	SD	Int	M	SD	Int
Location												
Coastal	4.55	0.57	VG	4.47	0.68	VG	4.56	0.58	VG	4.53	0.53	VG
Upland	4.69	0.48	VG	4.61	0.57	VG	4.66	0.49	VG	4.65	0.46	VG
Mainland	4.61	0.48	VG	4.43	0.66	VG	4.47	0.70	VG	4.50	0.56	VG
Sector												
Farmers	4.49	0.69	VG	4.56	0.55	VG	4.53	0.62	VG	4.53	0.53	VG
Fisherfolks	4.49	0.56	VG	4.33	0.77	VG	4.53	0.61	VG	4.46	0.55	VG
Senior Citizen	4.69	0.49	VG	4.61	0.58	VG	4.65	0.57	VG	4.65	0.49	VG
Businessmen/Profs	5.00	0.00	VG	4.71	0.46	VG	4.87	0.24	VG	4.86	0.22	VG
Indigenous People	4.61	0.49	VG	4.49	0.63	VG	4.55	0.57	VG	4.55	0.52	VG
Implementers	4.64	0.47	VG	4.50	0.65	VG	4.58	0.56	VG	4.57	0.51	VG
Whole	4.62	0.52	VG	4.52	0.63	VG	4.59	0.57	VG	4.58	0.51	VG

Extent of Social Benefits of Infrastructure Projects

Table 3 presents the extent of social benefits of infrastructure projects in terms of health, education, safety and security, and environmental protection. The extent of social benefits as a whole (M=4.64, SD=0.49) is very great. When grouped according to location, residents from coastal (M=4.61, SD=0.5), upland (M=4.7, SD=0.39), and mainland (M=4.65, SD=0.39) all rated very great extent. In terms of sector, farmers (M=4.54, SD=0.48), fisherfolks (M=4.57, SD=0.63), senior citizen (M=4.83, SD=0.37), businessmen/professionals (M=4.78, SD=0.29), indigenous people (M=4.59, SD=0.46), and implementers (M=4.53, SD=0.56) all rated very great extent.

As a whole, the respondents expressed that they are always availing of the social benefits of infrastructure projects in terms of health, education, safety and security, and environmental protection, which means that benefits are to a very great extent. The finding demonstrates that infrastructure projects contributed to the social development of the constituents of the component city. It also means that there is adequate infrastructure that responds to the need for health services, better education privileges, and greater access to social services.

The finding that social benefits are always felt by the residents is in conformity with Asian Development Bank [11], that health as an indicator is measured by the presence of electricity, schools, domestic water supply, and other facilities. Also, the finding confirmed Xiahou et al. [39] that environmental and social dimensions are benefits derived from infrastructures. The same is true in the study of Frolova et al. [40] that important infrastructures in local governments are transportation facilities, housing services, social protection, health, and education, identified as specific functions of local governments.

The infrastructure project, which respondents rated the highest, was environment protection (M=4.67; SD=0.77), while the lowest was education (M=4.63; SD=0.52), both interpreted as always availed of. The finding implies that the respondents observed that infrastructure projects protect the environment, facilitate adaptation to climate change, contribute to the development of local economies, mitigate risks, and strengthen social sustainability. Although education was provided the lowest rating, it was still interpreted as always extending social benefits, revealed in increase in enrolment of children, improved availability of school facilities, increased mobility of teachers, maintenance of the presence of teachers even in remote areas, and improvement in the attendance of students in schools.

This finding is strengthened by Kumar et al. [1] that infrastructure development improves the environment and facilitates adaptation to climate change. A study by the Organization for Economic Cooperation and Development [41] corroborates the findings and points out that infrastructure investments play a key role in strengthening social sustainability by helping generate jobs, facilitating access to employment opportunities, and contributing to local economies.

When grouped according to location, residents from coastal (M=4.61; SD=0.5), upland (M=4.7; SD=0.39), and mainland (M=4.65, SD=0.39) all rated always which means that infrastructure projects extended social benefits to a very great extent. The finding indicates that regardless of location, residents appreciate infrastructure projects as these provide them with the quality of life that they have wanted, improved the economy of the communities as a whole.

This finding is consistent with Stevens and Keyes [42] that infrastructure projects in coastal communities met the demands of changing demographics and climate change impacts and minimized the loss of ecosystem services. In upland communities, infrastructure projects are seen as economic and social engines for sustainable rural community development, which are basic social services that the government must provide in conformity with the findings of

Hussain et al. [43]. Also, Hine et al. [21] supported that without infrastructure, rural communities would be isolated from markets, health care, and education, which are social benefits.

In terms of sector, farmers (M=4.54; SD=0.48), fisherfolks (M=4.57; SD=0.63), senior citizens (M=4.83; SD=0.37), businessmen/professionals (M=4.78; SD=0.29), indigenous people (M=4.59; SD=0.46); and implementers (M=4.53; SD=0.56) all rated always implying that infrastructure projects extend social benefits to a very great extent. The finding advocates that sectoral groups acknowledge the social benefits extended by infrastructure projects alluding that the social impact of infrastructure projects is measured based on the expectations and satisfaction of the stakeholders. The finding that infrastructure projects always extend social benefits to stakeholders finds support in the study of Cook et al. [44], specifically on farmers and fisherfolks, and on all stakeholders who all claimed that efficient infrastructure contributes to social benefits.

The finding also confirmed the United Nations Development Program [36] that road infrastructure benefits women, the youth, businessmen, and the formal sector to engage in economic activities and the urban poor by increasing market access. This information was emphasized in the study of Biswas et al. [45] on social benefits to women and the business sector and Khan et al. [46], where the outcome of infrastructure was recommended by addressing traditional gender norms. The social impact of roads on indigenous people articulated by Clements et al. [47] is supported by this finding that provides them greater access to markets and increases their social mobility and migration habits.

Table 3. Extent of Social Benefits of Infrastructure Projects

Variable	Health			Education			Safety and Security			Environment Protection			Social		
	M	SD	Int	M	SD	Int	M	SD	Int	M	SD	Int	M	SD	Int
Location															
Coastal	4.58	0.58	VG	4.58	0.58	VG	4.65	0.55	VG	4.65	0.54	VG	4.61	0.50	VG
Upland	4.72	0.43	VG	4.68	0.46	VG	4.70	0.47	VG	4.70	0.46	VG	4.70	0.39	VG
Mainland	4.68	0.44	VG	4.64	0.48	VG	4.64	0.46	VG	4.66	0.50	VG	4.65	0.39	VG
Sector															
Farmers	4.57	0.51	VG	4.57	0.57	VG	4.56	0.61	VG	4.46	0.65	VG	4.54	0.48	VG
Fisherfolks	4.52	0.79	VG	4.49	0.75	VG	4.64	0.58	VG	4.63	0.60	VG	4.57	0.63	VG
Senior Citizen	4.76	0.40	VG	4.77	0.37	VG	4.83	0.32	VG	4.97	1.05	VG	4.83	0.37	VG
Businessmen	4.80	0.31	VG	4.63	0.45	VG	4.77	0.41	VG	4.90	0.24	VG	4.78	0.29	VG
Indigenous	4.64	0.44	VG	4.62	0.46	VG	4.56	0.54	VG	4.54	0.60	VG	4.59	0.46	VG
Implementers	4.57	0.58	VG	4.53	0.60	VG	4.49	0.70	VG	4.55	0.64	VG	4.53	0.56	VG
Whole	4.64	0.52	VG	4.63	0.52	VG	4.64	0.55	VG	4.67	0.77	VG	4.64	0.49	VG

Difference in the Extent of Economic Benefits of the Implementation of Infrastructure Projects according to Geographical Location

Table 4 presents the difference in the extent of economic benefits of the implementation of infrastructure projects in terms of income, employment, and food security when the component city is grouped according to geographical location. There was no significant difference in the extent of economic benefits of the implementation of infrastructure projects in terms of income [$\chi^2(2)=4.772$, $p=0.092$], and employment [$\chi^2(2)=3.918$, $p=0.141$] when the component city was grouped according to geographical location. There was significant difference in the extent of economic [$\chi^2(2)=6.882$, $p=0.032$] benefits of the implementation of infrastructure projects in terms of food security [$\chi^2(2)=6.363$, $p=0.042$]. Post hoc result revealed, residents from upland, rated significantly higher than mainland and coastal residents.

Generally, this finding implies that geographical location does not influence the extent of economic benefits of infrastructure projects in terms of income and employment. However, there was a significant difference in terms of food security because residents of upland areas

believe that the road infrastructure project provided them with greater chances of ending hunger due to increased agricultural growth and access to markets.

The findings on the significant difference in the extent of economic benefits of infrastructure projects in terms of food security, when grouped according to geographical location, find support in the study of the World Bank [48] that investments in infrastructure are directly linked to increased agricultural growth and affirmative well-being. Also, the study of Nissanke and Aryeetey [49] that the absence of infrastructure is disadvantageous to economically isolated populations because they need to pay extra costs in time and money to access markets. Further, the significant difference in terms of food security is affirmed in the study of Nyo [28], that food insecurity is due to the low level of agricultural infrastructure development. Kumar et al. [1] confirms this finding that rural roads improve the potential for food security in remote and underserved areas, which is recommended for adaptive agriculture and providing new seed varieties and inputs and a package of agricultural practices to the residents.

Table 4. *Difference in the Extent of Economic Benefits of the Implementation of Infrastructure Projects according to Geographical Location*

Variable	χ^2	df	p
Income	4.772	2	0.092
Food Security	6.363*	2	0.042
Employment	3.918	2	0.141
Economic	6.882*	2	0.032

Note: *difference is significant when $p \leq 0.05$

Difference in the Extent of Economic Benefits of the Implementation of Infrastructure Projects according to Sectoral Groups

Table 5 shows the difference in the extent of economic benefits of the implementation of infrastructure projects in terms of income, employment, and food security when respondents were grouped according to sectoral groups. There was no significant difference in the extent of economic [$\chi^2(5) = 12.338, p = 0.137$] benefits of the implementation of infrastructure projects and in terms of income [$\chi^2(5) = 14.412, p = 0.072$], food security [$\chi^2(5) = 8.463, p = 0.39$], and employment [$\chi^2(5) = 7.454, p = 0.489$] when the component city was grouped according to sectoral groups.

The finding of no significant difference in the extent of economic benefits of the implementation of infrastructure projects in terms of income, food security, and employment when respondents are grouped according to sectoral groups, suggests that all sectors agreed on the economic benefits of the implementation of infrastructure projects in terms of income, food security, and employment which means that economic benefits to respondents are very significant. This finding implies that the local government recognizes that the availability of adequate infrastructure is the key to accelerating development, both economically and socially. The finding validated the priority of the local government in the implementation of large infrastructure projects from 2018 to 2020.

Table 5. *Difference in the Extent of Economic Benefits of the Implementation of Infrastructure Projects according to Sectoral Groups*

Variable	χ^2	df	P
Income	14.412	5	0.072
Food Security	8.463	5	0.390
Employment	7.454	5	0.489
Economic	12.338	5	0.137

Note: *difference is significant when $p \leq 0.05$

Difference in the Extent of Social Benefits of the Implementation of Infrastructure Projects according to Geographical Location

Table 6 shows the difference in the extent of social benefits of the implementation of infrastructure projects in terms of health, education, safety and security, and environment protection when the component city is grouped according to geographical location. Kruskal Wallis was used to determine the significant difference in the extent of social benefits of the implementation of infrastructure projects in terms of health, education, safety and security, and environmental protection when the component city is grouped according to geographical location.

There was no significant difference in the extent of social benefits of the implementation of infrastructure projects in terms of education [$\chi^2(2) = 2.166$, $p = 0.339$], safety and security [$\chi^2(2) = 3.277$, $p = 0.194$], environment protection [$\chi^2(2) = 0.957$, $p = 0.62$], and social [$\chi^2(2) = 3.027$, $p = 0.22$] when the component city was grouped according to geographical location. There was a significant difference in the extent of social benefits in the implementation of infrastructure projects in terms of health [$\chi^2(2) = 6.157$, $p = 0.046$] when grouped according to geographical location. Post hoc results revealed that residents from the upland rated significantly higher than coastal residents.

As a whole, the no significant difference in the social benefits of the implementation of infrastructure projects means that infrastructure projects extend social benefits regardless of geographical location. The finding implies that upgrading public infrastructure can raise potential growth and reduce poverty, which will minimize social inequality. It will improve public investment efficiency and will bring substantial benefits in social terms. This finding of no significant difference in the social benefits from infrastructure projects finds support in Komatsuzaki [14] and Khanani et al. [9], who revealed that infrastructure projects scaled up residential development in peri-urban communities.

Meanwhile, the significant difference in the extent of social benefits of the implementation of infrastructure projects in terms of health, with residents of upland areas rating higher than coastal residents, suggests that positive policy, planning, and coastal infrastructure should be developed to increase resilience to climate changing conditions as residents of coastal areas are more vulnerable to climate change and they are more vulnerable to effects of disasters and climate change. Responding to these issues will result in higher and more social benefits for them.

This finding of significant difference in social benefits in the implementation of infrastructure projects in coastal communities is supported by the study of Stevens and Keyes [42] that coastal communities rely on coastal resources and are more prone to changing climate change impacts. Further, this finding is consistent with the idea of the Organization for Economic Cooperation and Development [41] that integrating environmental considerations in the planning and design of infrastructure can help avoid, minimize, and mitigate the risks posed

by environmental hazards over the lifetime of the infrastructure asset since it plays the role of strengthening social sustainability for local communities. The finding acknowledges the global infrastructure gap pointed out by Dimitriou and Field [3] and focuses on climate change and urbanization [2], as shown by the significant difference in the social benefits in terms of environmental protection when the city was grouped according to the sector.

Table 6. *Difference in the Extent of Social Benefits of the Implementation of Infrastructure Projects according to Geographical Location*

Variable	χ^2	df	P
Health	6.157*	2	0.046
Education	2.166	2	0.339
Safety and Security	3.277	2	0.194
Environment Protection	0.957	2	0.620
Social	3.027	2	0.220

Note: *difference is significant when $p \leq 0.05$

Difference in the Extent of Social Benefits of the Implementation of Infrastructure Projects according to Sectoral Groups

Table 7 shows the difference in the extent of social benefits of the implementation of infrastructure projects relative to health, education, safety and security, and environment protection when the component city was grouped according to sectoral groups. There was no difference in the extent of social benefits of the implementation of infrastructure projects in terms of health [$\chi^2(80)=10.808$, $p=0.213$], education [$\chi^2(80)=13.549$, $p=0.094$] when the component city is grouped according to sectoral groups while there was a difference in the extent of social [$\chi^2(8)=23.937$, $p=0.002$] benefits of the implementation of infrastructure projects in terms of safety and security [$\chi^2(80)=20.961$, $p=0.007$] and environment protection [$\chi^2(80)=30.021$, $p=0.000$] when the component city was grouped according to sectoral groups. Post hoc results revealed that senior citizens rated significantly higher than farmers and implementers.

The no difference in the extent of social benefits of the implementation of infrastructure projects in terms of health and education when the component city was grouped according to sector demonstrates that the benefit of infrastructure projects expands beyond the boundaries of each community and produces positive national well-being. As to education, improved access to education and increased rural-urban interaction are some of the outcomes of road connectivity, which are immediately observable, evidenced by the increase in higher school enrolment. This finding of no significant difference in the extent of social benefits of the implementation of infrastructure projects in terms of health and education is emphasized in Ellis and Menendez [50], Wagale and Singh [51], Kumar et al. [1] and Starkey and Hine [52]. The above finding is attested to in Kennedy et al. [53].

Table 7. *Difference in the Extent of Social Benefits of the Implementation of Infrastructure Projects according to Sectoral Groups*

Variable	χ^2	df	P
Health	10.808	5	0.213
Education	13.549	5	0.094
Safety and Security	20.961*	5	0.007
Environment Protection	30.021*	5	0.000
Social	23.937*	5	0.002

Note: *difference is significant when $p \leq 0.05$

Challenges Encountered by Implementers of Infrastructure Projects

Table 8 presents the challenges encountered by implementers of infrastructure projects. The major challenge encountered by implementers is the fluctuation in prices of construction materials, which was identified by more than half (69.6%) of the implementers at the national, provincial, and city levels. This challenge is beyond the control of the local government as it is a result of international and national policies such as overreliance on imports, government fiscal policy, infrastructural deficit, profiteering by some suppliers, increase in cost of labor, increase in petroleum cost, and higher interest rates. This challenge was also identified in the studies of Mohamed [54] and Oyieyo [55], which is one of the major causes of delay in the implementation of infrastructure projects.

Other challenges that can be addressed by implementers are materials shortage, refusal of property owners to provide access to their properties affected, organizational delays, inadequate skills among laborers, lack of coordination among implementers, inaccurate time and cost estimates, delays in the release of budget, and lack of risk management tools. This group of challenges can be resolved by contractors and the local government unit themselves, as it demands appropriate planning, design, and implementation schedules. This finding is supported by Mohamed [54] who urged the sincerity and capacity of local officials to plan and manage large-scale infrastructure at local levels of government as they are on the front lines of procurement and management of infrastructure projects.

The last set of challenges identified by some implementers includes the threat to the ecological viability of large areas due to the conversion of lands to other use, especially urban use, unknown geotechnical conditions, inadequate risk management, bureaucracy in government, contractors' inabilities, and litigation from property owners. These challenges are outside the control of local government units. However, they may be minimized with the application of advocacy and people empowerment, which means that there has to be an information campaign before the start of the project to solicit the opinion of stakeholders, especially those who will be affected. These challenges were elucidated in the studies of Kennedy et al. [53] and Mohamed [54], who all recommended adequate and appropriate planning and open communications with citizens.

Overall, the extent of economic and social benefits of infrastructure projects is to a very great extent. This implies that respondents felt that economic benefits in terms of income, employment, and food security are very significant, while social benefits were always extended to them in the areas of health, education, safety and security, and environmental protection. The findings of a very great extent of economic and social benefits of implementation of infrastructure projects validated the theory advanced by the researcher that implementation of infrastructure projects will contribute to the economic and social benefits to the communities and improve the living conditions of the people. The economic and social benefits of implementation resulted in the development of the sectoral group; hence, it can be concluded that when a policymaker is aware of the needs of the people, specifically on projects that lead to economic and social development, implementation will be successful in both aspects.

Table 8. *Challenges Encountered by Implementers of Infrastructure Projects*

	f	%	Rank
1. Fluctuation in prices of construction materials.	243	69.6	1
2. Materials shortage.	164	47.0	2
3. Refusal of property owners to provide access to their properties.	152	43.6	3
4. Organizational delays.	119	34.1	4
5. Inadequate skills among laborers.	114	32.7	5
6. Lack of coordination among implementers.	107	30.7	8
7. Inaccurate time and cost estimates.	108	30.9	7
8. Delays in release of budget.	110	31.5	6
9. Lack of risk management tools.	92	28.4	9
10. Threat to ecological viability of large areas due to conversion to urban use.	83	23.8	11
11. Unknown geotechnical conditions.	87	24.9	10
12. Inadequate risk management.	59	16.9	14
13. Bureaucracy in government.	54	15.5	15
14. Contractor's inabilities.	63	18.1	13
15. Litigation from property owners.	64	18.3	12

The theory of Good Governance of the World Bank [15], which espoused that good governance is participatory, consensus-oriented, accountable, transparent, responsive, efficient and effective, equitable and conclusive, and follows the rule of law, identified the gaps in implementation. In terms of the variables on economic benefits, income, employment, and food security were all rated to a very great extent; when grouped according to location, a significant difference was revealed in terms of food security, with residents of upland areas rated higher than mainland and coastal residents. Meanwhile, when respondents were grouped as to sector, there was no significant difference in terms of income, employment, and food security.

As a whole, social benefits are very great. When grouped according to location, all rated very great extent. In terms of sector, all rated very great extent. There was no significant difference in the extent of social benefits when the city was grouped according to geographical location. However, a significant difference was found in the area of health with residents of upland rated higher than those in the coastal areas. When grouped according to the sector, there was no significant difference in the areas of health and education. The challenges encountered revealed the inadequacies of implementers in the proper and appropriate implementation of policies on infrastructure projects: those that are beyond their control and those that can be resolved at their levels.

5.0. Conclusion

The very great extent of economic benefits in the implementation of infrastructure projects in the component city suggests that despite the challenges encountered, local government units are capable of handling large-scale infrastructure projects aimed towards inclusive and sustainable industrialization. The extension of social benefits to a very great extent with highest rating on environmental protection indicates that the greater demand for infrastructure is driven by a focus on climate change.

6.0. Limitations of the Findings

The results of the study are not generalizable to all areas in the province and in the country as a whole since the locale was on one component city only. The respondents were also limited to stakeholders identified by stratified random sampling and the views of the general population were not gathered. The results did not capture the opinion and views of the political

leaders, investors, and members of non-government organizations who are also important stakeholders.

7.0. Practical Value of the Paper

The findings of the study can be used by local government units as basis to formulate infrastructure programs and projects. The strategic plan as an output of this study will be integrated into the comprehensive development plan (CDP) and the Local Investment Plan (LIP) as well as in the Executive-Legislative Agenda (ELA) of the component city.

8.0. Directions for Future Research

Most of the principles of good governance were used and found effective in the generation of findings of the study. Many of the challenges need to be address through good governance mechanisms in the local level. The conduct of a qualitative research is recommended to understand better the economic and social benefits of the implementation of infrastructure projects at the local government level.

9.0. Declaration of Conflict of Interest

The authors declare no conflict of interest.

10.0 Acknowledgement

The author expresses his love and gratitude to persons who have accompanied him in this academic journey: panelists, mentors, editors, and adviser. His Intrepido-Tongson family, and his angels in heaven. To them, this humble work is sincerely dedicated.

11.0 References

- [1] Kumar, S., Giri, T. K., & Gogoi, B. J. (2019). *Determinants of rural livelihood interventions: An ISM-MICMAC approach*. *Journal of Indian Business Research*. <https://doi.org/10.1108/jibr-04-2019-0107>
- [2] Philippine Board of Investment (2018). Annual report 2018. Revolutionizing Philippine industries: Attracting the highest strategic investments. <https://boi.gov.ph/uFAQS/annual-report-2018/>
- [3] Dimitriou, H. T. & Field, B. G. (2019). Mega infrastructure projects as agents of change: New perspectives on 'the global infrastructure gap.' *Journal of Mega Infrastructure and Sustainable Development*, 1(2), 116–150. <https://doi.org/10.1080/24724718.2020.1786877>
- [4] Sol, X. (2019). Rebuilding the world: The hubris behind the global infrastructure agenda. *Open Democracy*. <https://www.opendemocracy.net/en/oureconomy/rebuilding-world-hubris-behind-global-infrastructure-agenda/>
- [5] Novianti, T., Rifin, A., Panjaitan, D. V., & Sri Retno, W. N. (2014). The infrastructure's influence on the ASEAN countries' economic growth. *Journal of Economics and Development Studies*, 2(4). <http://dx.doi.org/10.15640/jeds.v2n4a17>
- [6] Francisco, K. & Helble, M. (2017). *The impact of improved transport connectivity on income, education, and health: The case of the roll-on/roll-off system in the Philippines* (No. 792). ADBI Working Paper. <https://www.adb.org/sites/default/files/publication/381911/adbi-wp792.pdf>
- [7] Guadalquiver, N. (2019). NegOcc identifies 4 sectors as priorities for investments. *Philippine News Agency*. <https://www.pna.gov.ph/articles/1076586>

- [8] Ellera, T. (2021). P500-M infra projects underway for 25 Negros Occidental insurgency-cleared villages. *Sunstar Bacolod*.
<https://www.sunstar.com.ph/article/1894494/Bacolod/Local-News/P500-M-infra-projects-underway-for-25-Negros-Occidental-insurgency-cleared-villages>
- [9] Khanani, R. S., Adugbila, E. J., Martinez, J. A., & Pfeffer, K. (2021). The impact of road infrastructure development projects on local communities in peri-urban areas: The case of Kisumu, Kenya, and Accra, Ghana. *International Journal of Community Well-Being*, 4(1), 33-53. <https://doi.org/10.1007/s42413-020-00077-4>
- [10] Wang, L., Xue, X., Zhao, Z., & Wang, Z. (2018). The impacts of transportation infrastructure on sustainable development: emerging trends and challenges. *International Journal of Environmental Research and Public Health*, 15(6), 1172. <https://doi.org/10.3390/ijerph15061172>
- [11] Asian Development Bank (2017). Meeting Asia's infrastructure needs. <https://www.adb.org/sites/default/files/publication/227496/special-report-infrastructure.pdf>
- [12] Gomez-Cabrera, A., Sanz-Benlloch, A., Montalban-Domingo, L., Ponz-Tienda, J. L., & Pellicer, E. (2020). Identification of factors affecting the performance of rural road projects in Colombia. *Sustainability*, 12(18), 7377. <https://doi.org/10.3390/su12187377>
- [13] Barron, R. M. (2016). A complement, not a competitor: How public markets can support business districts in Worcester. *International Development, Community and Environment (IDCE)*. 60. https://commons.clarku.edu/idce_masters_papers/60
- [14] Komatsuzaki, T. (2019). Improving public infrastructure in the Philippines. *Asian Development Review*, 36(2), 159–184. https://doi.org/10.1162/adev_a_00135
- [15] The World Bank. (1994). Governance-the world bank's experience (English). <https://documents.worldbank.org/en/publication/documentsreports/documentdetail/711471468765285964/governance-the-world-banks-experience>
- [16] Booth, D., & Cammack, D. (2013). *Governance for development in Africa: Solving collective action problems*. Bloomsbury Publishing. <http://dx.doi.org/10.5040/9781350220522>
- [17] Ekundayo, W. J. (2017). Political elite theory and political elite recruitment in Nigeria. *Public Policy and Administration Research*, 7(5), 1-8. <https://www.academia.edu/download/60553902/37228-40273-1-PB20190910-24240-1fsqbej.pdf>
- [18] Lawshe, C. H. (1975). A quantitative approach to content validity. *Personnel Psychology*, 28(4), 563–575. file:///C:/Users/eheeheheh/Downloads/000Lawshe_content_valdity.pdf
- [19] Kadarisman, M., Wijayanto, A. W., & Sakti, A. D. (2022). Government agencies' readiness evaluation towards industry 4.0 and society 5.0 in Indonesia. *Social Sciences*, 11(8), 331. <https://doi.org/10.3390/socsci11080331>
- [20] Vana, J., Vargas, D., Vallejo, C. A., Rafael, P., & Hail, P. (2021). Infrastructure development projects and access to services of farm families. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3828883
- [21] Hine, J., Abedin, M., Stevens, R., Airey, T., & Anderson, T. (2016). Does the extension of the rural road network have a positive impact on poverty reduction and resilience for the rural areas served? If so, how, and if not, why not? *Social Science Research Unit, UCL Institute of Education, University of London*.

- https://www.academia.edu/download/40907377/Extension_of_network_2014_Hine_protocol.pdf
- [22] Rachmawati, E., Harianto, Y. S., & Novianti, T. (2014). Fluctuation and price responses retail level of red chili, cayenne pepper, shallot in five major cities in Java. *Red*, 2015(2016), 2017-2018. <https://doi.org/10.52155/ijpsat.v21.1.1868>
- [23] Lee, J. K. (2019). *the impact of transport infrastructure on productivity, employment center growth, and land values in the Seoul Region* (Doctoral dissertation, UCL (University College London)). <https://discovery.ucl.ac.uk/id/eprint/10079995>
- [24] Banerjee, A., Duflo, E., & Qian, N. (2020). On the road: Access to transportation infrastructure and economic growth in China. *Journal of Development Economics*, 145, 102442. <https://doi.org/10.1016/j.jdeveco.2020.102442>
- [25] Sawada, Y. (2015). The impacts of infrastructure in development: A selective survey. *Asian Development Bank Institute*. <http://hdl.handle.net/11540/9629>
- [26] Sieber, N. & Allen, H. (2016). Impacts of rural roads on poverty and equity. *Transport and Communications Bulletin for Asia and the Pacific*, 86, 23-40. <http://indiaenvironmentportal.org.in/files/file/Bulletin%2086%20Sustainable%20Rural%20Access.pdf#page=25>
- [27] Kankwamba, H., & Kornher, L. (2019). How much do infrastructural investments mitigate impacts of seasonal shocks on food security?. *ZEF-Discussion Papers on Development Policy*, (289). <https://dx.doi.org/10.2139/ssrn.3506560>
- [28] Nyo, A. K. (2016). Inadequate infrastructure: The bane behind food loss and food security in the Savannah zone of Ghana. *Journal of Developments in Sustainable Agriculture*, 11(1), 43-47. <https://doi.org/10.11178/jdsa.11.43>
- [29] Limon, M. R., Vallente, J. P. C., & Corales, N. C. T. (2020). Solid waste management beliefs and practices in rural households towards sustainable development and pro-environmental citizenship. *Global Journal of Environmental Science and Management*, 6(4), 441-456. <https://dx.doi.org/10.22034/gjesm.2020.04.02>
- [30] Oliveira, A. D. L., & Turra, A. (2015). Solid waste management in coastal cities: where are the gaps? Case study of the North Coast of São Paulo, Brazil. *Revista de Gestão Costeira Integrada-Journal of Integrated Coastal Zone Management*, 15(4), 453-465. <https://doi.org/10.5894/rgci544>
- [31] Singh, A. (2023). The current trends and need of infrastructure projects in the country India. In *Achieving the Sustainable Development Goals Through Infrastructure Development* (pp. 235-261). IGI Global. DOI: 10.4018/979-8-3693-0794-6.ch010
- [32] Avidov, R., Saadi, I., Krassnovsky, A., Hanan, A., Medina, S., Raviv, M., Chen, Y. & Laor, Y. (2017). Composting municipal biosolids in polyethylene sleeves with forced aeration: Process control, air emissions, sanitary and agronomic aspects. *Waste Management*, 67, 32-42. <https://doi.org/10.1016/j.wasman.2017.05.035>
- [33] Mukama, T., Ndejjo, R., Musoke, D., Musinguzi, G., Halage, A. A., Carpenter, D. O., & Ssempebwa, J. C. (2016). Practices, concerns, and willingness to participate in solid waste management in two urban slums in Central Uganda. *Journal of environmental and public health*, 2016. <http://dx.doi.org/10.1155/2016/6830163>
- [34] Ismail, N. W., & Mahyideen, J. M. (2015). The impact of infrastructure on trade and economic growth in selected economies in Asia. <https://dx.doi.org/10.2139/ssrn.2709294>
- [35] Hardaker, S. (2018). The emerging retail market in Myanmar—An institutional perspective of foreign retailers ‘market entry decisions. *International Business Research*, 11(1), 19-33. <https://doi.org/10.5539/IBR.V11N1P19>

- [36] United Nations Development Program (UNDP). (2015). Time for global action. *Annual Report 2014/2015*. <https://annualreport.undp.org/2015/>
- [37] Wu, H. W., Kumar, P., & Cao, S. J. (2022). Implementation of green infrastructure for improving the building environment of elderly care centres. *Journal of Building Engineering*, 54, 104682. <https://doi.org/10.1016/j.jobbe.2022.104682>
- [38] Otsuki, K., Read, M. L., & Zoomers, E. B. (2016). Large scale investments in infrastructure: Competing policy regimes to control connections. https://www.iss.nl/sites/corporate/files/32-ICAS_CP_Otsuki_et_al.pdf
- [39] Xiahou, X., Tang, Y., Yuan, J., Chang, T., Liu, P., & Li, Q. (2018). Evaluating social performance of construction projects: An empirical study. *Sustainability*, 10(7), 2329. <https://doi.org/10.3390/su10072329>
- [40] Frolova, E. V., Vinichenko, M. V., Kirillov, A. V., Rogach, O. V., & Kabanova, E. E. (2016). Development of social infrastructure in the management practices of local authorities: Trends and factors. *International Journal of Environmental and Science Education*, 11(15), 7421-7430. <https://files.eric.ed.gov/fulltext/EJ1117385.pdf>
- [41] Organization for Economic Cooperation and Development (OECD). (2019). OECD Work on Environment. <https://www.oecd.org/environment/brochure-oecd-work-on-environment-2019-2020.pdf>
- [42] Stevens, N., & Keyes, O. (2021). Seeing infrastructure: Race, facial recognition and the politics of data. *Cultural Studies*, 35(4-5), 833-853. <https://doi.org/10.1080/09502386.2021.1895252>
- [43] Hussain, S., Zhu, F., Ali, Z., & Xu, X. (2017). Rural residents' perception of construction project delays in Pakistan. *Sustainability*, 9(11), 2108. <https://doi.org/10.3390/su9112108>
- [44] Cook, J., Huizenga, C., Petts, R., Visser, C., & Yiu, A. (2017). The contribution of rural transport to achieve the sustainable development goals. *Research for Community Access Partnership*.
- [45] Biswas, S., Wu, M., Melles, S. J., & Kwon, T. J. (2019). Use of topography, weather zones, and semivariogram parameters to optimize road weather information system station density across large spatial scales. *Transportation research record*, 2673(12), 301-311. <https://doi.org/10.1177/0361198119846467>
- [46] Khan, W., Ahmad, A., Ahmad, F., & Saad Alam, M. (2018). A comprehensive review of fast charging infrastructure for electric vehicles. *Smart Science*, 6(3), 256-270. <https://doi.org/10.1080/23080477.2018.1437323>
- [47] Clements, G. R., Aziz, S. A., Bulan, R., Giam, X., Bentrupperbaumer, J., Goosem, M., ... & Laurance, W. F. (2018). Not everyone wants roads: Assessing indigenous people's support for roads in a globally important tiger conservation landscape. *Human Ecology*, 46, 909-915. <https://doi.org/10.1007/s10745-018-0029-4>
- [48] The World Bank (2018). The world by income and region. <https://datatopics.worldbank.org/world-development-indicators/the-world-by-income-and-region.html>
- [49] Nissanke, M., & Aryeetey, E. (2017). Comparative institutional analysis: Sub-Saharan Africa and East Asia. In *Comparative Development Experiences of Sub-Saharan Africa and East Asia* (pp. 30-70). Routledge. <https://www.taylorfrancis.com/chapters/edit/10.4324/9781315198668-2>
- [50] Ellis, S. D. & Menendez, A. (2015). Rural roads: The challenge of decentralized implementation. *ICEPP Working Papers*. 28. <https://scholarworks.gsu.edu/icepp/28>

- [51] Wagale, M. & Singh, A. P. (2019). The application of adaptive neuro-fuzzy inference system and fuzzy delphi technique to assess socio-economic impacts of construction of rural roads. *Transport and Telecommunication*, 20(4), 325-345. <https://doi.org/10.2478/ttj-2019-0027>
- [52] Starkey, P. & Hine, J. (2014). Poverty and sustainable transport. *How Transport Affects Poor People with Policy Implications for Poverty Reduction*. UN-Habitat/Overseas Development Institute. <http://sustainabledevelopment.un.org/content/documents/1767Poverty%20and%20sustainable%20transport.pdf>
- [53] Kennedy, M., Fox-James, L., Capizzi, P., Brown, A., & Dethier, S. (2019). Case studies on integrating ecosystem services and climate. *WWF and Arup, Washington DC*. https://files.worldwildlife.org/wwfmsprod/files/Publication/file/qopcq0me_Case_Studies_on_Integrating_Ecosystem_Services_and_Climate_Resilience_in_Infrastructure_Development_Lessons_for_Advocacy.PDF
- [54] Mohamed, M. B. I. (2015). *A study of project delay in Sudan construction industry* (Doctoral Dissertation, UTAR). http://eprints.utar.edu.my/1619/1/Microsoft_Word_-
- [55] Oyieyo, P. A. (2020). Emerging challenges in the completion of construction projects through public-private partnerships: Empirical literature review. *Journal of Building Construction and Planning Research*, 8(04), 263. <http://www.scirp.org/journal/Paperabs.aspx?PaperID=105970>