

Economic Prospect of Padma Multipurpose Bridge in Bangladesh: A Case Study on the People of these Bridging Areas

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Abstract: A country's economic development generally depends on the degree of infrastructural development of that country. Though Bangladesh is a developing country, its recent government is trying to progress in developing infrastructure as it is one of the most significant prerequisites to the total development of the country. The recent government has taken various and massive initiatives for infrastructure development. Padma bridge construction is the largest and bold project in the history of Bangladesh. The Padma Multipurpose Bridge (PMB), the 25th longest bridge in the world, will be constructed within 2018 aimed at contributing to the overall economic development in Bangladesh by eliminating all hurdles to the south-west corridor and activating economic exchanges between the regions. The purpose of the study is to determine and measure the Economic Prospect of Padma Bridge in Bangladesh including GDP, GNP, standard of living, infrastructure development in transportation and communication, industrial growth and employment opportunities etc. that are hinged on Padma Multipurpose Bridge. Padma Multipurpose Bridge is Government's self-financing, courageous and biggest project which will cover the entire development of the overall economic activities and ensures quality of life that will be derived from the implementation of the project. From the viewpoint of development researcher, If a country has to develop from economic to social, it must develop its infrastructures. The study investigates, measure, and evaluates whether The Padma Bridge would bring economic prospect from the reflection light of peoples' perceptions. To do this Five-Point Likert Scale has been used to survey people who are inhabitants and experts of these regions. As samples of 100 respondents (selective samples) have been surveyed since they represent all population segments in the country. This paper reports on the findings of a study to examine the economic prospects of the country based on primary and secondary data regarding the project.

Keyword: Padma Multipurpose Bridge, Padma River, Development approach, Infrastructure Development, Transportation and Communication, Government and Development, Government Policy.

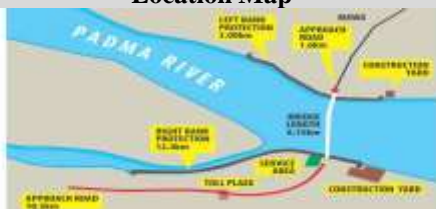
1. Introduction

Padma Bridge project is one of the most challenging, significant and largest self-financing projects of the current Government (Awami league). After the refuge proposal from World Bank it was the self-esteem of government to build it self-financing. It would be multipurpose road-rail bridge across the Padma River to be constructed in Bangladesh connecting Louhajang, Munshiganj to Shariatpur and Madaripur district. It will link the south-west of the country; to northern and eastern regions. The two-level steel truss bridge will carry a four-lane highway on the upper level and a single track railway on a lower level. With 150 m span, 6150 m total length and 18.10 m width it is going to be the largest bridge in the Padma-Brahmaputra-Meghna river basins of country in terms of both span and the total length.

Padma Multipurpose Bridge at a glance

Coordinates	23°25'21"N 90°18'35"E
Carries	Motor vehicles, Railway
Crosses	Padma River
Locale	Louhajang, Munshiganj to Shariatpur and Madaripur
Maintained by	Bangladesh Bridge Authority
Characteristics	
Design	Truss bridge
Material	Steel
Total length	6,150 m (20,180 ft)
Width	18.10 m (59.4 ft)
History	
Designer	AECOM
Constructed by	China Major Bridge Engineering Company Limited
Construction begin	7 December 2014
Construction end	Expected in December 2018
Opened	December 2018

Location Map



View of Padma Bridge



2. Objective of the Study:

- The objective of the study is to investigate, measure, and evaluate whether The Padma Bridge would bring economic prospect from the perspective of peoples of bridging areas.
- The study will also investigate the prospect of infrastructural and industrial development of these areas.

3. Methodology of the study

a. Research Approach:

- This research is quantitative in nature, but in some cases qualitative approach has been applied to get accurate result. In the primary stage an exploratory research has been conducted to find out the problem insight and to define it clearly.

b. Sources of Data

To achieve the research objectives both primary and secondary sources of data have been utilized. More emphasis is given on primary data to conduct the research program authentically.

i. Primary Source:

- A model questionnaire has been developed to elicit essential data. The Questionnaire is structured in nature and is based on Likert Scale method.

Population: All people of Munshiganj, Shariatpur and Madaripur in Bangladesh.

Sampling technique: Convenience sampling technique was used to select specific customers.

Sample Size: A total of 100 respondents.

Survey area: Munshiganj, Shariatpur and Madaripur.

- Informal interviews with industry experts and project managers of the bridge.

ii. Secondary Sources:

- Articles, Seminars, magazines, newspapers, and government data on the Padma multipurpose Bridge.
- Various websites.

Data Analysis Techniques:

- To analyze data Excel and SPSS software has been used.
- Various statistical methods and formulae have been used.
- Different Graphs, Tables, Charts and others instruments are used to make presentable the research results.

4. Literature Review

In the modern and global economy, to be succeed on overall economic development transport, water, energy, waste management system, digital communication are very inevitable components. Various significant study has shown that investment in well design infrastructures have long term economic benefit; because they can bring economic growth, productivity and real economic value of land. In their study (Novella Bottini, Miguel Coelho, and Jennifer Kao, 2012) they have shown that development of infrastructure facilities depends on the initiatives, strategies and policy requirement taken by government in the following areas: Strengthening the governance, strategic planning and finance of major infrastructure investment through the creation of a new institutional architecture. Key elements of this new architecture are:

- an Infrastructure Strategy Board (ISB) to provide independent expert advice to parliament to guide strategic priorities;
- an Infrastructure Planning Commission to support the implementation of those priorities with more powers to share the gains from infrastructure investment by more generously compensating those who stand to lose from new developments;
- an Infrastructure Bank to facilitate the provision of finance, to bring in expertise and to work with the private sector to share, reduce and manage risk.

(Source: Novella Bottini, Miguel Coelho, and Jennifer Kao, (2012), *Infrastructure and Growth*)

Infrastructure and Growth is a heterogeneous term, including physical structures of various types used by many industries as inputs to the production of goods and services (Chan et al., 2009). This description encompasses “social infrastructure” (such as schools and hospitals) and “economic infrastructure” (such as network utilities). The latter includes energy, water, transport, and digital communications. They are the essential ingredients for the success of a modern economy and the focus of this paper (Stewart, 2010).

Conceptually, infrastructure may affect aggregate output in two main ways: (i) directly, considering the sector contribution to GDP formation and as an additional input in the production process of other sectors; and (ii) indirectly, raising total factor productivity by reducing transaction and other costs thus allowing a more efficient use of conventional productive inputs. Infrastructure can be considered as a complementary factor for economic growth. The empirical literature is far from unanimous, but a majority of studies report a significant positive effect of infrastructure on output, productivity, or long-term growth rates. Infrastructure investment is complementary to other investment in the sense that insufficient infrastructure investment constrains other investment, while excessive infrastructure investment has no added value. To the extent that suboptimal infrastructure investment constrains other investment, it constrains growth (Newbery, 2012).

It is necessary to realign the nation’s infrastructure to the changing world economy. The Bangladesh’s infrastructure must be secure, flexible, and well inter-connected in order to support the Bangladesh’s long term economic growth. Infrastructure security and stability concerns the quantity of spare capacity (or security of supply). Instead of acting on the efficiency frontier, infrastructure projects must operate with spare capacity to contribute to economic growth through ensuring reliable service provision in energy and transport. Finally, interconnection and complementarities across different infrastructure sectors are key elements for increasing service efficiency, supporting the adoption of innovative technologies and supporting growth. Good connection between cities and airports, via rail, roads and underground, decrease the travel time and costs and increase airports’ appeal for both airlines companies and passengers. (Rosewell, 2012)

Infrastructure and Population Growth

In the context of Infrastructure and Population growth the spatial equilibrium model explained how population flows across regions to achieve equal utility in different areas (Glaeser 2009; McCann, 2013). Glaeser, Gottlieb and McCann showed that individual utility is derived from consumption of amenities plus private consumption of tradable and non-tradable goods (where the price of the former is exogenous to the region and that of the latter is endogenous). Individual budget limit the Consumption where wages may be city-specific, reflecting agglomeration and other factors.

Grimes (2014) extend the Overman et al model to include infrastructure provision, deriving the conditions under which a new infrastructure investment within a city will expand that city’s population. To do so, the infrastructure investment must raise amenity-adjusted real wages, where amenity-adjusted wages include the value of unprimed amenities to an individual. An infrastructure investment may increase amenity-adjusted wages through a variety of mechanisms: first, the infrastructure may raise amenities in a city (e.g. through provision of a new concert hall); second, the infrastructure may reduce travel costs (e.g. through provision of an improved transport network); third, the infrastructure may raise productivity and hence wages (e.g. through a new port or airport); fourth, the infrastructure may raise skills and hence wages (e.g. through provision of a higher educational institution).

Growth of Transport and Infrastructure development

Early studies which find positive impacts of transport infrastructure on economic growth include for Japan’s regions, for regional growth in West Germany, and for regions within the United States. Economic growth induced by transport investments encourages employment and population growth as consumers move across regions to maximize wages. Thus transport investments result in population growth and employment growth within regions where imperfect, spatially competitive labor markets lead to the provision of higher net wages. (Source: Wang, H. 2010. “Institutions of higher education and the regional economy: A long-term spatial analysis.” Economics Research International, Report ID 376148.)

Higher Educational Institutions, Skills and Regional Growth

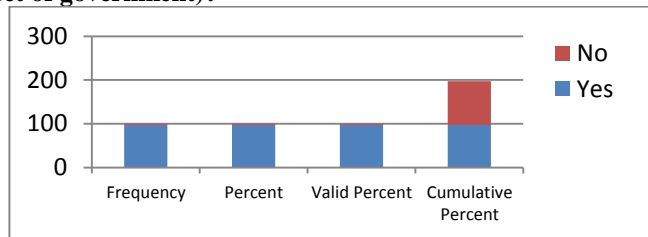
The impact of Higher Education Institutions (HEIs) on regional growth can be interpreted within the context of endogenous growth models which relate long term growth to endogenous investments in physical, knowledge, and human capital (Romer, 1990; Lucas, 1988). Investments in human capital and new knowledge by firms and HEIs are considered to result in knowledge spillovers, resulting in a positive externality benefiting the local economy, and possibly spilling over to other regional economies. These models allow for the possibility of sustained permanent growth rate differences across regional economies resulting from differences in innovative efforts and capabilities, with new knowledge being subject to increasing returns to scale. HEIs may be modeled as an input into the knowledge production function (Griliches, 1979 and 1984) which relates innovative outputs, such as patent applications, to innovative inputs such as research and development (R&D) and human capital. Jaffe (1989) analyses the potential importance of geographically based complementarities between university and firm research within the local area, finding that where such complementarities exist, universities are a catalyst for increasing innovation output at the regional level.

5. Analysis and findings

i. Primary data analysis and findings

01. Are you aware of Padma Bridge (As biggest project of government)?

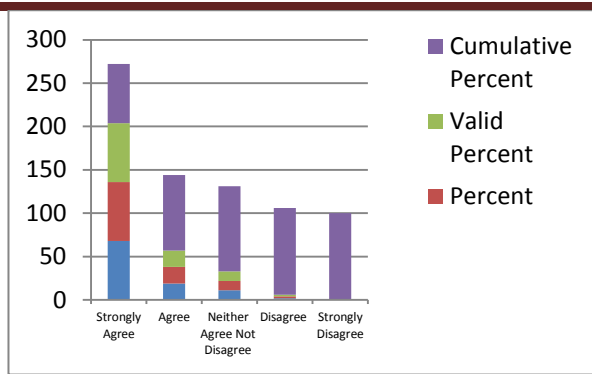
	Position	Frequency	Percent	Valid Percent	Cumulative Percent
	Yes	97	97	97	97
	No	3	3	3	100
	Total	100	100	100	



Interpretation: From the table it is shown that 97 respondents are aware of Padma Multipurpose Bridge and its economic prospect.

02. Padma Bridge will bring economic enhancement of the local people.

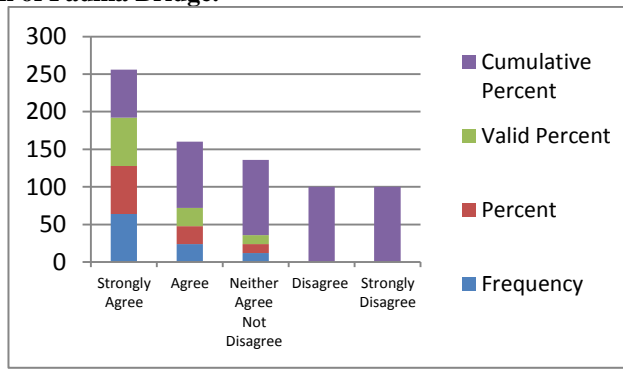
Position	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	68	68	68	68
Agree	19	19	19	87
Neither Agree Not Disagree	11	11	11	98
Disagree	2	2	2	100
Strongly Disagree	0	0	0	100
Total	100	100	100	



Interpretation: From the table it is shown that (68+19) or 87 respondents believed that Padma Bridge will bring economic enhancement of the local people. Another 11 respondents are neutral in their opinion. So we can say that most (87%) respondents are aware of their potential economic development.

03. Your income will be increased after inauguration of Padma Bridge.

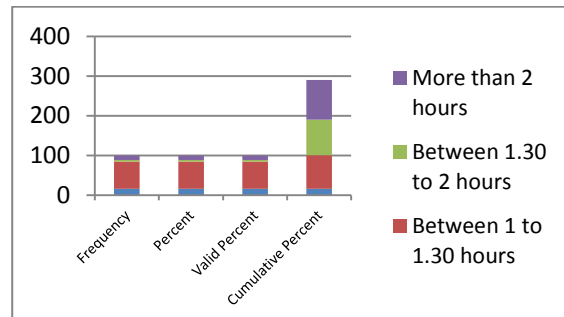
Position	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	64	64	64	64
Agree	24	24	24	88
Neither Agree Not Disagree	12	12	12	100
Disagree	0	0	0	100
Strongly Disagree	0	0	0	100
Total	100	100	100	



Interpretation: From the table it is shown that (64+24) or 88 respondents believed that Padma Bridge will increase their income level. Another 12 respondents are neutral in their opinion. So we can say that most (88%) respondents are aware of their potential economic income development.

04. How much time you need to cross the river at present?

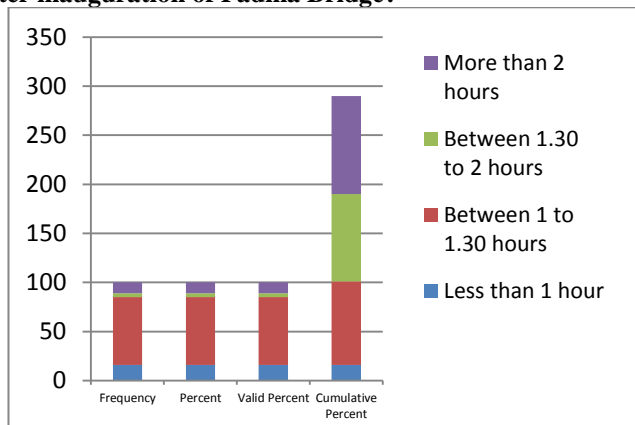
Position	Frequency	Percent	Valid Percent	Cumulative Percent
Less than 1 hour	16	16	16	16
Between 1 to 1.30 hours	69	69	69	85
Between 1.30 to 2 hours	4	4	4	89
More than 2 hours	11	11	11	100
Total	100	100	100	



Interpretation: From the table it is shown that (69) respondents said that they need 1 to 1.30 hours to cross the river at present. And 11 respondents said that they need more than 2 hours.

05. How much time would you need to cross the river after inauguration of Padma Bridge?

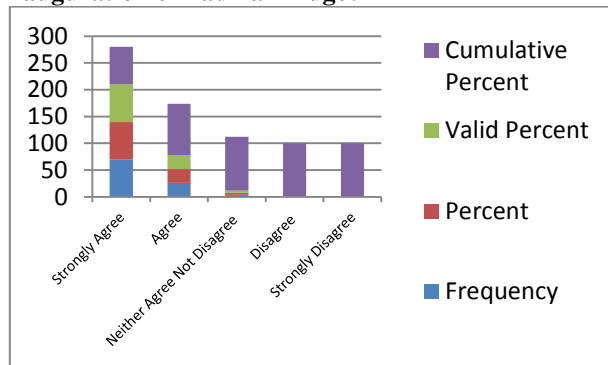
Position	Frequency	Percent	Valid Percent	Cumulative Percent
Less than 10 minutes	16	16	16	16
Between 10 to 20 minutes	59	59	59	75
Between 20 to 30 minutes	21	21	21	96
More than 30 minutes	4	4	4	100
Total	100	100	100	



Interpretation: From the table it is shown that (59) respondents said that they need just 10 to 20 minutes to cross the river after inauguration of Padma Bridge. And 21 respondents said that they need just 20 to 30 minutes and only 4% said just more than 30 minutes.

06. Infrastructure development would be possible after inauguration of Padma Bridge?

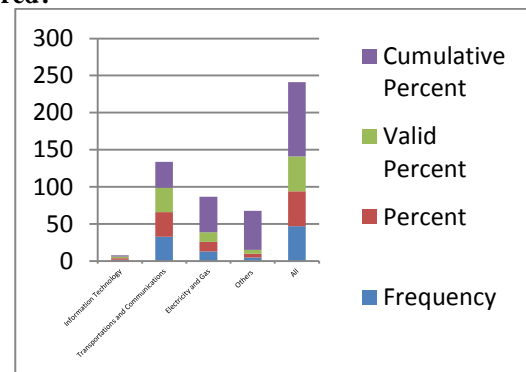
Position	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	70	70	70	70
Agree	26	26	26	96
Neither Agree Not Disagree	4	4	4	100
Disagree	0	0	0	100
Strongly Disagree	0	0	0	100
Total	100	100	100	



Interpretation: From the table it is shown that (70+26) or 96 respondents believed that Infrastructure development would be possible after inauguration of Padma Bridge. Another 4 respondents are neutral in their opinion. So we can say that most (96%) respondents believed that further Infrastructure development would be possible after inauguration of Padma Bridge.

07. In which areas infrastructure development should be occurred?

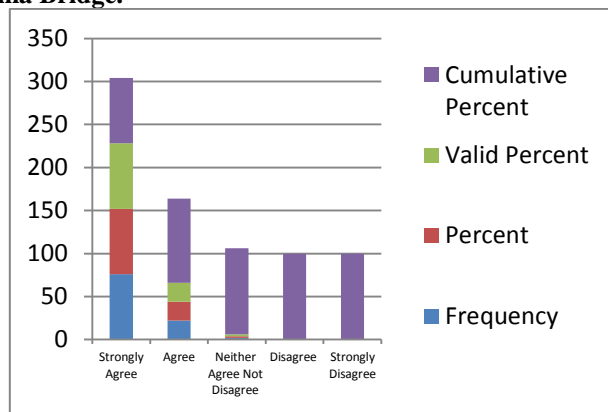
Position	Frequency	Percent	Valid Percent	Cumulative Percent
Information Technology	2	2	2	2
Transportations and Communications	33	33	33	35
Electricity and Gas	13	13	13	48
Others	5	5	5	53
All	47	47	47	100
Total	100	100	100	



Interpretation: From the table it is shown that 33 respondents believed that Infrastructure development would be possible in the areas of Transportations and Communications. 13 respondents said about gas and electricity. 47 respondents said that Infrastructural development must be occurred in all areas.

08. Industry expansion would be possible for being Padma Bridge.

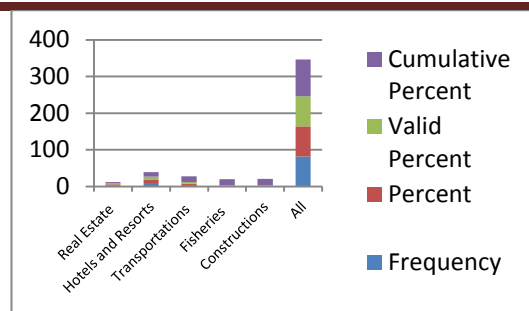
Position	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	76	76	76	76
Agree	22	22	22	98
Neither Agree Not Disagree	2	2	2	100
Disagree	0	0	0	100
Strongly Disagree	0	0	0	100
Total	100	100	100	



Interpretation: From the table it is shown that (76+22) or 98 respondents believed that Industry expansion would be possible for being Padma Bridge. Another 2 respondents are neutral in their opinion. So we can say that most (98%) respondents believed that Industry expansion would be possible for being Padma Bridge.

09. Which type of industrial expansion would be possible?

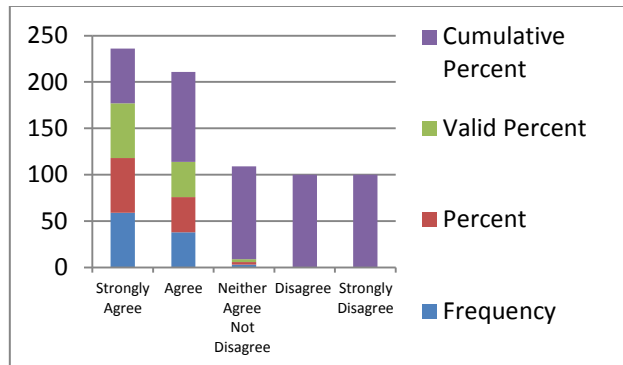
Position	Frequency	Percent	Valid Percent	Cumulative Percent
Real Estate	3	3	3	3
Hotels and Resorts	9	9	9	12
Transportations	4	4	4	16
Fisheries	1	1	1	17
Constructions	1	1	1	18
All	82	82	82	100
Total	100	100	100	



Interpretation: From the table it is shown that all respondents believed that industrial expansion would be possible in all areas.

10. After industrialization GDP might be increase.

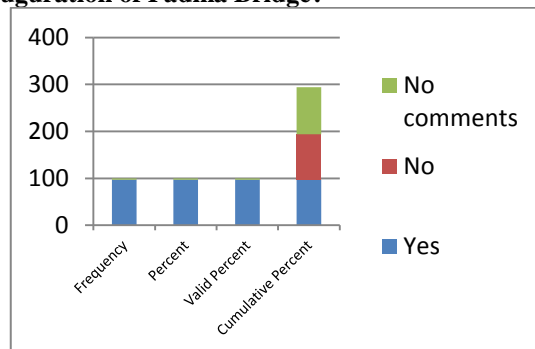
Position	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	59	59	59	59
Agree	38	38	38	97
Neither Agree Not Disagree	3	3	3	100
Disagree	0	0	0	100
Strongly Disagree	0	0	0	100
Total	100	100	100	



Interpretation: From the table it is shown that most of the respondents (59+38) or 97 believed that GDP might be increase after inauguration Padma Bridge.

11. Unemployment Problem should be removed after inauguration of Padma Bridge?

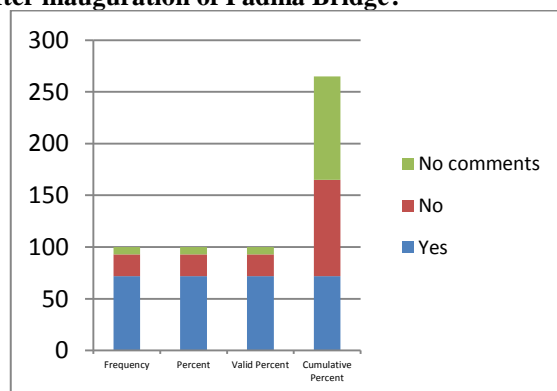
Response	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	97	97	97	97
No	0	0	0	97
No comments	3	3	3	100
Total	100	100	100	



Interpretation: From the table it is shown that 97 respondents said that Unemployment Problem should be removed after inauguration of Padma Bridge and 3 respondents have no comments on that topic.

12. Reducing pressure of over populated of Dhaka city after inauguration of Padma Bridge?

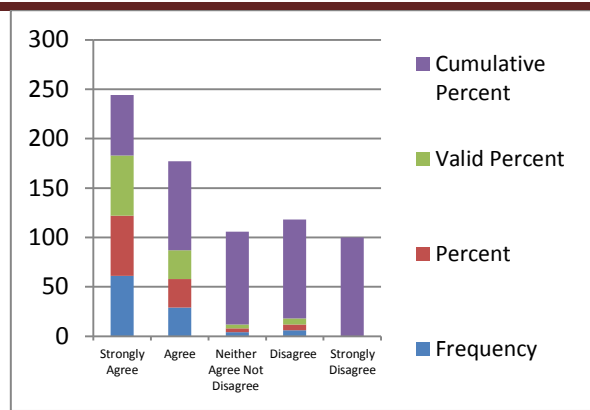
Response	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	72	72	72	72
No	21	21	21	93
No comments	7	7	7	100
Total	100	100	100	



Interpretation: From the table it is shown that 72 respondents said that Reducing pressure of over populated of Dhaka city after inauguration of Padma Bridge. 21 respondents have negative reply on that statement. And 7 respondents have no comments on that topic.

13. It is possible for Government to serve local people with utilities (services) like Gas, Electricity, internet and other infrastructure.

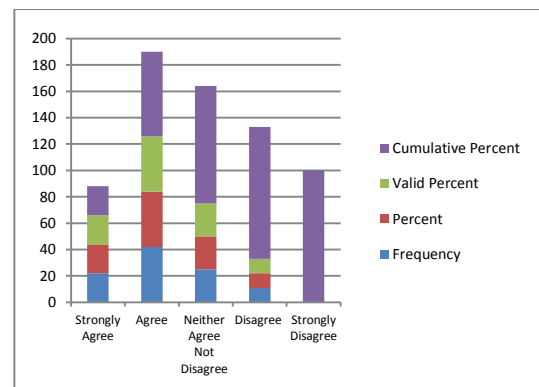
Position	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	61	61	61	61
Agree	29	29	29	90
Neither Agree Not Disagree	4	4	4	94
Disagree	6	6	6	100
Strongly Disagree	0	0	0	100
Total	100	100	100	



Interpretation: From the table it is shown that (61+29) or 90 respondents believed that It is possible for Government to serve local people with utilities (services) like Gas, Electricity, internet and other infrastructure. Another 4 respondents are neutral in their opinion and 6 respondents are disagreed. So we can say that most (90%) respondents believed that it is possible for Government to serve local people with utilities.

14. Literature rate would be increased.

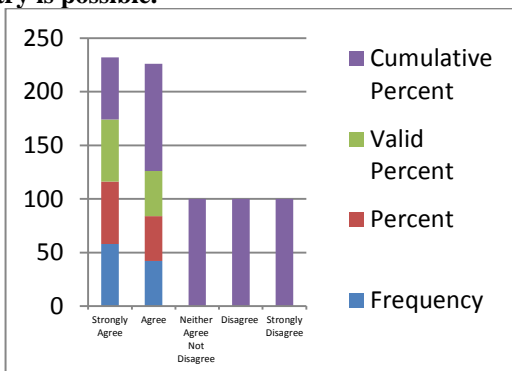
Position	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	22	22	22	22
Agree	42	42	42	64
Neither Agree Not Disagree	25	25	25	89
Disagree	11	11	11	100
Strongly Disagree	0	0	0	100
Total	100	100	100	



Interpretation: From the table it is shown that (22+42) or 64 respondents believed that Literature rate would be increased. Another 25 respondents are neutral in their opinion and 11 respondents are disagreed. So we can say that most (64%) respondents believed Literature rate would be increased.

15. Balanced infrastructure Development of the whole country is possible.

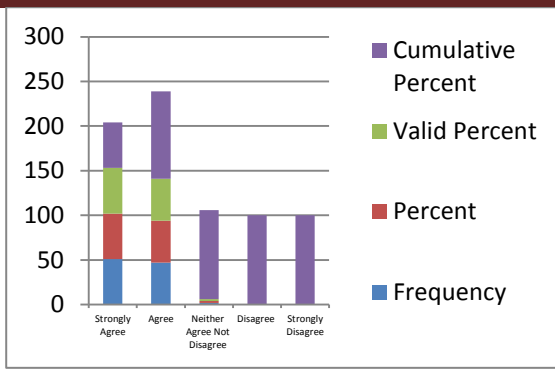
Position	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	58	58	58	58
Agree	42	42	42	100
Neither Agree Not Disagree	0	0	0	100
Disagree	0	0	0	100
Strongly Disagree	0	0	0	100
Total	100	100	100	



Interpretation: From the table it is shown that (58+42) or 100 respondents believed that Balanced infrastructure Development of the whole country is possible. So we can all respondents are believed that balanced infrastructure Development of the whole country is possible.

16. Balance economic developments of the people are possible.

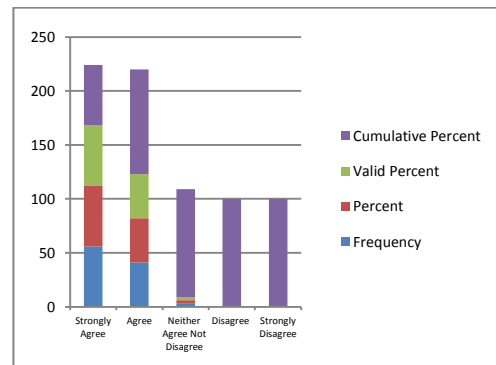
	Position	Frequency	Percent	Valid Percent	Cumulative Percent
	Strongly Agree	51	51	51	51
	Agree	47	47	47	98
	Neither Agree Not Disagree	2	2	2	100
	Disagree	0	0	0	100
	Strongly Disagree	0	0	0	100
	Total	100	100	100	



Interpretation: From the table it is shown that (51+47) or 98 respondents believed that Balance economic developments of the people are possible. Another 2 respondents are neutral in their opinion.

17. Quality and equal standard of living is possible.

	Position	Frequency	Percent	Valid Percent	Cumulative Percent
	Strongly Agree	56	56	56	56
	Agree	41	41	41	97
	Neither Agree Not Disagree	3	3	3	100
	Disagree	0	0	0	100
	Strongly Disagree	0	0	0	100
	Total	100	100	100	



Interpretation: From the table it is shown that (56+41) or 97 respondents believed that Balance standard of living is possible. Another 3 respondents are neutral in their opinion.

i. Secondary data analysis and findings

1. **Capital link:** Padma Bridge will have direct road link between the capital and the south west region (Mongla port).
2. **Reduce Travel Time:** The project will reduce the travel time between the capital and the south west region by one-fourth.
3. **International Connectivity:** Being part of the proposed Asian high way and Trans-Asian Railway Network the bridge will connect regional connectivity.
4. **Infrastructural and Industrial Growth:**
 - 29% Growth in construction sector,
 - 9.5% in agriculture,
 - 8% in manufacturing and transport.
5. **Poverty Reduction:**
 - 1% in the bridging area
 - 0.8% in nationally
6. **Growth of GDP:**
 - 1.7% in south west region
 - .56% in country wide
7. New Employment and Business Opportunities for Local people.
8. Economic Internal rate of return: 19% economic internal rate of return.
9. Reduce erosion and flooding.
10. **Utility service:** Electricity, Gas supply lines and optical fiber cable to pass through the bridge will save \$271 million.
11. **Saving on transportation cost:** \$400 million ferry service cost on mawa-jajira route to be saved.

[Source: The Daily Star, December 12, 2015]

ii. Findings from experts interview:

- If we can complete the project successfully it would be a big boost for our regional and sub-regional connectivity. And the country will enter a new era of development; *AFM Saiful Amin, Professor, Civil Engineering Department, BUET (Keynote speaker).*
- The government has taken massive development programmed targeting the Padma Bridge. We are planning to establish a high-tech park in Shariatpur. In Bagerhat we have already started construction of an airport. The Bridge will also connect the Payra port. It will also help decentralize the government administration. We will be able to bring a dramatic change in the life of the poor people of the region within next ten years. *Nahim Razzak MP, Shariatpur-3*

- The Padma Bridge is simply a blessing for the people of south-western region. They are already feeling the momentum. Previously one bigha land in my area fetched only Tk1 lac which has now soared to Tk 25 lac. Many industrialists are eager to invest in the area. After completion of the Bridge, it will take only one and half hours to reach Dhaka. So our farmers will be able to directly send their perishable products to the capital without suffering any wastage. It will also create an opportunity for developing tourism business in that area. On the whole, the Bridge will bring dramatic change in every sphere of our life. *BM Muzammel Haque MP, Shariatpur 1.*

[Source: The Daily Star, January 18, 2016]

Conclusion:

A country's economic development generally depends on the degree of infrastructural development of that country. Though Bangladesh is a developing country, its recent government (Awami league) is trying to develop infrastructure as it is one of the most significant prerequisites to the total development of the country. The recent government has taken various and massive initiatives for infrastructure development. Padma bridge construction is the largest and bold project in the history of Bangladesh. The Padma Multipurpose Bridge (PMB), the 25th longest bridge in the world, will be constructed within 2018 aimed at contributing to the overall economic development in Bangladesh by eliminating all hurdles to the south-west corridor and activating economic exchanges between the regions. Though the World Bank refused to finance in this Padma multipurpose Bridge project, the government take it as challenge to implement the project self-financing which the bold step is taken by the government. After analyzing all data and information it can be conclude that overall significant economic development would be possible specially in large areas like quality of life, communication and transport development, potential productivity and skill of people.

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