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## Review of Port City as a Place; Port City in Hambantota, Sri Lanka

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### **Abstract:**

*The port city is a place with dynamic characters because the physical, economical and environmental infrastructures are also developed parallel to the port project. There are some interactive relationships between the port and port city and abstracted to trend calculations of other infrastructure for the purpose of making predictions of the port city area. Having figured out the potential of Port project subject to the Location factors evaluation system, 30% possible figure have calculated and analyzed contribution to origin the city centre. Therefore port city expand parallel to the other project and there are interactive relationship among port and other projects.*

*Hambantota is the second port in Sri Lanka and Hambantota town has been developed as a port city. Originally, Hambantota town consisted of low-density population, under utilization of lands, low developed area and lower resources of Human and physical. Parallel to the port most of the development projects were planned and identification of this interaction is vital. Also, most social infrastructure needs to be improved parallel to the development of the city. Prediction of infrastructure requirements is also important with the forecast population. Now the port city is in the initial stage and there is a lack of research related to that. Therefore the main objective of this study is to explore the interactive relationship between the port and port city of Hambantota. Key research findings figure out its interaction with other projects and the future social infrastructure needed parallel to the population projections.*

**Key words:** Port City, Hambantota, Sri Lanka

## 1. Introduction

Port city plays a major role sustaining the sea port in national and international. It provides an overview of logistics, the supply chain, and the various components and functions involved in getting goods from the point of origin to the final customer. Therefore a port city is a major requirement for the proper functioning of a port to get the benefits of agglomeration economics and economies of scale. Thus port cities are identified as multi-cultural, multi-functional, multi-economic places and with all these together they become an area with international facilities.

Attracting other infrastructure and economic development projects, social infrastructure and population will be attracted to the port area and it will create a mode of transport and node of the city in the area. These factors create an urban background and strategically, the city will grow as a port city. Thus the question arises similar to the chicken or egg situation whether it is the port city that originated because of the port activities or the city which is created by the port activities. A port city facilitates a rich environment for movement of people and goods around the world as an industrial, financial, service and a potential administrative centre, open to railways, highways and air routes. Many of the biggest cities, for instance, London, New York, Singapore and Kolkata began as air ports with land and sea as their major function, but they have since grown disproportionately in other aspects so that huge port functions are no longer dominant.

Thus port cities are identified as multi-cultural, multi-functional, multi-economic places and with all these together they become an area with international facilities. In general, port cities originate from an efficiently functioning port for a long period and will develop automatically due to an increasing population earning an income by facilitating the marine personnel.

The port city does not refer to a specific scientific category or methodology, because of the diversity of port-city issues and the usual separation of port and urban studies. Thus, it is still an “unidentified real object” which, without a universally recognized definition, remains only broadly addressed by scholars as a circulation node between land and sea where specific functions develop. The study area and other urbanization-related infrastructure provide the guidance to organize development activities as needed.

### **1.1 Port city as a place**

More than a city with a port as an appendage, the port city is a place “where goods and people as well as cultures and ideas are transferred between land and maritime space” (Kidwai, 1989: 10). Port cities do not only function as entry or exit points for the movement of goods, labor and capital; they also serve as nodal centers for the reception and transmission of culture, knowledge and information (Frost, 2005); their essential functions generating the conditions and space for cultural mixing and hybridization.

As a consequence, their identity as places “is constituted as much by their relations with other places as by anything intrinsic to their location” (Massey, 1996). As nodes and hubs of economic and social networks, port cities become natural sites for the meeting of foreign and local societies, where “races, cultures and ideas as well as goods from a variety of places jostle, mix and enrich each other and the life of the city” (Murphey, 1989: 225).

In 1999, Driver and Gilbert, stated “the [port] city as a whole [thus] become less a centre than a crossroad”. In political form, the port city is in many ways the cosmopolis that Reid (2004: 10e11) talks about the cities with plural communities, usually united by commerce, and “governed by leaders who themselves are cosmopolitan in culture, and able to mediate between groups”.

While port cities are commercial cosmologies made by the external trans-national networks they serve, and connected with the hinterland to which they are linked. The essential functions of the port city are fundamentally determined by their relative positions between hinterlands on the one hand, and their sea-linked foreland that area of the overseas world with linked through shipping, trade and passenger traffic on the other.

Traditionally, city ports are linked to hinterlands by trade, and serve as the win does us or conduit through which the trade of the land is linked to the sea. The concept of the hinterlands, identify as immediate hinterlands (port area itself), primary hinterland (area where port and city assume a commanding role and determine life of area), and commodity hinterland (based on Shipment of particular types of commodities), and the inferred hinterland (port's hegemony over a particular area, to the extent that it satisfies the demand for imports in the area it serves) (Bird, 1971). The manner and content of influence depend on the economic, political and social relationships that link them together.

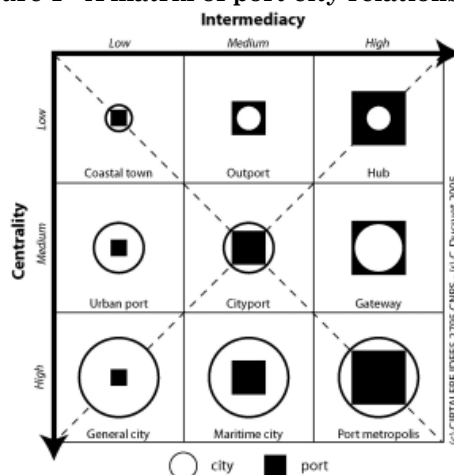
On the other hand, port cities are more than just passive economic funnels; they invariably exercise complex and profound influences on the hinterlands they serve. As places at the forefront of economic and cultural flows, port cities are often vehicles through which political, cultural and ideological changes are transmitted to the hinterland (Bird,1970).. In the 1970s and 1980s, scholars studying the colonial port cities preoccupied themselves with the part played by these entities in the development of colonial control in Asia (in different regions and over a long time-span) (Olaf Merk - 2010). Arising from the concerns of these studies, a number of important ideas and examples relating to the impact of port cities on their hinterlands have been developed.

## 1.2 Functional combination of port cities

However, on the urban side, port and maritime functions may be advantageous for the local economy in terms of land provision (wasteland redevelopment) and international trade opportunities. Some authors insisted on alternative strategies to develop obsolete port areas for new port uses (Ducruet and Jeong - 2005); in Korea for example, the recent character of port infrastructure avoids local authorities to redevelop port areas, as they are still performing original functions: this is a limiting factor in terms of lack of space. In spite of job cuts in traditional activities such as shipbuilding and repair, stevedoring, and various port services, the port function remains an advantage as it gives a long-term basis on which functions of other kinds may develop.

Two diagonals are funding the different theoretical combinations and dynamics of port and urban functions indicated in Figure 1. The first one (upper left – down right) shows a hierarchical trend with port-city equilibrium but with a logic of combined concentration; this trend is related to the Asian hypothesis.

Figure 1 - A matrix of port-city relationships



Source – European port-city interface and its Asian application (Ducruet and Jeong, 2005)

The second one (down left – upper right) marks an opposition – or separation – between the two aspects, with on one side the “general city” (where port function are limited) and on the other side the “hub” (where flows concentrate but without urban attractively). From these three extreme cases (hub, port metropolis, general city), various degrees of disequilibria can be found and give birth to gateways, out ports, urban ports and maritime cities. Also in 1970 kanyon mentioned locational factors affecting to port city. Following figure 2 mentioned it.

**Figure 2 - Location factors affecting port competitions.**



Source – Element in inter port competition –James Kanyon (1970)

### 1.3 Port cities in Sri Lanka

The City of Colombo developed as the first port city of the country and now it is well established as the commercial capital of Sri Lanka. The Colombo port developed from ancient times for a variety of purposes according to the written evidence of King Parakramabahu, the Great. It was developed for exports and imports of goods as well as for passenger transport from the past. Since the Roman period, the port has been functioning as a transportation centre in the Indian Ocean.

During the *Roman period* the port developed with international facilities for export and import activities. In this period the romance concept was applied to the port related area

and because of that, Roman and Dutch architecture were used in the port cities and with that kind of identity were created forts as well as port cities orientating/operating in several ports in Sri Lanka. Whatever the other reasons Colombo city developed as a mega city within fifty years not only due to port functions but also other many functions like centralization of the main administration activities, growing population because of the economy, attraction of living in a capital city of the country and due to weather conditions.

After six decades Sri Lanka identified the need for a second international port in the country and in 2009 the second international sea port was established in Hambantota, 200 km from Colombo. It was established very close to the Hambantota town which will play a major role as a port city in the future economic hub of Sri Lanka. The Department of National Physical Planning has identified Hambantota to be one of the Metropolitan Cities of Sri Lanka with a population of 7.2 million by 2030 (Greater Hambantota Development Plan, 2007). The Hambantota port is constructed as an inner harbor, which means that the port and port activities are located inland. Thus the above port is developing as an artificial port. Port-city relations in fact cover a wide range of themes related to logistics, tourism, tertiary activities, and planning, as shown in the proposed classifications. Therefore, it is reasonable to analyze the reasons for the origination of a city close to the port or the origination of a city because of the port.

Not only the port but also the port activities are not limited to inside the port; they come outside the port area, and on the other hand, the port may not function without facilitating the growth of the surrounding urban area. They all have the way of their route. The shipping curve has to be maintained by the port city for providing night life, food, fuel, water and any other essential things. Facilitating the port depends on the type of port functions and thus the port city may be established as a commercial city, industrial city, tourist

or any type of branded city.

## **2. Research Problem**

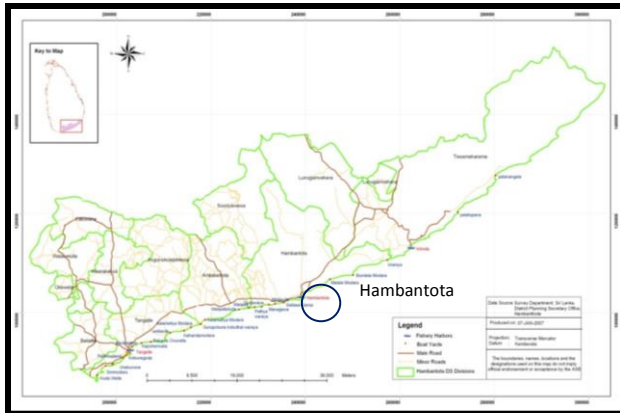
Most of the study deals with a comparison of port cities, a comparison of port activities and finding correlations of the port with other ports, but not concerning the effectiveness of the port for the city. On the other hand, creating a port city artificially in a particular area will create more and more spatial problems relating to city development in the new port area or to innovative a city plan to develop facilities for the port. It is important to analyse how to attract the population to the city area and the strategies to develop other infrastructure in the surrounding area. This study aims to find out the relationships between major action projects and the port in the Hambantota. It is in the initial stage and concerning effectiveness in the initial stage will help to the predictions, forecasting and preparation a strategic plans for the port city.

## **3. Study Area**

Hambantota district is located within the Eastern part of the Southern province in Sri Lanka (figure 2). Hambantota town considered as an administration town of the entire district Hambantota district having the access of A18 B8 major roads. In North East direction Monaragala city is connected by the access of A2, B53 major roads and in the West Matara city is directly connected through the A2 major road. Therefore the area is directly connected with the first order town of Galle and second order town of Matara. Apart from that it is directly link with Monaragala, Uva-wellassa, Ampara areas. Agricultural products and industrial exports are presently sending to other regions through existing transport nodes. This makes a strong linkage with other surrounding region.



**Figure 3: Location of Hambantota District**



Source – Urban Development Authority

#### 4. Methodology

Data collected from different fields like social, recreational, cultural, spiritual and educational and environmental using focused group discussions and observation. 100 persons in the 5 fields use for focused group discussions. Discussions focused to get idea about the existing social infrastructure for prepare accurate projections because it is important to finding out relationship of the projects, accurate projections is needed, in accordance to trend calculations. This study has applied weighted average system to calculate trend percentage for major projects.

#### Following formula used for weighted average figures

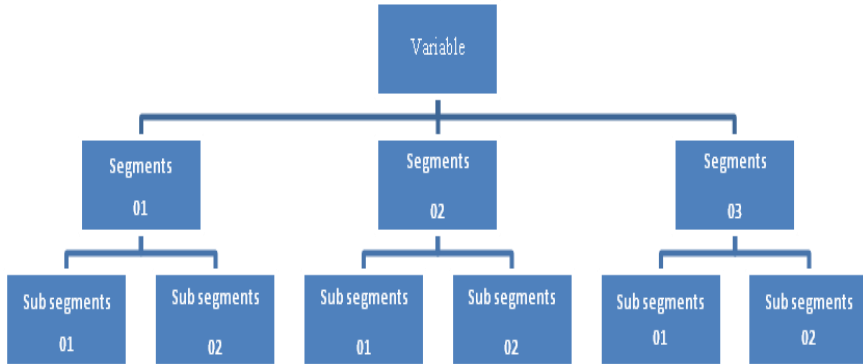
$$\text{Formula} = \frac{(a+4m+b)}{6}$$

**a** – most pessimistic value, **B** – most optimistic value, **m** – most likely value

To find out more reasonable value for ‘m’, each project has evaluated in qualitatively in given values as

01 – Weak, 02 – Faire, 03 – Good , 04 - Better

In accordance to above evaluation figures, evaluated each project from smaller sub segment to segment up to variables as follows (figure 4).



## 5. Data Analysis

### 5.1 Test Feasibility of Location factors

The location factor is one of the evaluation methods for the port, and it is highly concerning the place of natural location of the world. There are number of evaluation systems to evaluate the ports based on the potentials of the ports. Kanyon (1970) mentioned the factors affecting to port competitions and it indicate in literiture. There are many success factors to locating port of Hambantota, and lack of evaluation of these factors. Hence this research focuses on evaluating the location feasibility of Hambantota based on Kanyan (1970) mentioned factors.

### Port Accessibility

Container port accessibility examines the potential or opportunity for the transportation of containerized cargoes within the global liner shipping network. It is also a particularly relevant aspect of port competitiveness since, as previous studies have pointed out, the level of throughput at any container port is significantly and positively correlated to

its accessibility.

### **Size of Hinterland**

Hinterland means a rural area surrounding the urban catchment of large cities or agglomerations. It is characterized by a less dense population and infrastructure. In shipping usage, a port's hinterland is the area that it serves, both for imports and for exports. The size of a hinterland can depend on geography, but also on the ease, speed, and cost of transportation between the port and the hinterland. By analogy, it is the area surrounding a service from which customers are attracted, also called the market area.

### **Closeness to high import and export area**

Even today this sea route is operational with 36,000 ships passing Hambantota annually. By developing Hambantota Port will remain a hub port, bring more foreign exchange to the country, and develop supporting industries such as ship chandlery, ship repair, and bunkering. It will also have the potential to make Sri Lanka a distribution center for the South Asian region, a role normally centered on transshipment hubs. Being a transshipment hub will reduce shipping costs for Sri Lanka's own exports and imports, and thus make the country a more competitive location for foreign and domestic investment (Table 5.6).

### **Closeness to main Navigation Routes**

It has a well-protected deepwater harbor and is located near the east–west trunk routes between the Asia-Pacific, Europe, and the United States East Coast regions. It is thus the closest transshipment port to the huge, rapidly expanding markets of the ISC. For Europe-bound cargo for the east and south segments of the ISC, using Hambantota Port as a hub port is more advantageous than using Southeast Asian ports because of the shorter distance to Hambantota Port. Hambantota is

close to the Asian and European international shipping routes - the Suez Canal and the Strait of Malacca. These routes through Hambantota are used by about 36,000 ships, including 4,500 oil tankers.

### **Proximity of competing Ports**

The South Asian ports are considered as competition port for Hambantota port. Because the ships are coming along the silk route have to spend more time according to the distances from the route. These large ships, however, had to do a detour of three-and-a-half days to Singapore and also to India, Thailand, and Malaysian harbors for refueling, buying provisions medical supplies and other essentials.

### **Proximity to feeder ports**

Sri Lanka's newly built Magampura port in Hambantota could change the scenario, as it offers fewer days for shipment and cheaper freight charges thanks to its proximity to Chittagong Port and the country's major export market, Europe. Shipping Ministry officials said feeder vessels from Chittagong Port take four days to reach Colombo or Hambantota while it needs five days to reach Singapore, home to one of the world's largest seaports.

### **Space Availability for future expansion**

Space availability is controlling future expansions of the port. Availability of developable lands can be defined as space availability of the port area. Port and port related industries and any other operations are massive compared to other industries. Due to that the developments of marine industries are considered as long term investment and can't be removed in a short term. Development of port activities have to pace out and it will depend on the availability of space.

### **Good water conditions**

The port has to fulfill the basic requirement what are the water, fuel, foods and accommodations with knight life for the crews. Considering the above requirement, it is planned to provide supplementary water supply by, "Ruhunupura" water supply project at Hambantota.

## 5.2 Evaluation of port Trends

The affective factors for port feasibility are evaluated using weighted factor analysis mentioned in methodology. Port trend evaluated based on effective factor analysis and table 1 indicates the weights calculated to each factors.

**Table 1 - Evaluation of port Trends**

Variables (Effective Factors)	weights
Port accessibility	3.5
Size of hinterland	2.67
Closeness to high import and export area	1.8
Closeness to main navigation routes	4
Proximity of competing ports	-1.28
Proximity to feeder ports	1.7
Space availability for future expansion	4
Good water conditions	3
Favorable climate	2
Conductive operating environment	3
Total	24.39
fair	2.439

The average rate of the weighted average calculation has been taken according to the effective factors for measuring the port potentials. Internationally each of the variables has divided to sub segments to accumulate further reasonable figure. Qualitatively evaluated figure has taken as 2.439 and the percentile figure calculated as 30% is trend of the port project in 2014. Based on that the trend of the port project has calculated up to 2030 the port project is considering as economical infrastructure at the functional stage and there are limited activities booming up in similarly to the major project in

study area.

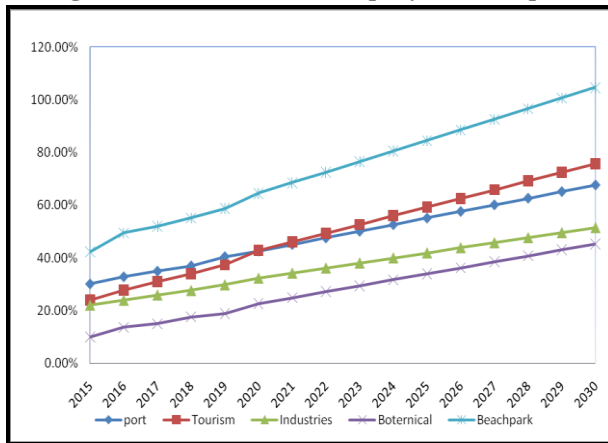
### 5.3 Trends of major socioeconomic projects with Port

There are major socio economic projects introduced in the study area such as tourism, Industries, Botanical and beach park. Considering existing situations and future potentials future trends has calculated in parallel to port project as follows. (Table 2)

**Table 2 – Trends of Each project with port**

Year	Trend				
	port	Tourism	Industries	Botanical	Beach park
2015	30.17%	24.00%	22.17%	10.00%	42.17%
2020	42.59%	42.76%	32.34%	22.67%	64.41%
2025	55.11%	59.21%	41.86%	34.01%	84.54%
2030	67.64%	75.66%	51.37%	45.34%	104.67%

**Figure 5 – Trends of Each project with port**



The greater Hambantota project has been planned up to 2030 to achieve their expected target but not complete all over the project target sea port, Air port and other relevant infrastructure will be grooving up according to the relationships and requirements of each other. The figure 5.9 is expediting the positive relationships of involving in each other.

Tourism, Industries, Dry-zone Botanical Garden and

Beach park projects are progressing in parallel to the port project. In this stage from the 2015 to 2030 and each project correlated with Sea. This study has taken several key project to find out correlations of each other to calculating the effectiveness of massive project for the attracting the population for the area. Listed five projects are operating since 2012 in some extent and using future plans and relative projections of each project, has been calculated their targets (Table 3).

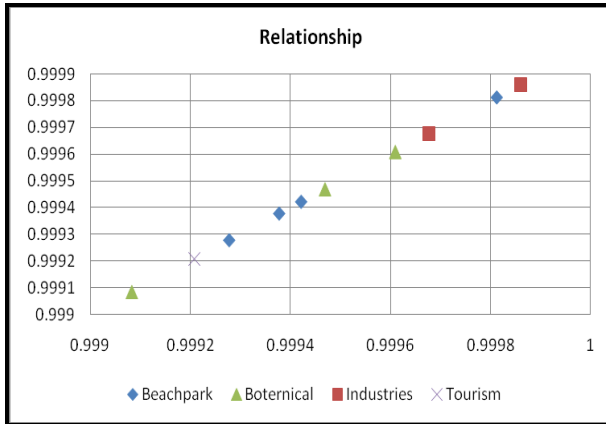
**Table 3 - Correlation Sea Port and selected key projects**

Beach park					
Botanical	0.999813				
Industries	0.999377	0.999469			
Tourism	0.999421	0.999609	0.99986		
port	0.999277	0.999083	0.99967	0.99920	
Projects	Beach park	Botanical	Industries	Tourism	port

Correlation with port and other projects are close to +01 and have perfect correlation, expedite close positive relationship with port project and other key projects. It means that at the time of progress, the port project, other key projects are progressing in same.

There are close relationship with tourism and other type of attractive projects like botanical, beach parks and industrial projects. Because of the tourism attractive activities tourism industry is growing up in equally. This relationship has shown in Figure 6.

**Figure 6 - correlation sea port and selected key projects**



#### 5.4 Population projections with key projects

Next study evaluates population projections with key projects. Population projects in the study area are as follows.

**Table 4 - Population projections**

Year	Population Attracting from projects	Projected population with Natural Growth	Total population
2015	122,120	137,120	138,656
2020	140,117	155,117	156,854
2025	159,457	174,457	176,411
2030	181,614	196,614	198,816

Physical and economical infrastructures are being projected without agglomerated population for the development area, in the period of that, basically required working population and professionals in specific subjects.

The correlation of population with each projects show in Table 5 All have the relationship with + 1 and its becoming 0.999 with tourism and industries, port and tourism and again port and industries. On the other hand this reason is making the relationship with populations and port project, population and industries. The real situation is explaining how the movement in population is varying with other infrastructure projects.



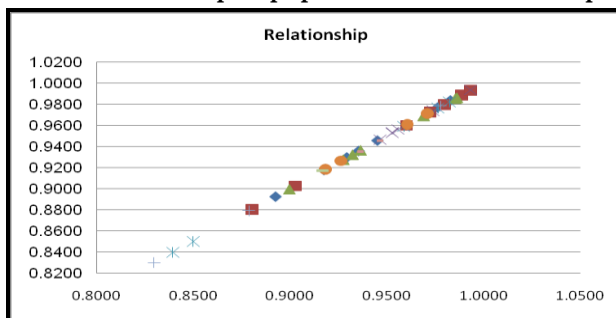
**Table 5 – Correlation of population with selected projects**

Port							
Population	0.9989						
Tourism	0.9992	0.9976					
Industries	0.9997	0.9983	0.9999				
Botanical	0.9991	0.9980	0.9996	0.9995			
Beach park	0.9993	0.9982	0.9994	0.9994	0.9998		
Tower Hill	0.9819	0.9880	0.9763	0.9786	0.9784	0.9798	
Projects	port	population	Tourism	Industries	Botanical	Beach park	Tower Hill

This situation has found the relationship with port project and demographics related data. It is showing the perfect correlation and has close positive relationship with port and social, economical infrastructures

Growth of the population is highly correlated by the key projects that are progressing in the area. The projected populations and major projects are interpreting perfect correlation in table 5.13. There are perfect correlations for each project and close relationships are shown in figure 5.11. Close relationships are exhibiting the typical pattern with each other the factors which are commencing at once and progressing with together.

**Figure 7 - Relationship of population with selected projects**



This relationship is making linear arrangement to predictions and forecasting the figures which are difficult to realize with conventional methods. The strategic projects are changing the

real situation effectively but no one ready to calculate without real data what would be the future. At the same way, as the major strategic project harbor project can change the real situation of the city with success function and making number of job opportunities. By identification the way of port project and trend of the project, can be taken as a guide for the planning other background for the buildup a port city.

### **5.5 Projections of Social infrastructures**

When planning for public facilities for residential settlements it is necessary to analyze the site and target population in order to determine the type of public facilities required for a specific development. The following procedures should be undertaken in order to determine what facilities are required. These types of infrastructures most probably take place based on the population, because of that, the correlations relating to population and social infrastructures are most probably very close to one or taking as 01. At the present situation, the basic needs and wants are taking place due to demand factors. There are specific relationships with population dealing with other infrastructure. Based on population projection social infrastructure requirements were calculated. Based on the analysis quantitative guidelines were prepared for Educational facilities, Health facilities, cultural and recreational facilities, Administrative facilities and Commercial and Housing & parking facilities. Table 6 shows the quantitative guidelines for each facility.

**Table 6 Quantitative guidelines for social infrastructure**

Year	Educational facilities					Health facilities		cultural and recreational facilities						Administrative facilities					Commercial, Housing & parking facilities			
	Nursery school	primary Schools	High school	Libraries	University	Clinic	Hospital	Recreational Places	Community	Religious	Recreational Places	Community	Religious	Municipal	Post offices	Police	Fire stations	Children's	Community	Parking	Housing	Commercial
2015	28	7	14	3	1	28	1	7	14	69	7	14	69	3	13	6	2	1	6	6,933	33,013	1,651
2020	31	8	16	3	2	31	2	8	16	78	8	16	78	3	14	6	3	1	7	7,843	37,346	1,867
2025	35	9	18	4	2	35	2	9	18	88	9	18	88	4	16	7	3	1	8	8,821	42,003	2,100
2030	40	10	20	4	2	40	2	10	20	99	10	20	99	4	18	8	3	1	9	9,941	47,337	2,367

Source: Author calculated based on accepted international guidelines

The situation of agglomerated activities will originate the branded city based on the key economic activities in the area. This study has tried to identify a pattern of related segments which are formulating too early to origin the city. In accordance with initiating related projects with the major project at the same time, population will attract to the center by opening the opportunities to provide social infrastructure. There will be dependent projects of the centre with one or two independent projects. Due to the project with considerable cash floor, the city critical node will be brand with the name of the major project. All these natural and artificial arrangements are creating the comprehensive background to originate a branded new city center.

## Conclusions

This study has illustrated the correlation of sea port operations and selected other infrastructures. In this stage, social infrastructures, physical infrastructures, economical infrastructures and environmental infrastructures are evaluated as relevantly to the study. According to the calculated figures, all relationships have been conducted as positive and perfect correlations from the port project. Strategic

planners are using a variety of methods to prepare a better plan for the area in relevance to preference place. At this type of spatial situation, policy makers or planners have to interpret with some creative way to achieve their targets.

This study is arranging as some sort of demographic study to predictions populations and other type of social requirements would be development in the city area. It is identified a pattern of the growth in urban activities. Kotler have convinced by introducing his theory of place marketing, there are four marketing strategies can be affected to market the place for the target market (Kotler & Levy, 1969; Kotler & Zaltman, 1971). This study has abstracted that theory to convince; development of infrastructures is highly affecting to develop a place as an urban centre.

This study is highly focused only on the infrastructures development within four marketing segments that were discussed by Kotler. There are other three segments that can affect a market place. As discussed, the infrastructure factor as well as circulates to booming up another place marketing segment like city image, life styles and populations so on. Application of Kotler's theory for the significance city area is successfully achieved by using infrastructure development approach for the study area and explores the effectiveness prominent project to origin the urban center.

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