INTERACTIVE RELATIONSHIP BETWEEN PORT DEVELOPMENT AND PORT CITY IN HAMBANTOTA, SRI LANKA

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ABSTRACT

The Port Construction Project has been a dominant topic in the last five years because it is the largest project implemented with considerable economic, social and environmental impacts. The Port is not a project operating by itself but will create city characteristics to fulfil the requirements of port functions. The port city is a subject related to the port activities, social, physical, economic and environmental infrastructure that are being developing alongside the port project. The interactive relationship between port and port city is being established quantitatively and abstracted to make trend calculations of other infrastructure for the purpose of making predictions about the port city area. Have figured out the potential of the port project subject to the location factors evaluation system, a 30% possible figure was calculated and the contribution to the development of the city centre was analyzed.

Hambantota is the second port in Sri Lanka and Hambantota town is developing as a port city. Originally, Hambantota town consisted of low-density population, under utilization of land, low developed areas and low human and physical resources. Therefore, the main objective of this study is to explore the interactive relationship between the port and the port city of Hambantota. Key research findings about the construction stage and operating stage activities show a positive relationship between the port and the port city.

Key words: port, port city, interrelationship

01. Introduction

Ports play an integral role in international trade. They provide an overview of logistics, the supply chain, and the various components and functions involved in getting goods from the source of origin to the final customer. A port-related city is a major requirement for the proper functioning of the port to get the benefits of agglomeration economics and economies of scale. A port city provides a facilitating and rich understanding of the movement of people and goods around the world. Therefore, the port city will become an industrial, financial and service centre and a potential administrative centre because of their water connections and urban concentration which arises there and later opens it to railways, highways and air routes.

The City of Colombo developed as the first port city of Sri Lanka, and now it is well established as the commercial capital of Sri Lanka. After six decades Sri Lanka identified the need for a second international seaport in the country and in 2009 the second international sea port was established in Hambantota 200 km away from Colombo. It was established very close to the Hambantota town, which now plays a major role as a port city of the future economic hub in Sri Lanka. Therefore the department of National Physical Planning identified Hambantota as one of the metropolitan cities of Sri Lanka with a population of 7.2 million by 2030. The sea port project is a key project in the Greater Hambantota area and many other projects will originate because of the sea port project. Attracting other infrastructure and economic 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 are creating an urban background and strategically the city will grow as a port city.

The port city may be thus understood as an object giving many interesting applications for studying the interrelationships between the port function and urbanization. Many issues may be stressed at the beginning of the urbanization process relating to the port or port activities and the functions of the port as a multi functional transportation node.

1.1 Port and port city

A port city is identified as centre of exchange where different cultures and different environments meet at the boundary between land and sea -geographers, economists, sociologists

and historians. The works of Banga (1992), Basu (1985), Broeze (1989), Driessen (2005), Murphey (1989), and Nas (2005) among others have highlighted distinctive features and characteristics of a port city. Port cities are not merely ‘‘cities that happened to be on the shoreline’’; they are economic policies whose character is essentially maritime in nature (Broeze, & McPherson, 1989). In explaining the urban culture, personality and morphology of port cities, their economic functions as nodes of sea-based trading networks need to feature prominently. On the other hand, it is expressed as a place, ‘‘as a hub in dense networks of maritime connections through which people, goods, ideas and meanings flowed’’ (Driessen, 2005: 129e130). Port cities do not only function as entry or exit points for the movement of goods, labour and capital; they also serve as nodal centre for the reception and transmission of culture, knowledge and information. Furthermore, port cities are more than just passive economic funnels; they invariably exercise complex and profound influences on the hinterlands they serve (Bird, 1971).

1.2 Empirical work on port-city relationship

The analysis of port-city relationships, although it uses very basic indicators of urban and port functions, helps reveal the importance of macro factors. In Europe, the distance to inland markets and the extension of hinterlands is a main factor in explaining the relative importance of urban and port functions, while in Asia, there is more a combined port-city hierarchy due to the lack of hinterlands (Cesar, 2005).

Hoyle (1998) mentioned areas at the geographical boundary of ports and their cities have generally been subject to dereliction and subsequent urban redevelopment. Old port areas are interesting for urban re-use due to their location on the waterfront and their close proximity to the inner city. Spatial changes in the port-city interface have always been preceded by changes in port development. There is a vast amount of scientific literature (particularly from the field of geography) devoted to describing, analyzing, and explaining the development of maritime ports. Bird 1963 developed a model for the development of ports. He conceived the port as a direct relationship between form and function and, in any port; port space is seen as a chronological and linear succession of historically distinct development phases (Olivier & Slack, 2006). Bird’s (1963) model provides a standard by which to compare the development of actual ports. Olivier & Slack (2006) talk about a behavioural approach, which surfaced in the mid-1980’s in port

studies, and tried to evaluate port carrier relationships from the port users' perspective, i.e., the behaviour of those who (want to) make use of port facilities. This point is argued in Slack's earlier work, in which he points out that the weakness in 'traditional hinterland studies' lay in their over focus on issues of cost and ports' inherent attributes in assessing port performance, overlooking shippers' perception of them (Slack, 1989).

Most empirical studies are concerned with ports' r capacity and the infrastructure provision for maritime port development.

2. Problem

The port will transform the total situation of the area and therefore help to create a port city. Port-city relations in fact cover a wide range of themes related with logistics, tourism, tertiary activities, and planning, as shown in the proposed classifications. Thus, it is reasonable to analyze reasons, origin of a city close to a port or origin of a city because of the port. Most of the studies have compared port cities and port activities and found correlations of a port with other ports, but not considered the impact of a port on a city. Effectiveness in the initial stage will help to make predict, forecast and prepare a strategic plans for the port city.

Hambantota port is located in the inner harbor and port activities are located inland of the country. The port is developing as an artificial port and there are many reasons for developing this port such as the minimum distance from the international sea routes, depth of the sea, land shape and availability of land, low density population, etc.

In this setting, not only the port but also the port city has to be planned with consideration for the low density population. Port city developments should focus on attracting more people to the city. Therefore analyzing effectiveness of port and port city in the initial stage is important for future plans. There is a lack of research on this matter and a clear research gap exists. Hence this study aims to fill this gap. It is mainly focused on analyzing the interactive relationship of the sea port and origin of a city with correlations of physical infrastructure. Omit this. You are stating the same thing in the next paragraph.

03. Objectives

The main objective of the study is to analyze the interactive relationship of the sea port and origin of a city with correlations of physical infrastructure.

The following sub objectives considered:

* To identify the relationship between different activities in the port city.
* To evaluate progress and the relationship of selected physical infrastructure in the port city during the period of port construction.
* To evaluate the related positive and negative factors.

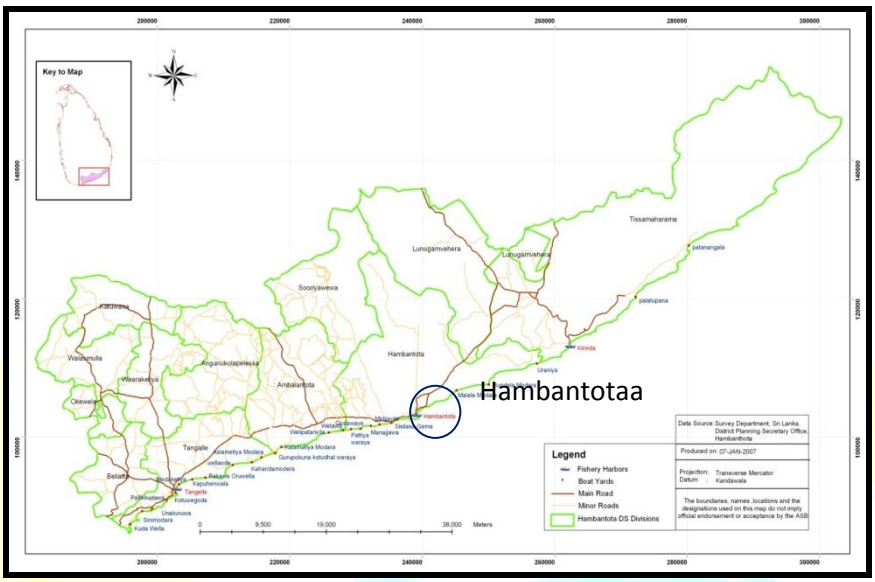
04. Methodology

The study concerns first the relationship between the urban centre with different infrastructure facilities and develops a conceptual model to identify it. In this stage data sources are used to define and explore the interrelationship. Secondly, it considers the data in the construction stage and the operational stage. The construction stage covers a percentage of the overall project but the operational stage data covers only project-related areas. An analysis is also done of these two types of stages. In both stages of data collection field observations and focus group discussions are used.

05. Case Study Area

The Hambantota district is located in the Eastern part of the Southern province in Sri Lanka (Figure 2). It is considered the administrative centre of the entire district Hambantota district with access through the A18 and B8 major roads. In the North East direction Monaragala city is connected by the A2, B53 major roads and in the West Matara city is directly connected through the A2 major road. Therefore the area is directly connected to the first order town of Galle and the second order town of Matara. Apart from that it is directly linked to the Monaragala, Uva-Wellassa, Ampara areas. Agricultural products and industrial exports are at present transported to other regions through existing transport nodes. This creates a strong linkage with the other surrounding regions.

Figure 2: Location of Hambantota District



Source – Urban Development Authority

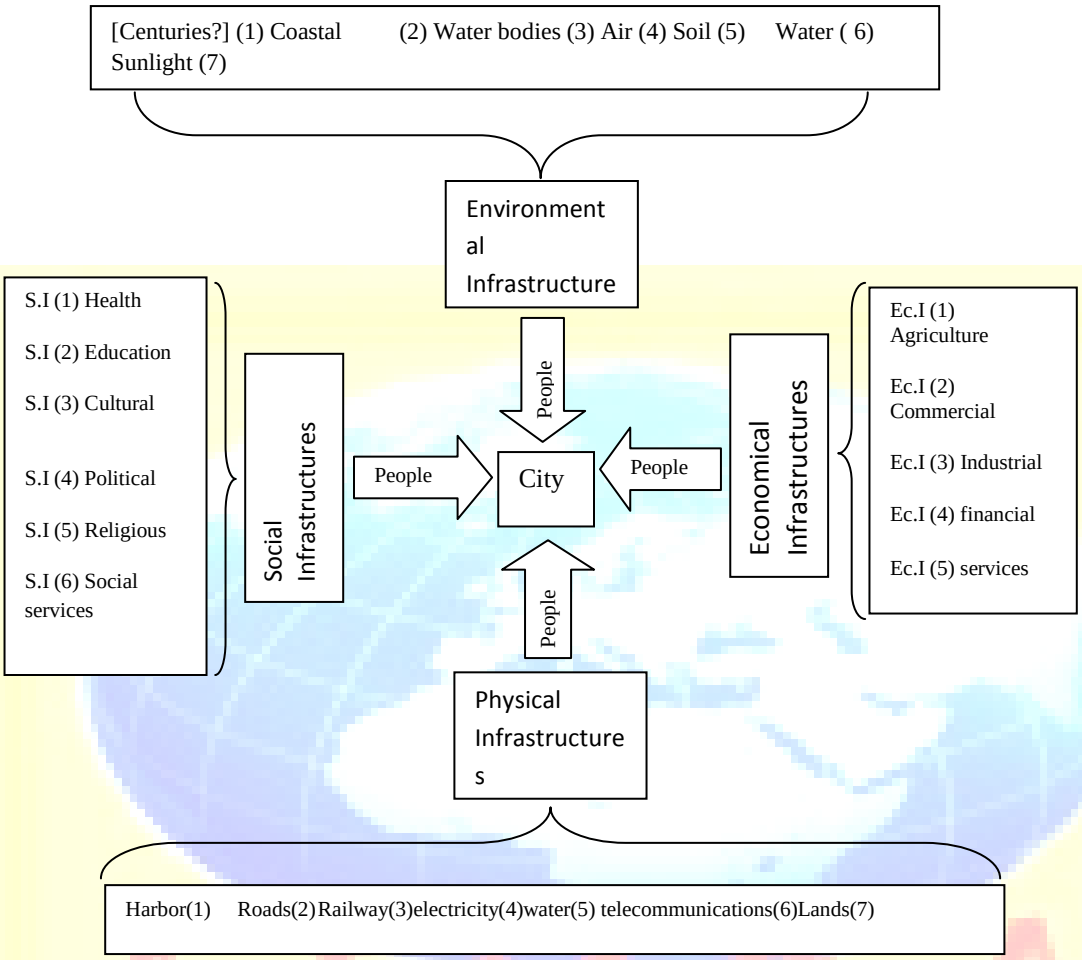
The Hambantota town plays a major role in the national urban hierarchy. It is will be a second order town in 2030 according to the published plan of the National Physical Planning Department. At the regional level Hambantota town figures as a first order town in the Hambantota district. Therefore it has to be developed as a national and regional centre apart from as a port city.

06. Data analysis

6.1 Relationship between activities in the port city

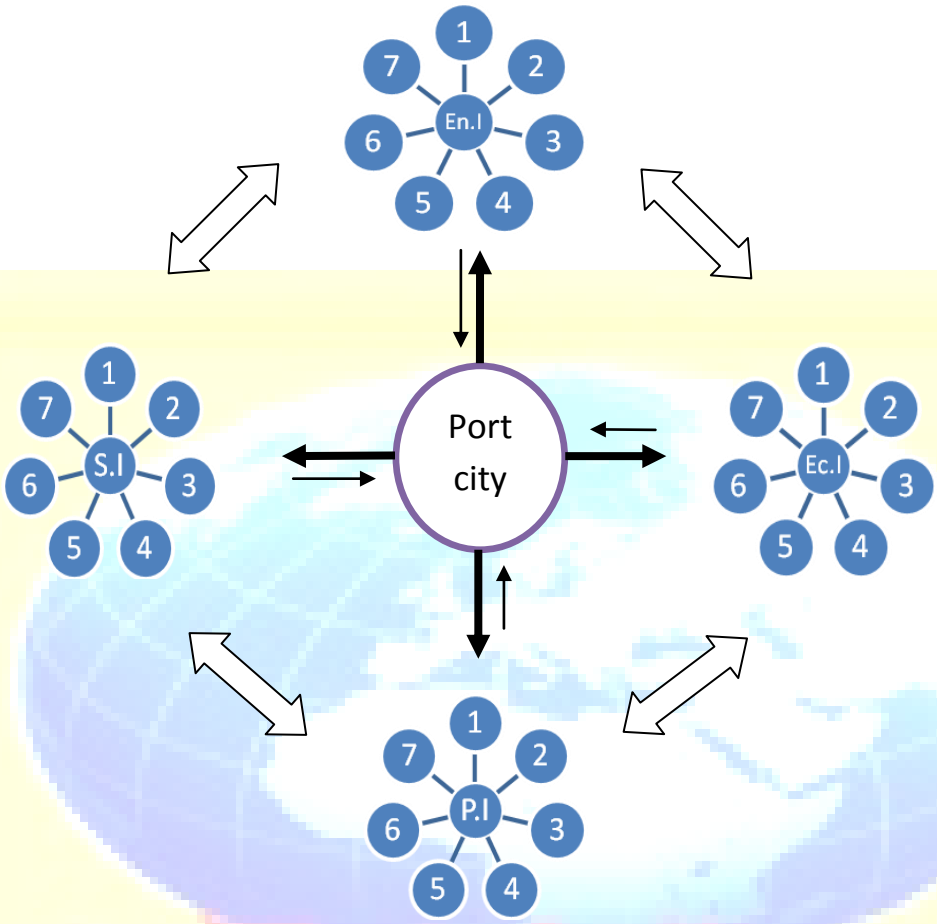
Hambantota is identified as second order town in the national urban hierarchy and as a first order town in the Hambantota district. It is at present a town with low density population and needs to increase its population. Normally population growth requires infrastructural and urban activities. Based on field observation, focused group discussions and secondary data the following conceptual model (Figure 3) was developed to explore the relationship with city activities. The figure explores the segment level structure to explain the effects and the interrelationship between port city and each infrastructure, not only the sea port but also every infrastructure.

Figure 3 - Identification of relationships with city activities



This chart identifies the relevant data about social infrastructure and physical infrastructure and covers economic factors and environmental factors. Figure 3 shows the conceptual plan relating to the interrelationship between each segment. Physical, social, economic and environmental factors are considered as segments.

Figure 4: Conceptual plan relating to interrelationship of segments



P.I – Physical infrastructure

S.I - Social infrastructure

E.I - Economic

En.I - Environmental

6.2 Relationship between port and port city

In the study the international sea port project is taken as the independent variable and all other social, economic and environmental factors are taken as dependent variables at the first stage. At the second stage the correlation of each other in affecting factor to city functions.

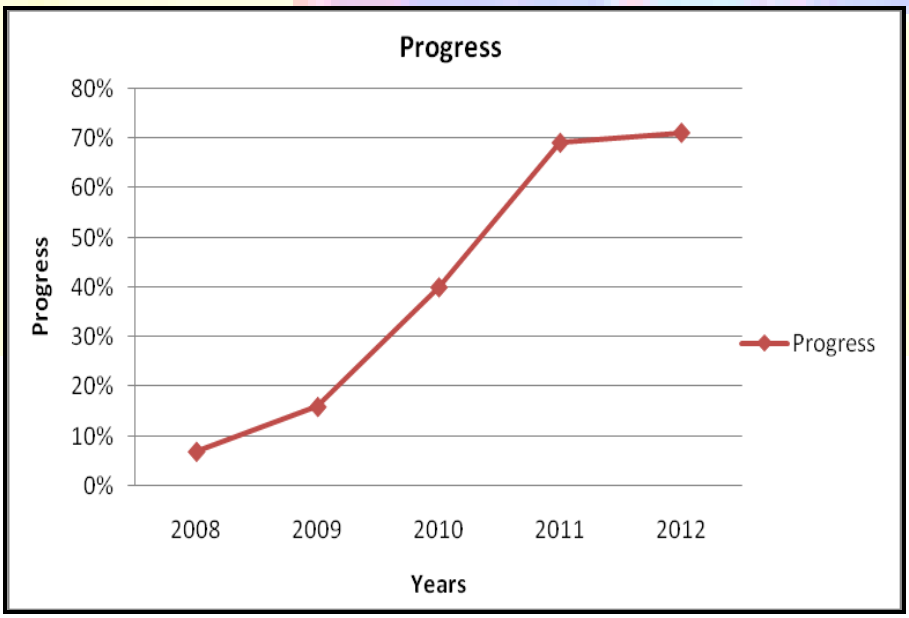
6.2.1 Progress of port project and other key infrastructure project

According to the logic 01 port project cannot take place along without other infrastructure projects, mainly, water projects, road constructions projects and electricity supply projects also taking place in parallel. The analysis focuses first on the harbour construction project and afterwards comparing it with other projects.

a) Progress of Harbor construction project

The harbour construction project commenced in 2006 and before constructions took place, preliminary activities commenced on site like land acquisitions, planning, design, soil testing, etc. Therefore many site activities are took place after 2007 and in the time after that project works were started together with construction vehicles, construction companies, machinery and working populations agglomerated on the site. The study considered the project progress from 2008 to 2012 and calculated the overall progress under the 18 variables taking a figure easy to analyze. The figures for the last five years are shown in Figure 5). Overall progress was being taken up to second phase of over the project and first phase of the project is accelerated within two years according to the graphical view latest period not taken rapid progress.

Figure 5 – Progress of Harbour project



There is a moderate progress from the 2008 and after that there is a rapid progress in 70% up to 2011 of port construction project. Up to 2012 is slowly progressing below the 10% according g to the draft.

b) Infrastructure development projects

The progress of other key projects is shown in Table 5 .

Table 1: Progress of Infrastructure Development Projects

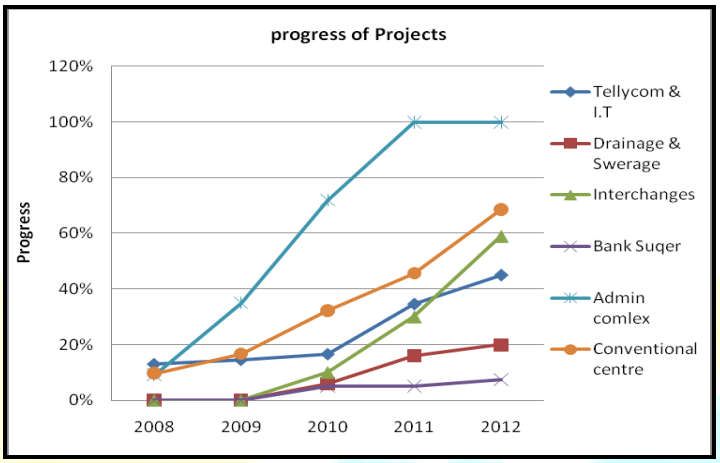
	Progress				
Project	2008	2009	2010	2011	2012
Harbour	7%	16%	40%	69%	71%
Roads	25%	29%	32%	38%	48%
Electricity	11%	20%	38%	42%	55%
Water	3%	4%	7%	13%	16%
Telecom & I.T	13%	15%	17%	29%	36%
Drainage & Sewerage	0%	0%	6%	16%	20%
Interchanges	0%	0%	10%	30%	59%
Bank Squire	0%	0%	5%	5%	7%
Admin Complex	9%	24%	72%	100%	100%
Convention Centre	4%	15%	32%	46%	53%

Source: Compiled secondary data

c). Relationship of selected projects with Harbour project

There are relationships within the each project according to this analysis from the starting point of the specific project. Limited infrastructure is growing following the major project (Figure 6). This study has taken the actual situation of all action projects to find the correlation of each other as follows (Ports North – 2012, Cairns Shipping Development Project, Initial advice statement).

Figure 6 – Progress of selected key projects



This multiple lines of the line draft are explaining all key projects are progressing in parallel to each other. This has shown as following the major projects by other related key projects.

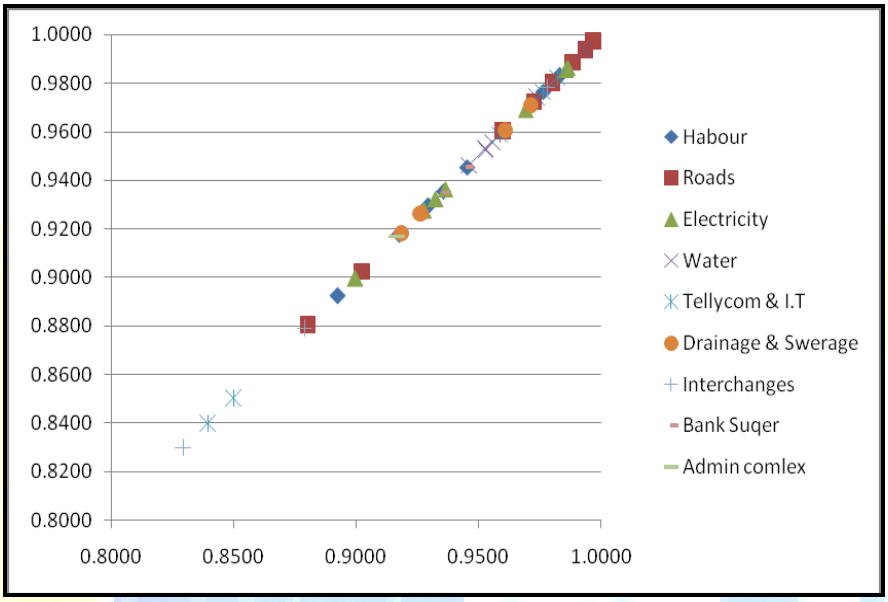
The Harbour Project was taken as a key project for the study to find out the interrelationships of each infrastructure. All these factors progress together to achieve the master project target. Table 2 explains the correlation with each other.

Table 2 – Correlation of selected projects

Projects	Harbor	Roads	Electricity	Water	Telecom & I.T	Drain & Sewerage	Interchanges	Bank Square	Admin complex	Conventional centre
Harbour										
Roads	0.9176									
Electricity	0.9294	0.9970								
Water	0.9712	0.9799	0.9856							
Telecom & I.T	0.9184	0.9725	0.8995	0.9463						
Drainage & sewerage	0.9765	0.9602	0.9285	0.9984	0.9825					
Interchanges	0.8925	0.9887	0.8988	0.9733	0.9818	0.9608				
Bank Square	0.9366	0.8668	0.9704	0.9037	0.8246	0.9020	0.8382			
Admin Complex	0.9878	0.8773	0.9626	0.9316	0.8720	0.9381	0.8383	0.9651		
Convention Centre	0.9873	0.9403	0.9849	0.9610	0.9223	0.9596	0.9006	0.9513	0.9853	

Since the construction stage, good road network and proper road conditions support to accelerate master plan implementation. Correlation of Harbour and Roads is very close to 1and, which means there is high inter relationship between each other as shown in Figure 7.

Figure 7 – Correlation of each selected project with the harbour project



In the Figure above, change "habour" to "harbour"

"Telly com" to "Telecom"

Swerage" to "Sewerage@

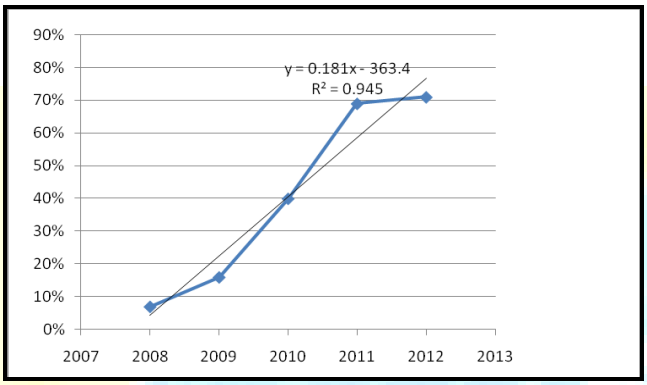
The harbour project shows perfect correlation of +.9 with road construction, water, electricity, telecom and other key infrastructure projects. Most of the time at the planed city Water, Electricity, Telecommunications, sewerage and drainage systems provides service lanes [preserved?] by the road network. Thus, there is positive correlation very close to +1 in the Table. The administrative complex, international convention centres, interchanges and banking square are not considered as directly correlated factors to the sea port. But in reality, all these things are progressing in parallel with the harbour project.

6.3 Test feasibility of Port project

The international port project is considered to be operating from 2015. The second phase of the project commenced in 2012 and it is planned to complete in 2018. But after installation [trains assume port operations will progress effectively?] (Figure 8). According to the trend line of the Harbour project the second phase will be completed in February, 2018, but most other projects will not be completed in the same period by 100%. There is close correlation of the port project

with the Admin Complex and the Convention Centre but not with reasonable effectiveness. [These two projects relating to Harbor project in technically and there will be close relation with Social factors affecting to origin a city.?]

Figure 8 – Trend Line for Harbour project in construction stage



The trend line of the harbor project at the constructions period shows smooth progress because slope of the line is close to one.

This study considered the project construction Phase II. This period is very important for generating the bulk of activities in the area. The second phase is planned to complete in 2018 and operation activities will affect the social, economic and environmental entities.

6.4 Trend calculations of Operation Stage

The port project is a key project in the origination of a port city and related construction work. Many changes occurred in the area relating to economic, social, physical and environmental the fields. This means that the port project construction can be considered the most important strategic project of the area. After completion of the second phase of the project, operations will commence for the 3rd and 4th phases. These calculations will apply to which types of contributions are provided to develop the functions of a port city. It is necessary to find out the trend of the port project and the specific potential for develop Hambantota port as an international harbour.

7. Conclusions

The study of Interactive Relationship of Port Development and Port City has brought to light a number of areas related to the main objective as well as sub objectives. The crux of the research it to find the relationship of port and port city and the impact of port development project on the development of the city. The port construction project commenced in 2006 after completing

planning and land surveying activities. Initially the port construction was started in 2007 and from 2008 the project works were accelerated. The relevant data relates to 2008 and the operation stage According to the study, there is perfect correlation between the ten active projects except in a special situation, Roads, electricity, water, sewerage and drainage, telecommunication and information technology are progressing most probably in keeping with the progress of the port project.

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