Assessment of the integration management among the major sector offices involved in infrastructure building in sodo town

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Abstract : This study has been undertaken to investigate the determinants of stock returns in Karachi Stock Exchange (KSE)
A*bstract: The main aim of this study is assessing the integration management trend among the main sector offices involved in infrastructure building in Sodo town. The assessments were done by preparing a questionnaire for experts in the area of the study and conducting site over surveys. The numbers of participants' responded in this questionnaire are 24 out of 30. The respondents' response shows that, usual formal way of communication is oral, believed for good outcome (effectiveness in cost, time, and quality) of better relationships and meeting during emergency maintenance encountered. But, the results shows that, the applicability of the guiding rules and laws in between them are loose, and degree of occurrence of claim also high. Therefore, the degree of integration management in between town municipality, Ethiopian road authority Sodo district, water supply enterprise, Electric power sodo district etc infrastructure building sectors are weak.*

Keywords: Assessment, degree of integration, infrastructure, questionnaire, observation

I. INTRODUCTION

In general, infrastructure is defined as electricity, gas, telecoms, transport and water supply, sanitation and sewerage [7]. Urban infrastructure management includes a vast range of activities that are essential to the efficient working of city utilities and services. It can include many activities, such as provisions for water and sewage facilities, highways, transport facilities, energy distribution networks, telecommunications facilities, and other networked services. It also includes the provision of the types of social facilities regarded as essential for the maintenance of public health and welfare. The multi sector nature of infrastructure management involves a variety of institutions in the process of selection, execution, and operation of projects. Decision makers involved in infrastructure management often include national and/or cabinet committees, heads of involved agencies , e.g., ministries, local government, banks, execution agencies, governmental and n on governmental organizations, beneficiary institutions, etc.!, executive directors within each of the involved agencies, planners, engineers, contractors, and others [1].

All subsystems have some common functions: planning, design, construction, evaluation, maintenance, and improvement. They also have common elements: inventory, measure of quality of service, needs analysis, project selection, and impact of various funding levels [2].

Infrastructure Sustainability and Sustainable Design. Elkington considered sustainability as a concept involving the famous triple bottom line-people, planet, and profit [3]. Abidin and Pasquire considered sustainability as objective including elements of the design, such as energy efficiency, waste minimization, and low maintenance costs [4].

1. Objective of the study

The main goal of this research is to assess of the integration management trend among the major sector offices involved in infrastructure construction in Sodo town.

II. Location of the study area

Wolaita Soddo town, the administrative capital of the Wolaita zone, is located 390 Km South and 167 Km of South West of Addis Ababa and Hawassa, respectively. The town is located 6 49" N latitude and 37 45'' E longitude. Currently, the total area of the town is about 3,200 hectares and is divided in to three sub town ("Kifleketema"), eleven "kebeles" (administrative units) and ninety nine villages ("mender"). Based on the 2010 Census, the town has a total population of 110,660 (male 58,407 and female 52,252) with the projected annual growth rate of the 4.8 % (CSA, 2014) [9].

III. METHODOLOGY AND MATERIALS

1. Non-Probability Sampling

Non-probability sampling is a sampling procedure that will not bid a basis for any opinion of probability that elements in the universe will have a chance to be included in the study sample [5].

2. Expert sampling

The researcher here seeks for the consent of those that are expert or known expert in the area of study, and begin the process of collecting his information directly from individual or group of respondent. It also involves sample assembling of group of people that can demonstrate using their experience or those that specialized in part of the areas. The reasons for using expert sampling are to have a better way of constructing the views of individuals that are expert in a definite area. It is also used in providing confirmation of validity to another approach of a selection of sampling [5].

The necessary data's were collected from questionnaires and site over survey. The questionnaires were filled by main of civil infrastructure offices which are Sodo Town Municipality, Ethiopian Road Authority Sodo district and Water supply service enterprise. The total numbers of questionnaires prepared and distributed for this research are 30. The individuals participated in this questionnaire are workers in these civil infrastructure offices. The other method applied during the assessment is observation of the infrastructures supported by photos using digital camera. Out of thirty respondents taken questionnaires, 24 of them were responded. So, it covers 80% of from the total.

Table 3.1 Response rate of respondents

Response rate	
Distributed questionnaire	30
Returned	24
Percentage returned	80

IV. DATA COLLECTION, ANALYSIS AND DISCUSSIONS

1. Data Collection and Analysis

Infrastructure management involves a wide range of issues such as inspection and data collection, condition assessment, performance evaluation, prediction of future performance, planning and prioritizing maintenance and repair operations, and evaluating alternative technical and economic policies. Besides these technical issues, a wide range of managerial, financial, social, and political issues are also involved. Civil infrastructure systems are typically managed by a multi-disciplinary team of stakeholders, each represent a particular view of the system. Understanding and supporting an integrated approach to infrastructure management is a key factor that would determine the success of any technological solution in the domain [6]. The infrastructures integration allows for the most excellent management and development of the town.

i. Type of communication among the organization

It is well known that, the civil infrastructure or services types are road and transport, storm water drainage, community water facilities community sanitation facilities. Buildings, environmental protection and solid waste management systems etc. These forms of infrastructures offices communications according to the respondent in the questionnaire are orally (63.5%), written (18.25%) and other communication ways (18.5%).

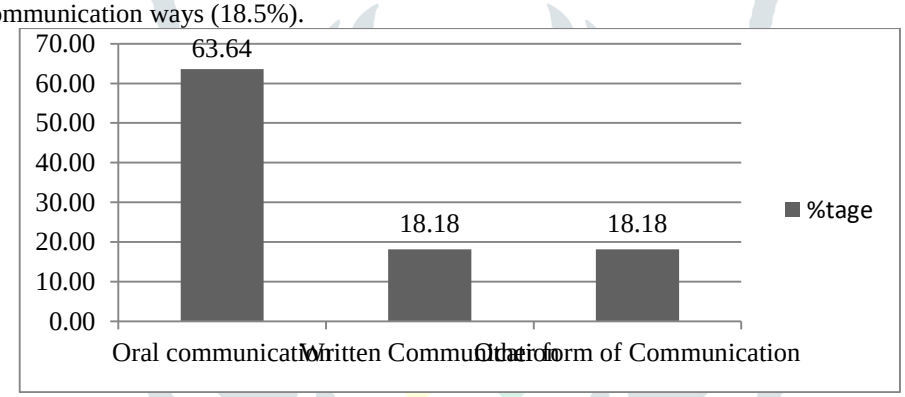

Chart 1: Type of communication among the organization

ii. Benefits of good relationship among infrastructure offices

The beneficiaries from the good communication are all parties participated in civil infrastructures construction. Out of all the respondents 8.33% believe offices benefited by cost/economic effectiveness, 16.67% cost and time effective, 8.33% cost/economic and quality, 50% of them believes cost/economic, time and quality effective, and other beneficiaries believes covers 16.67%.

iii. Application of joint program

The applicability of the joint integration is about 41.67% and 58.33% of the respondents agree on not applicability.

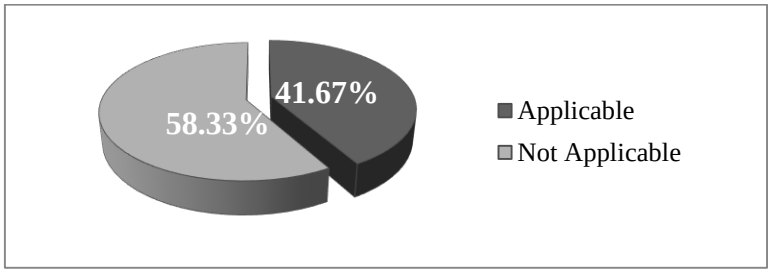

Chart 2: Applicability of joint program

iv. Interval to conduct joint meeting the offices involved in infrastructure construction

The frequency of meeting with in the civil infrastructure according to response under this questionnaire is 8.33% once a year, 8.33% two times a year, 33.33% month than twice a year and 50% of the conducted occasionally.

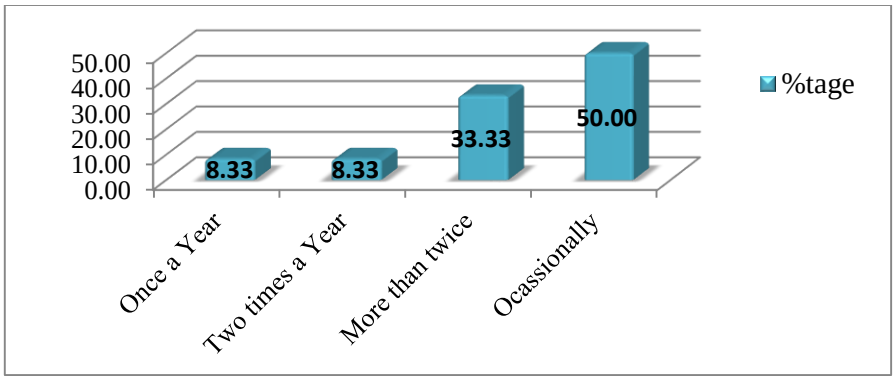

Chart 3: Frequency of meeting in between sector offices

v. Trend of communication when emergency maintenance encounter

According to the respondent response 66.67% of them agreed that they have a trend of communicating during problem encountered and 33.33% of them are not communicate during emergency maintenance happened.

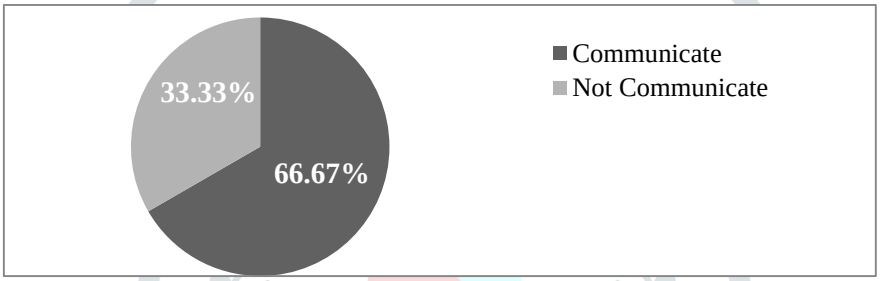

Chart 4: communication for emergency maintenance

The trends of communication for regular maintenance 50% of the respondents worked in these civil infrastructure offices responses are agreed. But 50% of them are not communicating regularly in regular maintenance.

vi. Occurrence of claim among the sectors involved in infrastructure construction

The occurrence of claim in between these organizations was 75%.

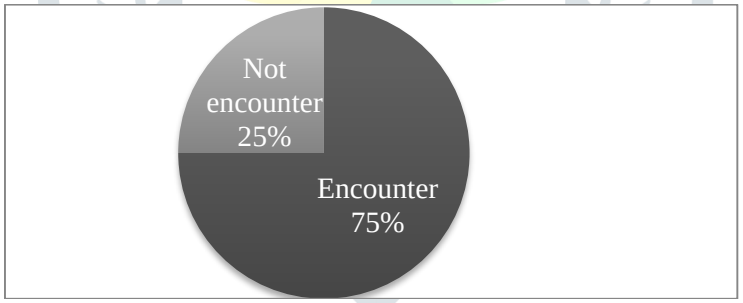

Chart 5: Occurrence of claim in between infrastructure offices

vii. The presence of applicable law on rework and maintenance

They have insured that, there are laws of maintenance and rework issues in infrastructure damages.

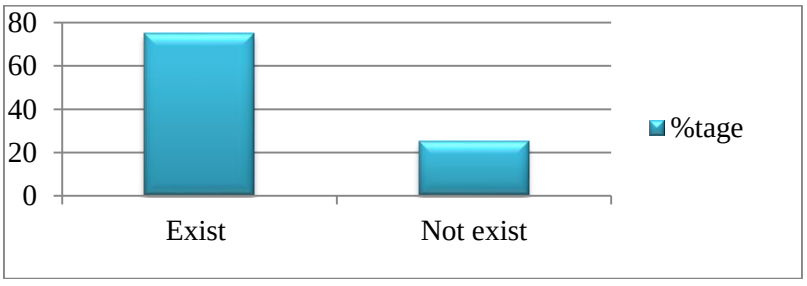

Chart 6: Applicable law on maintenance cases

viii. The best time to communicate and discuss on common issues

From their experience the best time of communication according to 50% of respondent was design phase, 25% of them on designing, tendering and during construction and 25% of them believed after construction.

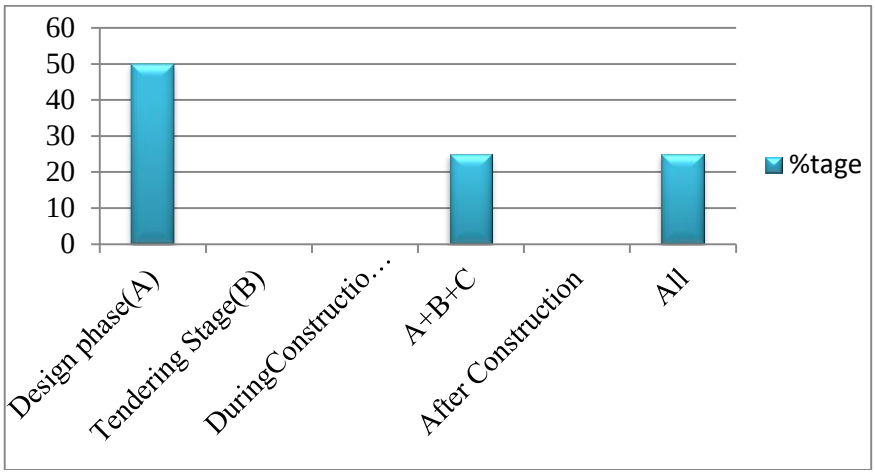

Chart 7. Best time of communications

ix. Degree of relation among the selected sector offices

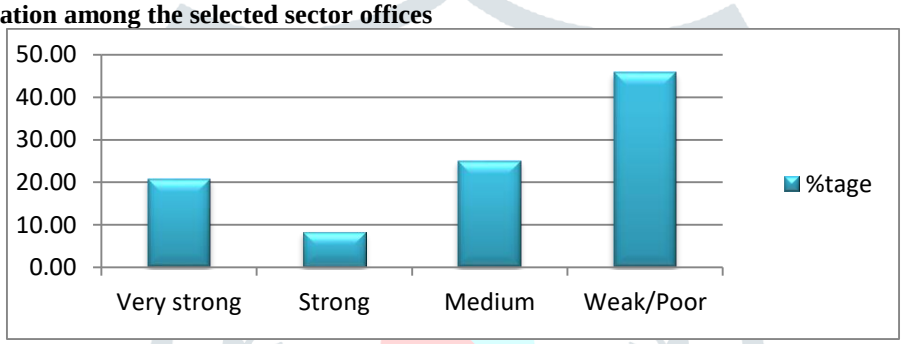

Chart 8. Degree of relation in between infrastructure sectors

2. DISCUSSIONS

Realizing this goal would require addressing a wide range of requirements: (1) modeling and management of infrastructure physical, functional, and performance data as well as gathering condition data in a timely and effective manner; (2) utilizing the knowledge of deterioration models, simulation models, cost models, optimization models, and effective MR&R operations to support the knowledge-intensive decision-making process; (3) interoperation and data exchange between different function-specific software tools; (4) modeling, management, and coordination of maintenance operations and effective communication of accurate and timely information; and (5) the ability to customize the system to specific project or organization policies, and to accommodate various operations that reflect industry practices. Satisfying each of these requirements represents a major challenge to be addressed [6].

The profit of multi-sector integrations are decreasiing investigation costs, easier and cheaper maintenance and operation, easier adaptation to climate change, reasching the intellegent disaster-resilent infrastructure and more successful control over the integrated infrastructure. It is helpful, cheaper and more environmentally transportation system, reduced overall damaging environmental impacts arising from construction, exploitation and maintenance of infrastructure, decreased habitat fragmentation and increased biodiversity to restore functioning ecosystems and provide the foundation for sustainable living; and more effective development of green infrastructure.

According to [8], the distingusher between productive and unproductive in infrastructure system are:

i. The production function approach that models the amount of output that can be produced for each factor of production, given technological constraints. In this approach public infrastructure enters as a free input furnished by government.
ii. The cost function approach takes into account factor prices such as the price of labour, machinery, and finance. Public infrastructures are conceived as costs saving factors.
iii. Growth models belonging to the tradition of endogenous growth and augmented to consider as growth enhancing factors also public infrastructures.
iv. Data-oriented models analyze relations between several data series including infrastructures and GDP and do not rely heavily on economic theory.

- Some of the defects obtained from site over survey

Fig.1: Some of the photos of defected infrastructeres

Fig.2.Some of the photos of defected infrastructures collected during observation

The 63.64% of the respondents answers shows that, the way of communication in between sector infrastructure offices in Sodo town is oral. Eveniff, the sector offices relation according to most of the responses in questionnaire is good, above 60% their way of communications were orally. Beside this, majority of stakeholders believed on beneficiaries on good relationships.

Based on 58.3% respondent responses, they have a trend of conducting consecutive meeting on infrastructure planning, implementation and maintenance issues. And the interval of joint meeting was conducted more than twice per a year and occasionally (problem encountered).

The sewage system with in the town is not planned and managed with integration in between sector infrastructure offices. The road side drainage constructed are not good. But also there is no side drainage in some road ways (Fig.1). The solid waste garbage's area dumped and stored within the drainage structure. Because of this, the environmental protection is weak and affects the livelihood of the communities. The storm water systems around buildings have a lot of limitation to transit rainfall towards the main drainage system. Beside this, majority of the responses in the questionnaire were well informed on the benefits with respect to cost effectiveness, time effectiveness and quality of infrastructures due strong integrations. From the results obtained in site over survey (observation) (Fig.1and Fig.2) and questionnaire, the weakness of their communication shown in building and implementation process by procedural defect. Actually these problems are shown by road side erosion, Asphalt and cobble stone roads cut/breakage/ for Telecom and water supply purposes.

Even though, the infrastructure buildings have a good progress in recent consecutive years in this town, specifically in construction of high story buildings, cobblestone and asphalt and water supply distribution systems, there are a distraction and rebuilding repeated cycles which cost time, money and quality of infrastructures..

The infrastructure building processes seeking multidisciplinary dependencies for performance-oriented planning, exploring the potential variations, physical–procedural-technical interdependencies, evaluation sequence and inputs, applicability, maintenance and sustainability's. From Fig.1 and Fig.2 captured through site over survey shows that, the damaged, unqualified and non reserved road side walk ways for free movement of humans, unfinished pavement roads, damped construction materials, solid waste and excavated soils on roads, erosion of gravel road under construction due to limitation in identification potential area susceptible to erosion, cut and remaintained asphalt road and blockage in drainage structure by solid solid waste and sediments. Residential and mixed purpose high rising buildings are not comfortable for disabilities. This situation is obstacle for town sustainable development.

V. CONCLUSION

Basically, in infrastructure planning enough information, knowledge and integration should be considered in between different sector offices to find and deliver successful services. Effective integration is uses to make efficient resource utilization, sustainable infrastructure development and finally form integrated economic development in the community. Even if, the stakeholders' responses on the final outcomes of well integration is very positive, their usual formal way of communication is oral and meet and discuss occasionally. Most of the time through their activities claims was happened in between these sectors.

Finally, the results obtained from questionnaire and observation shows that, the infrastructures sectors like municipality, Ethiopian road authority, water supply enterprise and electric power worked in Sodo town have weak integration. Weak/poor integration in these infrastructures building raises the issues of justice and governance.

VI. References

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