

Discussion

7.1 Introduction

In the research two questionnaires, namely preliminary field survey questionnaire –stage 1 and stage 2 were used to collect data for the ICT usage in main tasks and components in the road sector development. In addition to that an Organizational questionnaire was used to collect data for the ICT usage in road sector organizations. Results in Chapter 6 are discussed in this Chapter.

7.2 Survey of Individuals

Feasibility studies the ICT use is either moderate (37%) or low (23%). Results show that Data Collection and Data checking are the most ICT used sections.

In Engineering Design respondents have expressed that there is a large component of “High” and “Moderate” rating when compared to with the Feasibility Studies,

It is clearly shown that most ICT use is in Pavement Design, Bridge and Culverts. Lowest are in the areas of Lighting and Safety.

Total percentage of Construction sub tasks shows that the overall ICT use is inclined towards the lower side with 33% having a rank of Low and 30% with a rank of moderate Lighting, safety and Provision of utilities shows a weaker application of ICT in respective areas.

Preventive maintenance shows a 43% ranking of Low for ICT usage, while 12.5% have indicated that the ranking is Very Low. The most number of respondents with 43% have stated that operation and maintenance ICT usage is moderate, and 23.08 have stated the same as Low.

Overall assessment of ICT use in road infrastructure development shows that the respondents have indicated a Moderate to Low rank for ICT use in road development. The feasibility studies and engineering design have shown a higher level of use when compared with the other three. The weakest area of application is in the construction task

Based on the analysis it is very clear that there is significant room for improvement or exploitation of ICT applications in the road infrastructure development

The qualitative answers can be used for the identification of the general trend. However in case of very high usage responses it should be noted that this may be possible either due to the actual high ICT use or due to a poor respondent knowledge of ICT capabilities. The variety of respondents from various agencies and the level of detail collection can be attributed to this. As such interpolation of results has to be carried out with caution.

Road Planners, Engineers and managers can individually consider sub tasks under each category and then analyse the responses to identify suitable policies for meaningful use of ICT road sector development

Respondent's results match very well with the available documents and their contents which were identified during the study. Hence the results could be taken as realistic and provides information for resource allocation and utilization in a rational manner.

7.3 Survey of Organizations

Keeping the individual survey questionnaire and results as a guideline, the organizational detail capture was designed to obtain adequate information

In this survey the sample selected contained the major institutions dealing with road infrastructure development. 50% of the organizations had very high experience and another 25% had high experience. Type of road work handling by agencies shows that only a handful of organizations had capabilities in carrying out several sub tasks.

The enabling environment showed that only two agencies had an enabling environment greater than 80%. Two agencies had a less than 10% enabling environment. In general the level of enabling environment was around 40-50%.

From the preliminary survey it was clear that the level of ICT use in road sector was either moderate or Low. Therefore even the level of enabling environment at 80-100% should be interpreted as high and not very high Institutional role indicator consisted of information about having a separate unit, tasks executed, expenditure and staff of the ICT unit. In general the institutional role indicator fluctuates around 40-50% showing a higher support institutional frame work than for enabling policy environment.

Management instrument indicator was relatively poor in all organizations with values in between 10-30%. This means very few attempts have been made use ICT for improvement of out puts through management instruments. Lower staff strength and critical mass, training of staff are the areas that need to be strengthened for increasing ICT use in the roads development work.

In case of equipment availability of for management instruments all organizations shared a reasonably high level of general ICT equipment. However, there were about 4-5 agencies function with about 30% which is rather poor compared to the status of ICT use.

There is a greater need to enhance the level of professional tool availability to enhance ICT indicator for management instruments. Only one organization reached 50% and the next best were two agencies having values between 30% and 40%. Some organizations did not indicate any availability of professional road specific equipment.

Overall indicator for organizations showed the moderate to low performance level with respect to ICT usage in the three sectors which are the enabling environment, institutional role, and management instruments. It is important to note that only three agencies had a

cumulative indicator greater than 50% of the expected value. This is a very low status when compared with the needs of the road sector development.

The respondent agencies indicated the inadequacy of ICT use at national level. Road sector ICT use status according to major organizations is close to 40%. However upon answering the question for identifying the natural trend, respondents showed a positive indication with higher values than for the status.

7.4 Recommendations

7.4.1 Road Sector Components

The study on the status of ICT usage in the major components of infrastructure development revealed that there is a relatively low usage in case of Construction. The next area of low usage is Operational and Maintenance (Figure 6.43 and 6.44). The study also identified that sub component status with respect to ICT usage.

It is important for the responsible agencies to use the ranks obtained by each category for prioritizing the interests. Based on these it is necessary to take measures to introduce new technology, methods of use etc., in to specific areas of usage where the status is weak so that it is possible to support efficient resource management.

7.4.2 Organizational Needs

Average results of the sample (Table 6.7, Fig.6.49) indicates that out of the key component of Organizational ICT usage indicators, the Institutional Role has marginally exceeded 50% whereas the Enabling Environment was next with 39% and Management instruments having 21%.

The management instruments such as professional staff strengths, resource person capability, equipment and software, appear as very weak and therefore this critical mass has to be improved by giving top priority. Also sufficient efforts should be taken to facilitate with suitable institutional environment to foster ICT usage. This can be done by

having suitable policies, budgetary allocations and other key infrastructure such as internet and e-mail facilities.

It is therefore recommended to identify sub areas as well to strengthen road sector institutions in the aforesaid major areas namely the management instruments and institutional environment. However, it is encouraging to note that the institutional role is at a reasonable stage of development with basic self capabilities and allocations.



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