Critical Success Factors in Implementing E-Rural Development Projects: A Case Study Kegalle, Sri Lanka

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***Abstract*: Well-adapted information and communication technologies (ICTs) help rural communities improve their standard of living and increase their income levels, facilitating the abolition of poverty. The study was conducted to investigate the factors influencing the success of the implementation of an e-rural development project in the Kegalle district of Sri Lanka.**

The population consists of project implementation team members who have worked full-time in Kegalle District as project managers, technical leads, project team members, or consultants on at least one e-rural development project implementation. The total population was 38 people. Questionnaires for interviews were distributed to all members and there were 22 responses received.

The relevance of critical success factors (CSF) identified in the literature survey was validated through personal interviews with selected 22 project implementation team members who work in rural e-projects. The top ten critical success factors identified in the investigation were: clear project goals/objectives, top management support, end user commitment, involvement & training, and selecting appropriate technology. Effective communication and information sharing, vendor support and commitment, leadership style (effective decision making), and a focus on demand-driven needs, technological infrastructure and realistic Schedule

The study's significance would be to identify the factors that could affect the successful implementation of e-rural development projects in Sri Lanka in order to reduce project failure, allowing for the development of strategies to ensure the success of e-rural development projects in Sri Lanka.

***Keywords:* e-rural development, ICT for Development, Critical Success Factors (CSF)**

I. INTRODUCTION

Rural areas are home to more than 70% of the Sri Lankan population. (Dep of Census & Statistics, 2019) Information and Communication Technologies (ICT) play an important role in rural development. Many ICT-based rural development projects are being implemented in order to connect the rural population, thereby improving the rural people's quality of life by providing access to better public services, learning opportunities, and information. (Kumar, A. and Singh, K.M., 2012) Most government bodies, private organizations, and non-governmental organizations (NGOs) in Sri Lanka are currently working to introduce or improve ICT-based rural development initiatives. [1]

The ICT sector has become strategically important by determining a social and economic change in developing countries. There has been a significant improvement in the last few years in terms of access to telephony, the internet and web based technologies, in both urban and rural areas. The internet can open new communication channels that bring new knowledge and information resources to rural communities. New ICTs are becoming more accessible and it has enabled users to obtain information from various sources. Today ICT has become a powerful tool for providing farmers with the required knowledge and innovative agricultural and socio-economic opportunities. It also helps overcoming the problems such as rural poverty, inequality and environmental deficiency [5]

The Information and Communication Technology Agency (ICTA) of Sri Lanka commenced its initial operations in 2005. Its vision is to take the benefits of ICT to every citizen changing the way government works. It is the main body involved in ICT policy formulation and direction for the country

ICT in rural development projects are facing sustainability issues. The sustainability of these projects is important in order to make a positive impact on the lives of rural communities. The project implementation process is extremely complex, necessitating immediate attention to a wide range of human, financial, and technical factors. E-rural development projects, like any other, have constraints in order to stay within budget, scope, and time.

According to Komasaru and Abeysekera [3]the most difficult challenges for rural ICT development projects are financial, social, and political sustainability. It also identified the most important issues as the low utilization of e-Nenasala

tele-center services and raising awareness. The study also mentions that if the needs of rural communities are not properly identified and solutions are not found immediately to ensure sustainability, the project's objectives may fail.

From the literature the IT/IS project and e-rural development/e-government project implementation critical success factors were identified. [4] A research proposition was developed based on the identified critical success factors. The respective survey was carried out to validate the success factors in e-rural development projects in the rural sector in Sri Lanka. Based on the analysis and discussions, the CSF's related to e-rural development projects in Sri Lankan rural community was identified. End-user input was obtained in order to measure the e-rural development projects post implementation success. In the respective study identified CSFs confirm that the effective rural ICT project implementations greatly depend on the human/user factors related to social, political, cultural and economic context. While the list of CSFs of C Pade et al [4] and Vimalenthirarajah [5]'s identified six CSFs for successful e-Government project implementation. The six CSFs are as follows: the top management support, Clear goals/objectives, Leadership style (Effective Decision Making), End user commitments, Realistic schedule and Effective monitoring and feedback. The effective team building and motivation, which is related to the leadership style was identified as seventh preferable CSF for the e-Government project success. Factors such as internal political desire, technological infrastructure, overall vision/strategy, dominance of politics/self-interest, strong change management, effective project management and competencies among the project team were highlighted as most important factors by Hossan et al [8] for successful e-government project implementation based on the view of the government officials of Bangladesh

As a result, it is critical to identify the actions that must be taken in order to successfully achieve the goals of rural development projects that use ICT. In this regard, the research problem guiding this study is as follows: "What are the factors influencing the success of e projects in rural Sri Lanka?

II. METHODOLOGY

Population and Sample Selection

Although the context of e-rural project implementation can be multifaceted this study used e-rural development project practitioners as the research population . The sampling units were chosen from a group of stakeholders involved in the Kegalle District e-rural development projects.

The population comprised of project implementation team members, who have been involved in at least one e-rural development project implementation, on full-time basis as Project Managers, Technical Leads, Project Team Members or Consultants in Kegalle District. Total population was 38 members in total. Interview questionnaires were distributed to all the members and 22 responses were received Thus, the response rate is 58 percent.

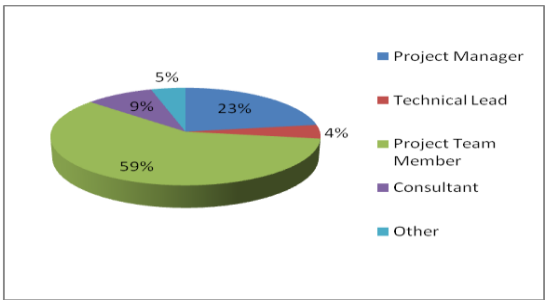

Figure 1: Respondents by category

The majority of the respondents (59 percent) were project team members. It also shows that the second largest group of respondents (23 percent) was project managers. Rest of the respondents was consultants, technical leads respectively.

III. RESULTS AND DISCUSSION

The below table represents the twenty (20) success factors identified as CSF's related to e-rural development project implementation process, along with the mean value and one-tail p-value against each factor, in the order of importance based on the ranking given by the project implementation teams.

Table 1: Analysis of Critical Success Factors for e-rural development projects

	N	Mean	Std. Deviation	Std. Error Mean
Clear Project Goals/Objectives	22	4.727	0.703	0.150
Top Management Support	22	4.455	0.671	0.143
Realistic Schedule	22	3.909	0.921	0.196
Adequate resources	22	3.682	0.716	0.153
End user commitment, involvement & training	22	4.364	0.492	0.105
Effective communication and information sharing	22	4.227	0.612	0.130
Leadership style (Effective decision making)	22	4.045	0.844	0.180
Effective monitoring and evaluation	22	3.727	0.550	0.117
Effective risk management	22	3.682	0.894	0.191
Clear policy and strategy	22	3.909	1.151	0.245
Vendor Support and Commitment	22	4.091	1.151	0.245
Effective Project Management	22	3.773	1.110	0.237
No political interference	22	3.682	1.460	0.311
Donor funding	22	3.682	1.287	0.274
Technological infrastructure	22	3.955	0.653	0.139
Change management	22	3.545	1.101	0.235
Organizational culture	22	3.727	0.703	0.150
Stakeholder management	22	3.500	1.144	0.244

Focusing on demand driven needs	22	4.000	0.873	0.186
Choosing Appropriate Technology	22	4.318	0.716	0.153

The below analysis helped identifying the critical success factors for implementing e-rural development projects.

One-Sample Statistics One-Sample t- Test

	Test Value = 3					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Clear Project Goals/Objectives	11.533	21	0.000	1.727	1.416	2.039
Top Management Support	10.168	21	0.000	1.455	1.157	1.752
Realistic Schedule	4.629	21	0.000	0.909	0.501	1.317
Adequate resources	4.465	21	0.000	0.682	0.364	0.999
End user commitment, involvement & training	12.990	21	0.000	1.364	1.145	1.582
Effective communication and information sharing	9.407	21	0.000	1.227	0.956	1.499
Leadership style (Effective decision making)	5.811	21	0.000	1.045	0.671	1.420
Effective monitoring and evaluation	6.197	21	0.000	0.727	0.483	0.971
Effective risk management	3.578	21	0.002	0.682	0.286	1.078
Clear policy and strategy	3.705	21	0.001	0.909	0.399	1.419
Vendor Support and Commitment	4.446	21	0.000	1.091	0.581	1.601
Effective Project Management	3.266	21	0.004	0.773	0.281	1.265
No political interference	2.190	21	0.040	0.682	0.034	1.329
Donor funding	2.485	21	0.021	0.682	0.111	1.252
Technological infrastructure	6.856	21	0.000	0.955	0.665	1.244
Change management	2.324	21	0.030	0.545	0.057	1.034
Organizational culture	4.856	21	0.000	0.727	0.416	1.039
Stakeholder management	2.049	21	0.053	0.500	-0.007	1.007
Focusing on demand driven needs	5.374	21	0.000	1.000	0.613	1.387
Choosing Appropriate Technology	8.632	21	0.000	1.318	1.001	1.636

Critical success factors were initially identified based on the test mean value of 3 or more and refined using the lower boundary of the confidence interval at 95% confidence level for enhanced acceptability. The "One-Sample Statistics" gives the mean values for each critical success factor.

The Clear Project Goals/Objectives has the highest mean value of 4.727, which is more than the test mean value 3. The two-tailed p-value against Clear Project Goals/Objectives is 0.000. However, one-tail p-value is also 0.000, which is significant at alpha=0.05. Therefore Clear Project Goals/Objectives is a critical success factor for e-rural development projects.

Similarly two-tailed p-value is 0.000, against the other critical success factors such as Top Management Support, Realistic Schedule, Adequate resources, End user commitment, involvement & training, Effective communication and information sharing, Leadership style (Effective decision making), Effective monitoring and evaluation, Vendor Support and Commitment, Technological infrastructure, Organizational culture, Focusing on demand driven needs and Choosing Appropriate Technology and however, one-tail p-value is also 0.000.

The One-Sample test has different p-values for each critical success factor. The above results validate that the mean values against all the above critical success factors are more than the test mean value of 3 and one-tail p-value against each factor is also significant at α=0.05. Hence all twenty factors listed above can be considered as the critical success factors for e-rural development projects

In summary, the research findings result in the formation of a list of critical success factors for e-rural development projects based on the level of importance. The findings of this research strongly indicate that all these factors have a positive impact:

1) Clear Project Goals/Objectives
2) Top Management Support
3) End user commitment, involvement & training
4) Choosing Appropriate Technology
5) Effective communication and information sharing
6) Vendor Support and Commitment
7) Leadership style (Effective decision making)
8) Focusing on demand driven needs
9) Technological infrastructure
10) Realistic Schedule
11) Clear policy and strategy
12) Effective Project Management
13) Effective monitoring and evaluation
14) Organizational culture
15) Adequate resources
16) Effective risk management
17) No political interference
18) Donor funding
19) Change management
20) Stakeholder management

IV. CONCLUSION

Possible new insight into e-rural development implementations focusing on CSF's would be to identify and manage the list of twenty CSF's identified within this research study.

The key factors considered in measuring e-rural development project implementation success, based on the order of importance are; 'Improved efficiency', 'On-budget', 'Reduced complexity of operation', 'End User Satisfaction', 'On-schedule' and 'Achievement of Project Objectives'. However, based on the respondents' feedback, two key aspects namely; 'Quality of Delivery' and 'Achievement of Project Objectives', have not been identified as very critical for e-rural development project success

When measuring the e-rural development system post implementation success, the factors 'Sustainability', 'Usage' and Intangible benefits' are considered as key factors. According to the respondents' feedback, the factor 'Political/policy decisions' is not important for measuring e-rural development system post-implementation success.

In summary, the research findings result in the formation of a list of critical success factors for e-rural development projects based on the level of importance. The findings of this research strongly indicate that all the identified CSFs have a positive impact.

The ranking developed in this study identifies 20 CSFs which should help further investigations and e-rural development implementation teams to identify possible problems and to detect the possible negative influence on the project success in an early phase. A government of any country starting e-rural development project implementations should learn to identify critical factors which are affecting the project success and ensure that the potential risks are avoided when the project management and the team members are controlling the project progress and the potential occurrence of CSFs.

The top ten critical success factors identified in the investigation were: clear project goals/objectives, top management support, end user commitment, involvement & training, and selecting appropriate technology. Effective communication and information sharing, vendor support and commitment, leadership style (effective decision making), and a focus on demand-driven needs . technological infrastructure and realistic Schedule

The study's significance would be to identify the factors that could affect the successful implementation of e-rural development projects in Sri Lanka in order to reduce project failure, allowing for the development of strategies to ensure the success of e-rural development projects in Sri Lanka.

V. LIMITATIONS AND FUTURE DIRECTIONS

A research should examine the study results and focus on different groups of stakeholders (e.g., vendors, donor organizations etc), stakeholders in different contexts, as well as how the results might change over time. E-rural development success must also consider viewpoints from other institutional and national perspectives as these may be crucial in fully understanding successful e-rural development implementations. Future studies should incorporate perspectives from leaders in various industries. These insights may reveal additional useful information regarding e-rural development implementations in developing countries.

A validation of the results would be a new investigation possibility in the field of CSFs in implementing e-rural development projects

CONFLICT OF INTEREST

The authors declare no conflict of interest.

Acknowledgement: This study was self-financed by the authors, further the authors would like to thank the respondents who participated in the study.

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