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E-District Portal for District Administration in West Bengal, India: A survey to identify important factors towards citizen's satisfaction

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Abstract

E-District Portal is one of the popular Information and Communication Technology (ICT) initiatives of Government of India to manage district administration in more effective way in place of manual system in West Bengal with the others state of India. Author(s) main objective is to explore different important factors in pilot district of West Bengal those are directly involved with the common citizen's satisfaction and contributing to citizen's behavioral change towards acceptance of e-District project, which could be a lesson learn to take more corrective action to roll out e-District services in future. A well set up questionnaires have been developed over the different related observables and conducted survey among the common citizen's randomly to get their feedback. In this study, quantitative methodology has been adopted to analyze the various observables. The Principal Component method and VARIMAX rotation options of Factor Analysis has been utilized to reduce the set of observables in order to identify key factors. The Kaiser-Meyer-Olkin (KMO) value also has been measured to check the adequacy of the collected dataset for factor analysis.

Selection and/or peer-review under responsibility of Symbiosis Institute of Management Studies.

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Contribution to the Body of Knowledge:

The primary contribution of this study is how to use factor analysis in order to find out key impact factors in E-district project by clustering different contemporary observables. There is no such research has done previously to find out key factors in e-District project in India. Thus this study is contributing to the growing body of knowledge about e-Governance and Government of India may incorporate the identified key factors for better implementation e-Governance project in future.

1. Introduction

With the growing populations and Government's initiatives to provide more and more citizens centric services, the district administration, local administration under a state in India, are facing more and more issues day-by-day. The deliveries of most of the services are taking long time because these services require the execution of different activities from various departments and the departments are not integrated properly. Finally, these are leading to the dissatisfaction of the citizens and this study reveals the following basic reason for that-

- No 24X7 help desk facility in place.
- Always taking more time in queue for receiving and submission of application form.
- In most of cases, verifications & approval process in different stages take long time.
- Sometimes it needs to re-submit the same set of information in different level of processing.
- There is no proper tracking system to know the status of application.

To mitigate all these problems, Government of India (GI) has taken a holistic initiative for district administration by transforming manual system to integrated computerized system through e-District portal. The Vision of e-District portal is to act as electronic way to provide a comprehensive Government service delivery model in one web portal like One-Stop-Shop for all the stakeholders - Common citizens, Government departments, Government bodies and Agencies. This vision also includes reducing the number of visit by citizens at Government office premises except for very few highly complex services.

E-District is most successful e-Governance initiative taken by GI under National e-Governance Project plan (NEGP). Government of West Bengal (GoWB), a state in India, has started implementing e-District portal in two districts, Bankura and Jalpaiguri as pilot. The common citizens of these two districts are availing the Government services through E-district web portal from Common Service Center (CSC) booth which is commonly known as Tathayamitra Kendra (Information Center) and Citizens Kiosks at district offices and sub division offices.

The architecture of E-District portal aim to address the following benefits:

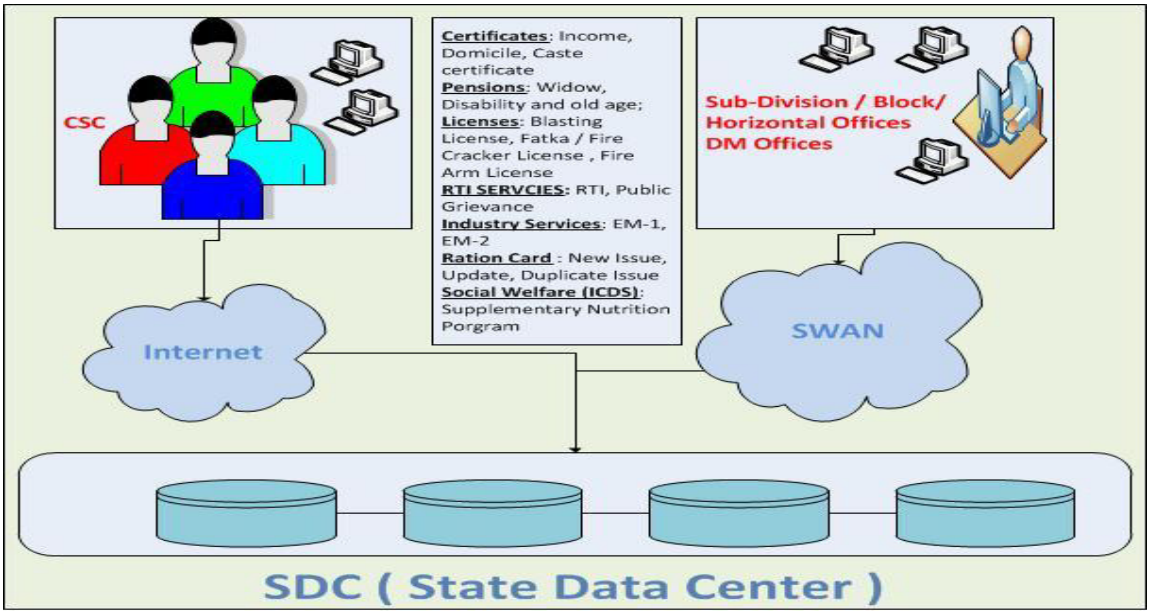
- To reach out Government services at doorsteps with minimal charges at any time
- To expedite Government service delivery with better responsiveness, transparency and accountability
- To facilitate application status tracking in Web Portal
- To revise and simplify the district administration processes with the help of complete automation in approval workflows in different level of Government administration.
- Seamless integration in between various Government offices to accelerate the inter office communication.

The services, offered by E-District portal, to the citizens through CSC / KIOSK are:

- **Certificates** : Income, Domicile, Caste certificate
- **Pensions** : Widow, Disability and old age;
- **Licenses** : Blasting License, Fatka / Fire Cracker License , Fire Arm License
- **RTI (Right to Information) SERVCIES**: RTI, Public Grievance
- **Industry Services**: EM-1, EM-2
- **Ration Card** : New Issue, Update, Duplicate Issue
- **Social Welfare (ICDS):** Supplementary Nutrition Program

The architecture of E-district portal (as shown in Fig 1) has been built on three main pillars: State Wide Area Network (SWAN), Common Service Center (CSC), and State Data Center (SDC). As an implementation strategy of e-Governance services, GI has rolled out these three projects with other mission mode projects (MMP) under the NEGP plan to establish infrastructure backbone.

Fig 1 The diagram of E-district project service delivery model



In this service delivery approach, essentially, common citizens need to visit to the CSC or KISOK to submit the applications in order to avail the Government services, offered by E-District portal. CSC is available almost in all localities across the district and acting as physical front end in e-District service model to meet all the citizens' interaction. Citizens also can visit to KISOK for the same which is now available in District Head office and Sub-division office only.

In this model, SWAN is used to provide underline network for connectivity of data among State Headquarters, District Headquarters, all the Sub-division offices, Municipalities and Panchayets (Village administrative body). SWAN is also extending connectivity of all Government offices with SDC for storing all the data in central repository. Apart from central repository, SDC also providing some key functionality like secure data storage, online delivery of services, Citizen Information/Services Portal, State Intranet Portal, Service Integration and Disaster Recovery Management etc.

2. Literature Review

Authors have done extensive literature review to cover e-Governance trends both in India and abroad. The E-District portal in India provides citizen centric services and there are very few literatures available on this topic. So, an attempt has been made to walk through existing e-Governance literatures, to find out key factors influencing citizen's satisfaction.

2.1. e-Governance trend in India

According to National e-Governance Plan (NeGP, 2006), Government of India (GI) aimed to transform all the Government activities from manual to computerized system in order to meet the commitment of providing fully ICT based Government services. To make it happen, GI has initiated 27 Mission Mode Projects (MMPs) including 10 Central MMPs, 10 State MMPs and 7 Integrated MMPs.

The Department of Electronics and Information Technology, GI (2012) has detailed the e-District projects which are aimed to accelerate the citizen centric Government services in Rural India. They have published document entitled "Integrated Framework for Delivery of Services", has described the holistic views of the application including Service Scope and Coverage, Business Re-Engineering Process and Technical Details like underline network, software, Database, Software delivery model etc.

With the other state in India, Government of West Bengal also has rolled out the e-District application in Bankura and Jalpaiguri district as pilot in the year 2010. The Federation of Indian Chambers of Commerce and Industry (FICCI), West Bengal State Council (2012) has made a rigorous study in Bankura district to analyze the project management technique which has been adopted to roll out e-District project. The study have used Fishbone analysis

to find out the root causes of different challenges in terms of Process/ Procedure, People, Technology, Delay in service delivery and Document/ Guideline.

Another research, done by Bagga, R. K. and Gupta Piyush (2009), has identified different approaches to roll out e-Governance projects in India. The main focus of the study was to find out the different critical issues, challenges of e-Governance projects and different approaches and methodologies for project assessment.

2.2. e-Governance trend in other countries

The implementations of e-Governance projects are getting success in most of the developing countries. In this context, Shirin, M. (2009) has explained about the proliferation of e-Governance projects in developing countries and their impact on local communities.

In context of e-Governance implementation in Sri Lanka, Jehan ,S. N. , Nishantha ,G. G. D. , Jehan ,S. Q. (2010), have shared their experiences that they have gathered through their practical involvement in different projects. They have highlighted different challenges and probable remedies to overcome all those challenges mainly related to transformation of any public services from manual to automation.

Bhuiyan, M. S. H. (2011) has focused on status of different e-service initiatives taken by Bangladesh Government like health service, utility bill payment, public exam result publication, e-ticketing etc. He has identified that maturity level of various e-Governance projects need to be improved by introducing sufficient infrastructures, e-payment system and digital signature etc. He has also identified some challenges in his study which are related to the deployment of e-Governance services in Bangladesh like Top management initiatives, legal issues, inadequate power supply, lack of integrity in public services which involve technical, operational, administrative and political differentials.

In a case study of e-Governance project, Kettani, D. and Mahidi A. E (2009) showed that how the Government and academic collaboration has overcome lot of challenges like organizational misbehaviors and ills of bad governance in local government in deployment process of Fez e-Government Project (eFez) in Morocco. Authors have concluded that the collaboration in academia, public administration and private sector could provide better transformative capability within Morocco and among other North African countries via the Maghreb Arab Union.

For the implementation of e-Governance projects in Nigeria, Mundy, D. and Musa, B. (2010) have enlighten details towards building up an e-Governance framework by benchmarking existing e-Governance projects in Nigeria with the UK e-Governance projects. In this study, authors have identified that Nigerian citizens are very much interested to engage themselves with Government activities through online services. Nigerian citizens are very keen to assist

Government to roll out different e-Governance projects and authors also found that the demands of citizens are more than the present facilities provided by the Government. In the proposed framework, authors have suggested to appoint a commissioner to oversee the implementation of e-Governance projects stage by stage to ensure the policy formulated in federal level are put in place. Authors also included into the framework that IT education is must needed to spread across the state Government departments and offices as well as to the civil society.

2.3. e-Governance key factors towards acceptance of e-service

In order to make successful implementation of e-Governance projects, it is very important for GI to measure different success factors of e-Governance projects in India or worldwide which could help Government to take corrective action for e-District project also.

In the context of India, Gujarathi, D. M., Patil Rakesh S. (2009) has emphasized some major factors which are responsible to make successful implementation and sustenance of different e-Governance projects for social development in rural area.

In related to e-Governance success factors Alomari, M. K., Sandhu, K., Woods, P. (2010) also have emphasized the different factors those are influencing the adoption of e-Governance in Jordan. Using the exploratory factor analysis, they identified the main factors like website design, beliefs, perceived usefulness, complexity, trust in e-Government, and trust in Government.

In the same objectives, Mofleh, S. I. and Wanous, M. (2008) have conducted survey among 660 people in Jordan to identify the important factors that Government should take special care for implementing e-Governance services in Jordan. Using the factor analysis Authors have reached to the decision that “Compatibility with e-Government “, “Trust in Internet”, “trust in Government” might play significant role to make citizens more satisfied to avail e-Governance services. This study also has highlighted that the special concentration to “e-Business activity” and “e-society” would increase the e-Governance demand to common citizens.

In the other study, Nabafu, R. and Maiga, G. (2012) also have followed the similar approaches like factor analysis to find out the important factors which are mostly identified as success factors towards implementing the e-Governance services in Uganda. In this study, the component factor loading has been observed through rotated component matrix based on the collected data from the field survey. Finally, The study has concluded with the order of different success factors of implementing e-Governance services as “Reduction on corruption”, “Faster Decision Making”, “increased Transparency “, “Communication”, and lastly “Reduction cost” .

It is very important to examine risk dimension as a part of risk assessments of IT project management. To identify

the different factors of risk dimension, authors Choudhury R. D., Banwet D. K., Gupta M. P. (2007) have conducted among 205 project managers. A factor analysis was performed with the data collected from this survey. After the study, they have identified that "System Specifications", "Project Planning", "Technology and Technical Aspects", "e-Governance Organization" and "Stakeholders" are the different five factors involved for risk dimension. Authors also have conducted factor analysis among project performance variables and concluded that "Product performance" and "Process performance" are the two factors directly impacting project performance.

3. Methodology

In this study, authors have applied quantitative method as research methodology. It has focused on all the contemporary observables related to common citizens which are extremely affecting in order to roll out the e-District project in West Bengal state, India. To carry out the research, authors have divided the methodology in two parts, 1) Data collection and 2) factors finding tools.

3.1. Data Collection

The primary data of this research has been collected through the survey process. The survey has been conducted among the citizens/CSC operators/Government officials who are related to the e-District project; either may be providing services to citizens on behalf of Government or availing the services to meet regular needs from the Government. The random sampling technique has been adopted in this research but among desire/ targeted common stake holders as purposefully.

The following techniques have been adopted to collect feedback for all observables:

Questionnaires survey: For the questionnaires survey, well-defined questionnaires had been formulated with the consideration of all observables. The questionnaires have been prepared on the basis of five point Likert scale like "Strongly Satisfied", "Satisfied", "Dissatisfied", "Strongly Dissatisfied", "Neither Satisfied or Dissatisfied". The questionnaires was circulated as a Feedback form to all and requested to respond all the questionnaires without any biasness. Authors also made testing of questionnaires among few audiences before conducting the actual survey to measure the validity of questionnaires.

Physical interview: Authors have taken face to face interview of the respondents where people were not interested to fill up Feedback questionnaires form. For this purpose, Authors have visited CSC/Kiosk offices physically to attend operators and common citizens interview those came to avail e-Governance services. Authors have attended to Government officials at District Head Quarters and State IT HUB (Webel Bhavan, Salt Lake) also to collect Feedback by taking one to one interview of them

Telephonic interview: Telephonic interview had been conducted among the common citizens who availed the

services. The telephone no. of those citizens has been collected from CSC/Kiosk offices. Feedbacks of few CSC operators also had been collected by telephonic interview.

The survey was conducted in the districts Bankura and Jalpaiguri of West Bengal, India, as Government of West Bengal had selected these two districts as pilot to roll out e-District project. The Bankura district is the fourth largest district in West Bengal and having more than 3.5 million population including 22 blocks and 3 sub-division offices viz. Bankura, Khatra, Bishnupur (Bankura District Portal).The Jalpaiguri district is the largest district in North Bengal and having more than 80 percent people in rural area among 3.8 million plus population. This district covers three sub-division viz. Jalpaiguri Sadar, Malbazar and Alipurduar with 13 different blocks (Jalpaiguri District Portal).

4. Factor Findings Method

The outcome of the survey has been quantified by five point Likert scale ranging value like -I) strongly satisfied →1, II) Satisfied→2, III) Dissatisfied→3, IV) Strongly dissatisfied →4, V) Neither→5. The aim of this study is to find out the key factors those are extremely crucial to measure the common citizen's satisfaction for availing Government services through E-District portal. In order to do that authors have used the factor analysis method using the following steps to reduce the observables into key factors.

Step 1: As a pre-requisite, Kaiser-Meyer-Olkin (KMO) measure of sampling and Bartlett's Test of Sphericity has been adopted to identify the adequacy of the collected data and the possibility of application of factor analysis among the collected data.

Step 2: The Principal Component method and Varimax rotation has been used in factor analysis to reduce observables to key factors

Step 3: Factor analysis help to remove redundant and duplicate variables from a set of correlated variables. Here, the correlation matrix has been calculated to see the co-relation in between all the observables.

Step 4: As a part of factor analysis, authors also have taken consideration of communalities to observe the proportion of each variable's variance that can be explained by the factors.

Step 5: A Scree plot and Total Variance explained matrix has been generated for observing the total amount of variance of the original variables with the help of Eigenvalue.

Step 6: Finally**,** component matrix has been used to do clustering of different observables into factors.

5. Analysis and Discussion

In order to identify the key satisfaction factors, a survey has been conducted among 148 citizens from 51 different e-District common service centers and Kiosks. The set of questionnaires was designed to measure the factors and the same has been used at the time of personal interview. The following set of Initial variables/ Observables have been

used in questionnaires to collect citizen's feedback:

1) Acceptability of Certificate, 2) e-District Awareness, 3)Certificate Issue/Get Procedure Awareness, 3) Fixed Fees, 4) Additional fees, 5) Agent Fees, 6) CSC Operator Skill, 7) Availability of Facilities, 8) Support Timing, 9) Attend to Govt. Office, 9) Physical Attendance to police Station, 10) Physical Attendance to CSC, 11) Apply Time, 12) Verification Time, 13) Certificate Issue Time.

The aim is not to continue with the all above observables, rather to explore the most sensible one from the 15 initial observables. For this resolution, the widely used statistical method –Factor Analysis has been conducted to identify complex interrelationships among the observables and cluster them into few key factors. In this study, authors are intended to identify only five key factors from 15 observables. As all the considered observables are independent with each other, the Varimax rotation method has been used to measure variance among all the observables. After execution of factor analysis with Principal Component Analysis as method, the Kaiser-Meyer-Olkin (KMO) value is 0.632 (Fig 2). As KMO value more than 0.5, it can be concluded that the selected dataset for this analysis meet the desired adequacy of data to perform this factor analysis.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.632
Bartlett's Test of Sphericity	Approx. Chi-Square	248.594
	df	105
	Sig.	.000

a. Based on correlations

Fig. 2 : Kaiser-Meyer-Olkin (KMO) Measure of sampling

In Fig 3, table "communalities" demonstrates the variance of all 15 observables that have been accounted for the 5 key factors. It can also be interpreted the communalities in terms of the percent of variance in all the 15 observables accounted for the identified 5 factors.

Communalities

	Raw		Rescaled	
	Initial	Extraction	Initial	Extraction
Aceptibility of Certificate	.672	.302	1.000	.450
E-Distrct Awareness	.965	.631	1.000	.654
Ceritficate Issue/Get Procedure Awareness	.937	.710	1.000	.758
Fixed Fees	.775	.474	1.000	.612
Additional fees	.740	.428	1.000	.578
Agent Fees	.706	.494	1.000	.700
CSC Operator Skill	1.024	.725	1.000	.708
Availability of Facilities	.629	.250	1.000	.397
Support Timing	.700	.541	1.000	.774
Attend to Govt. Office	.875	.548	1.000	.627
Physical Attendance to police Station	.961	.711	1.000	.739
Physical Attendance to CSC	.693	.448	1.000	.646
Apply Time	.543	.331	1.000	.611
Verification Time	.802	.494	1.000	.616
Certificate Issue Time	.514	.317	1.000	.616

Extraction Method: Principal Component Analysis.

Fig 3 Communalities value of different observables

Fig 3 shows the variances of 15 observables and the largest variance is for "Support Timing" (77.4%) while the lowest is for "Availability of Facilities" (39.7%).

In Fig 4, Scree Plot has been shown where the y-axis is referring Eigenvalues and the x-axis is referring the different factors. From the downward curve, it is very much clear that three factors are quite good as having Eigenvalue above 1 and two are just below Eigen value 1, also could be considered as factor.

Fig 5 depicts that the first five components contribution on the sample variance is 64.194%.

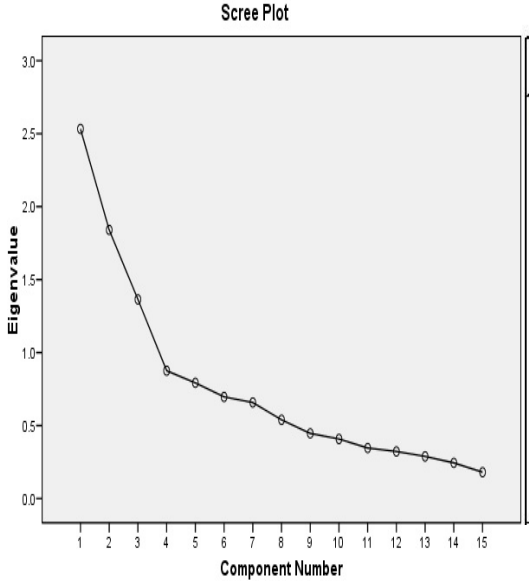


Fig 4 Screen Plot

Total Variance Explained

		Initial Eigenvalues[a]			Extraction Sums of Squared Loadings		
	Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
Raw	1	2.532	21.953	21.953	2.532	21.953	21.953
	2	1.840	15.953	37.906	1.840	15.953	37.906
	3	1.364	11.827	49.733	1.364	11.827	49.733
	4	.876	7.591	57.323	.876	7.591	57.323
	5	.793	6.871	64.194	.793	6.871	64.194
	6	.696	6.037	70.231			
	7	.658	5.704	75.935			
	8	.539	4.676	80.610			
	9	.446	3.870	84.480			
	10	.408	3.537	88.017			
	11	.346	3.000	91.017			
	12	.323	2.796	93.813			
	13	.289	2.503	96.316			
	14	.245	2.120	98.435			
	15	.180	1.565	100.000			

Fig 5 Total Variance Explained

Finally, Fig 6 shows the resultant component matrix of the factor analysis. Based on the loading value, authors have clustered 15 observables into 5 key factors. The identified factors have been listed in the Table 1.

Fig 6 Component matrix to show loading of different observables

Component Matrix[a]

	Rescaled Component				
	1	2	3	4	5
Aceptibility of Certificate	.110	.566	-.168	-.240	.180
E-Distrct Awareness	.245	.694	-.258	.117	.177
Ceritficate Issue/Get Procedure Awareness	-.029	.696	-.441	-.267	-.085
Fixed Fees	-.234	.490	.470	-.091	.296
Additional fees	.461	.345	.431	.030	-.242
Agent Fees	.343	.319	.354	.347	-.484
CSC Operator Skill	.765	.161	-.281	-.068	-.114
Availability of Facilities	.026	.047	-.302	.350	-.425
Support Timing	.195	.069	-.417	.720	.199
Attend to Govt. Office	.708	-.342	-.007	-.086	.033
Physical Attendance to police Station	.776	-.321	-.059	.053	.168
Physical Attendance to CSC	.627	-.185	-.042	-.181	.429
Apply Time	.120	.322	.498	.377	.320
Verification Time	.539	.117	.371	-.319	-.269
Certificate Issue Time	.221	.266	.612	.241	.253

Extraction Method: Principal Component Analysis.
a. 5 components extracted.

Table 1 Five identified factors based on different Observables

Sl. No	Factor Name	Observables Variable
1	Physical Presence of Applicant	Attend to Govt. Office, Physical Attendance to police Station, Physical Attendance to CSC Verification Time, SC Operator Skill
2	E-District Awareness	E-District Awareness, Certificate Issue/Get Procedure Awareness, Acceptability of Certificate
3	Service Cost	Fixed Fees, Additional fees, Agent Fees
4	Support availability	Availability of Facilities, Support Timing
5	Apply and Certificate Issue Time	Apply Time, Certificate Issue Time

6. Conclusion and Findings

It has been observed that the E-District is helping out to citizens to get Government services at door step at any time and faster delivery than the previous manual process. However, there are few challenges persist where Government should stretch more attentions to make it grant success. In this study, using factor analysis it has been identified that

Physical Presence of Applicant, E-District Awareness, Service Cost, Support availability, Apply and Certificate Issue Time are major critical factors which are seriously threatening the successful implementation e-District portal in West Bengal. Other than these key factors, authors have also identified that the e-District portal need to be more user friendly to encourage common citizen's in order to apply online and this can be possible by incorporating user friendly features like smooth document upload, flawless data entry provision, all time portal availability, proper user guideline etc.

7. Limitation

The main limitation of this study is that only Pilot districts Bankura and Jalpaiguri have been considered for survey. The analysis result of the study might be more robust if size of the sample could be increased by considering more districts in India. The web survey also needs to be incorporated to get feedback from the citizens who are availing service online using own facilities without visiting to CSC/KIOSK center. Though, this type of users is very less in number due to lack of Internet facilities in rural areas. Authors also have limited this study into five factors only instead of finding factors having Eigen value more than 1.

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