Redefining IT-Initiatives in Difficult Geographies (*A Case Study of Uttarakhand, a Hill State in the Central Himalayan Region in India, Asia)*

K. K. Ghanshala
Chairman
Graphic Era University
Dehradun

Durgesh Pant
Professor
Uttarakhand Open University
Dehradun

ABSTRACT

There have been attempts made by several organizations, nations and states to take leverage of Information Technology's ever expanding application-spectrum. These deliberate attempts are Information Technology Initiatives or IT-initiatives. As a consequence, the world over, there have been efforts to launch IT Initiatives in almost all the areas of human endeavour and sustenance. However, asymmetries with regard to access and equity happen to be extremely crucial in the difficult geographies of the world. Uttarakhand in the north Himalayan region in India (Asia) provides an interesting test bed to study IT-initiatives, awareness and their effectiveness.

General Terms

IT-Initiatives

Keywords

Difficult geographies; IT-Initiatives; Uttarakhand

1. INTRODUCTION

The way Information Technologies have changed the world is truly amazing. No doubt, it has great transformational prowess. The human society has been immensely impacted by the agriculture and industrial waves in its long journey but the information wave that swept across the planet in the 20th century, no doubt has produced an indelible mark on it [1]. The impact simply has been overpowering. In the long list of inventions that took place in last 25 years -The 'Internet' tops the list. Keeping in view its dynamic attributes the way information changed the world it was perceived to be used as 'information as a verb' [2]. The advent of the Internet and recent developments of technologies have opened the gate for greater democracy, inviting at the same time the reconsideration of our democratic processes [3]. Digital technologies are thought to hold promise as a mechanism facilitating alternative channels of civic engagement exemplified by political chat rooms, remote electronic voting in elections, plebiscites and the mobilization of virtual communities, thereby revitalizing levels of mass participation in public affairs [4]. This view was certainly popular as the Internet rapidly expanded in the United States during the mid-1990s and the radical potential of digital technologies for democracy continues to be expressed by enthusiasts today [5]. Little wonder that over the years the economies world over are fast becoming as Information Economies. Over the years, it has blended seamlessly into our psyche, and there are hundreds

of tasks we do every day that we just don't think about anymore like making a simple phone call, answering an email, video chatting with someone from across the globe, paying bills, automating tasks, finding information [6].

According to the Paquet, governance may be defined in a general way as the manner and mechanisms by which resources are coordinated in a world where power and knowledge are increasingly distributed [7]. The rise of electronic governance then denotes processes of coordination made possible or even necessary by the advent of technology, and particularly the spreading of online activities [8]. An initiative is a deliberate attempt on the part of an individual, society or government to carry out specific objectives. It is an endeavour to achieve the so-far-unattained objectives. Any initiative is taken for the larger welfare of the society and they are assumed to be aimed at strengthening the grassroots of any society. It facilitates in bringing about a transformational impact for the welfare of one and all. Since it is a deliberate attempt therefore, needs special emphasis and push.

The way the metamorphosis has taken place the world over in terms of different socio-political, scientific dimensions IT-initiatives, their planning and strategies have become extremely crucial. The use of IT-initiative has become so wide spread and all pervasive that it has become important to include it as a prime component of any development planning. It is in this light that issues related to IT-initiatives have been studied in this paper.

The IT initiatives are crucial for putting any state or nation on a global map. These initiatives are considered to be the prime factors for sustainable development, not only as a means for automation of work processes in business and industry, a tool for education and scientific collaboration, and a platform for technological innovation, but also for contributing to democratic empowerment [9]. Information systems play a powerful role for governments and citizens aiming at the collective decision-making and the reduction of democracy's shortcomings [10]. Given the potential impact of IT initiatives, pertaining to the social and economic development, governments strive towards making the benefits of IT initiatives available to the masses.

2. UTTARAKHAND's IT-INITIATIVES

Uttarakhand is a land of diversity. This diversity spans across culture, tradition, language, geography and the economic conditions of the people. It is a state that has a significant number of people living in far flung geographically difficult hilly areas. With It is located in the northern part of India bordering China (Tibet) on the north, Nepal on the east and the states of Uttar Pradesh to the south, Haryana to the west and Himachal Pradesh to the North-West.

There have been several IT-initiatives launched by the state of Uttarakhand. These initiatives range from the IT-awareness to capacity building, IT-infrastructure development to e-Governance initiatives. A few initiatives have been taken for the present study. These include the following:

- Project Aarohi: To provide IT- Awareness to the school children
- Project Shikhar: IT- Workforce creation in the Colleges / Universities
- Project Janadhar: To provide Citizen centric services
- Computerization of Government Departments: Govt. departments' automation
- Uttara Portal: Creation of the official Portal of the State
- e-Governance projects of the state : Bringing different line departments of the state

within the ambit of e-Governance

- Project SWAN: State wide Area Networking

The peculiar geographical, social, educational and economic coordinates prevailing in Uttarakhand makes it a formidable research test bed for the study of IT-initiatives. Application deployment, network topologies, architectures, technological readiness and awareness, implementation and successive updation and maintainability are extremely important factors. Any IT- Initiatives which could be implemented in Uttarakhand can be easily replicated elsewhere on the compatible lines.

material on each page should fit within a rectangle of 18 x 23.5 cm (7" x 9.25"), centered on the page, beginning 2.54 cm (1") from the top of the page and ending with 2.54 cm (1") from the bottom. The right and left margins should be 1.9 cm (.75"). The text should be in two 8.45 cm (3.33") columns with a .83 cm (.33") gutter.

3. RESEARCH DESIGN

Primary Data was collected through Survey method and the instrument used was questionnaire. The questionnaire consisted of two sections. In first part, Demographic questions were asked which consisted of age, gender, residence, education and income.

The second part consisted of 30 questions related to IT and its awareness. Respondents were asked to mark appropriate answer on the scale from 1(agree) to 3(disagree) which indicate to what extent they are in confirmation with the statements.

The Questionnaire was administered to 3000 respondents using convenient sampling method. 2907 out of 3000 were found to be valid and complete.

3.1 Establishing reliability and validity

The validity of the questions were confirmed by two experts of the field. To establish the validity of the instrument Cronbach alpha was used.

Table 1. **Reliability Statistics**

Cronbach's Alpha	N of Items
.689	30

The cronbach value can be rounded off to .7 and hence the questionnaire is reliable.

3.2 Normality Test

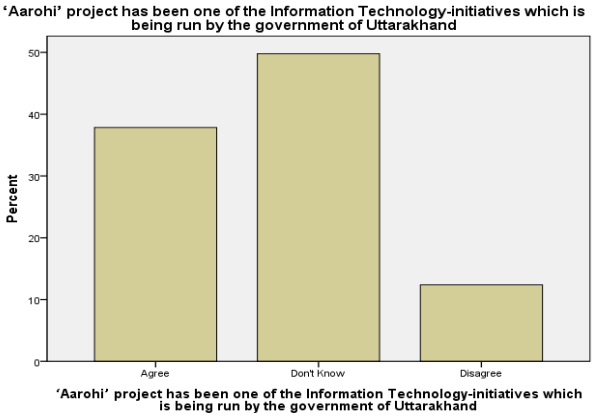
The data was found to significantly deviate from the normality assumption hence non parametric tests were used for data analysis.

4. DATA ANALYSIS AND INFERENCES

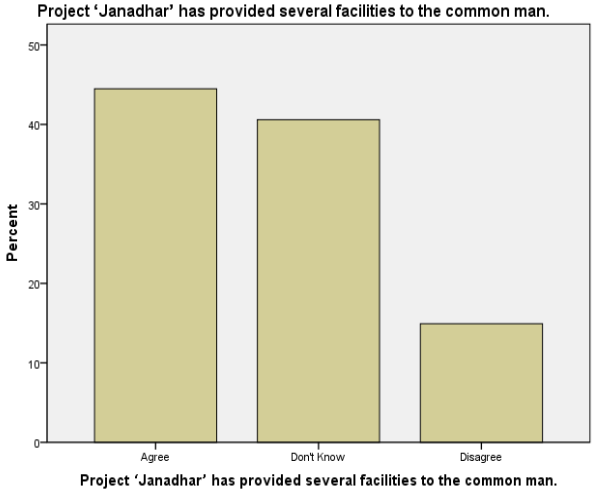
The present paper has revealed the gaps between two sides G (government) and C (citizens). Government devises schemes but effort is insufficient to make the citizens aware of these schemes or their benefits.

The following findings have been found to be generally true, whether we see them from the point of view of Age, Gender, Residence and Educational profile. Thus their applicability is uniform.

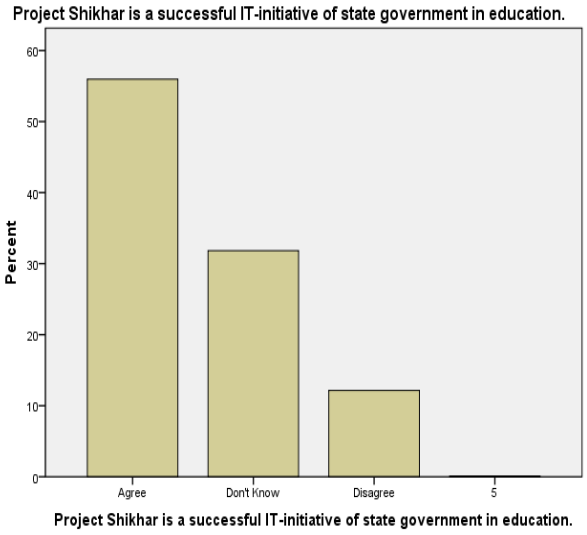
- The Awareness about various IT initiatives of the government is clearly missing. Respondents were not aware of many schemes like Aarohi, Janadhar, Shikhar etc.



Graph 1

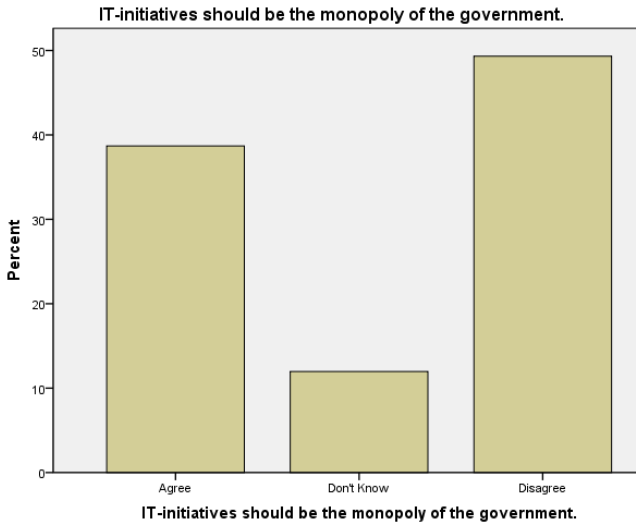


Graph 2



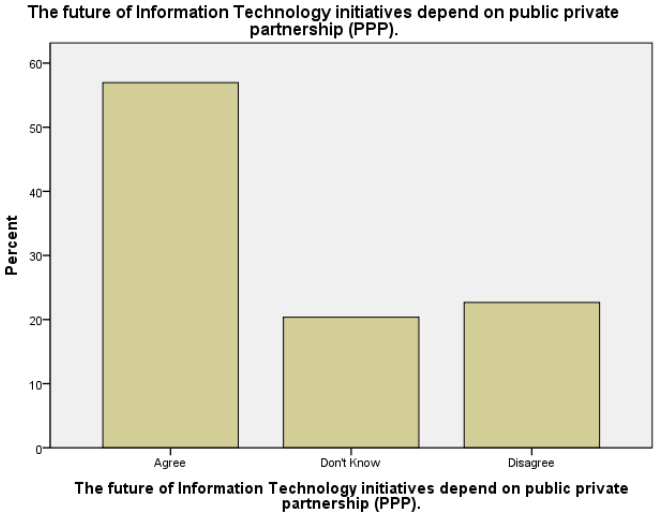
Graph 3

- A clear majority believes that the Connectivity should not be only government owned. People foresee private participation.



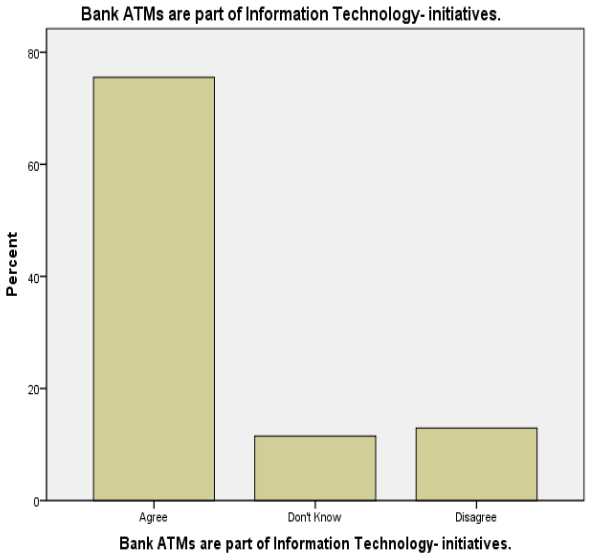
Graph 4

- People are also fed up of inefficient implementation of IT schemes, and want public- private model.

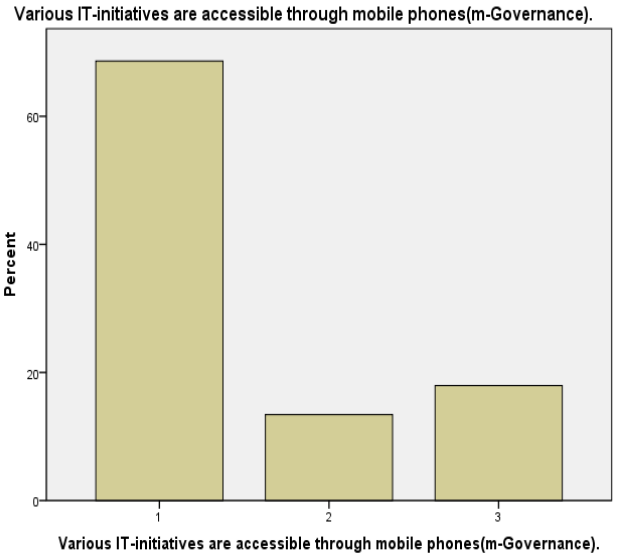


Graph 5

- People foresee the usage of Internet, ATMs and Mobile phones to spread e-governance.

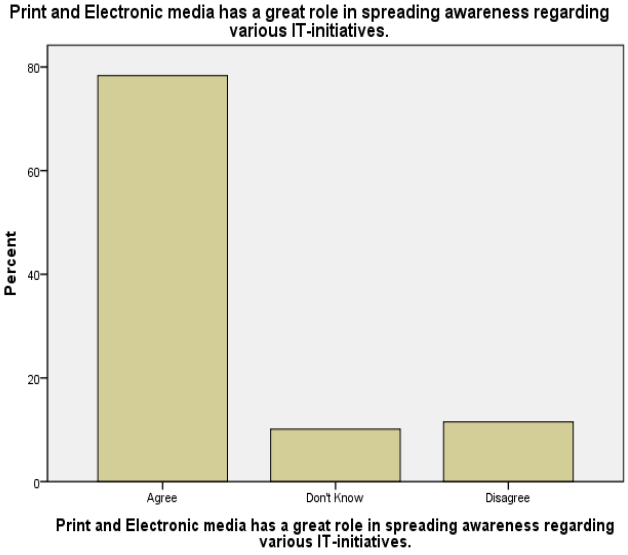


Graph 6



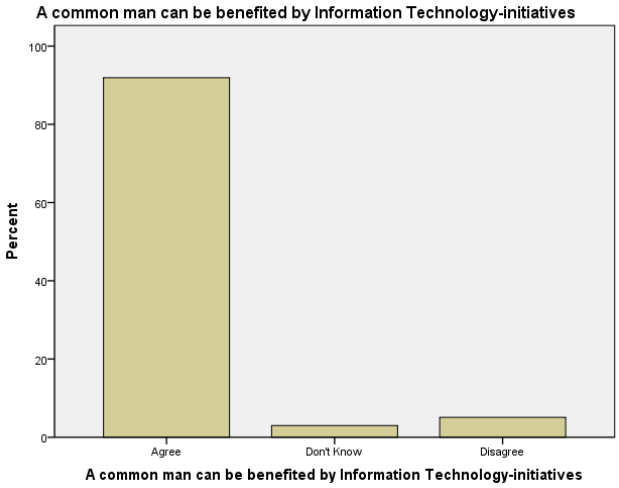
Graph 7

- Print and visual media are seen as very effective medium to reach out to large number of people in the community.



Graph 8

- Almost everyone agrees that IT initiatives are beneficial for the common man. IT applications have been in the public domain for so long now, that their usefulness is well accepted and taken for granted. This is a huge advantage where the government need not spend time or resources on creating an acceptance. There is no difference in the opinion of man or women in with respect to this finding.



Graph 9

Table 2. Mann-Whitney U Test Statistics[a]

	A common man can be benefited by Information Technology-initiatives
Mann-Whitney U	922003.000
Z	-.554
Asymp. Sig. (2-tailed)	.580

a. Grouping Variable: GENDER

Mann- Whitney Test was used to find and differences among gender regarding benefits of IT. The sig value = .580 which is greater than .05 hence there is no statistically significant difference between the opinions of both genders with mean rank of Male being 1451.17 and 1459.87 of female.

- A large majority of respondents are aware of the IT initiatives run by the government. This awareness level decreases as the age grows. The youngsters are most aware. This implies that those above 25 are not so much aware, though they are the main users who actually use the e-governance applications which means there should be targeted awareness campaigns for this age group.

Table 3. Kruskal Wallis Test Statistics[a,b]

	'Aarohi' project has been one of the Information Technology-initiatives which is being run by the government of Uttarakhand	Project 'Janadhar' has provided several facilities to the common man.	Project Shikhar is a successful IT-initiative of state government in education.
Chi-Square	10.228	8.897	14.508
df	2	2	2
Asymp. Sig.	.006	.012	.001

a. Kruskal Wallis Test

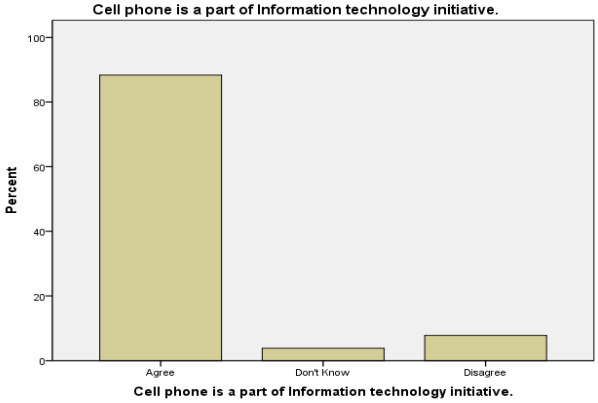
b. Grouping Variable: AGE

Kruskal – Wallis Test was performed to see if different age groups possess different IT awareness. The sig value of questions related to Janadhar, Shikhar and Aarohi projects are less than .05 hence there exist a significant statistical difference among the age groups. The mean rank distribution of all three questions shows that it is highest for Below 25 age group.

- Cell phone is accepted as part of IT initiative by a large majority. This is a breakthrough finding. The future belongs to m-computing. A person in remote area may not have a landline phone, a bank account, not even regular electricity, but will have a cell phone for connectivity.

Thus, cell phone can be used:

- to create awareness about IT applications, and
- to create thin client applications to provide interface to e-governance applications.



Graph 10

- The visibility of 'Aarohi' project under which Computer laboratories are being built for schools was known to just 1/3rd of the respondents. Government can popularize this measure to gain public appreciation.

Table 4

'Aarohi' project has been one of the Information Technology-initiatives which is being run by the government of Uttarakhand

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	1100	37.8	37.8	37.8
	Don't Know	1447	49.8	49.8	87.6
	Disagree	360	12.4	12.4	100.0
	Total	2907	100.0	100.0	

- Project "Janadhar", which is an important touch point also has not found acceptance. It needs visibility.

Table 5

Project 'Janadhar' has provided several facilities to the common man.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	1293	44.5	44.5	44.5
	Don't Know	1180	40.6	40.6	85.1
	Disagree	434	14.9	14.9	100.0
	Total	2907	100.0	100.0	

- Bank ATMs are seen as an IT initiative by majority. Thus ATM machines can be the tool to provide access to several government schemes. Along with Cell Phones, ATMs, which are now available in corners of the State, can be used as major e-governance clients.

Table 6

Various IT-initiatives are accessible through mobile phones (m-Governance).

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1995	68.6	68.6	68.6
	2	390	13.4	13.4	82.0
	3	522	18.0	18.0	100.0
	Total	2907	100.0	100.0	

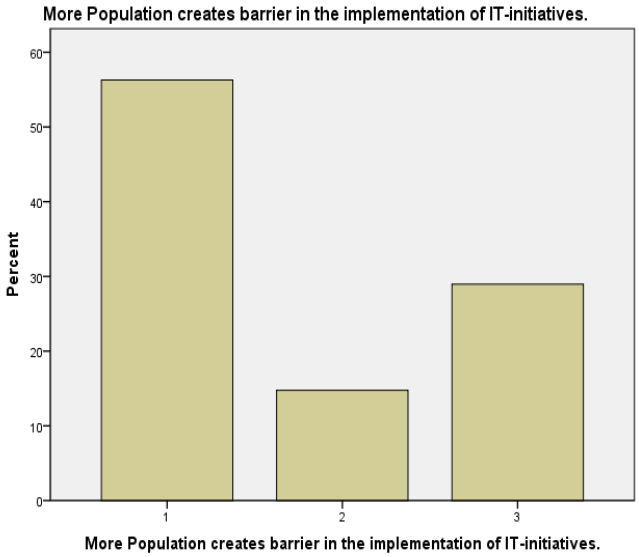
Table 7

Bank ATMs are part of Information Technology-initiatives.

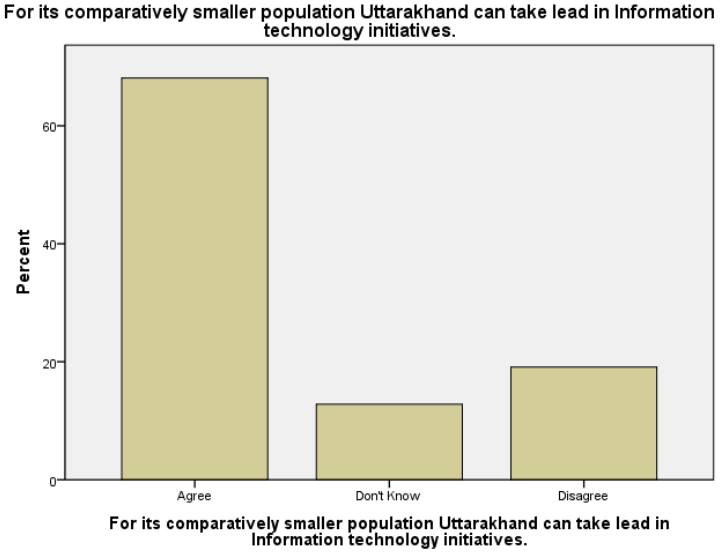
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	2196	75.5	75.5	75.5
	Don't Know	335	11.5	11.5	87.1
	Disagree	376	12.9	12.9	100.0
	Total	2907	100.0	100.0	

- About two third of the respondents believe that due to its comparatively smaller population, Uttarakhand can take lead in Information technology initiatives. This is a very positive sentiment and should be en-cashed by the government.

Interestingly, from global to national level implementations this point has found a firm footing.

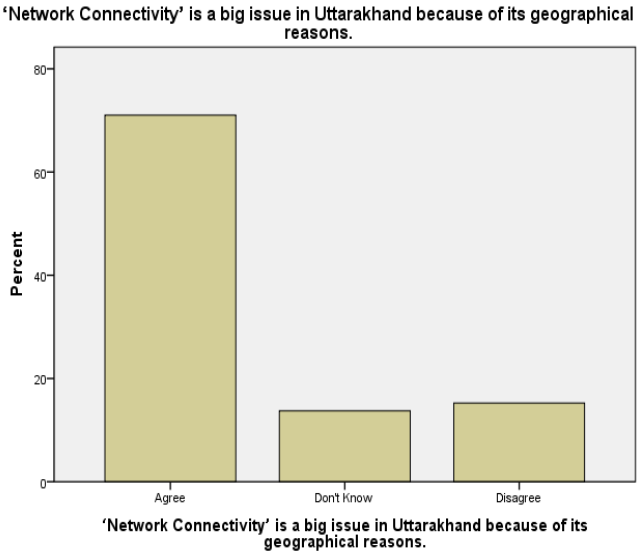


Graph 11



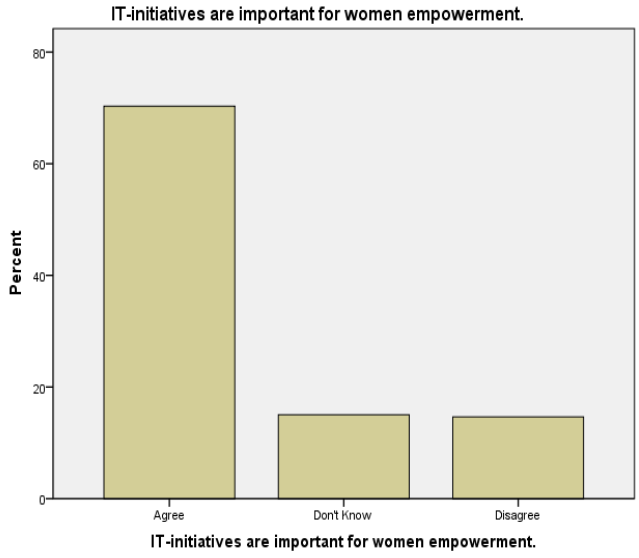
Graph 12

- People also realise that network connectivity issues are due to geographical reasons which shows people are mature and they understand the limitations.



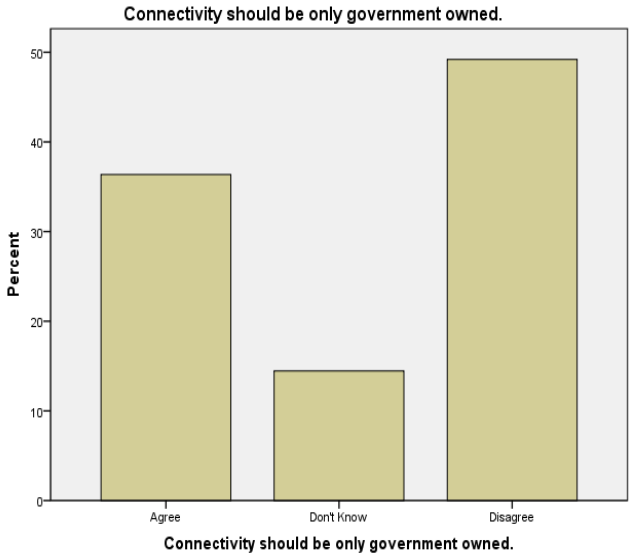
Graph 13

- People also felt that IT was a tool for women empowerment. It reduces the gender gaps and empowers women. Thus it makes sense to spread IT, if women are to be developed, and the society has to grow.



Graph 14

Less than half the respondents believe that IT-initiatives should be the monopoly of the government. There are clear indications that people foresee a role of private players. They believe that the government has failed, and only efficiency of private enterprise can redeem the status quo. The government must seriously look at private participation. The future of Information Technology initiatives depend on public private partnership (PPP).



Graph 15

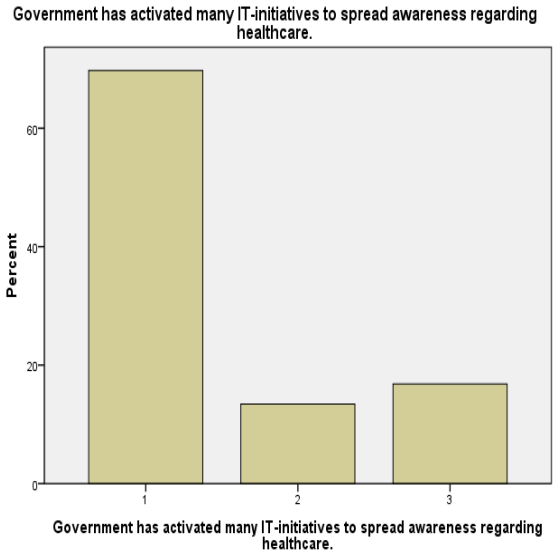
- People firmly believe that Internet is a powerful medium. Its power and reach can be innovatively used.

Table 8

Present time belongs to Internet.

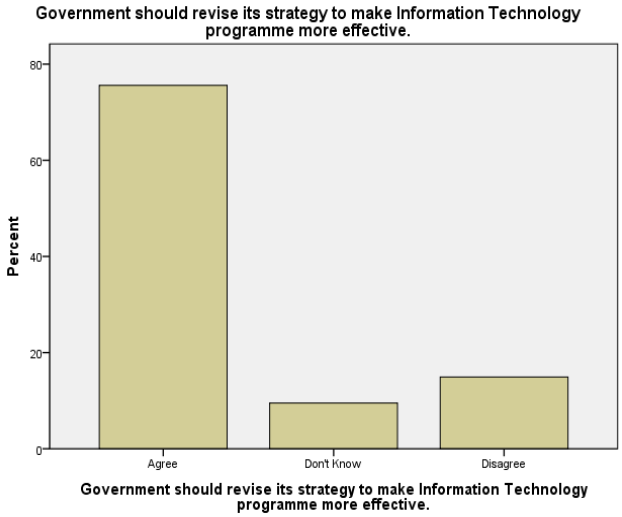
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2420	83.2	83.2	83.2
	2	203	7.0	7.0	90.2
	3	284	9.8	9.8	100.0
	Total	2907	100.0	100.0	

- Government IT-initiatives to spread awareness regarding Healthcare have been well accepted. Perhaps lessons could be learnt from there. People have also appreciated computerization of Land Records as a very beneficial step.



Graph 16

- 56.3% agree that government should revise its strategy to make Information Technology programme more effective.



Graph 17

5. DISCUSSION

The study reveals many important factors peculiar to difficult geographies some of them are discussed below

The rural urban divide

The results of a large body of research indicate that this division or classification introduce distortions in the economic systems, cause large income transfers away from the rural sector, and, ultimately, lead to slower agricultural and overall economic growth.

As India is a developing country its urban areas are full, beyond capacity. In contrast, urban areas in United States have seen a reversal as people - due to crime in urban areas - have relocated to the suburbs. In India despite all the issues that are prevalent in urban areas city life is still better than life in a village. Rural to urban migration is a contributing factor to the growth of the urban populations.

It is mostly seen that difficult geography and Rural settlement go hand in hand.

Women Empowerment

Though it is gradually rising, the female literacy rate in India is lower than the male literacy rate. Compared to boys, far fewer girls are enrolled in the schools, and many of them drop out. According to the National Sample Survey Data of 1997, only the states of Kerala and Mizoram have approached universal female literacy rates. According to majority of the scholars, the major factor behind the improved social and economic status of women in Kerala is literacy.

Women and men must therefore be treated equally for any initiative to succeed specially in difficult geographies.

Educational leverage

Difficult geographies inhibit the flower of education to bloom in its glory which is a major catalyst for the process of progress. Therefore the key to successful implementation of any policy in difficulty geography is education.

6. CONCLUSION

It is clear that awareness of government schemes is a key failure factor. Thus, when the schemes are being devised, sufficient planning and budget must go into the promotion of those schemes.

The project owners of the Application should also evaluate the best possible technological options to make the application user-friendly, stable, and secure. For this, in view of the already existing technology options available, the government agencies could use Mobiles, Internet Cafes, ATMs and other computer centres.

The government could engage with the telecom companies, Banks and Computer Centre owners in a Public Partnership (PP) model. Once the technological backbone is established and, all the government applications could ride on that.

This sharing of infrastructure will further reduce cost to both government and the citizens as users and would be a win-win for both.

7. ACKNOWLEDGMENTS

To all those participants who took part in the survey work diligently across the length and breadth of a difficult geography.

8. REFERENCES

[1] Friedman T, 2005 The World is Flat, ' A Brief History Of Globalized World In The 21st Century'

[2] Gates, B. , 1999 Business @ the speed of thought, Succeeding in the digital economy, Penguin Books, 1999, Page no. 15

[3] Shi, Y., and Scavo, C. 2000 Citizen participation and direct democracy through computer networking, Handbook of public information systems (pp. 247-263).

[4] Barber, B. R. 1998. Three scenarios for the future of technology and strong democracy. Political Science Quarterly, I(4), 573-589.

[5] Gilder, G. 2000. Telecom: How infinite bandwidth will revolutionize our world. New York: Free Press.

[6] Smith, R. Digit, July 2012, Page 1

[7] Paquet, G. 1997. States, communities and markets: The distributed governance scenario, The nation-state in a

global information era: policy challenges the Bell Canada Papers in economics and public policy (Vol. 5, pp. 25-46). Kingston: John Deutsch Institute for the study of economic policy.

[8] Allen, B., Juillet, L., Paquet, G., & Roy, J. 2001. E-government in Canada: People, partnerships and prospects. Government Information Quarterly, 30(1), 36-47.

[9] Potter R. B., Binns, T., Elliott, J.A., Smith, D. 1999. Geographies of Development. Pearson Education Limited, London.

[10] Bozinis I. 2007, Internet Politics and Digital Divide Issues: The Rising of a New Electronic Aristocrats and Electronic Meticians, Journal of Social Sciences 3 (1): 24-26.