

Factors Influencing Outcome Expectations and Self-Efficacy in Driving Internet Use in Rural India

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Factors Influencing Outcome Expectations and Self-Efficacy in Driving Internet Use in Rural India

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Abstract

Past studies of individual Internet adoption and usage have been mostly empirical and in developed countries or in urban settings of developing countries. These have largely examined socio-economic factors such as age, earnings, education, in driving adoption and use. Several of the past studies were done at a time when the Internet was a novelty and was primarily considered as a source of information for enhancing knowledge. Over time, with developments in social media and ecommerce, Internet is considered an effective medium for social networking, enabling knowledge creation and exchange and enhancing economic benefits. Using theory of social capital and social cognition helps us to understand the drivers of Internet use from the perspective of outcome expectations and self-efficacy along the social, economic and knowledge dimensions. The primary research question is: What factors drive outcome expectations and self-efficacy in Internet use?

Our study is based on a survey in two rural areas (Ranchi, Jharkhand, India) and (Guna, Madhya Pradesh, India). We used theory to develop a survey instrument on Internet users for understanding the drivers of Internet use based on outcome expectations and self-efficacy. We used data from the Principal Component Analysis (PCA) done previously, to identify the latent constructs as measures of outcome expectations and self-efficacy (Jain, 2016). Using ANOVA, the current study identified the differential across Age, Occupation, Digital Literacy, Earning, and Education on dimensions uncovered by PCA and related the findings to the rural context in a developing country.

The PCA revealed three dimensions that were labelled as 'Empowerment', 'Enhanced Scope of Work' and 'Transaction Efficacy'. There are statistically significant differences across those who are at different levels of Digital Literacy and Earnings and for 'Transactional Efficacy', in the two groups identified by type of Occupation as 'Business' and 'Others'. Along the other two dimensions of 'Empowerment' and 'Enhanced Scope of Work', there is no statistically significant difference across these two categories of Occupation. Further, there are no statistically significant differences across different categories of Age and Education.

Our results indicate that while a basic level of education may determine whether a user adopts Internet, once the user starts using the Internet with a goal orientation in terms of outcome expectations and self-efficacy, 'Education' level does not matter. A similar logic applies to 'Age'.

Since digitally literate users tend to have positive outcome expectations from Internet use, they may benefit far more than those who are not Digitally Literate. Therefore, public policy must not only focus on increasing Internet availability specifically in rural areas, there must be programs for increasing digital literacy as well. Without such support programs, Internet use outcomes would exclude those who are not as digitally literate. Since Internet is increasingly becoming the vehicle for economic growth, such exclusions could slow inclusive growth.

Those with higher incomes had possibly higher levels of negative disconfirmations with Internet use than those with lower incomes. A similar logic applies for the ‘Transactional Efficacy’ component in the ‘Occupation’ category. The study identifies the possible drivers for the disconfirmations.

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INTRODUCTION

Internet deployment in developing countries is a challenge. The problem is exacerbated in rural areas of developing countries. In India, government has supported Internet access in rural areas through several policy initiatives, including provision of subsidized PCs and connectivity. The accelerated growth in Internet adoption and usage is being driven by non-metro and rural areas where wireless Internet over mobiles is the predominant mode of access. Rural users are able to access internet over mobiles due to the availability of low cost smartphones, low tariffs due to competition and increasing awareness of popular apps such as Whatsapp, Facebook etc.

Besides access to knowledge and economic opportunities, the Internet forms the basic tool for governance, especially in rural areas, where people's access to institutions is limited, due to poor physical and institutional availability. This gap leads to both inefficiencies in service provision and exclusion from knowledge, economic opportunities and governance. Availability of infrastructure for access to Internet is a major gap. Where access is not a significant issue, affordability is a concern.

Rural contexts of poor access to markets and physical infrastructure reduce the ability to access social and knowledge networks. This makes it imperative to study the extent to which Internet adoption and usage helps to overcome these barriers. The lower education profile and digital literacy in villages could influence this outcome. Further, studies have indicated that age, occupation, and earnings are factors that could lead to differential use of Internet.

Past studies of individual Internet adoption and usage have been mostly empirical and in developed countries or in urban settings. These have largely examined socio-economic factors such as age, earnings, education, availability of Internet in driving adoption and use. Several of the past work was done at a time when the Internet was a novelty and was

primarily considered as a source of information (enhancing knowledge), but over time, with developments in social media and ecommerce, Internet is considered an effective medium for social networking and enhancing economic benefits. Thus, it is important to study drivers of Internet use not only based on empirical aspects, but also understand this phenomenon from a theoretical perspective. Using theory of social capital and social cognition helps us to understand the drivers of Internet use from the perspective of outcome expectations and self-efficacy. The primary research question is: *How do the outcome expectations and self-efficacy drive Internet use and what factors influence it?*

Why study rural individual Internet use?

Previous empirical studies on adoption and use of Internet have focused on developed countries with the unit of analysis being households (HH) or organizations. Few studies have focused on individuals and understanding what drives Internet use.

In the past, studies in developed countries have focused on HH or organizations as Internet was usually provided over fixed line services. The paucity of fixed line connectivity in developing countries and more so in rural areas is also a trigger for adoption of wireless/mobile Internet in rural areas. The availability of Internet over mobile makes it imperative to study Internet adoption and usage at the individual level. Past studies of individual Internet adoption and usage have been in developed countries or in urban settings. With mobile Internet penetration increasing in rural areas, it has become important to study Internet adoption and usage in this context. This is so because:

1. Poor state of physical infrastructure could drive Internet use very differently than in urban areas. For example, the social need to connect virtually in the absence of proper roads may be greater in rural areas. As another example, poor access to markets may make market information more valuable for rural areas.
2. The education and income profile which is considered as a determinant of Internet adoption and usage may be very different in rural areas.

LITERATURE SURVEY

Studies have indicated factors like age, race, gender, income, education, communications need, media habits, technology friendliness, interest, mediation of others, relevance, and House Hold (HH) dynamics etc. as the drivers of adoption (Balboni, et al, 2011; Dwivedi and Lal, 2007; Hoffman and Novak, 1998; Keegan Eamon, 2004; Rice and Katz, 2003; Romero and Margolis, 2005; Selwyn, et al, 2005), and being a student (Balboni, et al, 2011) as the most important factors in Internet adoption at the individual and HH level. Influence of friends, family, and secondary information sources have been found to have a positive relation to the adoption of Internet at the HH level (Choudrie and Dwivedi, 2005). Faster access to Internet, always-on and, un-metered access, the lack of content and applications, and the lack of needs have also been found to influence the usage of Internet at the HH level (Choudrie and Dwivedi, 2005).

In developed countries, higher income and education have been found to facilitate easy access to technology (Leigh and Atkinson, 2001). HH adoption of the Internet is also dependent on computer penetration (network effects) in the specific geographical area, and local spillovers (Goolsbee and Klenow, 1999).

At the individual level, factors such as age, access to computers, HH income, individual propensity for skill acquisition and learning, development and years of education have been found to influence adoption and usage (Demoussis and Giannakopoulos, 2006; Hargittai, 2003; Robinson, et al, 2003). Hedonic outcome such as usage of Internet for entertainment purpose has been an influential factor for adoption in developing countries (Dwivedi, et al, 2007).

In reference to developing countries, studies of adoption have focused on HH and community access (Balboni, et al, 2011; Griffiths and Christensen, 2007; Madon, 2000). The determinants of Internet diffusion at HH level such as income, age, education etc. have been found to be significant. In rural areas it has been seen that HH with students have a higher propensity to possess a computer and hence drive adoption of the Internet (Hoffman, et al,

2000). Appropriate governmental telecommunication policies could motivate individuals to adopt the Internet (Romero and Margolis, 2005). Some studies also found perceived usefulness as one of the important determinants of adoption of Internet at both individual and household level.

With regard to studies of Internet adoption in developing countries, pilot and full-fledged studies of individual adoption and usage have investigated the behavioural intentions of the consumers in India and Pakistan (Dwivedi, et al, 2007). These studies have been mostly done in urban areas, and have largely validated their prior work in UK. Earlier studies have identified the factors of adoption as presence of a primary influencer, resources, cost, perceived knowledge and perceived ease of use. One dimension on which there was difference between UK and India was gender. It played a 'not-so-important' role in developed countries, while it was an important factor in developing countries. The study did not focus on the relative importance of these factors between developed and developing countries. In a similar vein, (Ooi, et al, 2011) also identified primary influencer, self-efficacy, and relative advantage as key determinants for adoption in Malaysia.

Past studies have measured Internet usage in terms of frequency, number of hours, perceived costs across different socio-economic categories such as gender, age, income and occupation, and urban and rural areas respectively. However, few studies focus on use of Internet for achieving goals or outcome expectations and self-efficacy. Some previous studies have used theory of social capital and social cognitive theory linking outcome expectations and self-efficacy in assessing Internet use and Perceived Impact of Internet (Jain, 2016; Larose, et al, 2001) respectively. These studies have identified the latent drivers of Internet use based on outcome expectations and self-efficacy. The study by Larose et al (2001) was based in the USA and examined Internet self-efficacy, perceived addiction, activity outcomes, self-disparagement, self-slighting, pleasing sensory outcomes, social outcomes, novel sensory outcomes, and negative outcomes as variables. The study by Jain (2016) identified the latent drivers of Perceived Impact of Internet based on outcome expectations and self-efficacy. The study was done in a rural part of India, a developing country. The study examined constructs derived from theory of social capital and social cognitive theory. The attributes included the

increase in social structural capital (Nahapiet and Ghoshal, 1998), knowledge and economic capital as a consequence of using the Internet. Using this as a basis, the study identified the latent dimensions that drive Internet use as ‘Empowerment’, ‘Enhanced Scope of Work’ and ‘Transactional Efficacy’ as drivers of Internet use (Jain, 2016). However, the study did not elaborate on how the various socio-economic categories such as gender, age, income, occupation and digital literacy could affect Internet use.

This study fulfils this gap by using the data of the above study and profiles it across the socio-economic categories mentioned above. This aspect gives a more nuanced approach to previous studies and identifies various factors that drive the outcome expectations and self-efficacy from using Internet.

METHODS

Our study is based on a survey in two rural areas (Ranchi, Jharkhand, India) and (Guna, Madhya Pradesh, India). In order to understand the Internet adoption and usage profile and the pathways through which the users interact with social networks, and exploit economic opportunities, and strengthen their knowledge, we conducted a survey covering primary users in approximately 10 villages in Guna, Madhya Pradesh and Ranchi, Jharkhand, two of the poorer districts in the two states which are economically backward. There were projects designed to provide Internet access in these areas as they had poor coverage of mobile and fixed line networks^[1]. These projects used Wi-Fi like protocol for Internet access over large distances. This wireless access allowed individuals, government and private organizations, and community service centers to have access to Internet at lower costs than that was provided by privately serviced dongles by telecom providers.

1. We used a survey instrument that used a Likert Scale. The scale had five categories ranging from Strongly Disagree (1), Disagree (2), Neither Agree or Disagree (3), Agree (4) to Strongly Agree (5). The number of survey respondents was 319.

2. Internet users were asked to rate how the outcomes of Internet use helped them in their social aspects, building economic opportunities and creating and exchanging knowledge. There were 29 items in the survey.
3. A pilot study was conducted in the two districts which consisted of FGDs and limited surveys for validation. After validation, we conducted a survey with Internet users.
4. The profile of users in the survey is provided in Table 1.
5. The significance threshold was set at 0.05

Table 1: Profile of Users

Category	Sub-Category	Number	%	Coding for Analysis
District	Guna	149	47	-
	Ranchi	170	53	-
Age	Up to 25 years	106	33	0
	Above 25 years	213	67	1
Occupation	Business	143	45	0
	Others	176	55	1
Digital Literacy	Digitally Less Literate	112	35	0
	Digitally More Literate	207	65	1
Earnings	Up to Rs 15,000	211	66	0
	Above Rs 15,000	108	34	1
Education	Up to SSC/HSC and College	168	53	0
	Graduation/Post Graduation	151	47	1
Gender	Male	295	92	-
	Female	24	8	-

6. We used Principal Component Analysis, to identify the latent constructs as measures of outcome expectations and self-efficacy (Jain, 2016). Details of the process and various tests for establishing validity are provided in Appendix 1. Three components that explained 40.89%, 36.53% and 8.71% of the variance respectively were identified and labeled as 'Enhanced Scope of Work', 'Empowerment' and 'Transactional Efficacy'. The loadings are provided in Appendix 2.

- Enhanced Scope of Work: This relates to the use of Internet for outcomes such as increase in the number and geographical spread of customers and suppliers, efficiency in transacting business by reducing time for travel, searching information and

processing transactions, increase in new and existing job opportunities, collaborating with others for others.

- Empowerment: The four types of outcomes related to the components that load on this dimension are elaborated below:
 - i) The first arises due to being able to get current information on the Internet that gives a sense of empowerment. This has to be seen in the rural context where respondents have various issues in gathering information. Nearly 60% of the respondents had stated that they perceive that the information that they get is late or not current. The survey also indicated that newspapers were considered as the most important source of information by 71% of the users. Only 26.2% of the users considered Internet to be the most important source of information.
 - ii) The second dimension is due to the users being able to maintain social ties – both near and distant ones using the Internet. This ability to maintain social ties is critical for people in rural areas as they have greater challenges in organizing face to face meetings. This is because poor road infrastructure and transport availability makes it difficult to organize such meetings.
 - iii) The third dimension is the use of Internet for management of vulnerabilities arising out of users being able to manage emergencies, improving their current ability to earn and hardships related to travel for work. The poor road and transport infrastructure contributes to the last aspect.
 - iv) The fourth dimension is the aspect of empowerment by knowledge creation and cognition through use of Internet. This constitutes aspects such as the ability of users to understand a subject matter better, the use of videos for the same, sharing knowledge with other similarly interested people, higher preparedness and confidence with respect to the work environment, and ability to better understand the linkages amongst different topics.

- Transactional Efficacy: This relates to the use of Internet for outcomes such as performing transactions related to banking, on-line shopping and getting feedback on work and business related outcomes.

We assessed whether ‘Age’, ‘Digital Literacy’, ‘Earnings’, ‘Occupation’, and ‘Education’ affected these dimensions differentially by using ANOVA. We could not do this for gender as there were only 8% women in our sample. This reflects the situation in developing countries where women are relatively more excluded from Internet adoption and use and more so in rural areas. In such areas, women are likely to have lower incomes and education than men, and further societal norms may inhibit their adoption of Internet.

RESULTS AND ANALYSIS

Age

Table 2 refers to the ANOVA result for ‘Age’. The means for ‘Transactional Efficacy’, ‘Enhanced Scope of Work’ and ‘Empowerment’ are 2.86, 3.49 and 3.50 respectively. The means for the ‘Transactional Efficacy’ indicate that perceptions regarding outcomes on this dimension across both age groups (up to 25 years and greater than 25 years) are not high.

For the dimensions, ‘Enhanced Scope of Work’ and ‘Empowerment’, the means of the ‘Up to 25 Years’ and ‘Above 25 Years’ are 3.51 and 3.47 and 3.68 and 3.42 respectively. The F values for these three dimensions are 3.59, 0.04 and 2.79. The significance values for F are 0.059, 0.842 and 0.096. These are greater than 0.05. This shows that at 5% level of significance, we do not reject the null hypothesis. This shows no statistically significant differences in responses with respect to ‘Age’ along the three principal components.

Table 2: ANOVA: 'Age'

		N	Mean	Std. Deviation	F	Sig.
Transactional Efficacy	0	106	2.6698	1.20295	3.585	0.059
	1	213	2.9601	1.33072		
	Total	319	2.8636	1.29503		
Enhanced Scope of Work	0	106	3.5079	1.39550	0.040	0.842
	1	213	3.4739	1.45561		
	Total	319	3.4852	1.43381		
Empowerment	0	106	3.6770	1.19471	2.789	0.096
	1	213	3.4168	1.36426		
	Total	319	3.5033	1.31422		

Occupation

Table 3 refers to the ANOVA result for 'Occupation'. The means for 'Transactional Efficacy', 'Enhanced Scope of Work' and 'Empowerment' are 2.86, 3.49 and 3.50 respectively. The Means for the 'Transactional Efficacy' for the 'Business' group (2.58) are lower than for the 'Other' group (3.08). For the dimensions, 'Enhanced Scope of Work' and 'Empowerment', the means of the groups that are classified as 'Business' and 'Others' are 3.57 and 3.41 and 3.61 and 3.41 respectively.

The F values for these three dimensions are 11.265, 0.877 and 1.803. The significance values for F are 0.001, 0.350 and 0.180. The first value is less than 0.05, while others are greater than 0.05. This shows that at 5% level of significance, for the first dimension, 'Transactional Efficacy', we reject the null hypothesis and for the other two we do not reject the null hypothesis. This shows that for the first dimension, there is a statistical significant difference while for the other two, there is no statistically significant differences in responses with respect to 'Occupation' along the remaining two principal components.

Table 3: ANOVA: ‘Occupation’

		N	Mean	Std. Deviation	F	Sig.
Transactional Efficacy	0	143	2.5979	1.25072	11.265	0.001
	1	176	3.0795	1.29369		
	Total	319	2.8636	1.29503		
Enhanced Scope of Work	0	143	3.5686	1.48500	0.877	0.350
	1	176	3.4174	1.39141		
	Total	319	3.4852	1.43381		
Empowerment	0	143	3.6127	1.30923	1.803	0.180
	1	176	3.4143	1.31526		
	Total	319	3.5033	1.31422		

Digital Literacy

Table 4 refers to the ANOVA result for level of ‘Digital Literacy’. The means for ‘Transactional Efficacy’, ‘Enhanced Scope of Work’ and ‘Empowerment’ are 2.86, 3.49 and 3.50 respectively. The means for Digitally Less Literate are 2.07, 2.15 and 2.42 respectively across the three dimensions. The corresponding means for the Digitally Literate are 3.29, 4.21 and 4.09. This indicates that the outcome expectations and self-efficacy for the Digitally Literate group is higher on all three components.

The F values for these three dimensions are 80.796, 282.733 and 184.125. The significance value for F is < 0.001 for all the components. These are all less than 0.05. This shows that at 5% level of significance, we reject the null hypothesis. This shows that there is a significant statistical difference.

Table 4: ANOVA: ‘Digital Literacy’

		N	Mean	Std. Deviation	F	Sig.
Transactional Efficacy	0	112	2.0714	1.03727	80.796	0.000
	1	207	3.2923	1.21792		
	Total	319	2.8636	1.29503		
Enhanced Scope of Work	0	112	2.1489	1.04119	282.733	0.000
	1	207	4.2082	1.04561		
	Total	319	3.4852	1.43381		
Empowerment	0	112	2.4220	1.26651	184.125	0.000
	1	207	4.0883	0.90679		
	Total	319	3.5033	1.31422		

Earnings

Table 5 refers to the ANOVA result for Earnings. The means for ‘Transactional Efficacy’, ‘Enhanced Scope of Work’ and ‘Empowerment’ are 2.86, 3.49 and 3.50 respectively. The means for the group ‘Earning less than Rs 15,000’ per month are 3.06, 3.96 and 3.97 respectively across the three dimensions. The corresponding means for the group ‘Earning more than Rs 15,000 per month’ are 2.49, 2.56 and 2.60. This indicates that the outcome expectations and self-efficacy for the group ‘Earning less than Rs 15,000’ is higher than for the group ‘Earning more than Rs 15,000’.

The F values for these three dimensions are 14.463, 85.35 and 101.921. The significance value for F is < 0.001 for all the components. These are all less than 0.05. This shows that at 5% level of significance, we reject the null hypothesis. This shows that there is a statistical significant difference in the two groups.

Table 5: ANOVA: ‘Earnings’

		N	Mean	Std. Deviation	F	Sig.
Transactional Efficacy	0	211	3.0569	1.24081	14.463	0.000
	1	108	2.4861	1.32103		
	Total	319	2.8636	1.29503		
Enhanced Scope of Work	0	211	3.9569	1.26322	85.350	0.000
	1	108	2.5636	1.29689		
	Total	319	3.4852	1.43381		
Empowerment	0	211	3.9663	1.05801	101.921	0.000
	1	108	2.5986	1.29896		
	Total	319	3.5033	1.31422		

Education

Table 6 refers to the ANOVA result for Education. The means for ‘Transactional Efficacy’, ‘Enhanced Scope of Work’ and ‘Empowerment’ are 2.86, 3.49 and 3.50 respectively. The means for the ‘Transactional Efficacy’, ‘Enhanced Scope of Work’ and ‘Empowerment’ are slightly higher for the group ‘Graduate and Above’ than for the group ‘up to college’.

The F values for these dimensions are 3.046, 0.158 and 2.256. The significance values for F are 0.082, 0.691 and 0.134. These are greater than 0.05. This shows that at 5% level of significance, we do not reject the null hypothesis. This shows no statistically significant differences in responses with respect to 'Education' along the three principal components.

Table 6: ANOVA: 'Education'

		N	Mean	Std. Deviation	F	Sig.
Transactional Efficacy	0	168	2.7440	1.26087	3.046	0.082
	1	151	2.9967	1.32350		
	Total	319	2.8636	1.29503		
Enhanced Scope of Work	0	168	3.5155	1.41128	0.158	0.691
	1	151	3.4515	1.46244		
	Total	319	3.4852	1.43381		
Empowerment	0	168	3.3987	1.36758	2.256	0.134
	1	151	3.6196	1.24639		
	Total	319	3.5033	1.31422		

ANALYSIS

Our results indicate that in terms of latent drivers of Internet use along the three principal components identified as 'Empowerment', 'Enhanced Scope of Work' and 'Transactional Efficacy', there are statistically significant differences across those who are at different levels of Digital Literacy and Earnings. There is also statistically significant difference along the dimension of 'Transactional Efficacy', in the two groups identified by type of Occupation as 'Business' and 'Others'. Along the other two dimensions of 'Empowerment' and 'Enhanced Scope of Work', there is no statistically significant difference across these two categories of Occupation. Further, there are no statistically significant differences across different categories of Age and Educational Levels.

The findings regarding Digital Literacy have important implications for public policy in developing countries. Since digitally literate users tend to have very different and positive outcome expectations from Internet use, they may benefit far more than those who are not Digitally Literate. Therefore, public policy must not only focus on increasing Internet availability in developing countries and specifically in rural areas, there must be programs for

increasing digital literacy as well. Without such support programs, Internet use outcomes would exclude those who are not as digitally literate. Since Internet is increasingly becoming the vehicle for economic growth, such exclusions could slow inclusive growth.

The second aspect relates to users at different levels of earnings. It may appear counter-intuitive that for the group with lower level of income, the means were higher. We use the Disconfirmation theory, to provide a plausible explanation for this. The perception regarding outcome expectations and self-efficacy are based on the perceived gap in expected and actual outcomes in the context of Internet services (Khalifa and Liu, 2003; Khalifa and Liu, 2016; O'Neill, et al, 2003; Staples, et al, 2002). Those with lower levels of income could have lower expectations from usage or that the outcomes were higher than their expectations. Thus those with higher incomes had possibly higher levels of negative disconfirmations than those with lower incomes.

A similar logic applies for the higher means in the 'Transactional Efficacy' component in the 'Occupation' category. Those in the 'Others' category had lower expectations from the outcomes from Internet use or that the outcomes were higher than their expectations.

In case those with higher incomes are able to shape perceptions regarding outcome expectations and self-efficacy of Internet use and drive others' perception of Internet use, it is important to see how their expectations could be better shaped.

While other empirical studies have found that 'Age' and 'Education' are determinants of Internet adoption and use (Balboni, et al, 2011; Helbig et al, 2009; Jain, 2012; Venkatesh, et al, 2003), our study found that in terms of perceptions of outcome expectations and self-efficacy, the different categories across these variables do not contribute in a statistically significant way. This indicates that while a basic level of education may determine whether a user adopts Internet, once the user starts using the Internet with a goal orientation in terms of outcome expectations and self-efficacy, 'Education' level does not matter. A similar logic applies to 'Age'.

Overall, for the dimension:

- i. 'Transactional Efficacy': the means were low (varying from 2.07 to 3.29) across all categories of relevant factors, other than for 'Digital Literate', 'Other' category in Occupation and 'Earning below Rs 15,000' for which the means were 3.29 and 3.07 and 3.06 respectively.
- ii. 'Enhanced Scope of Work': the means ranged from 2.15 to 4.21 across different categories of relevant factors. The lower means were contributed by those who are not as Digitally Literate (2.15) and for those 'Earning more than Rs 15,000' (2.56) These indicate that across other factors, user perceptions regarding outcome expectations and self-efficacy were high.
- iii. 'Empowerment': the means ranged from 2.42 to 4.09 across different factors and categories. The lower means were contributed by those who are not as Digitally Literate (2.42), Earnings for those 'Earning more than Rs 15,000' (2.60). These indicate that across other factors and categories, user perceptions regarding outcome expectations and self-efficacy on this dimension were high.

The above shows that at the stage of deployment when this study was done, the outcome expectations and self-efficacy regarding Internet use for business transactions was low. Perceptions regarding Internet use for 'Enhanced the Scope of Work' and 'Empowerment' were relatively higher.

The relatively lower mean scores for 'Transaction Efficacy' could indicate either or both of the following:

- i. Users did not have adequate opportunities for transacting on-line, either because they could not find relevant content, did not have or want to use on-line transactions due to trust deficit or/and found that Internet service quality was not adequate for them to complete such transactions.
- ii. Even if users wished to transact on-line, other businesses or individuals with whom they wished to transact were not on-line.

It is possible that users initially see Internet as a mechanism for ‘Enhanced Scope of Work’ and ‘Empowerment’ and could possibly go to transacting on-line subsequently.

CONCLUSIONS

Our study identified the differential effect of factors such as ‘Age’, ‘Occupation’, ‘Digital Literacy’, ‘Earnings’ and ‘Education’ on Internet use driven by outcome expectations and self-efficacy in a rural context in a developing country. Some of the factors such as age and education that determine Internet adoption are not as relevant for Internet use. Since our study focused on Internet users, albeit at an early stage of deployment, it has gone beyond studies that focus on adoption. By using the logic of outcome expectations and self-efficacy as driving Internet use, this study focused on factors that facilitate such goal driven usage. The study found that Digital Literacy is a major driver of Internet use. This aspect brought out some implications for public policy, especially in the situation where government policies regarding making Internet available and affordable are already in place.

The role of Digital Literacy, Outcome Expectations and Self-efficacy has not been previously studied. By examining this role, this study further contributes to the existing literature.

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Appendix 1: Reliability

Scale: ALL VARIABLES

Case Processing Summary			
		N	%
Cases	Valid	319	100.0
	Excluded ^a	0	.0
	Total	319	100.0
a. Listwise deletion based on all variables in the procedure.			

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.988	.988	29

Item Statistics			
	Mean	Std. Deviation	N
Que25_1IncProfCont	3.5455	1.50167	319
Que25_2EnhSkillWk	3.5266	1.52084	319
Que25_3IncGeoReach	3.5361	1.48508	319
Que25_4IntensifiedCompetition	3.4828	1.52098	319
Que25_5IncExtJobOpp	3.4984	1.51071	319
Que25_6IncNewJobOpp	3.4577	1.52255	319
Que25_7ConductTransEff	3.4984	1.50445	319
Que25_8ReducedTvlT	3.4953	1.52314	319
Que25_9ReducedWaitingT	3.5392	1.50184	319
Que25_10BroughtDownSup	3.4608	1.54519	319
Que25_11SrInfoBWk	3.4890	1.57387	319
Que25_12onlineTrans	2.9185	1.44270	319
Que25_13CollaboratingB	3.4044	1.45675	319
Que25_14SrInfoWk	3.3730	1.47581	319
Que25_15FeedbackWk	2.8088	1.36365	319
Que25_16InfoAccurate	3.3574	1.38189	319
Que25_17WkWithoutPhysicaly	3.5580	1.30875	319
Que25_18IntMoreConfident	3.5674	1.40115	319
Que25_19IncInteractionFrnd	3.6301	1.42568	319
Que25_20EasyStayTouch	3.4734	1.40252	319
Que25_21touchmyFrndsFrnd	3.5078	1.45340	319
Que25_22IntOutsideTheCity	3.4828	1.53334	319
Que25_23IncPeopleEmergency	3.0690	1.47781	319
Que25_24ImprCurrentAbilitYrn	3.5204	1.54148	319
Que25_25UnderstandSubject	3.6458	1.51406	319
Que25_26ExchangeIdeas	3.6301	1.46054	319
Que25_27talkToInterestedSame Topic	3.5862	1.52483	319
Que25_28VideosLearning	3.6238	1.56701	319
Que25_29LinkageTopics	3.3887	1.54370	319

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Que25_1IncProfCont	96.5298	1286.527	.913	.	.987
Que25_2EnhSkillWk	96.5486	1286.211	.904	.	.987
Que25_3IncGeoReach	96.5392	1289.155	.898	.	.987
Que25_4IntensifiedCompetition	96.5925	1287.487	.892	.	.987
Que25_5IncExtJobOpp	96.5768	1286.383	.909	.	.987
Que25_6IncNewJobOpp	96.6176	1285.419	.911	.	.987
Que25_7ConductTransEff	96.5768	1284.912	.927	.	.987
Que25_8ReducedTvlT	96.5799	1284.886	.915	.	.987
Que25_9ReducedWaitingT	96.5361	1286.514	.913	.	.987
Que25_10BroughtDownSup	96.6144	1285.049	.900	.	.987
Que25_11SrInfoBWk	96.5862	1281.677	.914	.	.987
Que25_12onlineTrans	97.1567	1319.875	.622	.	.989
Que25_13CollaboratingB	96.6708	1294.561	.863	.	.988
Que25_14SrInfoWk	96.7022	1291.015	.886	.	.988
Que25_15FeedbackWk	97.2665	1321.265	.646	.	.988
Que25_16InfoAccurate	96.7179	1304.423	.810	.	.988
Que25_17WkWithoutPhysicaly	96.5172	1303.603	.866	.	.988
Que25_18IntMoreConfident	96.5078	1296.899	.875	.	.988
Que25_19IncInteractionFrnd	96.4451	1292.342	.905	.	.987
Que25_20EasyStayTouch	96.6019	1303.121	.810	.	.988
Que25_21touchmyFrndsFrnd	96.5674	1296.473	.846	.	.988
Que25_22IntOutsideTheCity	96.5925	1293.324	.829	.	.988
Que25_23IncPeopleEmergency	97.0063	1319.377	.611	.	.989
Que25_24ImprCurrentAbilitYrn	96.5549	1289.631	.859	.	.988
Que25_25UnderstandSubject	96.4295	1286.252	.908	.	.987
Que25_26ExchangeIdeas	96.4451	1291.512	.891	.	.987
Que25_27talkToInterestedSameTopic	96.4890	1287.854	.886	.	.988
Que25_28VideosLearning	96.4514	1284.607	.891	.	.987
Que25_29LinkageTopics	96.6865	1296.398	.795	.	.988

Scale Statistics			
Mean	Variance	Std. Deviation	N of Items
1.0008E2	1.387E3	37.24440	29

Appendix 2: Principal Component Analysis

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Que25_1IncProfCont	319	1.00	5.00	3.5455	1.50167
Que25_2EnhSkillWk	319	1.00	5.00	3.5266	1.52084
Que25_3IncGeoReach	319	1.00	5.00	3.5361	1.48508
Que25_4IntensifiedCompetition	319	1.00	5.00	3.4828	1.52098
Que25_5IncExtJobOpp	319	1.00	5.00	3.4984	1.51071
Que25_6IncNewJobOpp	319	1.00	5.00	3.4577	1.52255
Que25_7ConductTransEff	319	1.00	5.00	3.4984	1.50445
Que25_8ReducedTvlT	319	1.00	5.00	3.4953	1.52314
Que25_9ReducedWaitingT	319	1.00	5.00	3.5392	1.50184
Que25_10BroughtDownSup	319	1.00	5.00	3.4608	1.54519
Que25_11SrInfoBWk	319	1.00	5.00	3.4890	1.57387
Que25_12onlineTrans	319	1.00	5.00	2.9185	1.44270
Que25_13CollaboratingB	319	1.00	5.00	3.4044	1.45675
Que25_14SrInfoWk	319	1.00	5.00	3.3730	1.47581
Que25_15FeedbackWk	319	1.00	5.00	2.8088	1.36365
Que25_16InfoAccurate	319	1.00	5.00	3.3574	1.38189
Que25_17WkWithoutPhysicaly	319	1.00	5.00	3.5580	1.30875
Que25_18IntMoreConfident	319	1.00	5.00	3.5674	1.40115
Que25_19IncInteractionFrnd	319	1.00	5.00	3.6301	1.42568
Que25_20EasyStayTouch	319	1.00	5.00	3.4734	1.40252
Que25_21touchmyFrndsFrnd	319	1.00	5.00	3.5078	1.45340
Que25_22IntOutsideTheCity	319	1.00	5.00	3.4828	1.53334
Que25_23IncPeopleEmergency	319	1.00	5.00	3.0690	1.47781
Que25_24ImprCurrentAbilitYrn	319	1.00	5.00	3.5204	1.54148
Que25_25UnderstandSubject	319	1.00	5.00	3.6458	1.51406
Que25_26ExchangeIdeas	319	1.00	5.00	3.6301	1.46054
Que25_27talkToInterestedSame Topic	319	1.00	5.00	3.5862	1.52483
Que25_28VideosLearning	319	1.00	5.00	3.6238	1.56701
Que25_29LinkageTopics	319	1.00	5.00	3.3887	1.54370
Valid N (listwise)	319				

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.977
Bartlett's Test of Sphericity	Approx. Chi-Square	1.581E4
	df	406
	Sig.	.000

Communalities		
	Initial	Extraction
Que25_1IncProfCont	1.000	.903
Que25_2EnhSkillWk	1.000	.914
Que25_3IncGeoReach	1.000	.897
Que25_4IntensifiedCompetition	1.000	.885
Que25_5IncExtJobOpp	1.000	.915
Que25_6IncNewJobOpp	1.000	.914
Que25_7ConductTransEff	1.000	.928
Que25_8ReducedTvlT	1.000	.920
Que25_9ReducedWaitingT	1.000	.897
Que25_10BroughtDownSup	1.000	.878
Que25_11SrInfoBWk	1.000	.910
Que25_12onlineTrans	1.000	.844
Que25_13CollaboratingB	1.000	.842
Que25_14SrInfoWk	1.000	.880
Que25_15FeedbackWk	1.000	.767
Que25_16InfoAccurate	1.000	.759
Que25_17WkWithoutPhysicaly	1.000	.806
Que25_18IntMoreConfident	1.000	.820
Que25_19IncInteractionFrnd	1.000	.899
Que25_20EasyStayTouch	1.000	.771
Que25_21touchmyFrndsFrnd	1.000	.840
Que25_22IntOutsideTheCity	1.000	.819
Que25_23IncPeopleEmergency	1.000	.747
Que25_24ImprCurrentAbilitYrn	1.000	.861
Que25_25UnderstandSubject	1.000	.913
Que25_26ExchangeIdeas	1.000	.872
Que25_27talkToInterestedSame Topic	1.000	.885
Que25_28VideosLearning	1.000	.899
Que25_29LinkageTopics	1.000	.793
Extraction Method: Principal Component Analysis.		

Total Variance Explained									
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	21.898	75.511	75.511	21.898	75.511	75.511	11.858	40.888	40.888
2	2.049	7.066	82.577	2.049	7.066	82.577	10.593	36.527	77.415
3	1.029	3.549	86.125	1.029	3.549	86.125	2.526	8.711	86.125
4	.491	1.692	87.818						
5	.437	1.507	89.324						
6	.340	1.171	90.496						
7	.276	.953	91.449						
8	.232	.799	92.247						
9	.218	.751	92.998						
10	.207	.714	93.713						
11	.182	.628	94.341						
12	.164	.567	94.908						
13	.157	.542	95.449						
14	.144	.496	95.945						
15	.130	.449	96.395						
16	.127	.436	96.831						
17	.116	.399	97.230						
18	.108	.371	97.601						
19	.100	.346	97.947						
20	.088	.303	98.249						
21	.084	.291	98.540						
22	.078	.268	98.808						
23	.065	.224	99.032						
24	.060	.208	99.240						
25	.054	.186	99.427						
26	.050	.172	99.599						
27	.044	.151	99.750						
28	.041	.142	99.892						
29	.031	.108	100.000						
Extraction Method: Principal Component Analysis.									

Component Matrix ^a			
	Component		
	1	2	3
Que25_7ConductTransEff	.934	-.231	-.036
Que25_8ReducedTvlT	.924	-.256	-.027
Que25_1IncProfCont	.922	-.222	-.062
Que25_11SrInfoBWk	.922	-.246	.007
Que25_9ReducedWaitingT	.922	-.215	-.032
Que25_6IncNewJobOpp	.920	-.254	-.060
Que25_5IncExtJobOpp	.918	-.266	-.041
Que25_25UnderstandSubject	.914	.278	-.011
Que25_2EnhSkillWk	.914	-.276	-.053
Que25_19IncInteractionFrnd	.912	.258	-.034
Que25_10BroughtDownSup	.910	-.215	-.062
Que25_3IncGeoReach	.908	-.262	-.058
Que25_4IntensifiedCompetition	.902	-.257	-.066
Que25_26ExchangeIdeas	.898	.254	-.023
Que25_28VideosLearning	.898	.305	.028
Que25_14SrInfoWk	.897	-.264	-.076
Que25_27talkToInterestedSame Topic	.893	.294	-.006
Que25_18IntMoreConfident	.886	.137	-.129
Que25_17WkWithoutPhysicaly	.877	.129	-.143
Que25_13CollaboratingB	.875	-.271	-.052
Que25_24ImprCurrentAbilitYrn	.868	.327	.000
Que25_21touchmyFrndsFrnd	.857	.315	-.079
Que25_22IntOutsideTheCity	.840	.336	.002
Que25_16InfoAccurate	.825	.165	-.225
Que25_20EasyStayTouch	.822	.305	-.035
Que25_29LinkageTopics	.806	.361	.115
Que25_15FeedBackWk	.660	-.255	.516
Que25_23IncPeopleEmergency	.625	.380	.460
Que25_12onlineTrans	.636	-.188	.636
Extraction Method: Principal Component Analysis.			
a. 3 components extracted.			

Rotated Component Matrix ^a			
	Component		
	1	2	3
Que25_2EnhSkillWk	.840	.398	.223
Que25_5IncExtJobOpp	.833	.408	.234
Que25_6IncNewJobOpp	.832	.420	.215
Que25_3IncGeoReach	.828	.406	.215
Que25_8ReducedTvlT	.827	.417	.249
Que25_14SrInfoWk	.826	.399	.195
Que25_4IntensifiedCompetition	.823	.407	.205
Que25_7ConductTransEff	.821	.444	.240
Que25_1IncProfCont	.813	.445	.211
Que25_11SrInfoBWk	.810	.420	.279
Que25_13CollaboratingB	.809	.377	.214
Que25_9ReducedWaitingT	.800	.447	.238
Que25_10BroughtDownSup	.800	.442	.206
Que25_24ImprCurrentAbilitYrn	.399	.815	.196
Que25_28VideosLearning	.426	.815	.233
Que25_25UnderstandSubject	.466	.809	.203
Que25_27talkToInterestedSame Topic	.439	.807	.200
Que25_21touchmyFrndsFrnd	.420	.806	.119
Que25_22IntOutsideTheCity	.373	.803	.189
Que25_19IncInteractionFrnd	.484	.795	.182
Que25_29LinkageTopics	.301	.788	.286
Que25_26ExchangeIdeas	.473	.782	.190
Que25_20EasyStayTouch	.390	.772	.153
Que25_18IntMoreConfident	.570	.696	.097
Que25_16InfoAccurate	.535	.687	-.013
Que25_17WkWithoutPhysicaly	.573	.686	.083
Que25_23IncPeopleEmergency	.068	.649	.566
Que25_12onlineTrans	.399	.214	.799
Que25_15FeedbackWk	.493	.192	.698
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.			
a. Rotation converged in 6 iterations.			

Component Transformation Matrix			
Component	1	2	3
1	.706	.656	.267
2	-.655	.748	-.109
3	-.271	-.098	.958
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.			

PCA Loadings and Variance

Sr No	Components	Loading	% of Variance
Enhanced Scope of Work			
Internet Use:			
1	Helped me sell new products using the same channel / Helped me find new ways of enhancing my skills at work (indirect economic benefit)	0.84	40.888
2	Increased my existing business/work/ job opportunities	0.833	
3	Increased my new business/work/ job opportunities	0.832	
4	Increased the geographical reach of my business (customer/suppliers) than before/ Increased my professional circle as I am more connected	0.828	
5	Has reduced my travel time for business/work related activities	0.827	
6	Helped me in searching for new information related to business/work	0.826	
7	Has intensified competition/ I feel competitive pressure	0.823	
8	Helps me conduct my business/work related transactions efficiently (deal with more people in the same amount of time)/	0.821	
9	Increased the number of customers/suppliers for my business / number of professional contacts that I need to be in touch with for work	0.813	
10	Helped searching information on topics related to Business/work	0.81	
11	Helped me collaborating with others for business/ work	0.809	
12	Has reduced my waiting time for business/work related activities	0.8	
13	Brought down the cost of my supplies as I get competitive rates from different vendors/ Brought down my work cost as I get accurate information from the Internet related to my work (I spend less time so there is less work cost)	0.8	
Empowerment			
Internet Use:			
14	Increased the number of people who can help in improving my current ability to earn	0.815	36.527
15	Helped viewing videos for learning and understanding in a better way	0.815	
16	Helped searching and understanding the subjects that I would not have been able to understand otherwise	0.809	
17	Helped in getting a chance to talk to other people who are interested in the same topics as I am interested in	0.807	
18	Enabled me to be in touch with my friends' friends which has increased my social interactions	0.806	
19	Increased my knowledge of welfare and whereabouts of friends & relatives outside the city?	0.803	

Sr No	Components	Loading	% of Variance
20	Has increased my interactions with my relatives/friends (through emails/social networking sites etc)	0.795	
21	Helped in understanding the linkage among related topics better because of Internet	0.788	
22	Helped in exchanging ideas about work with other people	0.782	
23	Has made it easy for me to stay in touch with relatives/friends with whom I would not have otherwise stayed in touch.	0.772	
24	Helped in being more confident in expectation of my work requirement/job role	0.696	
25	Helped in getting accurate information	0.687	
26	Helped to do some part of my work without being at the place of work, physically	0.686	
27	Increased the number of people who I can turn to in case of emergency	0.649	
Transactional Efficacy			
Internet Use:			
28	Helped in banking online for business/work related transactions /conducting online transaction (booking railway, airline, bus etc/shopping for clothes/shoes/electronic items/books etc.)	0.799	8.711
29	Helped in Getting feedback on business/work related issues	0.698	