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OPERATIONS, INFORMATION & TECHNOLOGY | RESEARCH ARTICLE Evaluation of ICT opportunities from student's perspective in the state of Nagaland, India

K.D Vizo¹, M Mall^{1*}, R Rout² and P Parida³

Abstract: In the twenty-first century ICT has become a necessity in all walks of life primarily for performing various tasks remotely in a transparent, efficient, costeffective manner with speed and accuracy. ICT is instrumental in transforming various sectors like transportation, banking, manufacturing, education, employment, health and other essential sectors. Its integration with education system has brought a revolutionary transformation by instilling the spirit of innovation and providing flexible atmosphere of learning. In this age of digital communication, the opportunities created by ICT in the deliverance of various electronic services to the student community are analysed in this study. Thus, the study has been performed by developing a questionnaire initially on four dimensions of student's requirements, i.e., learning, research, job/employment and social contact where ICT has a significant role in generating opportunities. After performing exploratory factor analysis, learning and research are clubbed in one factor and in total 03 factors for further analysis. In order to validate the developed scale, confirmatory factor analysis has been performed on a separate sample. The findings of the study confirm usage of ICT towards fulfilment of student's needs. The research outcome has suggested to set up consortium of higher education libraries as well as creating a database by skill mapping of students for usage in local and national level

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PUBLIC INTEREST STATEMENT

Today, all over the world, there is a sharp rise in the use of Information Communication Technology (ICT) to provide online public services and making governance easier and enable citizens to access public services in an efficient and transparent manner. More and more Countries are now making an effort through e-governance to ensure that public institutions are more inclusive, effective, accountable and transparent. Across the civilized world, now people are promoting participatory decision-making through extensive use of ICT. Today, there has been an increased effort to utilize advanced Information Communication Technology (ICT) services for the benefit of citizens. However substantial regional disparities still exist resulting in a growing digital divide. In the State of Nagaland too there is a need to study the various factors of ICT affecting the Socio-economic Development of the State from a citizen Perspective to reduce the digital divide and increase productivity, transparency and efficiency.





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employment. The same database even will act as a certification from the government for those students who wish to start entrepreneurship and require funding from financial institutions.

Subjects: Information & Technology Management

Keywords: ICT opportunity; principal component analysis; confirmatory factor analysis; employment; social contact; learning and research

1. Introduction

Information Communication Technology (ICT) is a broader term inclusive of both hardware and software applications encompassing mobile phones, televisions, computers, internet and so on. As per the computing dictionary, ICT is defined as "study of technology used to handle information and aid communication". Duncombe (1999), defined ICT as a "group of interrelated technologies (electronic devices) for accessing, processing and disseminating information". Thus, ICT is a complex system of hardware, software and electronic network linked by large array of technical protocols (Mansell & Silverstone, 1996). Anderson et al. (2002) opined that ICT has become one of the basic requirements in the modern society. The rapid development in ICT around the globe can be attributed to technological changes due to globalisation. The true meaning of globalisation i.e. development without boundaries has become a reality because of ICT. Today we observe its wide range of usage in the areas like transportation, banking, manufacturing, education, employment, health, etc., benefitting various organisations in general and citizens in particular. The importance of ICT in building an all-inclusive knowledge society aimed at overall socio-economic development has become one of the major trust areas now-a-days for all developing countries including India. It acts as a catalyst in accelerating the development path of a country by attracting foreign investments, potential of creating job prospects, facilitate in research and innovation as well as promote good governance through delivery of public services in efficient and transparent manner. ICT can also be regarded as the facilitator in the inclusive growth, since it enables citizens in accessing information from anywhere and at any time without any communication barriers. Similarly, ICT along with education assists in empowering citizens by making them aware of their rights to participate proactively in various public policies and governance process. Thus, many countries after realising the importance of ICT included it as a part of their education system along with writing, reading and numeracy (UK Essays, 2018). According to Yusuf (2005), education sector consisting of teaching, learning and research has been largely influenced by ICT. Even the quality of education has been improved with the introduction of ICT as documented in the works of Al-Ansari (2006).

The advent of ICT has brought about many advantages for every student and teacher considered to be the major pillar in education sector in the age of technology. The research of (Cluckle et al., 2002; Harris & Anthony, 2001; Oliver, 2010) found that ICT provides both opportunities and challenges in the implementation of teaching practices. Madlela (2015) found existence of ICT opportunities and threats in his study area and suggested for exploiting the opportunities and turning the threats into opportunities could improve the teaching practices. From the teacher's point of view, the improvement in their teaching process was possible because of the ICT and thereby enhanced the student educational performance. Hence, it is worthwhile to say that ICT now-a-days become an important component for every teachers and students. During these years, computers and internet has proved their prowess in education (which includes teaching, learning and research) along with skill development and employability. It also provides a platform in hasslefree communication all over the world. This is the reason why many countries are giving due diligence towards integration of ICT platforms in higher education. Although, "developed countries have made significant progress in this aspect, developing countries have not yet effectively adopted this technology" (Ali & Magalhaes, 2008; Al-Senaidi et al., 2009; Gulati, 2008; Sife et al., 2007; Ssekakubo et al., 2011; Tarus et al., 2015; Yoloye & Nwokeafor, 2015).

In a bid to evaluate both theoretically and empirically in understanding the impact of ICT in education system, numerous studies have been made (Castillo-Merino & Serradell-L'opez, 2014). However, most of the authors approach the impact of ICT opportunities from the teachers' perceptive and its adoption on students' performance as a learner or researcher. These studies were criticized on the ground of adopting a narrow approach, since most of the studies rely on curriculum as a common method in addressing their objectives (Ali et.al., 2016; Rose & Kadvekar, 2015). Hence, an alternative broader approach was proposed that includes impact of ICT on attitude, competency and skill of a student along with curriculum. Although this extensive approach will yield more accurate results, yet it demands for a more comprehensive and complex strategy by observing the labour market.

The research gaps recognized require a detailed study on the perception of students about ICT opportunities in the fulfilment of their various needs. In this respect, this research work will judiciously evaluate the extent to which students' expectations are accomplished through ICT. Hence, in this study key factors that largely contribute to their need fulfilment will be identified.

This study was undertaken in Nagaland, India which is a land-locked hilly state with sparsely distributed population. The geographical location and perpetual geopolitical crises in this region lag this state in internet and mobile connectivity (Prabin, 2018). However, this state is credited for 80% literacy rate and empowerment of youth is one of the core objectives of the government. In this regard, the federal government has identified various thrust areas like-electricity to all, highways, I-ways (ICT), etc., and the respective state governments devise their policy in sync with the central government. This study will guide the policy makers in undertaking appropriate decisions for the welfare of students belonging not only to urban areas but also in rural hinterlands.

2. Review of literature

The growth in information and communication technology has provided a ray of hope in effective e-governance.¹ In particular to citizen-centric service delivery, ICT plays a significant role in a cost-effective manner by various governments worldwide. According to Foley & Alfonso (2009), technology can be seen as a harbinger of reforms and modernisation in governance. There are numerous studies concerning to role of ICT in the delivery of citizen-centric services efficiently. For instance, Pathak et al. (2009) in their study found a positive link between e-governance and improvement in transparency leading to heightened citizen-government relationship. In the same way ICT also provide opportunities in the education sector in the form of reshaped teaching and learning in Higher education (Pulkkinen, 2007; Sife et al., 2007) as well as assisting in employment, research and enhanced social contact. In this section, various opportunities generated by ICT from the student's perspective has been extensively reviewed and were summarized in Table 1 before detailed discussion.

2.1. ICT enhancing the learning and research environment among students

The technological leap in the form of internet and advanced hardware has transformed the education deliverance through online mode which is viewed as the future of modern education. It provides flexibility to students and effective implementation of online learning can solve pressing issues of learning achievement (Govindasamy, 2002). During the novel Covid-19 pandemic that restricts social gatherings creates impediments in classroom teaching. Hence, teaching and learning through online platform (ICT opportunity) is the only option left for students and teachers in pursuit of continuous learning. Ellis and Loveless (2013) in their study highlighted on the potential role of ICT in higher education. Similarly, Chan et al. (2013) in their study had assigned greater importance of ICT functions on university education in achieving dynamic student demands. Learning through ICT can be envisaged on various dimensions like computer-assisted learning, web-based learning, e-learning, virtual learning, etc.

Although developed countries have reached to the advance stages in the implementation of e-learning initiatives, yet developing countries are still in the nascent stage (Al-Azawei et al., 2016). Hence, educational institutions in developing countries need to make strategic choice about integration of ICT into their higher education system that will support and improve the usage particularly within a limited resource (Russell et al., 2014). The integration of technology in the education system has resulted in the recent growth in *"Massive Open Online Courses (MOOC)"* which has revolutionized the traditional higher education system (Chen, 2013). However, Liyanagunawardena et al. (2014), found from their study that majority of MOOC participants were from North America and Europe, while limited participations were from Asia and Africa. Van de Oudeweetering and Agirdag (2018) stated that MOOC can be presented as a tool in enhancing social mobility because of its scope and openness in serving socially underprivileged learners.

As per the UNESCO (2013) report, various governments and university managements around the globe have invested a large chunk of funds in developing their ICT infrastructure for education system. Hence, it can be said that opportunities generated from development and integration of ICT will have a significant impact on the students learning and research outcome. In this connection, Pegu (2014) had highlighted on the unprecedented growth in ICT in teaching, research and other extension activities in India. Similarly, Pandey and Pandey (2020) have reviewed ICT in teaching and learning from Indian perspective and they observed that ICT usage in India is on lesser side in comparison to developed countries. Lalitha and Prasad (2014) studied on usage of ICT in secondary schools of Telangana, India, and found that ownership management has no impact on ICT usage in secondary schools. Biswas (2017), had worked on ICT use in training institutes of tribal areas in India, and found that training institutes were not properly equipped with ICT equipment, nonetheless existing equipment were not properly used.

2.2. ICT providing a platform for employment and job searching

Recent developments in information and communication technology (ICT) as well as the ICTenabled service areas have opened up promising economic opportunities for the radical reshaping of how products, services, processes and practices are created and delivered by the labour market generally, and by the youth segment of the labour force in particular (Clarke et al., 2012). This swift development of ICT acts as a precursor of job searching opportunity among the youth around the world also. As per the BLOG, "higher unemployment among the youth will hamper the economic development of a country and could have a debilitating impact on their productivity and lives also". Hence, for promotion of youth employment in their countries it is highly essential to have the digital skill as well as knowledge of becoming ICT creators. In this way they contribute meaningfully in realization of their own personal well-being, empowerment and development as well as contributing to the creation and preservation of value in their community and society.

According to Chowdhry (2013), promoting youth employment and employability requires important integrated efforts that include actions in the areas of education, skill development, job supply and support for young low-income entrepreneurs. There is an extensive potential for ICTs to generate employment for young people. However, this potential will be really effective when the country has a range of supporting strategies in place, including an enabling environment (Sunkara et al., 2015).

ICTs have been thought of as an important catalyst in the economic transformations during the last two decades and for policy makers it has become a major thrust area while framing policies for job creation through increased economic activities (Warhurst et al., 2006). Antonelli, (2016) argued that ICT sector assists in determining productivity in the context of economic competitiveness that relies more on level of productivity and knowledge economy. Hence, a country's economic competitiveness largely dependent on a vibrant ICT sector. Now-a-days graduate jobseekers need not check and apply to various jobs offline rather they take the help of internet, computers to search and apply online from their comfort zone. Even, employers also able to get qualified candidate data from various job databases like Naukri.com, timesjobs.com etc.

Sadiq and Mohammed (2015) stated that information and communication technology (ICT) plays an important role in the everyday life and has become indispensable in the contemporary world, since ICT has become an integral part of life and inevitable in every aspect of human endeavor ranging from educational needs, social needs, commercial needs and above all security needs. The ICT centers in the developing world are now becoming center of attraction as youth engage themselves to seek employment as well as to propagate social and political views among others and it also provides job opportunities.

2.3. ICT facilitates social contact

Information and communication technology (ICT) influences the citizens in a community where they live and the way they interact with each other. Before delving deep into this aspect, it is very much vital to identify the various social groups interacting within a complex and heterogeneous network. According to Pozzebon and Diniz (2012), "social groups refer to a group of people who share a common geographical space like- a small neighbourhood or a common professional occupation like-students and teachers in educational institutes". ICT is changing the way individuals within a specified group interact as well as expand to those groups that are geographically apart, i.e., virtual groups. In this digital era social networking has brought about a new social norm among the youths. According to Van den Berg et al. (2012), ICTs have generated the possibilities of maintaining and establishing longer distance contacts. Moreover, ICT mediated communication has gained importance where it is difficult to have face to face interactions due to geographical distances. The authors concluded that "as social networks are becoming more geographically spread, the ICTs will become more important for the maintenance of social networks, especially as access to ICTs is expected to increase around the world". The ICT adoption within a community can be perceived as an opportunity in the flow of information exchange, performance of social activities and responsibility attributions. However, the requirement for communication differs from individual to individual. In this Carrasco and Miller (2006, 2009), Farber and Páez (2009), Frei and Axhausen (2009), and Tillema et al. (2010) opined that demographic characteristics like gender, work status, age mostly affects the frequency of communication among the members within a social network. For instance, Carrasco and Miller (2006) and Lu and Pas (1999), found that females are less involved in social activities than their counterparts. While, Farber and Páez (2009) found that young people are more active in social works from that of elderly people. Carrasco and Miller (2006) also found people who are employed have lower tendency in performing social activities, as people with more free time (less work or study) have more possibilities for more frequent social activities.

The extant review of literature on various aspects of ICT in India primarily highlighted on teacher's attitude, adoption and usage along with opportunities and challenges in implementation (Beri & Sharma, 2019; Debbarma & Das, 2019; Kaur, 2019; Kaur & Kaur, 2019; Mailavelan & Baskaran, 2018). On the other hand, very few researchers investigated opportunities generated by ICT from student perspective. Moreover, the methodologies adopted by various researchers were descriptive and theoretical in nature, while attitude and adoption of ICT were studied by adopting existing scale through Technology Adoption Model (TAM). In this study a novel attempt has been made by developing and validating a scale that evaluates various ICT opportunities from students point, since they are the future work force expected to contribute positively in the economic development of a country.

3. Data and methodology

This study primarily investigates the opportunities offered by ICT in promoting welfare of students in the form of providing e-learning environment, conducting scientific research, looking for employment and facilitate in social contact in the state of Nagaland, India. It involves four indicators and the data were obtained through survey method by administering questionnaire since, for objective analysis of hypothesis questionnaire method of data collection is highly recommended by the researchers. A scale was designed to collect data that measure the ICT opportunities linked to students on the basis of the dimensions explored from literature. Field study was carried out consisting of 512 participants selected randomly from technical institutes and universities in Nagaland, India. Out of the total 512 samples, 300 responses collected initially for exploratory factor analysis purposes and later on 212 responses for confirmatory factor analysis to validate the scale. Before administering the questionnaire for final data collection, at first a pilot study was undertaken on 50 respondents selected randomly to check the consistency and reliability of the questionnaire. The content validity of the questionnaire items was performed by two subject experts. All the factors considered for this study were measured in 4-point Likert scale. In order to validate the research instrument Principal Component Analysis (PCA) method has been used. It is a statistical technique of data reduction and used to explore the linear relationships amongst a group of variables. PCA method is also useful in checking independence of factors.

The data collected from 300 respondents were analysed in SPSS version 21 by using Varimax rotation. According to Tabachnick and Fidell (2014) the aim of PCA is to obtain a parsimonious solution by explaining the variation in the original data set using the underlying components. Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy tells about whether the sample size is adequate or not and the acceptable value should be greater than 0.6. With 300 cases and to improve the distinction between components, items with loadings less than 0.50 were suppressed. Similarly, the significance of Bartlet test results will prove independence between factors. To reject the null hypothesis, Bartlett's test of sphericity needed to be <0.05.

The PCA technique is generally used as a tool for dimension reduction, however the results could not confirm the validity of constructs considered in this study. Therefore, confirmatory factor analysis (CFA) has been adopted to verify the construct validity. The estimation method used is MLE (Maximum Likelihood Estimation) in CFA and as per Jackson (2003) a 10:1 ratio, i.e., 10 participants per measured item are specifically suggested for MLE. The PCA results have confirmed 18 items distributed under 03 dimensions and based on 10:1 ratio the required sample size should be 180. Thus, data were collected to verify the construct reliability and hypothesis testing from 250 samples out of which 212 responses were found suitable for confirmatory factor analysis. According to Hair et al. (2015) the rule of thumb for reliability estimate of 0.7 or higher suggests good reliability and reliability between 0.6 and 0.7 may be acceptable, provided that other indicators of the model construct validity are good. A high construct reliability is the indication of internal consistency and represents the latent variables. The construct reliability (CR) is calculated as per the below formula:

$$CR = \frac{\left(\sum_{i=1}^{n} L_{i}\right)^{2}}{\left(\sum_{i=1}^{n} L_{i}\right)^{2} + \left(\sum_{i=1}^{n} e_{i}\right)}$$

Where L_i is the factor loadings for each construct, and e_i is the error variance term of each construct. The results are presented in Table 3.

4. Analysis and discussion

The KMO measure of sampling adequacy value 0.952 with a sample size of N = 300 proves that the selected sample size is highly satisfactory since KMO value greater than 0.70 is considered to be satisfactory for PCA. The Bartlett's test of sphericity having a Chi-square value 5123.18 and a P-value less than 0.05 indicates that correlation between items is well defined for PCA, and the factors are independent.

As reported in Table 2, the resultant component matrix has produced a clear factor solution such that (a) all the items are clubbed under 03 factors, i.e., learning and research, job searching/employment and social contact, and (b) improper factor loading was absent. With the cutoff point 0.50, under the learning and research factor, 09 items were included since this factor

Table 1. Summary of I	CT opportunities from s	tudent perspective	
Sl No.	Unique Factors	Operational Factors	Authors (Year)
1	Learning and Research	Easy to search books and literature	Govindasamy (2002); Ellis and Loveless (2013); Pegu
		Improved search for electronic information	(2014); Pandey and Pandey (2020); Van de Oudeweetering and
		Improved knowledge and training skills	Agirdag (2018); Biswas (2017)
		Easier to learn from reputed institutes and professors	
		Facilitates online learning	
		Improved research skills	
		Collaborative research	
		Publication of research	
		Electronic information for conducting research	
2	Job Search	Creation of employment opportunities	Beardsley et al. (2010); Chowdhry (2013); V.M
		Easy searching and apply for jobs	Sunkara et al. (2015); Sadiq and Mohammed (2015)
		Skill and capacity building	(2015)
3	Social Contact	Develops new contacts	Tillema et al. (2010);
		Information flow	Van den Berg et al. (2012); Carrasco and
		Instant social contact with family	Miller (2006); Silvis et al. (2006); Boase et al.
		Instant social contact with friends	(2006); Dijst (2009); Frei and Axhausen (2009)
		Work contact with colleagues	

focused on the ICT opportunity in creating a learning and research environment among the students. Similarly, 03 items pertaining to job searching and employment factor and 04 items under social contact factors were included in the rotated component matrix. The first factor (Learning and research) accounted for the largest amount of variance, i.e., 49.33%, followed by the second factor (Job searching) 6.47% and social contact factor 9.39%. All these three factors combinedly explain 61.06% of total variance. As per the rule of thumb, the cumulative percentage of variation should be greater than 60% for robust exploratory factor analysis. Moreover, all these three factors have a very low correlation coefficient, suggesting that they are different from each other. Finally, the internal consistency measured through Cronbach's Alpha turned out to be 0.917, 0.834, and 0.822, respectively.

4.1. Confirmatory factor analysis

In this section, CFA is performed on a separate dataset as discussed in the methodology section by using SPSS AMOS version 21, and the overall fit indices are provided in Table 3.

The confirmatory factor analysis conducted on a separate dataset by taking into consideration the factors and their respective items in EFA provides adequate fit, as observed in the above table. The value of GFI, NFI, AGFI, and CFI indices are considered to be acceptable when their value is above 0.90 (Levesque et al., 2004). Similarly, according to Levesque et al. (2004), RMSEA index 0.05 or smaller reflects a good fit, whereas an index value between 0.05 and 0.08 is a reasonable fit, while an index value above 0.10 is considered as a poor fit. The threshold values of the above fit

Table 2. Results of Ey	xploratory Factor Analysis					
Factors	Variables	Mean	Reliability	Communalities	Factor Loading	% of Variance
Learning and Research	ST01	1.836	0.917	0.668	0.768	45.208
	ST02	1.717		0.619	0.761	
	ST03	1.679		0.629	0.736	
	ST04	1.684		0.588	0.733	
	RS01	1.818		0.663	0.726	
	RS02	1.838		0.638	0.741	
	RS03	1.738		0.603	0.681	
	RS04	1.837		0.514	0.588	
	RS05	1.998		0.591	0.594	
Job Searching/	JB01	1.998	0.834	0.495	0.690	6.465
Employment	JB03	2.008		0.590	0.600	
	JB04	1.949		0.649	0.597	
Social Contact	SW01	1.967	0.822	0.441	0.730	9.387
	SW02	1.902		0.489	0.716	
	SW03	1.979		0.532	0.650	
	SW06	1.908		0.547	0.606	
Kaiser-Meyer-Olkin (KMO)) Measure of Sampling Adequa	Icy			0.944	
Bartlett's Test of Spherici	ty (Chi-square Value = 3744.56	5, df = 253) p-value < 0.05	5 (Significant)			

Table 3. Overall Fit Statistics			
Goodness of Fit Index	Model Values	Decision Criteria	
Absolute Measures			
Chi-square Value	89.58		
Degrees of Freedom (df)	41		
CMIN/df	2.185	Less than 3	
GFI	0.969	Greater than 0.9	
RMSEA	0.048	Less than 0.08	
SRMR	0.022	Less than 0.05	
Incremental Fit Measures			
NFI	0.964	Greater than equal to 0.90	
CFI	0.980	Greater than equal to 0.95	
Parsimony Measures			
AGFI	0.950	Greater than 0.9	

measures suggest that the final model exhibits a good fit having Chi-square value = 89.58; df = 41, and p-value = 0.00. In addition to this, in the final model, all items are loaded very strongly with their corresponding factors (t-values are > 1.96).

Based on goodness of fit indices, it can be construed here that the selected sample has an acceptable fit to a 3-factor model. As per Gefen et al. (2000), factor loadings and construct reliability should be equal or greater than 0.70 for a good convergent validity. The results presented in Table 3, indicative of the convergent validity of the measured variables. From the results of CFA, it is observed that out of 11 measured variables, 08 loadings are greater than or equal to 0.7 while 03 loadings are in between 0.65 and 0.70 (Table 4). The convergent validity measured through AVE explains that except for the "Social Contact (0.47)" factor other two factors have good convergent validity since AVE > 0.50. Similarly, for a better discriminant validity computed as the square root of AVE (\sqrt{AVE}), which should be greater than any correlation coefficient between the factor and the other one (Chin et al., 2008; Gefen et al., 2000). In the event of a smaller value of discriminant validity from the correlation coefficient, the factors are not well separated. However, as per the corresponding Table 5, the factors are differentiated from each other.

The statistical results and corresponding discussions presented in this study buttresses for framing a comprehensive ICT policy by the concerned government aimed at addressing the student's requirements. According to Coward et al. (2014) "today's youth face enormous challenges in finding a job and earning a decent income", and in this regards the findings imply that ICT will play a significant role in addressing employment-related challenges of students. Even entrepreneurs can get skilled manpower from job portals that extensively use ICT in enrolling prospective job seekers. The benefits extended by ICT in learning and research as well as social contact will provide enough assistance to academicians in enhancing their knowledge and will open the flood gate of information and collaborative research.

5. Conclusion and recommendations

Information communication technology (ICT) within a short time has become one of the major building blocks of modern society. It became a powerful tool in the progress of individuals as well as the society, both because of inherent characteristics, and the mounting empirical evidence suggests that it will contribute a great deal in achieving the developmental goals of a country. A country's development is dependent on its skilled workforce that enters the job market. Being an emerging economy, 65% population of India are within the age group of 35 years or below, and the majority of them are living in villages. Hence, it becomes essential for the government to

Table 4. Factor Loadin	g and construct reliabili	ty (CFA Outcome)	
Factors	Learning & Research	Job search	Social Contact
ICT facilitates in searching for an electronic database for conducting research (RS02)	0.767		
Internet facilitates the search for books and literature for study purposes (ST01)	0.757		
ICT has improved my research skills while doing research (RS03)	0.743		
ICT facilitates long- distance learning from international institutes and professors (ST04)	0.739		
ICT assists in collaborative research and facilitates the publication of research work (RS05)	0.688		
ICT has created employment opportunities for the youth (JB03)		0.804	
Through the ICT platform, it becomes easier for me to apply for jobs in and out of Nagaland (JB01)		0.701	
ICT is helpful in enhancing learning, training, skill and capacity building within youth (JB04)		0.699	
ICT facilitates in developing new contacts within and outside the community (SW3)			0.699
ICT helps in the performance of social activities and information flow within my community (SW2)			0.698
ICT has made it possible for me to keep in contact with my family and friends instantly (SW1)			0.660
Construct Reliability	0.820	0.839	0.791
Decision	Good	Good	Good
Average Variance Extracted (AVE)	0.55	0.54	0.47

devise policies for the all-inclusive socio-economic development of its citizens especially the youth. More often, a nation's economic growth and societal development call for expansion in education. However, constraints like finance, efficiency, human capital, quality and governance thwarts in reformation through capacity building of higher education in developing countries (Ekundayo &

Table 5. Correlation coefficient and Discriminant validity			
Latent Variables	Learning & Research	Job search	Social Contact
Learning & Research	(0.742)		
Job search	0.739	(0.735)	
Social Contact	0.725	0.732	(0.686)

*Discriminant validity = Main diagonal of matrix in parenthesis

Ekundayo, 2009). In this regard, ICT assists in the higher education reform aimed at supporting teaching, life-long learning, research, etc. Therefore, the findings of this study will be useful in framing appropriate ICT policies aimed at the youth in general and students in particular as a work force contributing in the development of the economy, since Information Communication Technology (ICT) offers an abundance of benefits to users especially in socio-economic aspects.

Today the tech-savvy youths' expectations are higher in the fulfilment of their needs, and in this context, it becomes very difficult for the government to fulfil it within a limited resource. From the results of confirmatory factor analysis, it is found that under learning and research factor, "*ICT facilitates in searching for electronic database for conducting research*" has highest loading value (0.767) followed by searching for books and literatures (0.757). It is concluded that the benefits offered by ICT have undoubtedly enhanced the research and learning competency among the students. However, in expanding such learning and research facility especially in rural areas the state government should take initiative to create consortium of educational institute library where both printed and e-resources can be shared for the benefit of students at large. This will have lesser impact on the financial budget of the state and will ensure consistent involvement from students towards learning and research.

Mainstream economic sectors from agriculture to healthcare are witnessing an explosion of new ICT-enabled applications, both raising the bar in terms of the minimum ICT skills needed to perform job tasks, and generating new opportunities for entrepreneurs in developing ICT products and services for these sectors. Beyond these sectors, the internet itself is responsible for making possible new opportunities that have generated livelihoods for millions of people. Innovations in learning both ICT and soft skills are plentiful and increasing every month. Some of the greatest opportunities may be realized by combining online and offline activities and youth are ideally suited to take advantage of these opportunities. Hence, it is suggested to create a database by skill mapping of students for usage in local and national level employment. The same database even will act as a certification from the government for those students who wish to start entrepreneurship and require funding from financial institutions.

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Note

 According to the American Society for Public Administration (ASPA), e-Government is defined as: "the pragmatic use of the most innovative information and communication technologies, like the internet, to deliver efficient and costeffective services, information and knowledge".

Author credit statement

Author	Credit Statement
K D Vizo	 Conceptualization; Investigation and data collection,
	(3) Writing- Original Draft
M Mall	 Methodology, Writing- Review & Editing, Data Curation and analysis Writing- Original Draft and revisions
R Rout	 Recommendation and conclusion moderation Writing- Review & Editing,

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Figure 1. Final Model with

loading.

Annexures:





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