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Gender equality and women empowerment through e-governance: Case study of Akshaya e-centres of Kannur district

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Abstract
Gender equality means, "That all human beings are free to develop their personal abilities and make choices without the limitations set by strict gender roles; that the different behaviour, aspirations and needs of women and men are equally considered, valued and favoured". Gender equality is fully needed for equal representation and participation of both men and women in the economy, decision making as well as in social, cultural and civil life. The UN points out that, empowering women is an indispensable tool for achieving development and reducing poverty. The paper will discuss the string of measures, initiatives and projects to improve the ICT infrastructure. The paper will examine the role of e-governance in attaining gender equality through the analysis of Akshaya e-centres of Kerala. Further paper will also throw a light on how the e-governance project of Kerala helped in achieving women empowerment. Finally the paper also will try to study the problems faced by women as the targeted group for the present study. This paper is based on both primary secondary data. For achieving the objectives, e-governance project of Kerala namely, Akshaya e-centres have been selected. That is, to be specified, the study has been carried out from 26 Akshaya e-centres of Payyannur and Thalassery taluks of Kannur district of Kerala. The data have been collected from sample respondents such as beneficiaries (127), staffs (78) and entrepreneurs (26). A range of government official websites and other related books, articles and journals are also used for the study.

Keywords: Gender equality, e-governance, Kerala, women empowerment, digital divide

1. Introduction
Gender is a social assemble that attributes different responsibilities and rights to women and men despite of individual competence or priority. Gender and gender power are reflected at all levels of society. Consequently, women are often subject to a triple burden – they are responsible for domestic responsibilities, for social care provision, and also participate in the labour force. On the other hand, men do not often share domestic and care responsibilities and are able to use a greater part of their time for leisure, to pursue productive activities, or to participate in decision-making in all walks of life.
Gender equality means, "That all human beings are free to develop their personal abilities and make choices without the limitations set by strict gender roles; that the different behaviour, aspirations and needs of women and men are equally considered, valued and favoured". Gender equality is fully needed for equal representation and participation of both men and women in the economy, decision making as well as in social, cultural and civil life. The UN points out that, empowering women is an indispensable tool for achieving development and reducing poverty.

2. Literature Review
The e-governance plays an important role in ensuring women empowerment and gender equality. It helps to eliminate digital divide. There are a number of studies related to e-governance and gender equality. Some of the studies are reviewed below.
Meera. K. Joseph and Theo. N. Andrew (2007) [1] in their paper analysed how use of the telephony (both cellular and land line), internet and other ICTs can benefit rural women in

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educational, business and economic sector. They examined the countries such as India and South Africa which have unique ICT projects meant for empowering rural women. It highlighted different low-cost ICT initiatives and strategies taken by women's organizations, various companies and other non-governmental organizations NGOs for rural women empowerment. The paper also highlighted various factors influencing use of internet and mobile phone adoption by rural women. Various bottlenecks for the community projects, factors de-motivating the use of mobile phones and internet by rural women and possible solutions for these are also mentioned.

According to Hazel Gillard and Nathalie Mitev (2006) [3] by equipping the women with ICT skills, such as network engineering, and utilizing their "soft" relational expertise, greater employ ability and opportunity then can achieve inclusion. The gendered relation to the labour market is hidden by the narrative of inclusion through ICT skills acquisition. Furthermore, the relational association reduces women and men to normative gendered identities and roles which will do little to challenge existing stereotypes of technical expertise. The paper concluded that rather than inclusion, the possible result is further gendered inequalities and exclusion.

Claudia *et al*. (2007) [4] described the educational and employment opportunities for women in developing countries accrue from the ICT sector. Their study concluded that the ICT sector have increase the volume of employment and educational opportunities.

Sandra Buchmuller *et al*. (2010) [5] in their article, they presented an interdisciplinary research and design project on gender and diversity aspects in the development of information and communication technology (ICT).They taken project as a case study in order to show how we dealt with the digital divide. According to them, digital divide denotes a knowledge and communication gap that finally leads to social disintegration caused by unequal ownership of information and communication technology (ICT) and unequally distributed access to the online world. It separates the society into so-called onliners and "none-liners". The digital divide is caused by social factors like age, gender, education, and local infrastructure. In their case study, they particularly showed how the e-governance dealt with the aspects of age and gender on a methodological and practical level. Finally, they presented design concept based on research results explicitly considering age- or female-induced ICT demands and preferences. With this concept, they showed how to enhance social equality and inclusion based on distributed responsibilities within local social networks.

According to Mizanur Rahman (2011), Information and Communication Technologies (ICT) is a catalyst to enhance the level of community empowerment. The study from Bangladesh showed that ICT penetration on its not proportionately related with community empowerment. The evidence also showed that if ICT penetration is high, but ICT governance is low, ICT does not remain as high a catalytic factor for community empowerment.

A quick review of the existing literature shows that e-governance is relatively new area that remains to be explored in much more detail with respect to gender equality. This primer builds on this extensive body of work on ICTs and gender, but focuses on key gender issues related to e-governance.

3. Objectives and Methodology
The specific objectives of the study are:
- To examine the role of e-governance in attaining gender equality through the analysis of Akshaya e-centres of Kerala.
- To highlight how the e-governance project of Kerala helped in achieving women empowerment.
- To study the problems faced by women as the targeted group for the present study.

This paper is based on both primary and secondary data. For achieving the objectives, e-governance project of Kerala namely, Akshaya e-centres of Kannur district have been selected. That is, to be specified, from 26 Akshaya e-centres of Payyannur and Thalassery taluks of Kannur district of Kerala. The data have been collected from sample respondents such as beneficiaries (127), staffs (78) and entrepreneurs (26). A range of government official websites and other related books, articles and journals are also used for the study.

4. Results and Discussion
4.1 Gender inequality and ICT (Information and Communication Technology)
Information Technology (IT) plays a vital role in the economic development of Kerala which helps to cater dramatic changes in the economic, social and political life. The IT led knowledge era had shepherd in a new found status for the state in the global space which helped the state to attain a leadership position in supplying quality human resources in this sunrise sector. It has created new avenues and opportunities for people. The process of e-governance has included computerization, installation of kiosks for information and networks for dissemination. This scheme can succeed with gender-sensitivity and removal of regional biases. There have been numerous experiments in India devoted to addressing the digital divide, only a few are specifically targeted at women like Akshaya kiosk in Kerala.

According to a UNESCO report on "Gender issues in the information society", the capability of women to effectively use information obtained through ICT is clearly depends on many social factors including illiteracy and education, geographical location, mobility and social class.

Information and communication have been playing an increasingly important role in economic and social development of nations. Proficient experts believe that this century belongs to the power of Knowledge & Information. On one side, the recent developments in communication technology have drastically reduced the geographical barriers, while on the other side computers have enormously enhanced the capacity to accumulate and access information.

Unfortunately the access to these technologies is highly unequal, somewhat built-in in all our development sectors. This is true for different geographical regions and diverse socio-ethnic groups inside India. The inequality contributes to increasing the gap between those who have access to abundant information resources and those who are deprived of this access, thus reinforcing the marginalization that already exists in terms of development and technical resources.

Issues related to gender is always a concern for the world. Already a "digital divide" implying uneven distribution of

the technologies within the societies and across the world has set in, upsetting the balance of gender equality. Ready access and use of ICT is expected to bridge this "gap" or "divide" to a large extent, provided social and economic benefits are directly linked to these emerging technologies.

Access is the key issue necessary for women's empowerment. Women have traditionally been excluded from the external information sphere, both because of factors such as lack of freedom of movement and low levels of education. ICT opens up a direct window for women to the outside world. Information flows to them without any distortion or censoring. This leads to broadening of perspectives, greater understanding of their current situation and the causes of poverty and the initiation of interactive processes for information exchange.

4.2 Status of Gender Equality in Kerala

ICTs (Information Technology) are emerging as a powerful tool for gender empowerment in developing country like India. There has dramatically expanded since the 1990s. According to the World Bank, tele density in India had reached 3.8% of the population by 2001. The number of internet accounts is growing at a rate of 50% per annum. The IT enabled service sector (ITES) alone grew at 59% and employment had reached 106,000 by 2004 [NASSCOM 2004]. The IT and ITES is projected to grow 18% in the next five years to become an industry of Rs.4.58 lakh crores by 2011, according to an IDC release. But still, there is a strong digital divide in the society. According to the 2004 report by the Cisco Learning Institute women comprise only 23% of India's internet users. This gender digital divide in India is characterised by low levels of access to technologies. Poverty, lack of computer literacy and language barriers are among the factors impending access to ICT infrastructure, especially in developing countries.

The Indian experience shows that the development strategies were male centric. Analysis of various indicators of socio-economic development undoubtedly proves this lopsided economic development, which is unfavourable against women folk of the nation. The low literacy rate among women, the unfavourable sex ratio, persistent female foeticide, low female work force participation rate despite the high levels of education, high mortality rate among infant girls etc. are proven records of this gender imbalance.

As per Census 2011, desktop ownership in households in Kerala stands at 9.5 percentage and Kerala comes 5th in India. While this is above the national average of 6.4 percentage, the figure is possibly much below optimal levels after accounting for affordability. The e-governance is one of the emerging area which combines the role of ICT and governance. Kerala is one of the foremost states in the country renowned for e-governance and efficient public service delivery. The state can potentially witness a dramatic emergence of IT enabled people and organizations in the state with the help of the initiative such as Akshaya e-centres which are located across the length and breadth of the state of the state. It is now emerged as a major channel for government to citizen services and can be seen as the delivery mechanism for the e-governance system in Kerala. It is only through achievement of the universalisation of this digital literacy, which the Kerala had achieved, one can ensure that people have the necessary power to leverage on the unfolding IT revolution.

The position of women in Kerala has improved dramatically according to the conventional human development indicators and can even be compared to that of advanced countries. Kerala ranks first among the major Indian States in Human Development Index with women constituting almost 52 per cent of Kerala's total population, Kerala has achieved enviable social development indicator. Literacy rates are high among women (91.98 per cent) as well as men (96.20 per cent) in Kerala and the difference between two are relatively low. Health indications are equally impressive with high levels of life expectancy for women (76.30) and for men (71.40) and indeed a strong positive tilt towards women.

Kerala, however, presents a paradox when it comes to other dimensions of gender equality - namely economic access and political participation. There is substantial evidence that suggests that women fall behind in the areas of access to economic opportunities, resources, assets and equal voice and participation in decision making in the state.

The government has started several schemes and initiated many new policies for the welfare and development of women which include initiatives for equality in various aspects of social, economic and political life. Women empowerment programmes were an important part of programmes introduced by the government to support gender equality. Empowerment of women is closely linked to the opportunities they have in education, health, economic and political participation. Government has been erationalizing this approach through legislative and programmatic interventions as well as by mainstreaming gender into the development planning process. IT together with Communication Technologies has brought about unprecedented changes in the way people communicate; conduct business, pleasure and social interaction.

4.3 Akshaya e-centres and women empowerment

For achieving the objectives, e-governance project of Kerala namely, Akshaya e-centres have been selected. That is, to be specified, from 11 Akshaya e-centres of Payyannur and Thalassery Taluks of Kannur district of Kerala. The data have been gathered from sample respondents such as beneficiaries (127), staffs (78) and entrepreneurs (26). Table 1 depicts the distribution of sample respondents (Entrepreneurs and staffs of Akshaya e-centres) on the basis of gender. The study aims to develop understanding of the status of women in Kannur district through illustrations and discussions. Of the total number of Akshaya entrepreneurs (26), 57.69 percent are women. It is worthwhile to note that 96.15 percent of total staffs of Akshaya are women. Therefore, it is analysed from the table 1 that role of women in prestigious e-governance project of Kerala is very impressive.

Table 1: Distribution of sample respondents on the basis of Gender

	Male	Female	Total
Entrepreneurs	11 (42.307)	15 (57.69)	26
Staffs	3 (3.84)	75 (96.15)	78

Source: Pilot survey 2015
Figures in brackets are the respective percentage

The selected women entrepreneurs and staffs are distributed on the basis of demographic features such as age, marital status, education, and income and is depicted in table 2. It can be analysed from the table 2 that out of the total number of women entrepreneurs 73.33 percent fall in the age group of 31-40. Further, it is to be noted that, 86.66 percent of the

sample respondents have acquired technical+degree as education qualification. It is also noted that, 53.33 percent of the women entrepreneurs are receiving an amount in between 12001-14000 rupee per month. Therefore, it is evidenced from the study that the Akshaya e-centre is financially viable strategy for women. With respect to the profile of staffs of Akshaya e-centres, 90.66 percent of the total number of staffs is women. Of the sample respondents, 82.66 percent are married. The educational profile of staff is also admirable as 92 percent of them have acquired degree+ technical education. About 92 percent of the staffs are receiving 8000-10000 rupee per month.

Table 2: Distribution of women entrepreneurs and staffs of Akshaya e-centres on the basis of demographic features

Socio-economic status		Entrepreneur	Staffs
Age(In years)	20-30	3(20)	68(90.66)
	31-40	11(73.33)	6(8)
	41-50	1(6.66)	1(1.33)
	50 and above	0	0
TOTAL		15(100)	75(100)
Marital status	Married	15(100)	62(82.66)
	Unmarried	0	12(16)
	Widow	0	1(1.33)
	Divorced	0	0
TOTAL		15(100)	75(100)
Education	Illiterate	0	0
	Primary	0	0
	Secondary	0	0
	Higher secondary	0	0
	Degree+ Technical	13(86.66)	69(92.00)
	PG	2(13.33)	6(8.00)
TOTAL		15(100)	75(100)
Income	6000-8000	0	6(8.00)
	8001-10000	0	69(92.00)
	10001-12000	4(26.66)	0
	12001-14000	8(53.33)	0
	14001 and above	3(20.00)	0
TOTAL		15(100)	75(100)

Source: Pilot survey 2015
(Figures in brackets are the respective percentage)

The study also carried out the survey of beneficiaries (both male and female) of Akshaya e-centres. The table 3 shows the distribution of beneficiaries of Akshaya e-centres on the basis of gender. Out of 127 beneficiaries of Akshaya e-centres, 60.6 percent of them are female and 39.4 percent are male. Of the array of e-governance services the most availed service is e-district (62.99%). From the table it can be analysed that the services such as e-district, food safety registration, and e-payment services are mostly used by women.

Table 3: Distribution of beneficiaries of Akshaya e-centres on the basis of gender

Name of service	Number of users		
	Male	Female	Total
e-district	36	44	80
FREES	4	2	6
Food safety registration	2	13	15
e-grantz	3	2	5
e-payment	5	16	21
Total	50 (39.4)	77 (60.6)	127 (100)

Source: Pilot survey 2015
(Figures in brackets are the percentage)

4.4 Chi-square analysis
Pearson chi-square is used to examine the relationship between usage of e-governance services and gender. The null hypothesis framed was:

H₀: There is no significant association between usage of e-governance services and gender of sample respondents

H₁: There is significant association between usage of e-governance services and gender of the sample respondents

Table 4: Relationship between the usage of e-governance services and gender

Variable	Chi-square value	Degrees of freedom	Asymptotic significance
e-district	2.870	1	0.090
Freez	1.966	1	0.161
Food safety	4.831	1	0.028
e-grantz	.928	1	.335
e-payment	2.552	1	.110

Source: Pilot survey 2015

Here we reject null hypothesis that there is no relationship between gender and e-governance service, for all the chi–square values are greater than .455(for alpha=0.5). The values shown very high with respect to e-district, e-payment, and food safety.

Table 5: Symmetric measure table

		Value	Approx.Sig.
Nominal by nominal	Phi	-.142	.110
	Crammer's V	.142	.110
Number of valid cases		127	

Source: Pilot survey 2015

Phi and Cramer's V are both tests of the strength of association. It can be seen that the strength of association between the variables is very weak. The study found that seen here that $\chi(1) = 0.487$, $p = .110$. This tells us that there is statistically significant association between Gender and e-governance service; that is, both Males and Females equally prefer e-governance services. Government adopt e-governance service to carry out their public responsibilities while providing efficient automated services to beneficiaries of e-governance services. Out of 5 different types of services that are commonly provided via Akshaya e-centres, e-district is mostly used service(62.99 %). The number of services that provide different type of e-governance services also differ across the gender, as confirmed by results of a chi-square test of independence. (chi-square value=2.8, df=1, p=0.00)

From the analysis it can be concluded that the district performs excellently in participation of women in e-governance initiative. It has resulted in the empowerment of women in the context of knowledge and skills. E-governance initiative entails developing the capacities of women to overcome social and institutional barriers and strengthening their participation in the economic and political processes so as to produce an overall improvement in their quality of life.

4.5 Problems and Limitations
There are several problems that prevent women from fully participating in the ICT sector such as cultural traditions and

stereotypes about women's role in society and about the sector, internal barriers, socio-psychological factors pulling back women from the sector and its top positions: lack of self-confidence, lack of bargaining skills, risk-aversion and negative attitudes towards competition, external barriers, ICT sector features strengthening the gender gap: strongly male dominated environment, complex reconciliation between personal and professional life, and lack of role models in the sector.

The lack of a clear National policy for promoting ICT for women's development, poor ICT infrastructure, inefficient telephone services, lack of electricity in many remote, far-flung areas, and frequent power cuts, poor literacy among women (in spite of intensive measures to promote education), and inadequate computer skills, Unaffordable costs of computer hardware and software, maintenance and connectivity, little awareness of the full range of opportunities offered by ICT other than access to information; limited online information in vernacular languages, absence of favourable bandwidth and connectivity for smooth operation etc are considered as identified as the main reasons of gender inequality.

The women often face obstacles like resource crunch (financial and technological), reduced access to training and technical assistance or non-gender sensitive methodologies, social and cultural barriers for women and girls to access technology, educational short- comings, misconceptions about technology, language barriers, etc., some of which have already been mentioned above.

Women face real barriers to using ICT, and the delivery of e-services (the availability of electronically-supplied public services, such as land records and civil documents) does not take into account these critical gender gaps and women's basic needs. For example, current e-governance programmes might prioritize e-passports over the issuance of birth certificates, even though they are required in many countries to enrol children in public schools. Therefore, the latter type of an e-governance programme will have a greater development impact for poor women and girls than the former.

These key issues can be segregated as policy-making processes for e-governance planning delivery of basic services and public information via ICTs and empowerment of stakeholders, particularly women, to use ICT networks to engage with governments over governance processes.

5. Conclusion
Gender equality programmes and projects are perceived as leading to increase in income and savings of the rural households and as helping to improve the standard of living of the rural households. In order to overcome the obstacles of women's access to ICT in India, e-governance was introduced. e-governance initiatives catalyses the process of women's empowerment by opening up avenues for women to freely articulate and share their experiences, concerns and knowledge, creating their possibility of their future enrichment. It can help the women to broaden the scope of their activities and address key issues and concerns. From the study it can be analysed that, the packages such as e-governance has helped women entrepreneurs to a great extent. e-Governance have created new types of work that favour women because the kiosk helps the women to serve as a comfortable and better workplace. Thus, it enhances the participation of woman as an entrepreneur, staff, and as a

beneficiary. Therefore, it can be said that the e-governance plays twin role such that it helps to eliminating digital divide in one hand and thereby ensuring empowerment of women on the other hand.

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