THE ROLE OF INFORMATION COMMUNICATION TECHNOLOGY IN WOMEN EMPOWERMENT AND POVERTY ERADICATION IN KERALA

Dr.K.S.Chandarsekar
Professor and Head
Institute of Management in Kerala
University of Kerala
kscnair@gmail.com

C.S.Siva Prakash
Faculty
Institute of Management in Kerala
University of Kerala
sivaprakashcs@gmail.com

Abstract
Kudumbashree means Prosperity of the Family, the project initiated by the Kerala state government aims at improving the living levels of the poor women in rural and urban areas of Kerala and in India it is a massive poverty eradication programme in contemporary history .It envisaged to bring the scattered poor women talent together to form the grass root organizations to help boost their empowerment and economic security. The project aims at removing poverty among rural women households through setting up of industrious enterprises varied from pickle units to ICT based micro enterprises. The activities of micro-enterprises under the project were undertaken by the locally formed Community Development Societies comprising poor women. It has proved from this Kudumbasree project without doubt that women empowerment is the best strategy for poverty eradication. Through this innovate project the voiceless and powerless women started identifying their inner strength, weakness and opportunities for growth, and started reshaping their own destiny and the process of empowerment becomes the symbol of hope for the family and society. It opens a new landscape in development history of Kerala. In this article we critically analyzing and discussing about the Women ICT based micro enterprise supported by Kudumbasree .The discussion focus on socio economic background of women ICT based enterprises, women empowerment, input/resource support ,sustainability , challenges the enterprises facing, success factors ,and job satisfaction level among women group members .
Key words: *Kerala, Poverty alleviation, Women Empowerment, ICT Enterprises, Below Poverty Line, Kudumbasree, Community Development.*

Introduction

Kudumbasree is an innovative woman based participatory programme launched by the Government of Kerala for the eradication of poverty through concerted community action. Kerala, which is more advanced in terms of social indicators like health, education etc. has a low female work participation rate (22.9% in 2000) resulting in a high level of chronic unemployment among women. A recent study on gender parity in Kerala reveals that women in the secondary and higher secondary education segment are recording the highest incidence of educated female unemployment (Mridul and Praveena, 2005). The crucial determinants of demand and absorption of female labour, range of occupations open to women in the regional

context and the role of technology in broadening the range etc need to be studied in greater detail to articulate policy interventions to revolutionize the high incidence of educated female unemployment and their low labour participation rate in Kerala. In this context, the initiative undertaken by Kudumbasree is a major initiative to broaden the range of choice of activity for women deserves special attention. Women empowerment initiatives, micro finance operations, micro enterprise promotion and community action constitutes the core activities of Kudumbasree carried out through organizations of women below the poverty line. These enterprises are all owned, managed and operated by women from below poverty line families. One important point is that these enterprises do not underpin much of a base line education and are more suited to women with lower levels of education. In contrast the enterprises sponsored by women in ICT sector unlike in the traditional sectors, is an innovative attempt which reinforces base line education and builds on it through training and which is aimed at women with higher levels of education. More importantly this opens up an avenue for poor women to participate in the gains from technology development. The women ICT based enterprise could be evaluated by multidisciplinary approaches (Harriss 2002) ,it includes gender-based perspective that focused on transformative/developmental streams within gender studies (Reeves & Baden 2000), Enterprise-based perspective that draws from business studies and focuses particularly on the relationship between key enterprise success factors and financial/business outcomes (e.g. Perren 1999) and last livelihoods-based perspective that draws from development studies. It focuses particularly on the sustainable livelihoods framework, including access to assets and livelihood strategies (DFID 1999). The women's ICT units under Kudumbashree initiative undertaken the following jobs as given in the below Table 1.

The organization of paper contains four sections. The first section looks on literature review which emphases on previous related works from secondary sources. The second section covers the objectives and hypotheses, the scope of study, research methodology adopted for analysis of data. The third section reports the analysis and findings of the study. The last section concludes the study.

Units	**Number of units**	**Location**		**Average No of Core Group Members (Per unit)**	**Average No of Supporting Staffs**
		Urban	**Rural**		
IT School Units	151	72	79	6	1,021
Data Entry Units	72	42	30	10	3,200
Hardware Assembly Units	5	4	1	6	15

Table -1

<u>Data Entry Units</u>

The 72 data entry units have around 10 core members each; in addition they employ a further 3,400 staff that includes women and few number of men. The data entry units of Kudumbashree principally involved in data entry work like digitization of electoral rolls, or of license records. In addition they are executing following nature of works .

1. **<u>Basic data analysis work:</u>** Survey data and then summarizing that data into a report.

2. **Web design:** Undertook design of the page outlines, with women in the units filling data to complete the pages but later the women themselves started to undertake Web commissions.
3. **Human resource supply:** Supply staff to government departments that require it. For example the state government's first call centre was staffed by women from a Kudumbashree ICT unit.

IT @ School Units (Under Vidyashree Brand)

The IT @ School units have around 6 core members each. The main activities of these units are to provide necessary computer software and hardware training to the government and aided secondary school students. Core groups are further divided in to three groups with two member's .Each of the group focusing on activities of primer school, high school and secondary school respectively. If necessary this units will hire people from outside for assisting the project.

Hardware Assembly Units

The hardware assembly units have around 6 core members. The units undertake assembly, servicing and maintenance (AMC) of computers for government, schools and private enterprises. These units are also adopting supporting staffs (men) for the smooth functioning of units operations since women got certain limitation to attend remote services and maintenance. Hardware units under Kudumbashree ICT initiatives are under premature stage since it has not getting sufficient support from the government as well as local self government bodies.

Review of literature

Wresch(1996) wrote that "the poor are excluded from much of the world's information and no one has even begun to outline a solution to the problem" (1996:58). This literature review will reveal whether his sentiments are still true today. In his view, one of the biggest ironies of the information age is that the rich get their information almost free, while the poor have to pay dearly for it, in the case for instance of the price poor people have to pay to make a simple telephone call. The notion of exclusion is thus an important consideration in some of the literature in this review.

Castells (1999) examines a profile of a new world, centered on multinational corporations, global financial markets and a highly concentrated system of technological research and development, which may not be highly relevant to this review. It is significant however that the system he envisages allows linkages with everything that is valuable according to dominant values and interests, while disconnecting everything that is not valuable, or becomes devalued. The system has a concurrent capacity to include and exclude people based upon a capacity to network, and this is where the poor in developing countries suffer from exclusion.

Braga (1998) argued some believe that ICT's have and will contribute to even wider economic divergence between developing and developed countries. This view is consistent with Brown's (2001) argument that there is still a lot of scepticism with regard to whether ICTs can reduce poverty in the developing countries. This thesis is also evident in Chowdhury (2000) who says that some sceptics still do not see any role for ICTs in efforts aimed at poverty alleviation. In his words "the poor can't eat high-speed Internet access, of course". Nevertheless, others believe that ICTs can be mechanisms that enable developing countries to 'leapfrog' stages of development. This perspective is in line with Barlow's (1998) commentary that Africa (discussed as a unit) should skip industrialism entirely and leap directly into the information era. This conclusion is shared by Hudson (2001) who says the potential for 'leapfrogging' lies in the

use of wireless terrestrial and satellite technologies. An example of this is provided by Kibati (1999) who described 'a cost model that contrasts GSM and CDMA networks'.

Chowdhury (2000) writes that ICTs encompass technologies that can process different kinds of information (voice, video, audio, text and data) and facilitate different forms of communications among human agents, among humans and information systems, and among information systems. They are about capturing, storing, processing, sharing, displaying, protecting, and managing information. Duncombe and Heeks (1999) simplify the definition by describing ICTs as an

Mansell & Wehn (1998) focus on how ICTs can be harnessed for purposes of meeting development goals. There is one chapter in the publication specifically on the uses of ICTs when poverty is pervasive. They warn that if poor countries implement investment strategies that emulate the 'one person – one telephone – one Internet access point' model that is predominant in the West, frustration will be rife. In addition, they advance the view that there is little to be gained from access to global or local resources if the skills to select, interpret and apply the information are absent or poorly developed through the population. Consequently, they suggest it is important for poor countries to develop models for 'access' and 'information content' because the capacity to generate and share information about local resources is as important as access to distant digital information.

Barlow (1998) believes that common perceptions of the potential of the digital age are limited by the habits of mind one develops in an industrial society. These habits are different for those who have grown up in poverty with no television sets for instance to shape their world view. Most of these people are found in Africa and the developing world in general. The basis of this argument is weak however since Barlow has no empirical evidence to support his assertion, apart from his experiences in the countryside of a developed country.

Braga (1998) builds a case that concludes that the countries that are better positioned to thrive in the new economy are those that can rely on: widespread access to communication networks; the existence of an educated labour-force and consumers; and the availability of institutions that promote knowledge creation and dissemination. This may suggest that developing countries are at a disadvantage in comparison to developed countries. Similar sentiments are shared by Mansell & Wehn (1998).

Heeks (1999) asked: "Can information and communication technologies (ICTs) help to alleviate poverty in low-income countries?" His study attempts to answer that question and provides a theoretical framework for empirical studies in this area. Heeks suggests that ICTs play a role mainly as communications technologies rather than as information-processing or production technologies. Among his priorities for the development agenda are: the poor need knowledge to access, assess and apply existing information and need resources for action more than they need access to new information; the poor need access to new, locally-contextualized information more than access to existing information from an alien context; the information needs of the poor may be met by more informal information systems than by formal ICT-based systems; the poor will reap the fullest benefits of ICTs only when they know and control both the technology and its related know-how.

Chowdhury (2000) asserts that "ICTs do not have any more to do with poverty and food security in the developing countries than rain dances have to do with rain". He notes that many skeptics have not seen the role of ICTs in efforts intended to alleviate poverty and bring food security to developing countries. The author acknowledges that the problem of poverty alleviation is complex. Efficient production systems and physical infrastructure are a few of the necessities.

Brown (2001) argues that ICTs are simply tools. Significantly, no single tool can solve a global problem, such as, poverty, which has such complex and multiple causes. The author gives examples of where ICTs can play a significant role such as in the creation of jobs and in the reduction of distance. However, the author points out that it would be preferable if the labour-force were educated in this information age. **Mohanan Pillai & Shanta (2008)** argues while there are hundreds of government projects aimed at poverty alleviation, stock taking of their impact revealed that their outcomes have been mixed. In this context the newly designed projects based on IT specifically aimed at reducing the social, gender and economic divide needs to be examined to understand the lessons that these new initiatives offer. Such an attempt is made in this project on employment generating potential of this technology among poor women.

Need of the study

The studies conducted by various agencies and individuals indicates that except ICT enterprises other micro enterprises are shown good indication of women empowerment and poverty alleviation .This throws the light for in-depth evaluation of women ICT based enterprises in Kerala. Though the earlier studies have developed some multidisciplinary approaches they have not been corroborated with exhaustive empirical content (Shobha Arun et al, 2004). This study fills this gap. This article is a part of doctoral work done in Kerala to evaluate ,how women ICT based enterprises under Kudumabasree is useful for women empowerment and poverty alleviation and various problems the enterprises facing to run the ICT units . The study will help the agencies and policy makers to intervene on the problems and help the ICT units for turnaround.

Objective and Hypostases of the study

1. To conduct a socio-economic evaluation of women ICT based enterprises.
2. To analyze whether the input/resource are adequate for smooth functioning of Women ICT units.
3. To critically evaluate sustainability issues related with women ICT enterprises.
4. To analyze how ICT units supporting women empowerment.
5. To analysis the job satisfaction level of core group members in women ICT units.
6. To critically analyze various challenges women ICT units facing in Kerala.

Hypotheses

The following hypotheses were formed for the study:

1.H_0 : The women ICT enterprises are significantly supporting for empowerment.

H_1 : The women ICT enterprises are not significantly supporting for empowerment.

2.H_0: The women ICT enterprises are experiencing no difficulty to obtaining adequate Input/resources.

H_1: The women ICT enterprises are experiencing difficulty to obtaining adequate Input/resources.

3.H_0: There exists a sustainable future for women ICT based enterprises in Kerala under the present circumstances.

H_1: There exists no sustainable future for women ICT based enterprises in Kerala under the present circumstances.

4.H_0: There is no significant level of job satisfaction among core group members working in women ICT enterprises.
H_1: There is a significant level of job satisfaction among core group members working in women ICT enterprises.

Research Methodology
In kerala there are 228 Kudumbasree ICT enterprises spread across 14 districts in kerala .Based on the activities theses units can be classified in three categories as Data processing units, IT @ School, and Hardware assembling units (see Table -1). The data processing units are only considered for the study. A sample of 50 % of the total data processing units(36 out of 72) were selected for the study and 108 core group members of total 252 considered for individual survey . The study was conducted through a systematic survey using a structured questionnaire covering ICT enterprises, ICT unit members and the agency. A Stratified simple random sampling survey was carried for selecting sample for survey by considering number of units in each district in kerala and also number of core group members in each unit. The one sample binomial test "to test the proportion of agreement" and chi-square teat was used to test hypotheses.

Women ICT Entperises -socio-economic analysis
The analysis of the women's socio-economic background shows that both married and unmarried women were members of IT Kudumbasree units. The majority of the members were above 22 years of age and 65% of the participants fell in the age group 22 to 31. Around 81 % were post SSLC and an almost equal distribution of around 43% to 31% was found as Plus 2 / ITI / Degree holder, and 7% were Post Graduates. This basic literacy was an important enabling factor for women to become beneficiaries of the IT revolution quite in contrast to many other states where female literacy is low (see Table-2). It is equally interesting to note that 74 % of the women were married women. The survey revealed that nearly 91 % of the families held land and the average land holding size for the family was 6 cents. It was also seen that while 6% lived in rented houses, 94% lived in houses owned by other members of the family and 14 % had houses in their own name. It could also be a factor, which pushes one to the job market reflecting the absence of alternate income or income base for starting own enterprises. The survey shown that 85% respondents' experienced financial difficulty before joining the unit. Location specific factors of the units were also conducive factors. These can be considered as major push factors for women to participate in Kudumbasree. By introducing the poor women to the ICT sector the new experiment seems to have addressed both the social and economic digital divide.

Educational Qualification	Frequency	%
SSLC	20	19%
Pre- Degree / ITI	46	43%
Degree	34	31%
Post Graduate	8	7%
Total	108	100%

Table-2

The survey indicated that 87 % were engaged in data entry works, while 17 % did data entry and DTP works. 4% were engaged in miscellaneous IT related work such as accounting and graphic art works etc (see Table -3).

Job Profile	Frequency	%
Data Entry	87	81%
Data Entry + DTP	17	16%
Others	4	4%
Total	108	100%

Table -3

The positive factor favoring women's entry into ICT was the support from Kudumbasree in the form of training in financial, technical and managerial aspect. It is important to note that 66% of the women have been specifically trained with the intention of formation of Kudumbasree. As for the remaining 34 % they were already trained in data entry and other such simple tasks as part of the Community Development Societies (CDS) programme or on their own. The four main agencies of training were from Kudumbasree, CDS and local bodies and other private institutions. 66 % got training from Kudumbasree, 12 % got training from CDS and 6% got training from local bodies and 7% got training from private institutions and 9 % have received training through on the job training. Thus in all 89 % had received training. In the case of communication skill it is to note that 73 % reported they are poor.

In the case of internal capacity building, over and above the work experience gained, it was observed that there was widespread participation from the members in the day-to-day activities of the unit. Only in a few units was there a leader who took up responsibilities. In the normal course it was shared. The survey also showed that 78 % reported that over and above their normal duties they did participate in the functioning of the unit .This was an opportunity for sharpening their managerial skills that includes developing skills in personnel and financial management, marketing, customer relationship, technical etc.

Women Empowerment Analysis

Empowerment Parameters	Opinion					
	Not Improved	Less Improved	No Change	Improved	Highly Improved	Total
Confidence to run the business alone		5 (4.6)	4 (3.7)	57 (53)	42 (39)	108 (100)
Community level participation			8 (7.4)	55 (50)	45 (42.6)	108 (100)
Support from the family for working in an ICT unit	6 (5.5)		5 (4.6)	46 (42.4)	51 (47.5)	108 (100)
Change in status in the family		2 (1.9)		44 (40.7)	62 (57.4)	108 (100)
Contribution to family income			14 (13)	31 (29)	63 (58)	108 (100)
Decision-making power	7 (6.4)	14 (13)		29 (26.8)	58 (53.8)	108 (100)
Freedom in household expenditure		6 (5.6)		72 (66.6)	30 (27.8)	108 (100)
Participation in political activity			12 (11.1)	57 (52.8)	39 (36.1)	108 (100)

Table -4

The Table -4 shows the parameters considered for women empowerment analysis and the responses. In the case of "confidence to run the business" 53% has said that they have improved, 39% said highly improved, 3.7% has said that they have no change in the state and 4.6% said only less improvement. In the case of second statement "community level participation "50% said that they have improved and 42.6 % said highly improved and 7.4% has said no change in the state. The third statement "support from the family" indicates that 47.5% highly improved, 42.4% improved, 5.5% not improved and 4.6% has said no change in the state. The fourth statement "change in family status" indicates that 57.4% highly improved, 40.7% improved, and 1.9% has said less improved. In the case of fifth statement "contribution to family income" 58% has said highly improved ,29% improved and 13% has said no change in the state. The sixth statement shows that 53.8% highly improved, 26.8% improved, 13% less improved and 6.4% has said no improvement in the state. The seventh statement "freedom in house expenditure" shows that 66.6% improved, 27.8% highly improved and 5.6% said less improved. The last statement "participation in political activity" 52.8% has said improved, 36.1% highly improved and 11.1% has said no change in the state.

Hypothesis

H_0 : The women ICT enterprises are significantly supporting for empowerment.

H_1 : The women ICT enterprises are not significantly supporting for empowerment.

Respective sample	**Observed frequency O_i**	**Expected frequency E_i**	**$O_i - E_i = X$**	**X^2**	**X^2 / E_i**
Confidence to run the business alone	**95**	**108**	**-13**	**169**	**1.56481481**
Community level participation	**100**	**108**	**-8**	**64**	**0.59259259**
Support from the family for working in an ICT unit	**97**	**108**	**-11**	**121**	**1.12037037**
Change in status in the family	**106**	**108**	**-2**	**4**	**0.03703704**
Contribution to family income	**94**	**108**	**-14**	**196**	**1.81481481**
Decision making power	**87**	**108**	**-21**	**441**	**4.08333333**
Freedom in household expenditure	**102**	**108**	**-6**	**36**	**0.33333333**
Participation in political activity	**96**	**108**	**-12**	**144**	**1.33333333**
Degree of Freedom = n-1 =8-1=7		**Calculated Value**			**10.8796296**
Level of Significance = .05					
Table value = 14.07					

Table -5

INFERENCE: Since the calculated value is less than the table value we accept the null hypothesis that is **"The women ICT enterprises are significantly supporting for empowerment"** and reject the alternative hypothesis "The women ICT enterprises are not significantly supporting for empowerment".

Input/resource analysis

Parameters	Opinion					Total
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	
Availability of technically competent candidates for the requirement of ICT enterprise is adequate.			4 (11.1)	24 (66.7)	8 (22.2)	36 (100.0)
Technical Training obtained from the agency is adequate		4 (11.1)	3 (8.3)	24 (66.7)	5 (13.9)	36 (100.0)
Training obtained from the agency in Management/entrepreneurship skills is adequate		6 (16.7)	8 (22.2)	20 (55.6)	2 (5.6)	36 (100.0)
Support to obtain ICT hardware and software's for compete in the market is adequate	4 (11.1)	9 (25.0)	6 (16.7)	16 (44.4)	1 (2.8)	36 (100.0)
It is difficult to get financial assistance for recurring /working capital for running business?		2 (5.6)	8 (22.2)	10 (27.8)	16 (44.4)	36 (100.0)
It is difficult to get information about customer	3 (8.3)	2 (5.6)	5 (13.9)	26 (72.2)		36 (100.0)

Table- 6

The Table- 6 regarding obtaining adequate input/resources, nobody disagreed with the first statement "Availability of technically competent candidates for the requirement of ICT enterprise is adequate" but 11% has no opinion and 89% agreed with it. In the case of second statement "Technical Training obtained from the agency is adequate",11% disagreed and 80% agreed with it. In the case of third statement "Training obtained from the agency in Management/entrepreneurship skills is adequate", only 17% disagreed and 70% agreed with it. The fourth statement "Support to obtain ICT hardware and software's for compete in the market is adequate" has indicates only 11% strongly disagreed, 25% disagreed and 47% agreed with it. In the case of fifth statement "It is difficult to get financial assistance for recurring /working capital for running business", only 5% disagreed, 22% has no opinion and 72 % agreed with statement. The last statement "It is difficult to get information about customer", 14% disagreed and, 14% has no opinion and 72% agreed with the statement.

Hypothesis

H_0: The women ICT enterprises are experiencing no difficulty to obtaining adequate input/resources.

H_1: The women ICT enterprises are experiencing difficulty to obtaining adequate input/resources.

Binomial Test of (To test the proportion of agreement; H_0: p =0.5, H_1: p>0.5)

Parameters	N	Proportion of agreement (p)	Z-value
Availability of technically competent candidates for the requirement of ICT enterprise is adequate.	**36**	**0.89**	**7.48***
Technical Training obtained from the agency is adequate	**36**	**0.81**	**4.74***
Training obtained from the agency in Management/entrepreneurship skills is adequate	**36**	**0.61**	**1.35**
Support to obtain ICT hardware and software's for compete in the market is adequate	**36**	**0.47**	**-0.36**
It is difficult to get financial assistance for recurring /working capital for running business?	**36**	**0.72**	**2.94***
It is difficult to get information about customer	**36**	**0.72**	**2.94***

*** Agreement is significant at 5% level of significance**

Table- 7

The results of binomial test to test the proportion of agreement on different parameters is given in **Table -7**. From the table it can be observed that 89% agreed with the statement "availability of technically competent candidates for the requirement of ICT enterprise is adequate". The binomial test gives Z-value 7.48 which is significant at 5% level of significance. It reveals the availability of technically competent candidates is adequate. 81% opined that "technical training obtained from the agency is adequate" which is significant at 5% level of significance. Even though 61% agreed with "training obtained from the agency in management / entrepreneurship skills is adequate', the binomial test shows which is not significantly above 50% at 5% level of significance. Only 47% told that "support to obtain ICT hardware and software's for compete in the market is adequate". 72% of the ICT enterprises facing "difficulty to get financial assistance for recurring / working capital for running business" which is a significant proportion at 5% level of significance. 72% facing "difficulty to get information about customer". So, the analysis of different parameters of the availability of input resources to run ICT enterprises reveals that they face difficulty to get input resources in general. But it is to be noted that technically competent candidates and technical training are adequate to run ICT enterprises in the state. Thus the hypothesis **"Women ICT enterprises are experiencing difficulty in obtaining adequate input recourses"** is to be accepted.

Women ict Enterprises – sustainability analysis

Parameters	Opinion					Total
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	
The enterprise will be Financially sustainable in terms of to sufficient capital investment ,recurrent funds and short-term credit to manage cash	2 (5.6)	20 (55.6)	5 (13.9)	9 (25.0)		36 (100.0)
The enterprise could sustain workforce skills and build managerial capacity; as well as create and sustain a motivational, rewarding and satisfying work environment		3 (8.3)	4 (11.1)	24 (66.7)	5 (13.9)	36 (100.0)
The enterprise could able to continually update technology and associated skills to be able to respond to changing customer needs.	1 (2.8)	14 (38.9)	16 (44.4))	5 (13.9)		36 (100.0)
The enterprise could go for diversification of products and services offered and by attracting a greater number of customers.	1 (2.8)	6 (16.7)	23 (63.9)	6 (16.7)		36 (100.0)
The enterprise could get consistent market and customer support for service	4 (11.1)	10 (27.8)	7 (19.4)	15 (41.7)		36 (100.0)
The enterprise would get sustainable support from kudumbasree			9 (25.0)	21 (58.3)	6 (16.7)	36 (100.0)
There will be a sustainable support and help from the government	2 (2.8)	13 (36.1)	10 (27.8)	11 (30.6)		36 (100.0)

Table-8

The Table-8 regarding sustainability clearly indicates 70% disagreed on statement "The enterprise will be Financially sustainable in terms of to sufficient capital investment ,recurrent funds and short-term credit to manage cash" , 25% agreed and 14% has no opinion .In the case of second statement "The enterprise could sustain workforce skills and build managerial capacity; as well as create and sustain a motivational, rewarding and satisfying work environment", only 8.3% disagreed ,11% has no opinion, and 80% agreed with the statement . In

the case of third statement "The enterprise could able to continually update technology and associated skills to be able to respond to changing customer needs" only 14% agreed with, 44.4% has no opinion and 41% disagreed with the statement. The fourth statement "The enterprise could go for diversification of products and services offered and by attracting a greater number of customers" 63% has no opinion, 19.5% disagreed, and only 16.7% agreed with it. The fifth statement "The enterprise could get consistent market and customer support for service",39% disagreed ,19.4% has no opinion and 41.7% agreed with it .The statement " The enterprise would get sustainable support from Kudumbasree" 75% has agreed ,and 25% has no opinion and nobody disagreed with it. In the case of last statement "There will be a sustainable support and help from the government", 39% disagreed, 30.6% agreed and 28% has no opinion with the statement.

HYPOTHESIS

H_0: There exists a sustainable future for women ICT based enterprises in Kerala under the present circumstances.

H_1: There exists no sustainable future for women ICT based enterprises in Kerala under the present circumstances.

Binomial Test (To test the proportion of agreement; H_0: p =0.5, H_1: p>0.5))

Parameters	N	Proportion of agreement (p)	Z-value
The enterprise will be Financially sustainable in terms of to sufficient capital investment ,recurrent funds and short-term credit to manage cash	**36**	**0.25**	**-3.46 #**
The enterprise could sustain workforce skills and build managerial capacity; as well as create and sustain a motivational, rewarding and satisfying work environment	**36**	**0.81**	**4.74 ***
The enterprise could able to continually update technology and associated skills to be able to respond to changing customer needs.	**36**	**0.14**	**-6.23 #**
The enterprise could go for diversification of products and services offered and by attracting a greater number of customers.	**36**	**0.17**	**-5.27 #**
The enterprise could get consistent market and customer support for service	**36**	**0.42**	**-0.97**
The enterprise would get sustainable support from kudumbasree	**36**	**0.75**	**3.46 ***
There will be a sustainable support and help from the government	**36**	**0.31**	**-2.46 #**

 # Significant disagreement with the statements at 5% level of significance

*** Significant agreement with the statements at 5% level of significance**

Table-9

The results of binomial test to test the proportion of agreement on different parameters is given in Table -9. From the table it can be observed that 25% agreed with the first statement "The enterprise will be financially sustainable in terms of to sufficient capital investment, recurrent funds and short-term credit to manage cash", which is significantly low at 5% level of significance. 81% agreed on second statement "The enterprise could sustain workforce skills and build managerial capacity; as well as create and sustain a motivational, rewarding and satisfying work environment " its Z-value is 4.74 and significant 5% level of significance. Only 14% agreed on the statement "The enterprise could able to continually update technology and associated skills to be able to respond to changing customer needs" and the binomial test shows which is significantly low at 5% level of significance. The statement "The enterprise could go for diversification of products and services offered and by attracting a greater number of customers" is accepted by 17% only. Even though 42% agreed on the statement "The enterprise could get consistent market and customer support for service" the binomial test shows which is not differed significantly from 50% at 5% level of significance. 75% agreed on the statement "The enterprise would get sustainable support from Kudumbasree" which got Z –value, 3.46 and the agreement is significant at 5% level of significance. 31% agreed on the statement "There will be a sustainable support and help from the government" and the disagreement on the statement is significant at 5% level of significance. So, the analysis of different parameters of the sustainability of women ICT based enterprises in Kerala reveals that it is difficult to get a sustainable future for women ICT based enterprises in Kerala. Thus the alternate hypothesis **"There exists no sustainable future for women ICT based enterprises in Kerala under the present circumstances"** is to be accepted

Job satisfaction analysis

The below Table-10 indicates the parameters considered for the study and the opinions. In the case of first stamen "conducing working environment" 52% strongly agreed, 33.2% agreed, 9.2% has neutral opinion, 2.8% disagreed and 2.8% stonily disagreed. The statement "harmony in group activity" only 4.6% disagreed, 58.2% strongly agreed, 29.7% agreed and 7.4% has neutral opinion. In the case of third statement "sufficient financial support form enterprise", 37% strongly agreed, 38% agreed, 17.6% has neutral opinion and 7.4% disagreed. The fourth statement "highly supportive group members", 67.7% has strongly agreed, 21.4% agreed, 9.2% has neutral opinion and only 1.7% has strongly disagreed. In the case of last statement "employment stability" 46.4% agreed, 24% strongly agreed, 11.1% disagreed and 18.5% has neutral opinion.

Parameters	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total
The Woking environment in conducive	**3 (2.8)**	**3 (2.8)**	**10 (9.2)**	**36 (33.2)**	**56 (52)**	**108 (100)**
There is harmony in group activities		**5 (4.6)**	**8 (7.4)**	**32 (29.7)**	**63 (58.3)**	**108 (100)**
The enterprise providing me sufficient financial support		**8 (7.4)**	**19 (17.6)**	**41 (38)**	**40 (37)**	**108 (100)**
The group members are highly supportive	**2 (1.7)**		**10 (9.2)**	**23 (21.4)**	**73 (67.7)**	**108 (100)**
Employment stability in ICT enterprise		**12 (11.1)**	**20 (18.5)**	**50 (46.4)**	**26 (24)**	**108 (100)**

Table-10

HYPOTHESIS

H_0: There is no significant level of job satisfaction among core group members working in women ICT enterprises.

H_1: There is a significant level of job satisfaction among core group members working in women ICT enterprises.

Respective sample	Observed frequency	Expected frequency E_i	$O_i - E_i = X$	X^2	X^2 / E_i
The Woking environment in conducive	**92**	**108**	**-16**	**256**	**2.37037037**
There is harmony in group activities	**95**	**108**	**-13**	**169**	**1.56481481**
The enterprise providing me sufficient financial support	**81**	**108**	**-27**	**729**	**6.75**
The group members are highly supportive	**96**	**108**	**-12**	**144**	**1.33333333**
Employment stability in ICT enterprise	**86**	**108**	**-22**	**484**	**4.48148148**
Degree of Freedom = n-1 =5-1=4				**Calculated Value**	**16.5**
Level of Significance = .05					
Table value = 9.49					

Table-11

INFERENCE: Since the calculated value is greater than the table value we reject the null hypothesis that is "There is no significant level of job satisfaction among core group members working in women ICT enterprises" and accept the alternative hypothesis **"There is a significant level of job satisfaction among core group members working in women ICT enterprises"**.

Women ict Based Enterprises –challenges

The major challenge faced by the units under study was delay in payments for the work done. Around 60% of the units reported delay in payment from Kudumbasree which involved large sums of money .This has put the members to considerable difficulty. If the unit get money form agency or not they need to pay wages to outside workers employed by the unit had to be paid in time for which they had to find their own resources. In this respect, it is important to note that government work in no way guarantees payment in time. Added to this is the fact that since there is no formal contract entered into when undertaking the works, they are more vulnerable in the case of non-payment. This has resulted in unstable income flows. As for advances received in case of hardware units they did get advances as soon as the quotation was accepted mainly by panchayats. ICT units run by women under cooperative form of organization are the main competitors for ICT units under the banner of Kudumbasree. The competition is prevalent mainly for work coming from within that region rather than state level works. Given the nature of the work done by these units i.e. data entry, not much competition is faced from private parties since such type of data entry is not common. In case of DTP and other related works, Kudumbasree units face competition from the private sector. They survive by charging lower prices. The element of subsidy probably helps them to do this. This is because when DTP work comes and if they are busy they are not able to take it. The units are only concentrating on data entry work only and not ready to diversify to related business.

Conclusion

The Women ICT initiative under the leadership of Kudumbasree has vast potential as a tool for empowering the poor women. The social and economic barriers could be effectively overcome through this innovative programme. This programme has made a impression in the digital divide and in scripted the opening of opening up the opportunities of the information, communication and technology to the poor and socially rearward women. The study indicates that, at the basic literacy of the Kerala state, ICT of poor women empowerment is feasible provided the right organizational support is given. The Poor woman through this initiative have made an entry into the lowest continuum of IT enabled jobs and also ensures minimum level of income adequate to meet family needs. The study also indicates that as days passes the ICT enterprises are facing difficulties to get adequate inputs/resources ,facing sustainability issues and also various challenges like delay of payment ,technological obsolesces and stiff competition from the digital market Etc. It is the high time for the agency (Kudumbasree) and government to act and support this innovative ICT based women empowerment and poverty elevation progarmme for sustainable Kerala future.

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