

ADOPTION OF ICTS BY WOMEN MICRO-ENTREPRENEURS IN RURAL AREAS - A STUDY IN DINDIGUL DISTRICT, TAMIL NADU, INDIA

S. Gnanasaranya

Post-Doctoral Fellow (ICSSR), Department of Economics, The Gandhigram Rural Institute-DU, Gandhigram, Tamil Nadu, India. Email: gokuladharanni@gmail.com

Abstract Women constitute almost half of the population of India (indiaonlinepages.com) and similar is the case in rural areas. They contribute very significantly for economic development as well as increased per capita output and income. This has more significance to entrepreneurial women when ICT applications have become important for their business growth. Infact, the adaptation to the ICT is not an optional but has become a necessity in all business organisations including micro-enterprises. Therefore, an attempt has been made through a field enquiry to disclose the adoption of ICTs by women micro-entrepreneurs. The study finds that women micro-entrepreneurs are aware about the significance of ICTs for their entrepreneurial development. Among ICTs, mobile phones are prominently used by employing Facebook, WhatsApp, and other social media applications. High level of adoption is found among women micro-entrepreneurs in services sector particularly among educated youth and among those who have vocational skill. The entrepreneurs who ventured recently have adopted ICTs to a greater extent than the experienced entrepreneurs. The study concludes with the emphasis on institutional arrangements for non-formal vocational skill training on ICTs to women in general and women micro-entrepreneurs in particular.

Keywords: ICTs, Women Entrepreneurs, Micro Women Entrepreneurs, Entrepreneurship, Entrepreneurship Development, India, Tamil Nadu

INTRODUCTION

Information and communication technology (ICT) is a powerful economic development tool (Nduati, Ombui, & Kagiri, 2015). It promotes growth through innovation and application of technology for business development (Doukidis, Lybereas, & Galliers, 1996), and encourages growth from within local economies. In fact, technology has enabled those of ordinary level to do extra ordinary things. Since the role of rural women entrepreneurs are something beyond just increasing per capita output and poverty alleviation (Kreide, 2003) by initiating and constituting change in the business and the society, it is the need of the hour that women entrepreneurs in general and such women micro-entrepreneurs in rural areas in particular are to be pushed to the comfort zones by developing in them new skills with the help of ICT knowledge in the modern era. Nowadays, ICT is felt as the major subject of importance especially for entrepreneurial success and therefore, the adaptation of ICT is not optional but has become a necessity to all the women micro-entrepreneurs. Use and adaptation to the modern ICT will enable the women micro-entrepreneurs to reach the heights and develop the enterprises as an

effective competitive force in the era of economic reforms and globalisation.

STUDY BACKGROUND

Perusal of literatures evidences that use and adoption of ICTs by women micro-entrepreneurs is one of the pre-requisites for the development of their business. Cell phone usages have increased the confidence and economic activities of business women (Munyua & Mureithi, 2008). Women with high personal traits such as innovativeness and risk-taking propensity are highly motivated for the adoption of ICTs (Ndubisi & Kahraman, 2005). "IT therapy" has provided individualised technology-related assistance with an emphasis on relationship-building, customised training, context sensitivity and solutions to open new opportunities for micro-enterprises (Wolcott, Kamal, & Qureshi, 2008). However, motivating factors which influence the ICT adoption rate of micro-enterprises seem to differ between countries (Steyn, Steyn, & De Villiers, 2015). Poor telecommunication infrastructure, lack of security supports and high investment cost (Ladokun, Osunwole, & Olaoye, 2013), lack of perceived usefulness and job-fit

(Xiong, Qureshi, & Najjar, 2013), and market characteristics including technology characteristics (Mwai, 2016) are reported to influence as well as affect the adoption of ICTs by small and medium entrepreneurs, whereas awareness of e-business technologies, availability of resources, and market forces serve as drivers (Esin & Heeks, 2015) among women micro-entrepreneurs in rural areas. In this context, with a view to disclose more about the adoption of ICTs by women micro-entrepreneurs in rural areas, an in-depth field investigation has been made in Dindigul district with the following specific objectives.

OBJECTIVES

- To assess the knowledge about and usage of ICTs by the women micro-entrepreneurs in rural areas,
- To identify the factors that are contributing as well as affecting the adoption of ICTs for entrepreneurial development, and
- To suggest measures for increased adoption of ICTs by women micro-entrepreneurs in rural areas.

METHODOLOGY

The study was empirical in nature and survey method was employed. On simple random basis, one of the Gram Panchayats (GP) which were adopted by Gandhigram Rural Institute- Deemed University, Gandhigram in Tamil Nadu

under the Scheme of Unnat Bharat Abhiyan of Government of India was identified purposively and all the women micro-entrepreneurs found in the sample GP were identified and studied. Structured interview schedule was prepared for the collection of the data from the field. A few statistical tools were used for analyses enabling to draw inferences.

MAJOR INFERENCE

Literatures evidence that the adoption behaviour is influenced by several micro and macro environmental factors which include socio, economic, cultural, and psychological traits of the individuals and the factors constituting the macro environments which are beyond the control of individuals. However, the study presumes that demographic characteristics such as age and educational status, and knowledge level of individuals exert direct as well as indirect effect on the adoption behaviour. Hence, an attempt has been made to understand the adoption behaviour towards ICTs among women micro-entrepreneurs and the major influences drawn from the analysis are presented below.

Pattern of Women Micro-Entrepreneurs

Through field investigation, 56 women micro-entrepreneurs involved in different pattern of micro-entrepreneurial activities were identified in the study area.

Table 1: Pattern of Women Micro-Entrepreneurs

Sl. No	Pattern of Micro-entrepreneurs	Distribution of Women Micro-entrepreneurs (N=56)			
		Up to 30 years	31 – 50 years	Above 50 Years	Total
	Services Sector				
1	Vegetable and Fruit vending	1	4	3	8 (16)
2	Fabrics and Garment vending	1	2	-	3 (6)
3	Flower and Garland making	-	2	-	2 (4)
4	Retail trading	2	3	2	7 (14)
5	Tailoring	2	2	-	4 (8)
6	Washing and Ironing	-	3	2	5 (10)
7	E – Servicing	1	1	-	2 (4)
8	Beauty parlouring	1	1	-	2 (4)
9	Pavement Food Stalls	1	2	-	3 (6)
10	Money Lending	-	3	1	4 (8)
11	Rental services	-	1	-	1 (2)

12	Clinical testing	1	2	-	3 (6)
Secondary Sector					
13	Cooking & Catering	-	2	1	3 (6)
14	Snacks making	-	2	2	4 (8)
15	Handicrafting	-	-	1	1 (2)
Primary Sector					
16	Cattle Rearing	-	2	2	4 (8)
Total		10 (18)	32 (57)	14 (25)	56 (100)

Source: Computed data

Figures in brackets are percentages to 'N'

As show in Table 1, majority of the micro-entrepreneurs are found in services sector which includes distribution of goods and services while a few micro-entrepreneurs are found in primary and secondary sectors which include production/manufacturing of snacks, preparation of food stuffs against orders, handicrafting of goods and cattle rearing.

Among the micro-entrepreneurs in the services sector, 40 percentage of them are involved in distribution of goods which includes distribution, retail trading, vending of fruits, vegetables, flowers, garments and food stuffs through pavement stalls, while 60 per cent are involved in offering/distributing services such as tailoring, money lending, beauty parlouring, washing & ironing of cloths, catering of

food stuffs, rental services of vessels, furniture's and fixtures and e-services such as browsing & downloading, e-booking, e-transfer of money and such other services. Thus, majority of the women entrepreneurs in the study area are involved in services sector.

Age Wise Distribution of Women Micro-Entrepreneurs

As the study intends to find out the relationship between age and adoption of ICTs by women micro-entrepreneurs, an analysis has been made on the age wise distribution of respondents.

Table 2: Age wise Distribution of Women Micro-Entrepreneurs

Sl. No	Age of the respondents Entrepreneurs category	Distribution of Women Micro-entrepreneurs (N=56)			
		Up to 30 years	31 – 50 Years	Above 50 Years	Total
1	Services sector	10	26	8	44 (79)
2	Secondary sector	-	4	4	8 (14)
3	Primary sector	-	2	2	4 (7)
Total		10 (18)	32 (57)	14 (25)	56 (100)

Source: Computed data

Figures in brackets are percentages to 'N'

The study finds that a majority 57 percentage of the women micro-entrepreneurs belonged to middle age category (age ranging between 31 and 50 years). Moreover, none of the entrepreneurs under young age category is found both in primary and secondary sectors, whereas a significant percentage of young entrepreneurs are found in services sector. This may indicate not only the potentials of services sector in providing entrepreneurial opportunities to women but also the increased demand for services in the rural economy.

Educational Status of Women Micro-Entrepreneurs

As shown in Table 3, majority (32%) of the women micro-entrepreneurs did not have formal education. However, 21 per cent of women micro-entrepreneurs have primary level education and another 27 per cent have higher secondary level education. Only 20 per cent of women micro-entrepreneurs have technical education.

Table 3: Educational Status of Women Micro-Entrepreneurs

Sl. No	Entrepreneurs category Level of Education	Number of respondents (N=56)			Total
		Services sector	Secondary sector	Primary sector	
1	No formal education	12	3	3	18 (32)
2	Primary level	9	2	1	12 (21)
3	Secondary level	7	1		8 (14)
4	Higher secondary level	6	1		7 (13)
5	Technical education	10	1		11 (20)
Total		44 (79)	8 (14)	4 (7)	56 (100)

Source: Computed data

Figures in brackets are percentages to 'N'

Awareness and Knowledge of Women Micro-Entrepreneurs About ICTs

The study finds that women micro-entrepreneurs in rural areas are highly aware about the ICTs, such as mobile phones, computers, Internet and the like. Further, majority of them are highly aware about the brands of various ICTs. However, when it comes to the level of knowledge, the study finds differences in knowledge level among women micro-entrepreneurs.

To understand the knowledge level about ICTs, a few questions related to brand knowledge, utility specifications

and operational details of ICTs are enquired. For instance, the utility features of ordinary versus smart mobile phones, including services features in connection with e-communication and e-learning and operational features like calling, messaging, video recording, snap taking, data storing and retrieving, etc., are estimated with the help of three point rated scales. The index scores on knowledge about ICTs were computed to all the respondents. Based on the index scores, the respondents were grouped into three categories, viz., low, medium and high profile in knowledge about ICTs as detailed in Table 4.

Table 4: Knowledge Level About ICTs

Sl. No	Entrepreneurs category Knowledge level	Number of respondents (N=56)			Total
		Low	Medium	High	
1	Services sector	8	12	24	44 (79)
2	Secondary sector	1	2	5	8 (14)
3	Primary sector	-	1	3	4 (7)
Total		9 (16)	15 (27)	32 (57)	56 (100)

Source: Computed data

Figures in brackets are percentages to 'N'

As shown in Table 4, majority (57%) of the respondents have high level of knowledge about ICTs. Although majority of them did not know about operational features of computers and internet, it is observed that they have high level of knowledge about mobile phones. The mobile phones are very popular among women micro-entrepreneurs in rural area.

Adoption of ICTs for Entrepreneurial Development

The study intends to know whether ICTs are used in connection with entrepreneurial activities by women micro-entrepreneurs or not? During field visits, it was observed that a few women micro-entrepreneurs seem to maintain

customer relationship with the help of mobile phones; a few have used internet services particularly WhatsApp and Facebook for customer attraction. They have used the mobile phones for market expansion and market promotion through personalised communications and customer care. A few have used mobile phones to avail customer orders. Some cases have received payments through e-banking with the help of mobile phones. Therefore, with a view to estimate the adoption of ICTs in-connection with promotion

of entrepreneurial activities by women micro-entrepreneurs, a few statements to be responded in three point rated scales were administered and the index scores to each individual respondents were estimated. High scores (scores ranging from 20 to 30) indicate high level of adoption while low scores (scores up to 10) indicate low level of adoption of ICTs for entrepreneurial promotion. The distribution of respondents according to their adoption index scores is presented in Table 5.

Table 5: Adoption of ICTs for Entrepreneurial Development

Sl. No	Adoption level Entrepreneurs category	Number of respondents (N=56)			Total
		Low	Medium	High	
1	Services sector	20	9	15	44 (79)
2	Secondary sector	5	2	1	8 (14)
3	Primary sector	2	1	1	4 (7)
Total		27 (48)	12 (21)	17 (31)	56 (100)

Source: Computed data

Figures in brackets are percentages to row total.

As shown in Table 5, majority (48%) of the respondents have low level of adoption of ICTs for their entrepreneurial promotion. However, entrepreneurs in the services sector are reported to have adoption index scores to a higher extent when compared to that of entrepreneurs in other sectors. Existence of more number of youth and a fair level of educational status among women micro-entrepreneurs in the services sector could be the reason for high level of adoption of ICTs.

Effect of Age and Educational Status on the Awareness and Knowledge of ICTs – LMR Model

To know the effect of demographic variables such as age and educational status on the awareness and knowledge of ICTs, the LMR model is used for analysis.

Table 6: Effect of Age and Education of Women Micro-entrepreneurs on Awareness and Knowledge on ICTs

Variables Entered/ Removed^a

Model	Variables Entered	Variables Removed	Method
1	Education, Age ^b	.	Enter

a. Dependent Variable: Awareness and Knowledge level

b. All requested variables entered.

Model Summary

R Square	Adjusted R Square	Std. Error of the Estimate
.651	.638	.45573

a. Predictors: (Constant), Education, Age

Anova

Model	Sum of Squares	Df	Mean Square	F	Sig.	
1	Regression	20.546	2	10.273	49.464	.000b
	Residual	11.007	53	.208		
	Total	31.554	55			

a. Dependent Variable: Awareness and Knowledge level

b. Predictors: (Constant), Education, Age

Coefficients^a

Model	Unstandardised Coefficients	Standardised Coefficients	t	Sig.		
	B	Std. Error	Beta			
1	(Constant)	.803	.228		3.528	.001
	Age	.537	.172	.466	3.118	.003
	Education	.186	.074	.375	2.513	.015

a. Dependent Variable: Awareness and Knowledge level

Table 6 reveals the effect of age and education on the awareness and knowledge of ICTs among women micro-entrepreneurs. The R^2 value is 0.651 which shows the model fitness of the variables. Among the independent variables, age as a variable of women micro-entrepreneurs has significant effect on the dependent variable - awareness and knowledge level of the women micro-entrepreneurs. The β value of age of the respondents is 0.466 and it is significant at 95 per cent level on awareness and knowledge level of the respondents. Hence, age of the women micro-entrepreneurs significantly and positively affects awareness and knowledge about ICTs among women micro-entrepreneurs. Although this finding is contrary to our expectation, long years of experience in

entrepreneurial activity among elderly women might have effected for greater knowledge about ICTs.

EFFECT OF AGE AND EDUCATIONAL STATUS ON THE ADOPTION OF ICTs FOR ENTREPRENEURIAL PROMOTION - LMR MODEL

To know the effect of demographic variables - age and educational status on the adoption of ICTs, the LMR model is used for analysis.

Table 7: Effect of Age and Education of Women Micro-Entrepreneurs on

Variables Entered/ Removed^a

Model	Variables Entered	Variables Removed	Method
1	Education, Age	.	Enter

a. Dependent Variable: Adoption level

b. All requested variables entered.

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.945a	.893	.889	.29149	1.725

a. Predictors: (Constant), Education, Age

b. Dependent Variable: Adoption level

ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	37.711	2	18.856	221.920	.000b
	Residual	4.503	53	.085		
	Total	42.214	55			

a. Dependent Variable: Adoption level

b. Predictors: (Constant), Education, Age

Coefficients^a

Model	Unstandardised Coefficients	Standardised Coefficients	T	Sig.		
	B	Std. Error	Beta			
1	(Constant)	.442	.146		3.036	.004
	Age	-.055	.110	-.041	-.501	.618
	Education	.561	.047	.980	11.862	.000

a. Dependent Variable: Adoption level

Table 7 reveals the effect of age and education status on the adoption of ICTs among women micro-entrepreneurs. The R^2 value is 0.893 which shows the model fitness of the variables. Among the independent variables, education status as a variable of women micro-entrepreneurs has significant effect on the adoption of ICTs. The β value of education of the respondents is 0.980 which is significant at 99 per cent level. Hence, education of the women micro-entrepreneurs significantly and positively affects adoption of ICTs by women micro-entrepreneurs. This finding is on our expected line; i.e. increased educational status has resulted for increased adoption of ICTs. Thus, it may be stated that the level of formal education plays an important role in the adoption of ICTs in general and among women entrepreneurs in particular.

CONCLUSION

The study evidences that ICTs are very popular in rural areas and more so, among women micro-entrepreneurs who do not have high level of formal education including technical/vocational skills. All the women micro-entrepreneurs have adequate knowledge about ICTs, its brands, its significance and a few essential/popular e-communication and e-learning applications. Cell phones are very popular and they are increasingly used than any other ICTs. This is more apparent among women micro-entrepreneurs in services sector than those in other sectors. However, when it comes to the level of adoption for business/entrepreneurial development, the study finds that educational status of the women micro-entrepreneurs is found to be an important factor influencing the adoption behaviour, followed by long years of experience in entrepreneurial activity. Therefore, it is suggested that necessary measures may be taken to impart skill on ICTs applications by rural masses in general and women micro-entrepreneurs in particular. Informal training on ICTs applications carved on need base may pave the way for entrepreneurial success among women micro-entrepreneurs.

REFERENCES

- Doukidis, G. I., Lybereas, P., & Galliers, R. D. (1996). Information systems planning in small business: A stages of growth analysis. *The Journal of Systems and Software*, 33(2), 189.
- Erumi-Esin, R., & Heeks, R. (2015). *Proceedings of the Seventh International Conference on Information and Communication Technologies and Development*, Article No. 11, ISBN: 978-1-4503-3163-0, doi>10.1145/2737856.2738015
- Kreide, R. (2003). Self-employment of women and welfare-state policies. *Rev Int Sociol*, 13(1), 205-218. Retrieved from <http://dx.doi.org/10.1080/0390670032000087069>
- Ladokun, I. O., Osunwole, O. O., & Olaoye, B. O. (2013). *Information and communication technology in small and medium enterprises: Factors affecting the Adoption and use of ICT in Nigeria*. Retrieved from <http://dx.doi.org/10.6007/IJAREMS/v2-i6/443>, DOI: 10.6007/IJAREMS/v2-i6/443
- Munyua, A. W., & Mureithi, M. (2008). Harnessing the Power of the Cell phone by Women Entrepreneurs: New frontiers in the Gender Equation in Kenya. Grace Project Research Report, Kenya, pp. 7-13.
- Mwai, E. (2016). Factors influencing adoption of ICT by small and medium enterprises in the hospitality industry in Kenya. *IOSR Journal of Mobile Computing & Application*, 3(2), 12-19. ISSN: 2394-0042
- Nduati, N. L., Ombui, K., & Kagiri, A. (2015). Factors affecting ict adoption in small and medium enterprises in Thika town, Kenya. *European Journal of Business Management*, 2(3), 395-414.
- Ndubisi, N. O., & Kahraman, C. (2005). Malaysian women entrepreneurs: Understanding the ICT usage behaviors and drivers. *Journal of Enterprise Information Management*, 18(6), 721-739.
- Steyn, E., Steyn, R., & De Villiers, C. (2015). *South Africa micro entrepreneurs: Mobile ICT adoption*. Proceedings of Informing Science & IT Education Conference (InSITE)

2015, pp. 445-465. Retrieved from <http://Proceedings.InformingScience.org/InSITE2015/InSITE15p445-465Steyn1540.pdf>.

Wolcott, P., Kamal, M., & Qureshi, S. (2008). Meeting the challenges of ICT adoption by micro-enterprises. *Journal of Enterprise Information Management*, 21(6), 616-632.

Xiong, J., Qureshi, S., & Najjar, L. (2013). *Factors that affect Information and Communication Technology Adoption by*

Small Businesses in China. Proceedings of the Nineteenth Americas Conference on Information Systems, Chicago, Illinois, pp.1-10.

WEB REFERENCES

<http://www.indiaonlinepages.com/population/india-current-population.html>