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Constraints refraining women from using ICTs

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Abstract
Information and communication Technologies (ICTs) are powerful tools that lead to empowerment of women and social change. (Hafkin and Huyer 2007). However, there are hurdles in using ICTs to the full extent that affect women's engagement with technological devices. To make the dream of women being advantaged by new technology a reality, social, personal, financial and technological factors need to be identified. (Gil *et al.,* 2010; Shettar, 2015). Hence, the objective of the investigation was to find out important factors that hinder women from using ICTs.

Keywords: Constraints, refraining, ICTs, financial and technological

Introduction
Information and communication technologies abbreviated as ICT is an umbrella term that comprises of heterogeneous set of devices, applications and services that can be used for producing, processing, transforming and disseminating information. The information and communication technologies have evolved over the years and are increasingly impacting lives. Information and communication technologies have been identified as potent tools to achieve gender equality and advance women's empowerment by various international organizations. There is variation in access and utilization pattern of ICT among women and men that leads to digital gender divide. Some of the major benefits which ICTs provide are information access on what is going on in the world, information related to healthy living, distance and online learning, working from home and making money. ICT ultimately should result in benefiting both women and men substantively.

International Federation of Global & Green Information Communication Technology (2010) defines Information and communications technology (ICT) as an extensional term for information technology (IT) that stresses the role of unified communications and the uniform integration of telecommunications (telephone lines and wireless signals) and computers. In modern India women are key players in all activities such as education, science & technology, sports, politics, defence as well as private sector jobs. Various case studies successfully highlight the presence of ICTs as a magic wand for the economic empowerment of women**,** participation in social activities, and increasing women's knowledge, skills and capabilities in society. Effective and efficient utilization of ICTs can help women to exchange information without any pressure that will ultimately help to improve educational and economic condition of women**.** However, there are challenges in using ICTs by women that come up as a challenge in the way women influence their communities. To make women equal beings in reaping the benefits of ICTs, personal, technical, infrastructural, psychological, cultural as well as financial factors that hinder women from using ICT tools need to be identified.

Literature review
Nguyan (2014), made a detailed analysis of data obtained from Azerbaijan, Kazakhstan, the Kyrgyz Republic, and Uzbekistan's women entrepreneurs by Asian Development Bank and found that the most frequently encountered problems were poor quality signals and slow speed of internet connections while using ICTs for business purpose. Cost of usage was also a major constraint for peri-urban and rural respondents.

Ariansyah (2018) [2] in a study of rural areas found that main barriers to internet use cited by non-user rural respondents were lack of relevant content (8% respondents) infrastructure (31% respondents), service cost (34% respondents), device cost (32% respondents), ICT skills (32% respondents) and awareness (40% respondents).

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Vardhan (2020) [11] stated that content of ICTs is predominantly in English which is a great hurdle for Hindi or regional language-speaking women. The language barrier calls for the development of applications like multilingual databases, graphic interfaces and automatic translation programs would be useful for illiterate women. Also women have limited access to financial resources that is another obstacle faced by women on entering the world of ICTs. Henceforth, they aren't able to afford the cost of expensive equipments and devices.

Research methodology
Constraints faced by women in using ICTs were listed by reviewing the literature. Constraints were further categorized into five categories had five, four, three and two statements i.e. personal, technical, infrastructural, psychological, cultural which had five, four, three and two statements respectively. Both urban and rural women were selected for the study that constituted of 222 urban respondents and 188 rural respondents. Total sample selected for the study was 410.

To find out the most important constraints faced by women in engaging with ICTs, Garrett's ranking method was used. According to the procedure of the technique, respondents were asked to rank the factors. The results of the ranking were arranged into frequency and further converted into score value to find the percent position with the help of following formula:

Percent position $=100(R_{ij}-0.5)/N_j$

Where
R_{ij} = Rank given for i^{th} variable by j^{th} respondents
N_j = number of variables ranked by j^{th} respondents

After calculating percent position, Garrett values for each Percent position value were obtained from the Garrett's table. Further, the scores of each individual were added and total scores were obtained. Later, average scores were obtained by dividing the total scores with total number of respondents. At the end, the constraints were ranked on the basis of highest mean value.

Result and Discussion
An attempt was made to identify the constraints which affect the engagement of women with ICTs. Constraints were listed into five different categories and respondents were asked to rank the constraints in each category. The categories were; personal, technical/ infrastructural, psychological, cultural and

financial constraints that had five, four, three and two statements respectively. The respondents were asked to assign 1st rank to the constraint that they felt was the most important and 2nd, 3rd, 4th and 5th ranks respectively were assigned to constraints with decreasing order of importance. Firstly, the percent positions were calculated and after calculating the percent position, Garrett values for each Percent position value were obtained from the Garret table. The estimated percent position and Garrett values of constraints in each category are presented in Table 1 to Table 3. Later, for each constraint the score obtained from each individual was added and then total values and average values were calculated. At the end ranks were assigned based on the average value and the data is further presented in Table 4 to Table 8.

Table 1: Percent position and Garrett table values for personal constraints

Rank	Percent position for Personal constraints		Garrett values from table
1	100(1-0.5)/5	10	75
2	100(2-0.5)/5	30	60
3	100(3-0.5)/5	50	50
4	100(4-0.5)/5	70	39
5	100(5-0.5)/5	90	24

Table 2: Percent position and Garrett table values for Technical/ infrastructural Constraints

Rank	Percent position for Technical and infrastructural Constraints		Garrett values From table
1	100(1-0.5)/4	12.5	73
2	100(2-0.5)/4	37.5	56
3	100(3-0.5)/4	62.5	43
4	100(4-0.5)/4	87.5	27

Table 3: Percent position and Garrett table values for Psychological Constraint

Rank	Percent position for Psychological Constraint		Garrett values from table
1	100(1-0.5)/3	16.50	69
2	100(2-0.5)/3	50	50
3	100(3-0.5)/3	83.33	31

Table 4: Percent position and Garrett table values for cultural and financial constraints

Rank	Percent position for Cultural Constraints		Garrett value from table
1	100(1-0.5)/2	25	63
2	100(2-0.5)/2	75	36

Table 5: Distribution of respondents on the basis of personal constraints in using ICTs

Constraint category	S. no.	Ranks	1	2	3	4	5	Total	Average scores	Rank
		Garrett table values	75	60	50	39	24			
Personal Constraints	Constraint 1.1	Lack of confidence in using ICTs	91 6825	18 1080	45 2250	2 78	254 6096	16329	39.82	4
	Constraint 1.2	Lack of time in using ICTs	225 16875	47 2820	21 1050	4 156	113 2712	23613	57.59	**1**
	Constraint 1.3	Lack of training on how to use ICTs	124 9300	61 3660	34 1700	8 312	183 4392	19364	47.22	3
	Constraint 1.4	Language problem in using ICTs	148 11100	40 2400	111 5550	16 624	95 2280	21954	53.54	**2**
	Constraint 1.5	Restrictions from family members	72 5400	8 480	29 1450	5 195	296 7104	14629	35.68	5

It is clear from the above table that lack of time in using ICTs was identified as the first most important constraint (Garrett score 57.59) and language problem in using ICTs (Garrett score 53.54) was identified as the second most important constraint in personal constraint category. Huyer (1997) [4], Hafkin and Taggart (2007) [3] and Gil *et al.* (2010) [2] too opined that limited free time due to responsibility of household chores were barriers that restrict women's access to and use of ICTs. Thus from the above table it can be concluded that although people are having ICTs and using it for variety of purposes but still face different kinds of constraints.

Table 6: Distribution of respondents on the basis of technical/ infrastructural constraints in using ICTs

Constraint category	S. no.	Ranks	1	2	3	4	Total	Average scores	Rank
		Garrett table values	73	56	43	27			
Technical/ infrastructural Constraints	Constraint 2.1	Lack of expertise in using ICTs	224 16352	72 4032	17 731	97 2619	23734	57.88	**2**
	Constraint 2.2	Poor connectivity	160 11680	79 4424	35 1505	136 3672	21281	51.90	3
	Constraint 2.3	Poor electric supply	187 13651	23 1288	27 1161	173 4671	20771	50.66	4
	Constraint 2.4	Complex nature of ICTs	305 22265	6 336	14 602	85 2295	25498	62.19	**1**

It is clear from the above table that the two most important constraints in Technical/ infrastructural category was complex nature of ICTs (Garrett score 62.19) and lack of expertise in using ICTs (Garrett score 57.88). Hilbert (2011) and Ributhi (2011) [8] also highlighted that women encountered problems such as technical knowledge and skills in using ICTs

Table 7: Distribution of respondents on the basis of psychological constraints in using ICTs

Constraint category	S. No.	Ranks	1	2	3	Total	Average scores	Rank
		Garrett table values	69	50	31			
Psychological Constraints	Constraint 3.1	Anxiety in using ICTs	140 9660	2 100	268 8308	18068	44.06	**2**
	Constraint 3.2	Lack of motivation in using ICTs	105 7245	50 2500	255 7905	17650	43.04	3
	Constraint 3.3	Fear of doing wrong that can't be reversed	310 21390	24 1200	76 2356	24946	60.84	**1**

It the evident from the above table that, fear of doing wrong that can't be reversed (Garrett score 60.84) and anxiety in using ICTs (44.06) were the two most important psychological factors that hinder the engagement of women with ICTs. Mackey and Petrucka (2021) [6] too opined that technophobia is the main reason that needs to be worked upon.

Table 8: Distribution of respondents on the basis of cultural constraints in using ICTs

Constraint category	S. no.	Ranks	1	2	Total	Average scores	Rank
		Garrett table values	63	36			
Cultural Constraints	Constraint 4.1	Discouragement from society to use ICTs	34 2142	376 13536	15678	38.23	**2**
	Constraint 4.2	Traditional belief that ICTs are waste of time	105 6615	305 10980	17595	42.91	**1**

Table 9: Distribution of respondents on the basis of financial constraints in using ICTs

Constraint category	S. no.	Ranks	1	2	Total	Average scores	Rank
		Garrett table values	63	36			
Financial Constraints	Constraint 5.1	Financial problem to buy ICTs	131 8253	279 10044	18297	44.62	**2**
	Constraint 5.2	Less accessibility to internet because of expensive data pack recharge.	189 11907	221 7956	19863	48.44	**1**

The data in table highlights that, traditional belief that ICTs are waste of time (Garrett score 42.91) was found to be the most important cultural constraint and less accessibility to internet because of expensive data pack recharge (Garrett score 48.44) was identified as the important financial constraint. Vardhan (2020) [11] quoted socio-cultural and monetary issues as the limiting factors that affect access and use of ICTs.

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