

Mobile Phone Usage for Economic Development of the Women of Rural Remote Areas of Gilgit-Baltistan, Pakistan

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ABSTRACT - Economic barriers and male dominant societies of developing nations play a vital role in the most significant role in impeding women from access mobile phone. A quantitative approach for research is applied and structured questionnaires were distributed among the sample size of 200 female participants (190 responded) age from 20 to 40 years to collect data regarding (i) access of mobile phone, (ii) mobile phone usage pattern and (iii) mobile phone use for business activities. To analyze the demographic data, descriptive statistics are used (e.g. Mean, SD and Percentage) such as age, the origin of residence (district), qualification and inferential statistics such as one sample t-test has been used to determine the significance among variables. The independent t-test was also used to compare the significance of use of mobile phone among rural women of two districts for business purposes and its usage pattern. Results show that 80% women of Hunza and Nagar Districts access mobile phone (MP) without any barriers and 77.33% women agreed and that use mobile phone to promote their business. The findings verified that mobile phone is beneficial to its users in the field of business, communication, and daily basis activities. The study recommends that users should be well-aware of the mobile phone marketing tools (mobile apps) for further promotion of their products to bring business to national and international level.

messages, mobile apps for only payment, banking, shopping besides its basic services [10, 11]. It also help to improve economic as well as social lives specially rural women of developing countries [4, 12, 13].

Due to development gap between rural and urban areas of developing countries, people facing many challenges in every field of life such as cultural, education, health, low income per capita, poverty, economic and poor infrastructure. [11, 14, 15].

Hunza-Nagar did not participate in the landline phone revolution but has seen extraordinary growth in mobile phones as today it is the most accessible and affordable ICT to the people of Hunza-Nagar and it is explosively expanding in very short time span in all over the world [11].

There is lack of research on access and impact of mobile on rural women specially Hunza and Nagar Districts. This research focuses on impact of mobile phone in economic development of rural women of Pakistan. The research has been carried out due to strategic importance of CPEC.

KEYWORDS - : Mobile Phone, ICT, Technologies, and business

I. INTRODUCTION

Information and Communication Technology (ICT) is everyday use of digital technology such as computer, tablet, mobile phone, send email, make video call and surfing the [1-3]. As mobile phones are reshaping the living standards of users, regardless of social, economic and gender differences. Mobile phone has positive impact on the development of people specially rural areas by connecting them with information and knowledge societies. [4].

Worldwide, the number of women with mobile phones is 26% less likely to own mobile phone than men [1]. In South Asia, the situation is even worse, where women are 38% less likely to own a mobile phone than men on average [5]. In Pakistan, it was reported 2018 that the fixed line phone subscription was 1.3% while the mobile phone subscription was 74% [6-9].

As mobile phone technology became advance many new services and facilities are incorporated such as multimedia

II. LITERATURE REVIEW

A) Mobile Phone Subscription and its Usage

The male users of mobile phone are greater than as compare to female users in world including Pakistan [8, 16]. Due to male dominant society in developing countries, the female do not own mobile phones [17]. The situation is same in Pakistan as 37% women are less likely to own mobile phone as compare to man and Bangladesh is the second widest at 33% [5].

The facilities provide by mobile phone are tremendous such as connect with family and friends, access online information, financial independence [12], access education, better family health facilities, difference services of Govt and NGOs and surfing [18, 19]. As access to mobile phones and the internet grows, ICTs are playing vital role to improve living standard of rural remote women [9, 20]. Besides the important positive factors, there are some psychological barriers in women which may preclude women to take advantage such as gender discrimination [21], lack of confidence [22], language difficulties, low literacy [23] and lack of time and money [24].

The current situation of technology adoption in rural Pakistan are in critical situation [25], there should be taken some steps towards ICT adaptation such as educating women on ICTs,

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recruitment drive(equal opportunity for male and female), mentoring schemes, business must provide equal facilities(pay, respect, leadership, no discrimination, flexible work schedules)[4]. The challenges faced by women are not small, but continuous efforts from all stakeholders can help more attention to this key area, so that women can improve their access to ICT in a timely manner and use these tools to fully realize the potential[26]. Women in rural Pakistan do not own mobile phones because of their weak educational background, cannot afford it, lack of awareness, poor internet quality and stolen [3]. But the scenario of Hunza Nagar Districts is different than other rural parts of Pakistan.

B) Mobile Phone Support Rural Women in Business

The researchers stated that mobile phones enable women to participate in socio-economic services[14], report domestic violence, consult with family planning agencies[27], access education, health care, and financial services[28], thereby enhancing their value and their families Life[5].

Unlike other ICT devices, mobile phones do not require literacy or complex skills that many women lack. Women are using mobile phones to manage, maintain, change and participate in political and social affairs[29]. Mobile phone also provides information on every field of life on quickest and easiest way [30, 31]

The growth of mobile phone coverage in the urban areas specially and rural remote areas particularly offers new potential for increasing the access of huge amount of the information and use them in product way [32]. Hunza Nagar scenario is different than other rural part of Pakistan where women of rural Hunza and Nagar Districts extensively use mobile phone for their business. The literature shows that proper usage of mobile phone can change the lives of the

people in different domains such as telemedicine, small business development, market trading and farming, [11, 33]. The poor and mountainous rural inhabitants are getting benefits more from mobile phones in all aspects of life, as well as in business (MMS, 3G,4G and portability)[11]. Other than to overcome societal troubles, the role of mobile phone in rural areas women’s business usga can not be ignored [34, 35] [36].

III. RESEARCH QUESTIONS

This study explores the factors effecting access, usage pattern and impact on use of mobile phone by rural women.

RQ1: Do the rural women access to mobile phone without any barrier?

RQ2: Is there any differences of usage patterns of mobile phone adopted by rural women of two districts (Hunza and Nagar)?

RQ3: Is there any differences for specific way of using of mobile phone for business purposes by rural women of two districts?

IV. METHODOLOGY

A) Framework

Authors developed a theoretical framework which provides a guideline for researchers, as detail is shown in Figure 1 [37-42].

B) Sample and procedure

A survey study was carried out among rural women of GB, Pakistan. 27-item questionnaires were consisted of three major sections. Section A consisted of demographic such as participants’ age, District of origin, and qualification (shown in Table 1). Before distribution of questionnaires among the participations, 5 University faculty members from department of mathematics and statistic were asked to review the

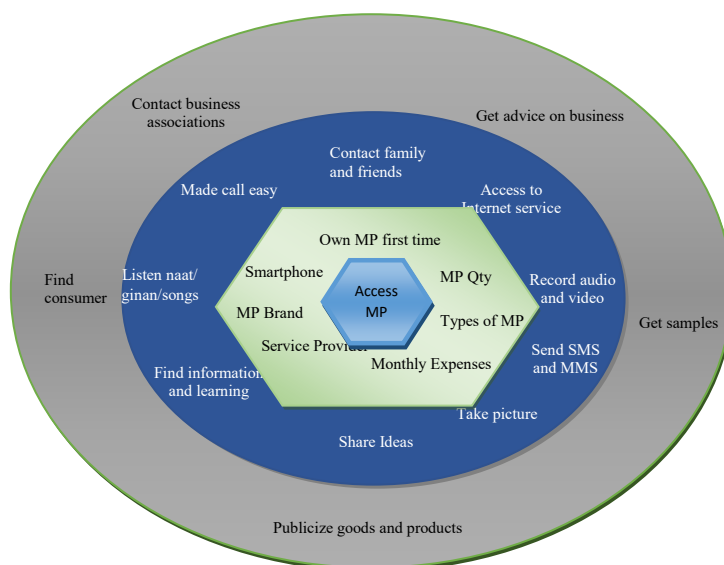


Figure 1. Theoretical Framework for Mobile Phone Usage

questionnaires. This was aimed to gauge if participant respondents would be able to understand the questionnaires. Few sentences were rephrased for a better understanding of questionnaires. A reliability test was performed, the result shows the cronbach’s Alpha value is 0.965 which is acceptable level of internal consistency.

200 Participants were selected by means of a random sampling procedure of two Districts of GB and 190 responded. Participants were composed of 100 from Hunza and 100 from

Nagar District (10 did not participate, among them 7 from Hunza and 3 from Nagar District).

This section indicates mobile phone usage pattern of rural women of Hunza and Nagar in daily life activities. 5-point Likert scale ranging from 1 = strongly disagree(SDA), 2=disagree(DA), 3=somehow agree(SHA), 4=agree(A) and 5 = strongly agree(SA) were used to indicate the respondents agreement on the statements(result shown in Table 3 and 4).

Table 1. Characteristics of Respondents

		Region			
		Hunza		Nagar	
Items	Variable	N	%	N	%
Age of respondent	20 to 25	13	7	17	9
	26 to 30	34	18	22	12
	31 to 35	31	16	40	21
	36 to 40	17	9	16	8
Qualification of respondent	No education	54	28	55	29
	Below Middle	4	2	3	2
	Below 10	9	5	5	3
	Below 12	13	7	18	9
	Bachelors	10	5	12	6
	masters and above	5	3	2	1

The section consists on access of mobile phone, types of mobile phone (simple or smart), quantity of mobile phone at respondents home, monthly expenses of mobile phone, how

many smart phone, mobile phone brand, service providers, and first time own mobile phone (assess on 1 equal to Yes and 0 equal to No)(detail shows in Table 2).

Table 2. Access of Mobile Phone by women of Hunza and Nagar

Questions (1-3)	Percentages		Questions (4-6)	Percentages		Questions (7-9)	Percentages	
	Hunza	Nagar		Hunza	Nagar		Hunza	Nagar
Access to mobile phone?			Number mobile phone own by participants at family.			Memory of mobile phone?		
No	10.5	9.5	Only one	9.9	7.8	Have memory	10.5	8.4
Yes	39.5	40.5	2 to 4	28.1	30.7	No memory	3.2	11.1
			5 to 7	1	1.6	I do not know	21.6	13.2
						I know and want to buy	4.2	7.9
Types of mobile phone own by participants?			Number of smart phones own by participants in their family			Which is your service provider?		
Simple	31.6	31.1	Only one	16.1	12.5	Scom	2.6	2.6
Smart	7.9	9.5	2 to 4	13	8.9	Telenor	9.5	14.7
			5 to 7	1	0	Zong	15.3	10.5
						More than 1	12.1	12.6
Reasons to not own mobile phone			Mobile phone brand			Do you have these mobile phone accessories?		

No barrier	38.4	40.5	Nokia	3.2	7.4	Portable charger	21.6	20
Cost of Phone services	0.5	0	Samsung	0.5	2.1	Portable charger bank	0	0.5
Concept of misuse by female	0	0.5	Q-Mobile	19.5	15.8	2 and 1	3.7	6.3
Family does not allow	1.1	1.6	Blackberry	0	1.6	1, 2 and 4	13.2	13.2
Lack of skills to use mobile phone	0.5	0	1 and 3	11.6	10.5	Above all	1.1	0.5
Concept of misuse and family does not allow to own mobile phone	6.3	5.3	2 and 3	3.2	1.6			
cost of mobile and services are barriers to own mobile phone.	2.1	2.1	1 and 2	1.6	1.6			
All of Above	1.1	0						

(a) Access of Mobile Phone

(b) Kinds of Mobile Phone

Items	Percentage					
	Region	SDA	DA	SHA	A	SA
Contact with friends and family members	Hunza			0	19	56
	Nagar			1	22	54
Find important information and learn new things	Hunza	1	13	25	23	13
	Nagar	0	11	14	38	14
Share our ideas and contact with others for ideas	Hunza	1	15	24	21	14
	Nagar	0	11	20	34	12
Mobile phone has made a phone call very easy	Hunza				19	56
	Nagar				24	53
Help you to take picture	Hunza	1	15	18	26	15
	Nagar	0	16	20	28	13
Help you to send SMS and MMS	Hunza	2	26	14	20	13
	Nagar	4	19	20	23	11
Record audio and video	Hunza	3	29	21	17	5
	Nagar	6	29	17	19	6
Access to Internet service	Hunza	18	30	5	15	7
	Nagar	30	23	7	10	7
Help to listen Music and songs	Hunza	2	6	23	33	11
	Nagar	2	8	22	31	14

Table 4. Mobile Phone Usage in Business by Rural Women of Hunza and Nagar Districts					
Questions (1 to 3)	Percentages		Questions (4 and 5)	Percentages	
	Hunza	Nagar		Hunza	Nagar
Mobile phone helps me to contact business associations?			To get practical advice on business (like farming) strategies?		
Disagree	0.0	0.5	Strongly disagree	0.0	2.6
Somewhat agree	0.0	1.6	Disagree	3.2	5.8
Agree	3.2	11.1	Somewhat agree	3.7	3.7
Strongly agree	6.8	8.4	Agree	1.6	7.4
No business	29.5	18.9	Strongly agree	1.6	2.1
Mobile phone helps to find consumer?			To get samples regarding your business. Like samples of handicrafts?		
Disagree	0.5	1.6	Strongly disagree	1.6	2.6
Somewhat agree	1.6	1.6	Disagree	2.1	7.4
Agree	4.7	13.2	Somewhat agree	2.6	3.7
Strongly agree	3.2	5.3	Agree	2.6	5.3
To publicize your goods and products?			Strongly agree		
Strongly disagree	0.0	0.5			
Disagree	1.6	5.8			
Somewhat agree	1.6	3.2			
Agree	4.7	9.5			
Strongly agree	2.1	2.6			

V. RESULTS

To analyze the data, Statistical Package of the Social Sciences (SPSS 23.0) was used. The descriptive statistics were used to find the percentages for the section A and B. The inferential statistics were also used to find out the t-value, p-value, means, standard deviation as well as compare the independent and dependent variables.

A) Demographic

200 females participated in this research study, and 190 responded. The average age of participants was 25 years. More detail about age, qualification has been shown in Figure 2.

B) Access of Mobile Phone

The section addresses following question and result has been shown in percentage in Figure 3. The following questions were addresses such as 1) access to mobile phone 2) types of mobile phone, 3) service providers (detail shown Figure 3), 4) How many Smart phone own by participants 5) Mobile phone brand 6) Quantity of mobile phone participants family own (only one 17.7%, 2 to 4 58.8% and 5 to 7 2.6%). 7) Monthly expense on mobile phone (less than 100 12.1%, 100 to 200 41.6%, 300 to 500 17.4%, 500 to 100 4.7% and above 100 is only 4.2%). When did you first time use mobile Phone (> 6 months 1.0%, >=1 year 5.8%, >= 3 years 17.9%, above 3 years 42.6 and time unknown are 12.6%)?

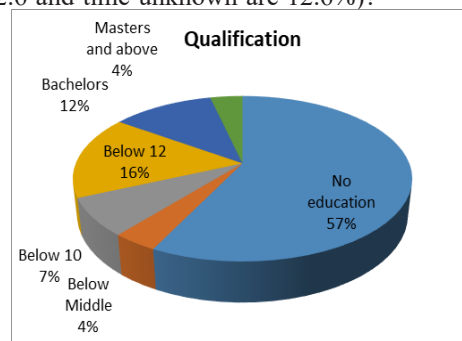
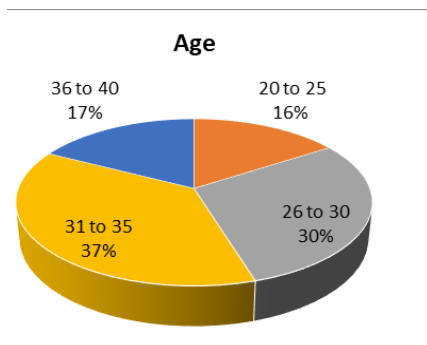
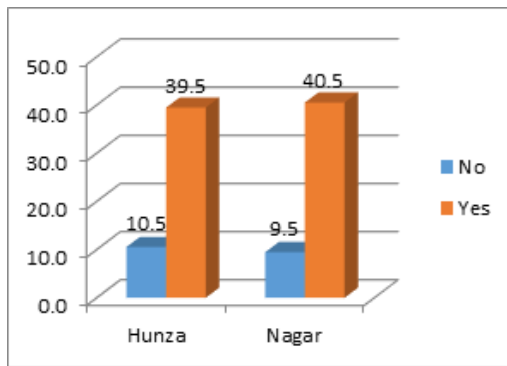
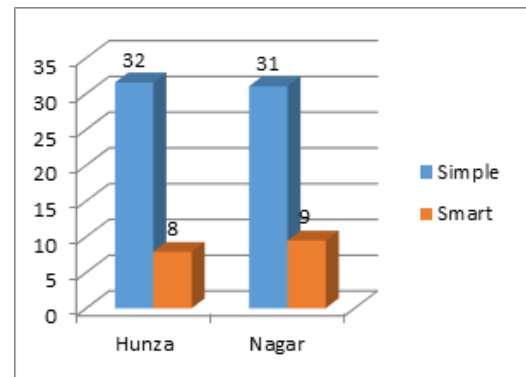


Figure 2. Participants' characteristics, age and qualification

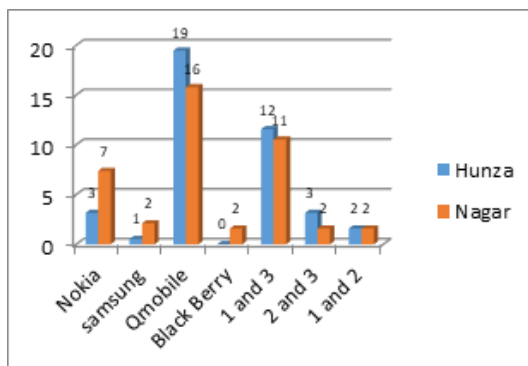


(a) Access of Mobile Phone

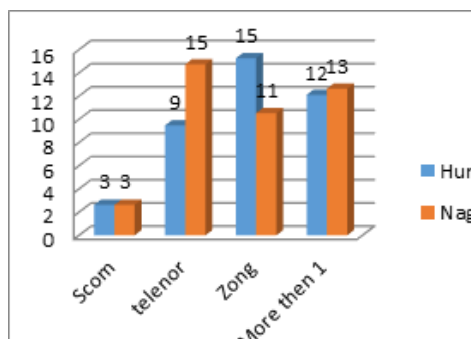


(d) Service Provider

Figure 3. Mobile Phone access, types, brand and service provider



(b) Kinds of Mobile Phone



C) Access of mobile phones

The first research question has been addressed in this section. The result of t-test has been shown in Table 5. The p-values shows that mobile phone access characteristics is significant which is less than 0.05. The Table 2 shows further detail about access of mobile phones in percentage. The result shows that women of two rural districts access mobile phone without any barrier from their family members.

D) Mobile phone usage pattern

The section addresses the second research question. The result of t-test shown in Table 6. The p-value are significant which is less than p-value of 0.05. The highest mean is 3.77 of the questions of “keep in touch with family and mobile phone has made a phone call very easy” and lowest mean value is 1.89 which is “access to internet”. The percentage of usage pattern is shown in Table 3. The result shows that women of two districts use mobile phone for multipurpose and properly use the features of mobile phone.

The independent t-test is made to verify the one sample t-test regarding mobile phone usage pattern between two districts. The result shows that there is no significant difference of usage pattern of mobile phone among the women of both

Items	t-value	p-value	Mean	Std. Deviation
Access to mobile phone	61.86	.000	1.80	0.40
Types of mobile phone own by participants	21.92	.000	0.97	0.61
Number mobile phone own by participants at family.	23.79	.000	1.45	0.84
Number of smart phones own by participants in their family	12.67	.000	0.76	0.83
Mobile phone brand	19.70	.000	2.89	2.02
Which is your service provider	17.96	.000	3.30	2.53
Monthly expenses	20.07	.000	1.87	1.29

When did you first time use mobile Phone?	24.51	.000	3.00	1.69
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Items	t-value	p-value	Mean	Std. Deviation
Contact with friends and family members	26.85	0.00	3.77	1.94
Find important information and learn new things	23.48	0.00	2.87	1.68
Share our ideas and contact with others for ideas	23.30	0.00	2.82	1.67
Mobile phone has made a phone call very easy	26.89	0.00	3.77	1.93
Help you to take picture	22.97	0.00	2.81	1.68
Help you to send SMS and MMS	21.51	0.00	2.58	1.65
Record audio and video	21.21	0.00	2.31	1.50
Access to Internet service	17.20	0.00	1.89	1.52
Help to listen Music and Songs Listen Naat/ Ginan/songs	23.66	0.00	2.88	1.68

districts. The highest p-value are .852 on the questions “Keep in touch with family and friends and Mobile phone has made a phone call very easy” and lowest is .246 on the question of “Find important information and learn new things”. The basic purpose of this test is to check the difference between two districts (results show in Table 7). The results show from test that women of rural areas use mobile phone for different

purposes properly and no district or region is behind one and another.

E) Use for Business purposes

This section addresses the third research question. The t-test results shown in the Table 8 regarding the use of mobile phone for business purposes. The p-value is significant which is less

Items	t-value	p-value	Mean	Std. Deviation
Mobile phone help me to contact business associations	25.72	.000	3.69	1.98
Mobile phone helps to find consumer	25.15	.000	3.60	1.97
To publicize your goods and products	23.80	.000	3.44	1.99
To get practical advice on business (like farming) strategies.	22.60	.000	3.31	2.02
To get samples regarding your business. Like samples of handicrafts?	22.04	.000	3.24	2.03

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Contact with friends and family members	Equal variances assumed	.482	.488	-.187	188	.852	-.05263	.28180	-.60853	.50326
	Equal variances not assumed			-.187	187.647	.852	-.05263	.28180	-.60853	.50327

Find important information and learn new things	Equal variances assumed	.001	.971	-1.165	188	.246	-.28421	.24405	-.76564	.19722
	Equal variances not assumed			-1.165	187.997	.246	-.28421	.24405	-.76564	.19722
Share our ideas and contact with others	Equal variances assumed	.289	.591	-.914	188	.362	-.22105	.24183	-.69810	.25599
	Equal variances not assumed			-.914	187.879	.362	-.22105	.24183	-.69810	.25599
Mobile phone has made a phone call very easy	Equal variances assumed	.620	.432	-.187	188	.852	-.05263	.28140	-.60774	.50248
	Equal variances not assumed			-.187	187.598	.852	-.05263	.28140	-.60775	.50249
Help you to take picture	Equal variances assumed	.559	.456	-.215	188	.830	-.05263	.24492	-.53577	.43051
	Equal variances not assumed			-.215	187.590	.830	-.05263	.24492	-.53578	.43052
Help you to send SMS and MMS	Equal variances assumed	.148	.701	-.350	188	.726	-.08421	.24038	-.55839	.38997
	Equal variances not assumed			-.350	187.836	.726	-.08421	.24038	-.55839	.38997
Record audio and video	Equal variances assumed	.067	.796	-.193	188	.847	-.04211	.21795	-.47206	.38784
	Equal variances not assumed			-.193	187.968	.847	-.04211	.21795	-.47206	.38785
Access to Internet service	Equal variances assumed	.002	.963	.763	188	.446	.16842	.22059	-.26674	.60358
	Equal variances not assumed			.763	187.700	.446	.16842	.22059	-.26674	.60358
Help to listen Music and Songs Listen Naat/ Ginan/ songs	Equal variances assumed	.059	.808	-.345	188	.731	-.08421	.24433	-.56620	.39778
	Equal variances not assumed			-.345	187.989	.731	-.08421	.24433	-.56620	.39778

than 0.05. It means that women of both districts use mobile phone for business purposes. The highest mean value is 3.69 and lowest value is 3.24. further detail has been shown in Table 4.

VI. DISCUSSION

Gilgit-Baltistan (GB) Pakistan is one of the remote areas of Pakistan and education ratio is higher as compare to other part of Pakistan, Hunza has highest education ratio in GB. The

Items	t-value	p-value	Mean	Std. Deviation
Mobile phone help me to contact business associations	25.72	.000	3.69	1.98
Mobile phone helps to find consumer	25.15	.000	3.60	1.97
To publicize your goods and products	23.80	.000	3.44	1.99
To get practical advice on business (like farming) strategies.	22.60	.000	3.31	2.02
To get samples regarding your business. Like samples of handicrafts?	22.04	.000	3.24	2.03

To verify the one sample t-test, we also made the independent t-test, which shows that there is no significant difference in use of mobile phone for business purposes among the women of two districts(regions). The highest p-value is .660 on the question "Mobile phone helps to find consumers" and the lowest p-value is .116 on the question "To get samples regarding your business, Like samples of handicrafts?". This

shows that women of both districts use mobile phone for business purposes equally, because both districts have long history and different cultural and norms with different practices in daily life activities. The independent t-test result has been shown in Table 9 regarding use of mobile phone for business purposes of both districts

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Mobile phone help me to contact business associations	Equal variances assumed	2.362	.126	.843	188	.400	.24211	.28707	-.32418	.80839
	Equal variances not assumed			.843	183.943	.400	.24211	.28707	-.32426	.80847
Mobile phone helps to find consumers	Equal variances assumed	1.891	.171	.440	188	.660	.12632	.28686	-.43956	.69220
	Equal variances not assumed			.440	185.123	.660	.12632	.28686	-.43962	.69225
To publicize your goods and products	Equal variances assumed	.703	.403	1.278	188	.203	.36842	.28831	-.20032	.93716
	Equal variances not assumed			1.278	185.251	.203	.36842	.28831	-.20038	.93722

To get practical advice on business (like farming) strategies.	Equal variances assumed	.943	.333	1.443	188	.151	.42105	.29171	-.15438	.99649
	Equal variances not assumed			1.443	185.535	.151	.42105	.29171	-.15443	.99654
To get samples regarding your business, Like samples of handicrafts?	Equal variances assumed	1.758	.186	1.581	188	.116	.46316	.29301	-.11485	1.04116
	Equal variances not assumed			1.581	184.558	.116	.46316	.29301	-.11492	1.04123

Hunza and Nagar districts have their important due to China Pakistan Economic Corridor (CPEC). The CPEC route is passing through these two districts. There will be many challenges and opportunities faced by these two districts such as education, social, politics, culture and economic. If government and local people will not play on time, these opportunities will be converted to more difficult challenges. The women of these two districts will play a vital role to cope with the challenges and convert them into opportunities. The economic situation of Pakistan is in decline condition due to COVID-19 and the CPEC is the hope for game changer. But how to hook ourselves in this game changer is million question. The only way people can cope with the challenges is to adopt emerging technology in every field of life such as ICT for education, livestock, construction, agriculture, health, economic etc. However, the people of the area especially female participants had access to a mobile phone and use to facilitate their daily life activities without any barrier to own it. All the participants were confident in operating mobile phones and did not report any barrier of finance, misuse concept, family restriction, and skills to use. The result also showed that participants use mobile phones to contact family and friends, use to share ideas and convey their ideas to others, listen Naats, Songs and Ginan, take picture and records their events and access internet services. At the meantime, the women of rural remote area using mobile phones for their business purposes such as contact business associate, find consumers, getting practical advice, publicize goods and products, and getting sample of raw products. But these features are used only with the persons, businesses or organizations which are in their contact list. This all because of the well-established service providers in Pakistan and rural remote areas of Gilgit-Baltistan, far surpassing other infrastructure (World Bank, 2017) [43]. There is still space for improvement, and the big challenges in terms of CPEC will very soon hit the area, because a skilled work force from China may move to the area. We should prepare ourselves to cope with the challenges of CPEC. The concentration should be given on skills and online earning. Market should be accessed through mobile communication. The skills of women on business and use of mobile phone should be

utilized properly and more training should be provided to improve

VII. CONCLUSION

Multiple barriers in a male dominant society of developing countries play the vital role in precluding the women from access the mobile phones. Our study finds out the different result as compare to other developing nations. 190 respondents from age 20 to 40 participated in survey and 80% women said that they access mobile phone and more 77% said that they use mobile phone for daily business activities. Most of the participants use mobile phones for contacting friends and families, getting information and share ideas with others, use internet services and listen songs and Naats. The results show that rural women access and use mobile phone positive ways.

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