

Postgraduate ODL programs for women in Assam: a comparative institutional analysis

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Abstract

Purpose – Open and distance learning (ODL) has become an effective means of expanding access to higher education. The present study attempts to analyze the impact of postgraduate ODL programs in empowering female students in Assam, taking into consideration economic empowerment, educational empowerment, social empowerment and technological empowerment, grounded in empowerment theory, which emphasizes increased access to resources, agency and capability development.

Design/methodology/approach – This study employed a descriptive survey research design to elicit information from 300 female postgraduates who were randomly selected from three open and distance learning institutions in Assam: Krishna Kanta Handiqui State Open University (KKHSOU), Gauhati Regional Center of Indira Gandhi National Open University (GRC-IGNOU) and Gauhati University Institute of Distance and Open Learning (GUIDOL).

Findings – The study revealed that ODL programs contributed significantly to the empowerment of women by improving their economic, educational, social and technological capabilities. Most of the respondents experienced the benefits of economic security, employment opportunities, increased knowledge, social status and technological awareness because of the programs. Statistical analysis showed no significant difference between general and professional programs regarding student benefits; however, some significant differences were found between institutions. The study concluded that postgraduate ODL programs play an important role in empowering women and promoting access to higher education in Assam.

Research limitations/implications – This study was limited to representative ODL institutions of Assam. The sample size was limited to only 300 as the response rate was significantly low compared to the completed PG learners. The intended learner respondents were selected using a random sampling technique.

Practical implications – ODL is crucial, as it can play a pivotal role in providing educational opportunities to deprived sections and a greater scope for skill development in chosen fields, in a self-paced and flexible manner. Therefore, every learner will need to update their prior knowledge and skills. It is also being noted that in the Indian context, women are more underprivileged and relatively deprived in accessing their educational, economic and social rights compared to their male counterparts. Therefore, it is pertinent to discuss to what extent education in general and ODL in particular can play a vital role in making women learners competent with basic skills, besides making them fit in the present technology-based society and the job market.

Social implications – With the help of findings of the study, the investigator came to know the benefits of the programs in changing the lives of the women learners at the personal and social levels, etc. This research work was designed to be a support for practitioners, researchers, analysts, policy makers and others to understand the efficacy of the ODL system from the perspectives of the women learners.

Originality/value – This paper is original in the sense that no such studies have been carried out, taking the cross-analysis among the three major ODL Institutions in Assam, India. The research helps in mapping the effectiveness of the courses, which eventually explores the level of knowledge and skills of the learners. The study will help the marginalized women to know about the benefits of the ODL courses and thereby would motivate them for taking up education through this mode. It would make people in general aware about the education through the ODL mode and their benefits.

Keywords Open and distance learning, Women's empowerment, Postgraduate programs, Higher education, Assam

Paper type Research article



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1. Introduction

Education enables women to meet life's challenges with confidence and confront traditional patriarchy. It fosters self-respect, courage and the ability to lead meaningful lives. Additionally, education can transform women into better individuals, caregivers and citizens, thereby nurturing families and contributing to an ideal society. Educated women tend to enjoy higher status and prominence and are more laws, creative and self-sufficient in their roles. In India, numerous laws and policies have been enacted to promote educational opportunities for women. However, whether these benefits have been fully realized remains a concern, as many women are still deprived of education for various reasons. Open and distance learning (ODL) has thus become an essential pathway for women to pursue higher education, accommodating their unique circumstances.

Due to increasing demand and issues of access and funding, developing countries sought alternatives for providing higher education to the masses. Subsequently, ODL emerged as a viable means for expansion of higher education and to meet the growing demands and the diversified educational needs of people, which are the results of the changing social, economic and technological developments across the globe. The system aims to democratize education and provide every citizen with easy and affordable access to quality education. It takes education to the doorsteps of people who are up till then unreached with adequate facilities of formal education. Unlike the conventional system, this system is more flexible in terms of entry and exit, place and pace of study, selection of courses, etc. and is cost-effective. As such, it has proved as a significant means for higher education of women.

Against this background, the present study endeavors for a conclusive assessment of the postgraduate programs provided by the ODL institutions of Assam in the eventual empowerment and upliftment of the status of women learners. It attempts to explore the changes brought by the nuanced benefits of such programs into the personal and social lives of the women learners involved.

Besides, in the present digital age, there is a close relationship between the acquisition of digital skills and employability. Today's job market requires the use of computers and demands a highly skilled and "specialized" workforce. This demand is growing day by day. On the other hand, in a developing country like India, "employability" is a major marker of economic empowerment. So, to increase employability, every job-seeker has to acquire basic digital as well as technical skills. The most effective way to learn these skills is through education. Hence, the educational institutions, particularly the higher education institutions, need to focus on developing the basic knowledge and skills of using digital devices. Besides, the process of skilling, reskilling and upskilling is also the basic means for having a required employability. In this context, apart from the conventional learning system, ODL is very crucial as it could play a pivotal role not only in providing educational opportunities to the deprived sections but also in providing a greater scope for upskilling the people in their chosen field in a more self-paced and flexible way. Therefore, every learner will need to update their prior knowledge and skills. It is also being noted that in the Indian context, women are more underprivileged and relatively deprived in accessing their educational, economic and social rights compared to their male counterparts. Therefore, it is pertinent to discuss to what extent, education in general and ODL in particular, can play a vital role in making women learners competent with basic life skills besides making them fit in the present technology-based society and the job market. Hence, the development of skills, a positive attitude and a constructive way of life has become indispensable for the people of India, contributing to economic, social, and technological empowerment. These skills will enable them to have appropriate access to employment sector, social life, commercial life, emotional balance, learning opportunities as well banking transaction services; develop in them the right decision-making power; inculcate the capability to fight against societal discrimination and take forward a violence-free domestic life.

In this context, the higher education system prepares learners to face life's challenges, improve their lives and contribute to the nation's growth and development. It helps in acquisition of skills and makes learners confident, self-reliant and self-sufficient.

Higher education, particularly the Master's Degree level, provides expertise to learners along with knowledge and wisdom and prepares them to be fit in the future world of work. The institutions of higher education have a decisive role to play in producing knowledgeable, ethical, responsible and skillful individuals and are expected to impart quality education. Development of technological, social, economic skills in learners should be a primary responsibility of the higher education institutes of today. One of the objectives of higher education is to provide earning or employment opportunity to the learner. Per se, at this digital age, the ODL system has to provide the Master's Degree courses in such a manner so that the empowerment can be built or developed in learners, no matter whether it is a technical course or not. The ODL institutions have to prepare learners with proper employability, social, economic and digital skills and attributes through the prescribed curriculum to fulfill the requirements of the present situation. So, this paper intends to explore to what extent the various ODL courses have enabled women learners to become empowered in their real life that helps them to lead a meaningful life in society. For the study, this paper examined the postgraduate women learners of the ODL institutes of Assam.

2. Review of related literature

[Olakulein and Ojo \(2012\)](#) through their paper, "Distance education as a women empowerment strategy in Africa", observed that women emancipation through empowerment all over the world is at its peak and Africans are generally not left out. Nonetheless, considering the low level of girls' education in Africa, the issue of educational attainment by women was at a negative variance to achieve a decent position, as certain level of educational attainments are required to function effectively in the various areas – be it work-place, group or committees of locales or international standing. The paper stressed on the use of open and distance learning institutions in Nigeria as an avenue to acquire knowledge and education that would put women in a better stead towards achieving their aims and aspirations.

A Comparative Study by [Deka \(2015\)](#) on "Learning process and learning success under different modes of open and distance learning system" tried to examine the learning process and learning success of distant learners of different modes of ODL system (single and dual-mode universities), and with that, wanted to make a comparison of the modes. The results of the study showed that the enrollment and the learning success of learners in dual-mode system was better than the single-mode system and the study skill of learners was significantly influenced by the personal variables, such as gender, practical/non-practical base of course, etc. The study also found that the learners of single-mode universities had more problems in learning than the learners of dual-mode university.

[Thomas \(2017\)](#) studied the gender training framework of open and distance learning for empowerment of women. Through a paper, "Empowerment of women: an analysis of gender training frameworks for open learning system", the investigator hold that the open learning system can encounter the processes of conventional system for curriculum design and development to emphasize on the need for gender training. The investigator opined that collaboration with user agencies like NGOs and voluntary organizations is vital in development and delivery of gender training courses and programs. Lastly, the investigator provided a number of valuable insights in the paper.

[Carr, Balasubramanian, Atieno, and Onyango \(2018\)](#) elucidated through a paper, "Lifelong learning to empowerment: beyond formal education", the relevance of lifelong learning in relation to the Sustainable Development Goals (SDGs) of UN. The investigator undertook a case study in the agricultural sector and analyzed the role of lifelong learning in empowering small holders of backyard poultry enterprises in Kenya and argues that lifelong learning needs to be placed in appropriate social and economic contexts so that it can generate results and influences like empowerment.

[Saikia and Bordoloi \(2020\)](#) investigated the participation of female students in postgraduate programs at Krishna Kanta Handiqui State Open University (KKHSOU) and

discovered that a substantial number of women enroll in ODL programs due to their flexibility and accessibility. The study indicated that numerous female learners are either married or employed, and distance education allows them to pursue their studies without interfering with their social and familial obligations.

Considering the relevance of digital skills, [Asha \(2023\)](#) in her lecture delivered on 8th March 2023, stated that 66% of the global population is connected to the internet, and many women and girls in the Commonwealth are on the wrong side of the digital divide. Therefore, to address this issue, Commonwealth of Learning (COL) is applying technologies that are appropriate, affordable and available to reach the last mile. COL, which is an intergovernmental organization, has initiated a program like lifelong learning for farmers (L3F), which uses basic mobile phones to provide short audio lessons in local languages on agriculture and financial literacy to women farmers, leading to empowerment and economic gains etc.

Again, in [2021](#), UNESCO stated that across the world, women are less likely to know how to operate a smartphone, navigate the internet, use social media and understand how to safeguard information in digital media. The lack of digital skills indicates the lowest skill proficiency levels of women, such as using applications on mobile phones to the advanced skills such as coding computer software, less awareness towards cyber security etc. These issues are confronted by women due to their lower level of educational access and attainment. So, women are behind men in internet usage, which is hindering the empowerment strategies of women. Training on digital skills and internet access and use in educational institutions become essential for women's capacity building. Digital literacy is a powerful catalyst for gender equality and women's empowerment.

[Moorhouse \(2022\)](#) undertook a cross-national study that analyzes the representation of women as graduates of post-secondary institutions in 51 nations, paying attention to the way the structure of the educational system affects gender inequality in higher education. According to her results, despite the fact that women are now outnumbering men in terms of getting a higher education diploma, there is still much variability concerning the percentage of female students at various educational levels. It has been established that organizational factors, particularly the delay of educational tracking and diversity of educational tracks available, strongly affect these outcomes. Countries delaying educational tracking and providing for greater educational choice show a greater share of female students enrolled in programs leading to Master's and PhD degrees.

An empirical study carried out by [Kumar et al. \(2025\)](#) examines the role of women in higher education in India. According to their findings, there has been a considerable increase in the number of women students in higher education, especially those enrolled at postgraduate programs, because of changes in attitude towards women's education in society. Yet, gender inequality remains evident within different subjects and universities because of social-cultural factors, economic limitations and issues related to safety.

It can be inferred from the above-mentioned studies that ODL is indeed an empowering mechanism for women in terms of accessibility, flexibility and skills. Most of the above-cited studies are confined to a particular setting, theoretical in nature or are institution-based or regional-based and lack comparative analysis. Besides, very little attempt has been made to analyze empowerment in a multi-dimensional sense (economic, education, social and technological). As far as Assam is concerned, studies related to women's empowerment through ODL have concentrated only on participation/accessibility but neglected critical analysis of the impact of different institutions on empowerment. This research work aims to fill this gap by providing comparative institutional analysis of prominent ODL institutions of Assam along with multi-dimensional analysis of empowerment.

3. Objectives of the study

- (1) To examine the benefits of Post Graduate programs in improving the economic, social, educational and technological skills of women in Assam.

- (2) To analyze the differences in the benefits of postgraduate programs between women learners enrolled in general and professional programs in Assam.
- (3) To examine the differences in the benefits of postgraduate programs among women learners of selected institutions, namely Krishna Kanta Handiqui State Open University (KKHSOU), Gauhati Regional Center of IGNOU (GRC-IGNOU) and Gauhati University Institute of Distance and Open Learning (GUIDOL).

4. Research questions

- (1) What is the present status of respondents after completing the ODL programs?
- (2) What are the benefits of postgraduate programs in improving the economic, social, educational and technological skills of women in Assam?
- (3) Is there any difference in the benefits of postgraduate programs between women learners enrolled in general and professional programs in Assam?
- (4) Is there any difference in the benefits of postgraduate programs among women learners of the selected institutions, namely Krishna Kanta Handiqui State Open University (KKHSOU), Gauhati Regional Center of IGNOU (GRC-IGNOU) and Gauhati University Institute of Distance and Open Learning (GUIDOL)?

5. Methodology

Method: The study adopted descriptive survey method as the method of inquiry through the gathering and analysis of empirical data and attempted to develop knowledge. The collected data were tabulated, organized, analyzed and interpreted carefully to draw comprehensive conclusions. Through these approaches, the impact of the ODL programs in the empowerment of the women learners was analyzed.

Population and sample: In this study, the population comprised of women postgraduates of Guwahati Regional Center, Indira Gandhi National Open University (GRC-IGNOU), Krishna Kanta Handiqui State Open University (KKHSOU and Institute of Distance and Open Learning, Gauhati University (GUIDOL). From each of the select institutions, a total of 100 learners, including all the programs under study, were selected to make up a sample of total 300 postgraduates. The sampling scheme could be shown graphically in the following manner:

A stratified and random sampling approach was used in order to select 300 women postgraduate students who had studied in three ODL institutions, which are GRC-IGNOU, KKHSOU and GUIDOL, in the year 2014, 2016 and 2018 respectively. The sample selection scheme adopted for the present study is presented in [Figure 1](#).

Tools for data collection: The tool used in the study was a questionnaire, which was divided into four main parts, namely socio-economic profile, program description, difficulties experienced and benefits received, which were indicators of empowerment.

Tool validation: Validity was proven by expert opinion, a review of the literature and a pilot test with 50 people to confirm content and face validity. Reliability was ensured by using internal consistency methods like split-half and Cronbach's alpha, which gave us a value of 0.857, which means it was very reliable. So, the tool was scientifically sound, consistent and good for gathering data.

6. Analysis and interpretation of data

The outcomes that the women learners derived from the PG level ODL courses, in terms of social, political, economic, educational, intellectual and technological gains, were assessed and these benefits were taken as the proxy of their empowerment. As such, this part of the questionnaire

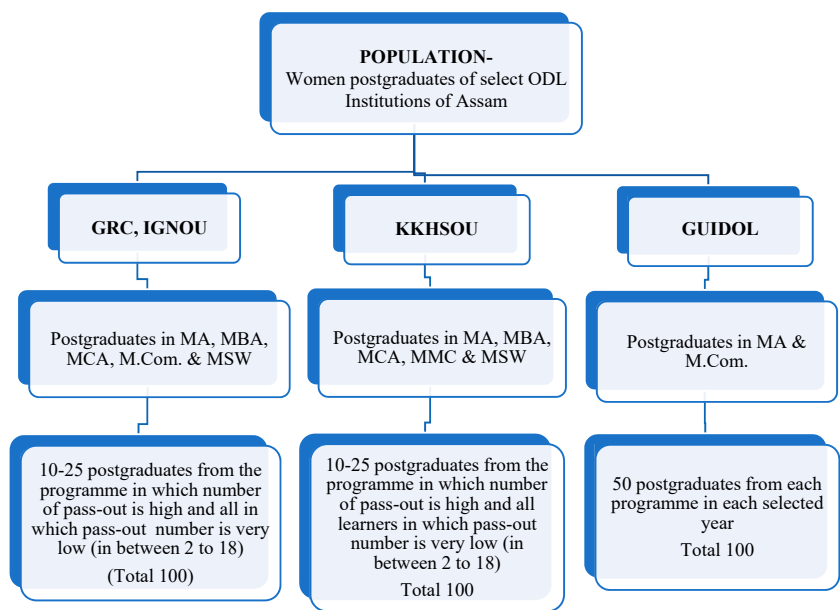


Figure 1. Flow-chart of the sample selection scheme for the study. Source: Authors’ own work

goes deeper into the courses to catch the learners’ responses regarding the benefits of the courses. Furthermore, the present status of the respondents and their suggestions regarding improvement in the course-delivery and the overall functioning of the ODL institutions, and their viewpoint towards the ODL system have also been analyzed in this section.

Present status of the respondents: This study assessed changes that occurred in the personal lives of learners after completing the courses. The responses of the learners in this regard are presented in [Table 1](#).

From [Table 1](#), regarding the present status of the respondents, it was found that 74.0% of them are employed now while 4.7% is self-employed, totaling at 78.7% of the presently employed respondents. Moreover, 16.3% respondents are still studying other courses while 2.7% are house-wives. None of the respondents are currently social workers or political activists, and 2.3% respondents are engaged in some other activities.

The benefits were again analyzed in detail in terms of economic, political, intellectual, educational, social and technological benefits as shown in the following Tables.

Economic benefits of the course: The economic benefits of the course are shown in [Table 2](#).

Table 1. Present status of the respondents

Present status	Frequency	Percentage
House-wife	8	2.7%
Student	49	16.3%
Employed	222	74.0%
Self-employed	14	4.7%
Social worker	Nil	Nil
Political activist	Nil	Nil
Others	7	2.3%

Source(s): Authors’ own work

Table 2. Economic benefits

Benefit	Course	SA	AG	NC	DA	TDA	NR
Helps to earn more and increase in business by improving present earning skill and efficiency	Gen	23 (10.7%)	72 (33.6%)	79 (36.9%)	36 (16.8%)	4 (1.9%)	0
	Prof	5 (5.8%)	36 (41.9%)	33 (38.4%)	12 (13.9%)	0	0
	Total	28 (9.3%)	108 (36.0%)	112 (37.3%)	48 (16.0%)	4 (1.3%)	0
Got promotion/pay hike/increment	Gen	18 (8.4%)	54 (25.2%)	82 (38.3%)	52 (24.3%)	8 (3.7%)	0
	Prof	5 (5.8%)	15 (17.4%)	45 (52.3%)	21 (24.4%)	0	0
	Total	23 (7.7%)	69 (23.0%)	127 (42.3%)	73 (24.3%)	8 (2.7%)	0
Got a job of choice/improved career opportunity	Gen	31 (14.5%)	93 (43.5%)	62 (28.9%)	27 (12.6%)	1 (0.5%)	0
	Prof	8 (9.3%)	35 (40.7%)	23 (26.7%)	20 (23.3%)	0	0
	Total	39 (13.0%)	128 (42.7%)	85 (28.3%)	47 (15.7%)	1 (0.3%)	0
Became self-employed	Gen	4 (1.9%)	6 (2.8%)	48 (22.4%)	139 (65.0%)	11 (5.1%)	6 (2.8%)
	Prof	1 (1.2%)	3 (3.5%)	24 (27.9%)	57 (66.3%)	0 (0%)	1 (1.2%)
	Total	5 (1.7%)	9 (3.0%)	72 (24.0%)	196 (65.3%)	11 (3.7%)	7 (2.3%)
Provides financial security and support to the family	Gen	46 (21.5%)	101 (47.2%)	45 (21.0%)	19 (8.9%)	3 (1.4%)	0
	Prof	27 (31.4%)	29 (33.7%)	15 (17.4%)	13 (15.1%)	2 (2.3%)	0
	Total	73 (24.3%)	130 (43.3%)	60 (20.0%)	32 (10.7%)	5 (1.7%)	0
Started saving for the future realizing the importance of savings	Gen	30 (14.0%)	120 (56.1%)	50 (23.4%)	11 (5.1%)	3 (1.4%)	0
	Prof	18 (20.9%)	33 (38.4%)	21 (24.4%)	12 (14.0%)	2 (2.3%)	0
	Total	48 (16.0%)	153 (51.0%)	71 (23.7%)	23 (7.7%)	5 (1.6%)	0

Source(s): Authors' own work

Table 2 explains that from general courses, 10.7% strongly agreed and 33.6% agreed; from professional courses, 5.8% strongly agreed and 41.9% agreed that the courses had helped them to earn more and increase earning in business by improving their present earning skills and efficiency. Overall, 9.3% respondents strongly agreed and 36.0% agreed to this; only a small percentage, i.e. 16.0% disagreed and 1.3% strongly disagreed to this and 37.3% refrained from commenting on it.

In respect of getting promotion or pay hike or increment after completing the courses, 8.4% respondents of general courses strongly agreed and 25.2% agreed while 5.8% respondents of the professional courses strongly agreed and 17.4% agreed to this. Overall, 7.7% respondents strongly agreed and 23.0% agreed to this. Conversely, 42.3% respondents did not comment on this, while 24.3% disagreed and 2.7% strongly disagreed to this.

A total of 14.5% respondents of general courses strongly agreed and 43.5% agreed while 9.3% respondents of the professional courses strongly agreed and 40.7% agreed that the course has helped them to get a job of choice or improve career opportunities. Overall, 13.0%

respondents strongly agreed and 42.7% agreed to this and only 15.7% respondents disagreed and a negligible 0.3% strongly disagreed to this. A total of 28.3% respondents did not comment on this.

Only 1.9% respondents of general courses strongly agreed and 2.8% agreed while 1.2% respondents of professional courses strongly agreed and 3.5% agreed that they became self-employed after completing the courses; in total, 1.7% respondents strongly agreed and 3.0% agreed to this. A total of 65.3% respondents did not comment on this while 3.7% disagreed and 2.3% strongly disagreed to this.

Overall, 21.5% respondents of general courses strongly agreed and 47.2% agreed while 31.4% respondents of the professional courses strongly agreed and 33.7% agreed that the completion of the courses has provided them with financial security and support to the family; total 24.3% respondents strongly agreed and 43.3% agreed to this, and only 10.7% respondents disagreed, a negligible 1.7% strongly disagreed to this and 20.0% respondents did not comment on it.

Moreover, 14.0% of respondents from general courses strongly agreed and 56.1% agreed, while 20.9% from professional courses strongly agreed and 38.4% agreed that they had started saving for the future after realizing the importance of saving through the course. In total, 16.0% respondents strongly agreed and 51.0% agreed to this. Only 7.7% respondents disagreed and 1.6% strongly disagreed to it, and 23.7% respondents refrained from commenting on it.

Statistical inference: Difference in economic benefit between the respondents of general and professional programs is presented in Table 3.

As shown in Table 3, regarding the differences in economic benefit among the postgraduates of general and professional programs, the above statistics signifies that though the calculated mean of general courses is higher than the mean for professional courses, both the Z value and p-value suggests that there is no significant difference at 5% level between the two group means. Therefore, it can be concluded that regarding the economic benefits of the courses, there is no significant difference between the postgraduates of general and professional courses.

The Z-test comparing general and professional programs showed $Z = -1.179$, $p = 0.238$ (>0.05), which means that the difference in mean scores (General: $M = 20.5$, $SD = 3.90$; Professional: $M = 19.8$, $SD = 3.60$) is not statistically significant. This implies that program type does not affect economic benefits, and any discerned difference is probably attributable to sampling variability rather than a genuine population effect.

6.1 Difference in economic benefits among the postgraduates of selected institutions

On the other hand, to analyze the difference in economic benefits among the postgraduates of the three selected ODL institutions, the analysis of variance (ANOVA) test was applied which shows the following result in Table 4.

As presented in Table 4, regarding the benefits of the courses among the respondents of all three ODL institutions, it is found that the mean score of economic benefit of KKHSOU is 21.26, GRC-IGNOU is 19.58 and GUIDOL is 20.02. The F value 5.396 at df 2, 297 and $p = 0.005$ indicate that the difference of economic benefits among the institutions is significant at 1% level.

Table 3. Difference in economic benefits

General programs		Professional programs		Total		Z value	p-value
Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation		
20.5	3.90	19.8	3.60	20.3	3.82	-1.179	0.238

Source(s): Authors' own work

Table 4. Difference in economic benefits among selected institutions

Institution	Mean	SD	Df	F	Significance
KKHSOU	21.26	3.609	2	5.396 ^a	0.005
GRC-IGNOU	19.58	3.560	297		
GUIDOL	20.02	4.063			
Total	20.29	3.805	299		

Note(s): ^a0.05 level of significance
Source(s): Authors' own work

The ANOVA results, however, showed that $F(2,297) = 5.396, p = 0.005 (<0.01)$, which means that there was a statistically significant difference between the institutions. This means that the context of the institution has a big impact on the economic benefits.

6.2 Multiple comparison among variables with Tukey HSD test

As the F value is significant, Tukey HSD test was conducted to find out the significant difference between the variables. The results are presented in Table 5.

From Table 5, it can be found that amongst the institutions, there is significant difference between KKHSOU and GRC-IGNOU regarding economic benefit of the courses for the women postgraduates, and the benefit is in favor of KKHSOU. There is no difference amongst the other institutions.

Educational benefits of the course: The educational benefits of the course are presented in Table 6.

It can be observed in Table 6 that a majority of the respondents of both general and professional courses agreed that the courses helped them to enrich knowledge on the subject matter. Amongst the respondents of general courses, 42.1% strongly agreed and 56.5% agreed to this while amongst the respondents of professional courses, 31.4% strongly agreed and 68.6% agreed to this. Total 39.0% strongly agreed and 60.0% agreed to this. Only 1.0% respondents in total did not comment on this and no respondent denied this.

Likewise, 21.5% respondents of general courses strongly agreed and 58.4% agreed while 16.3% of professional course strongly agreed and 77.9% agreed that they are now capable to disseminate the knowledge gained from the courses, which is strongly agreed by 20.0% and agreed by 64.0% in total. A total of 15.7% put no comment on it and only 0.3% denied it.

Moreover, amongst the respondents of general courses, 22.9% strongly agreed and 67.8% agreed that they got a second chance of learning to fulfill their dreams of higher education; amongst the respondents of professional courses, 31.4% also strongly agreed and 61.6% agreed to this. A total of 25.3% respondents strongly agreed and 66.0% agreed to this. However, mere

Table 5. Difference in economic benefits among selected institutions

ODL institutions	ODL institutions	Mean difference	Standard error of mean	Significance
KKHSOU	GRC-IGNOU	1.680 ^a	0.530	0.005
	GUIDOL	1.240	0.530	0.052
GRC-IGNOU	KKHSOU	-1.680 ^a	0.530	0.005
	GUIDOL	-0.440	0.530	0.685
GUIDOL	KKHSOU	-1,240	0.530	0.052
	GRC-IGNOU	0.440	0.530	0.685

Note(s): ^a0.05 level of significance
Source(s): Authors' own work

Table 6. Educational benefits

Benefit	Course	SA	AG	NC	DA	TDA
Helped to enrich knowledge on the subject matter	Gen	90 (42.1%)	121 (56.5%)	3 (1.4%)	Nil	Nil
	Prof	27 (31.4%)	59 (68.6%)	Nil	Nil	Nil
	Total	117 (39.0%)	180 (60.0%)	3 (1.0%)	Nil	Nil
Capable to disseminate the knowledge gained from the course	Gen	46 (21.5%)	125 (58.4%)	42 (19.6%)	1 (0.5%)	Nil
	Prof	14 (16.3%)	67 (77.9%)	5 (5.8%)	Nil	Nil
	Total	60 (20.0%)	192 (64.0%)	47 (15.7%)	1 (0.3%)	Nil
Got a second chance of learning and fulfilled dreams of higher education	Gen	49 (22.9%)	145 (67.8%)	19 (8.9%)	1 (0.5%)	Nil
	Prof	27 (31.4%)	53 (61.6%)	4 (4.7%)	2 (2.3%)	Nil
	Total	76 (25.3%)	198 (66.0%)	23 (7.7%)	3 (1.0%)	Nil
Increased thirst for knowledge and motivated for lifelong education	Gen	48 (22.4%)	159 (74.3%)	7 (3.3%)	Nil	Nil
	Prof	23 (26.7%)	55 (64.0%)	8 (9.3%)	Nil	Nil
	Total	71 (23.7%)	214 (71.3%)	15 (5.0%)	Nil	Nil
Encouragement to others for higher education	Gen	47 (22.0%)	152 (71.0%)	15 (7.0%)	Nil	Nil
	Prof	15 (17.4%)	64 (74.4%)	7 (8.1%)	Nil	Nil
	Total	62 (20.7%)	216 (72.0%)	22 (7.3%)	Nil	Nil
Children are motivated to study more seriously	Gen	32 (15.0%)	123 (57.5%)	36 (16.8%)	22 (10.3%)	1 (0.5%)
	Prof	20 (23.3%)	38 (44.2%)	19 (22.1%)	9 (10.5%)	Nil
	Total	52 (17.3%)	161 (53.7%)	55 (18.3%)	31 (10.3%)	1 (0.3%)

Source(s): Authors' own work

1.0% opposed this and total 7.7% did not comment on it. Again, a majority of the respondents from both the general and professional courses were of the opinion that their thirst for knowledge had increased and they are motivated for lifelong education; 22.4% respondents of general courses strongly agreed and 74.3% agreed to this whereas 26.7% respondents of professional courses strongly agreed and 64.0% agreed to this. In total, 23.7% strongly agreed and 71.3% agreed to this. No respondent denied it, and only 5.0% in total refrained from commenting on it.

While 22.0% respondents from general courses strongly agreed and 71.0% agreed that now they become encouragement to others for pursuing higher education, 17.4% respondents from professional courses strongly agreed and 74.4% agreed with this. Overall, 20.7% respondents from both courses strongly agreed and 72.0% agreed to this. It was opposed by none, but not commented on by total 7.3% respondents.

Further, 15.0% respondents from general courses strongly agreed and 57.5% agreed that children were motivated to study more seriously while 23.3% respondents from professional courses strongly agreed and 44.2% agreed to this. In total, 17.3% of respondents from both

courses strongly agreed and 53.7% agreed, while 10.3% disagreed and only 0.3% totally disagreed. A total of 18.3% did not comment.

Statistical inference: Difference in educational benefit among the learners of general and professional programs is shown in Table 7.

According to the statistics above presented in Table 7, it can be understood that the group mean is in favor of professional courses; but the Z value indicates that there is no significant difference between the means of the two groups of general and professional courses. Therefore, it can be concluded that regarding educational benefits of the courses, there is no difference between the postgraduates of general and professional courses.

The Z-test results indicated $Z = -1.501$ and $p = 0.133 (>0.05)$, confirming the absence of a significant difference between general and professional programs. Even though the average for professional programs is slightly higher ($M = 24.7$), this difference is not statistically significant.

Again, regarding the educational benefit among the institutions, the following result was found in Table 8.

As shown in Table 8, regarding the educational benefits of the courses among the respondents of all three ODL institutions, the statistics suggest that the mean score of benefit of KKHSOU is 25.21, of GRC-IGNOU is 24.37 and of GUIDOL is 24.42. The $F = 3.981$ at $df\ 2, 297$ and $p = 0.020$ indicates that the difference of educational benefits among the institutions is significant at 5% level. It indicates that the postgraduates of KKHSOU were more educationally benefitted than the postgraduates of GRC-IGNOU and GUIDOL.

The results of the ANOVA test showed that $F(2,297) = 3.981, p = 0.020 (<0.05)$, which means that there was a moderate but statistically significant institutional effect.

6.3 Multiple comparison among variables with Tukey HSD test

As the F value is significant, Tukey HSD test was conducted to find out the significant difference between the variables. The result is shown in following Table 9.

In Table 9, it can be noticed that amongst the institutions, there is significant difference between KKHSOU and GRC-IGNOU regarding the educational benefits of the courses for the women postgraduates, and the benefit is in favor of KKHSOU. Similarly, there is significant difference between KKHSOU and GUIDOL too, which is in favor of KKHSOU. There is no significant difference regarding educational benefits in between GRC-IGNOU and GUIDOL.

Table 7. Difference in educational benefit

General program		Professional program		Total	Standard deviation	Z value	p-value
Mean	Standard deviation	Mean	Standard deviation	Mean			
24.6	2.51	24.7	2.04	24.7	2.38	-1.501	0.133

Source(s): Authors' own work

Table 8. Difference of educational benefit among the learners of selected ODL institutions

Institution	Mean	SD	df	F	Significance
KKHSOU	25.21	2.306	2	3.981 ^a	0.020
GRC-IGNOU	24.37	2.368	297		
GUIDOL	24.42	2.409			
Total	24.67	2.385	299		

Note(s): ^a0.05 level of significance

Source(s): Authors' own work

Table 9. Difference in educational benefits among selected institutions

ODL institution	ODL institution	Mean difference	Standard error of mean	Significance
KKHSOU	GRC, IGNOU	0.840 ^a	0.334	0.033
	GUIDOL	0.790 ^a	0.334	0.049
GRC, IGNOU	KKHSOU	−0.840 ^a	0.334	0.033
	GUIDOL	−0.050	0.334	0.988
GUIDOL	KKHSOU	−0.790 ^a	0.334	0.049
	GRC, IGNOU	0.050	0.334	0.988

Note(s): ^a0.05 level of significance

Source(s): Authors' own work

Therefore, it can be concluded that postgraduates of KKHSOU are more educationally benefitted than the postgraduates of other two institutions.

Social benefits of the course: The social benefits of the course are presented in [Table 10](#).

[Table 10](#) describes that a large number of the respondents from both general and professional courses opined that the completion of the courses helped them to raise their status in the family and society. From the general courses, 16.8% respondents strongly agreed and 66.8% agreed, while from professional courses, 16.3% strongly agreed and 55.8% agreed to this, and in total 16.7% strongly agreed and 63.7% agreed to this. It was denied by total 2.0% respondents only, and total 17.7% put no comment on it.

Again, 15.9% respondents of general courses strongly agreed and 49.1% agreed that the courses helped them in better upbringing of their children and taking good care of their self and the family, which was strongly agreed by 5.8% and agreed by 54.7% respondents of professional courses; total 13.0% respondents strongly agreed and 50.7% agreed to this. This was denied by 17.0% respondents and not commented by 19.3% respondents in total.

Likewise, 21.5% respondents of general courses strongly agreed and 62.1% agreed while 23.3% respondents of professional courses strongly agreed and 68.6% agreed that the courses had helped them in the development of social skills, such as the ability to work in team, leadership quality, communication/interpersonal skills, etc.; which was strongly agreed by 22.0% and agreed by 64.0% respondents in total. Only 1.7% in total disagreed to this and 12.3% put no comment on it. Again, 9.8% respondents of general courses strongly agreed and 67.8% agreed that the completion of the courses had raised their reputation among friends and helped in making new friends, which was strongly agreed by 18.6% and agreed by 61.6% respondents of professional courses. A total of 12.3% respondents strongly agreed and 66.0% agreed to this, but, 1.3% opposed it and 20.3% remained indifferent from commenting on it.

And, 9.8% respondents of general courses strongly agreed and 70.6% agreed that their concerns about social issues and solutions of those had increased after completing the course, which was strongly agreed by 15.1% and agreed by 70.9% respondents of professional courses. Overall, 11.3% respondents strongly agreed and 70.7% agreed to this whereas only 1.7% respondents disagreed to it and 16.3% had no comment on it.

4.2% respondents of general courses strongly agreed and 69.2% agreed that they got encouragement to work for the preservation of culture and traditions of the society after doing the courses, which was strongly agreed by 19.8% and agreed by 54.7% of the respondents of professional courses. Overall, 8.7% respondents strongly agreed and 65.0% agreed to this whereas 2.7% did not agree to this and 23.7% put no comment on it.

Moreover as seen in [Table 10](#), 10.3% respondents from general courses strongly agreed and 66.4% agreed that they were now capable to raise voice against discrimination and injustice in the society which was strongly agreed by 23.3% and agreed by 58.1% respondents from professional course. A total of 14.0% respondents strongly agreed and 64.0% agreed to this

Table 10. Social benefits

Benefit	Course	SA	AG	NC	DA	TDA
Raised status in the family and the society	Gen	36 (16.8%)	143 (66.8%)	34 (15.9%)	1 (0.5%)	Nil
	Prof	14 (16.3%)	48 (55.8%)	19 (22.1%)	5 (5.8%)	Nil
	Total	50 (16.7%)	191 (63.7%)	53 (17.7%)	6 (2.0%)	Nil
Helps in better upbringing of children and taking good care of self and the family	Gen	34 (15.9%)	105 (49.1%)	38 (17.8%)	37 (17.3%)	Nil
	Prof	5 (5.8%)	47 (54.7%)	20 (23.3%)	14 (16.3%)	Nil
	Total	39 (13.0%)	152 (50.7%)	58 (19.3%)	51 (17.0%)	Nil
Developed social skills, such as the ability to work in team, leadership quality, communication/interpersonal skills, etc.	Gen	46 (21.5%)	133 (62.1%)	30 (14.0%)	5 (2.3%)	Nil
	Prof	20 (23.3%)	59 (78.6%)	7 (8.1%)	Nil	Nil
	Total	66 (22.0%)	192 (64.0%)	37 (12.3%)	5 (1.7%)	Nil
Raised reputation among friends and helped making new friends	Gen	21 (9.8%)	145 (67.8%)	44 (20.6%)	4 (1.9%)	Nil
	Prof	16 (18.6%)	53 (61.6%)	17 (19.8%)	Nil	Nil
	Total	37 (12.3%)	198 (66.0%)	61 (20.3%)	4 (1.3%)	Nil
Increased concerns about social issues and their solutions	Gen	21 (9.8%)	151 (70.6%)	37 (17.3%)	5 (2.3%)	Nil
	Prof	13 (15.1%)	61 (70.9%)	12 (14.0%)	Nil	Nil
	Total	34 (11.3%)	212 (70.7%)	49 (16.3%)	5 (1.7%)	Nil
Got encouragements to work for preservation of culture and traditions of the society	Gen	9 (4.2%)	148 (69.2%)	50 (23.4%)	7 (3.3%)	Nil
	Prof	17 (19.8%)	47 (54.7%)	21 (24.4%)	1 (1.2%)	Nil
	Total	26 (8.7%)	195 (65.0%)	71 (23.7%)	8 (2.7%)	Nil
Made capable to raise voice against discrimination and injustice in the society	Gen	22 (10.3%)	142 (66.4%)	44 (20.6%)	3 (1.4%)	3 (1.4%)
	Prof	20 (23.3%)	50 (58.1%)	15 (17.4%)	1 (1.2%)	Nil
	Total	42 (14.0%)	192 (64.0%)	59 (19.7%)	4 (1.3%)	3 (1.0%)

Source(s): Authors' own work

while mere 1.3% in total disagreed and 1.0% strongly disagreed to this. Total 19.7% refrained from commenting on it.

Statistical inference: Difference of social benefits among the respondents of general and professional programs is shown in [Table 11](#).

[Table 11](#) indicate that though, the group mean is in favor of professional courses, the Z value indicates that there is no significant difference between the means of the two groups of general and professional courses. Therefore, it can be concluded that regarding social benefits of the courses, there is no significant difference between the postgraduates of general and professional courses.

Table 11. Difference in social benefits

General prog.		Professional prog.		Total		Z value	p-value
Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation		
27.0	3.17	27.4	3.15	27.1	3.16	−0.684	0.494
Source(s): Authors’ own work							

The Z-test results ($Z = -0.684, p = 0.494 > 0.05$) show that there is no significant difference between the two types of programs. This means that social benefits are equally available in both general and professional streams.

The difference in social benefits among different institutions is shown in following Table 12.

From Table 12 regarding social benefits of the courses for the learners of all the ODL institutions, it was found that the mean score of social benefit of KKHSOU is 28.00, of GRC-IGNOU is 26.27 and of GUIDOL is 27.04. The $F = 7.846$ at $df\ 2, 297$ and $p = 0.000$ indicate that the difference among the institutions regarding social benefits is significant at 1% level.

6.4 Multiple comparison among variables with Tukey HSD test

As the F value is significant, Tukey HSD test was conducted to find out the significant difference between the variables. The result is shown in Table 13.

The statistics presented in Table 13 indicate that amongst the institutions, there is significant difference between KKHSOU and GRC-IGNOU regarding the social benefit of the courses for women postgraduates and the benefit is in favor of KKHSOU. But there is no significant difference regarding social benefit in between the postgraduates of KKHSOU and

Table 12. Difference of social benefit among the learners of selected ODL institutions

Institution	Mean	SD	Df	F	Significance
KKHSOU	28.00	3.181	2	7.846 ^a	0.000
GRC-IGNOU	26.27	3.209	297		
GUIDOL	27.04	2.881			
<i>Total</i>	<i>27.10</i>	<i>3.164</i>	<i>299</i>		
Note(s): ^a 0.05 level of significance					
Source(s): Authors' own work					

Table 13. Difference in social benefits among selected institutions

ODL institution	ODL institution	Mean difference	Standard error of mean	Significance
KKHSOU	GRC-IGNOU	1.730 ^a	0.438	0.000
	GUIDOL	0.960	0.438	0.074
GRC-IGNOU	KKHSOU	−1.730 ^a	0.438	0.000
	GUIDOL	−0.770	0.438	0.000
GUIDOL	KKHSOU	−0.960	0.438	0.074
	GRC-IGNOU	0.770	0.438	0.185
Note(s): ^a 0.05 level of significance				
Source(s): Authors’ own work				

GUIDOL or in between GRC-IGNOU and GUIDOL. Therefore, it can be concluded that the postgraduates of KKHSOU are more socially benefitted than the postgraduates of other two institutions.

Technological benefits of the course: The technological benefits of the course are presented in Table 14.

Technological awareness refers to the extent to which women learners possess knowledge, understanding and practical ability to use digital devices and technologies in their day-to-day life. It is measured through specific indicators such as ability to use computers or electronic gadgets, access and use of the internet, handling digital tasks, use of social media for communication and awareness of ethical and safe use of technology. In case of technological benefits, Table 14 shows that, regarding increasing the capabilities to handle a computer/electronic gadget more confidently, 6.5% respondents of general courses strongly agreed and 43.9% agreed to this whereas from professional courses, 8.1% strongly agreed and 58.1% agreed to this. A total of 7.0% respondents of both the courses strongly agreed and 48.0% agreed to this, while total 14.0% disagreed and 6.3% strongly disagreed to this 24.7% did not comment on it.

Only 6.5% respondents of general courses strongly agreed and 61.7% agreed that they became capable to use the internet realizing its importance in the present-day contexts which was strongly agreed by 8.1% and agreed by 57.0% of professional course respondents. Overall, 7.0% respondents strongly agreed and 60.3% agreed to it. In total, only 6.7%

Table 14. Technological benefits

Benefit	Course	SA	AG	NC	DA	TDA
Increased capabilities to handle a computer/electronic gadget more confidently	Gen	14 (6.5%)	94 (43.9%)	64 (29.9%)	27 (12.6%)	15 (7.0%)
	Prof	7 (8.1%)	50 (58.1%)	10 (11.6%)	15 (17.4%)	4 (4.7%)
	Total	21 (7.0%)	144 (48.0%)	74 (24.7%)	42 (14.0%)	19 (6.3%)
Became capable to use the internet realizing its importance in present-day context	Gen	14 (6.5%)	132 (61.7%)	44 (20.6%)	14 (6.5%)	10 (4.7%)
	Prof	7 (8.1%)	49 (57.0%)	22 (25.6%)	6 (7.0%)	2 (2.3%)
	Total	21 (7.0%)	181 (60.3%)	66 (22.0%)	20 (6.7%)	12 (4.0%)
Became capable to perform tasks needed to do digitally in day-to-day life	Gen	9 (4.2%)	136 (63.6%)	38 (17.8%)	20 (9.3%)	11 (5.1%)
	Prof	5 (5.8%)	45 (52.3%)	26 (30.2%)	8 (9.3%)	2 (2.3%)
	Total	14 (4.7%)	181 (60.3%)	64 (21.3%)	28 (9.3%)	13 (4.3%)
Capable to use social media to get connected with people	Gen	11 (5.1%)	138 (64.5%)	43 (20.1%)	12 (5.6%)	10 (4.7%)
	Prof	8 (9.3%)	62 (72.1%)	10 (11.6%)	4 (4.7%)	2 (2.3%)
	Total	19 (6.3%)	200 (66.7%)	53 (17.7%)	16 (5.3%)	12 (4.0%)
Realized the need for judicious and ethical use of technology	Gen	19 (8.9%)	91 (42.5%)	54 (25.2%)	30 (14.0%)	20 (9.3%)
	Prof	4 (4.7%)	45 (52.3%)	19 (22.1%)	16 (18.6%)	2 (2.3%)
	Total	23 (7.7%)	136 (45.3%)	73 (24.3%)	46 (15.3%)	22 (7.3%)

Source(s): Authors' own work

respondents disagreed and 4.0% strongly disagreed to it while total 22.0% put no comment on it. Regarding the capability to perform tasks needed to do digitally in day-to-day life, 4.2% respondents of general courses strongly agreed and 63.6% agreed to it while from professional courses, 5.8% respondents strongly agreed and 52.3% agreed to it. A total of 4.7% respondents strongly agreed and 60.3% agreed to it while total 9.3% disagreed and 4.3% strongly disagreed to it; 21.3% respondents in total did not comment on it.

Moreover, 5.1% respondents from general courses strongly agreed and 64.5% agreed that they are now capable to use social media to get connected with people, which was strongly agreed by 9.3% and agreed by 72.1% of professional course respondents. Overall, 6.3% respondents strongly agreed and 66.7% agreed to this while only 5.3% disagreed and 4.0% strongly disagreed to this; 17.7% respondents did not put comment on it.

In addition, Table 14 also inferred that 8.9% respondents of general courses agreed and 42.5% agreed that they realized the need for judicious and ethical use of technology which was strongly agreed by 4.7% and agreed by 52.3% respondents from professional course. A total of 7.7% respondents strongly agreed and 45.3% agreed to this while total 24.3% did not put any comment on this. Overall, 15.3% respondents disagreed and 7.3% strongly disagreed to this.

Statistical inference: The difference in technological benefits in respect to different programs is shown in Table 15.

It could be understood from Table 15 that group mean is in favor of professional courses; but the Z value indicates that there is no significant difference between the two group means of the general and professional courses. Therefore, it can be concluded that regarding technological benefits of the courses, there is no significant difference between the postgraduates of general and professional courses.

In Table 15, The Z-test results ($Z = -0.755$, $p = 0.450 > 0.05$) show that there is no significant difference between the types of programs.

The difference in technological benefits among selected ODL institutions is presented in Table 16.

As shown in Table 16, regarding technological benefits of the courses derived by the respondents of all three ODL institutions, it is found that the mean score of benefit for KKHSOU is 17.42, GRC-IGNOU is 16.90 and GUIDOL is 17.98. The $F = 1.971$ at $df\ 2, 297$ and $p = 0.141$ indicate that the difference of technological benefits among the ODL institutions is not significant.

Table 15. Difference in technological benefit

General prog.		Professional prog.		Total		Z value	p-value
Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation		
17.3	3.99	17.8	3.52	17.4	3.86	-0.755	0.450
Source(s): Authors' own work							

Table 16. Difference in technological benefits among the learners of selected ODL institutions

Institution	Mean	SD	Df	F	Significance
KKHSOU	17.42	4.033	2	1.971	0.141
GRC-IGNOU	16.90	3.639	297		
GUIDOL	17.98	3.859			
Total	17.43	3.859	299		
Source(s): Authors' own work					

7. Discussion

From the foregoing survey, it can be understood that most of the women postgraduates benefitted from the course they completed through the ODL mode. The survey revealed that the PG level ODL programs significantly enhance the status of women. It helped them in getting a job to be economically independent, provide support to the family and save for future. They became able to exert control over their own earnings and became more aware of their rights and well-being. They gained self-confidence and self-satisfaction too. It helped them in better family set-up and upbringing of children, to develop their creative thinking, decision-making capacity, leadership quality and some other social skills. Also, it increased their thirst for knowledge, inspired to continue education and developed their basic technological knowledge and so on. Through the course, their status in the society and family had been raised, social skills had been developed and they became motivated to work for social upliftment and development. Accordingly, it can be said that the PG level ODL programs have helped the women to be economically independent, politically aware, intellectually developed, educationally enriched, socially upgraded and technologically capacitated. The study also reflects that most of the women became self-confident and self-dependent now. They gained access to knowledge and information and thereby developed the feeling of self-reliance and self-respect.

Non-significant differences between general and professional programs reveal that ODL mode alone, rather than program types, contribute to women's empowerment. The same curriculum structures and learner support systems within different programs could be the reason behind this result. On the other hand, significant differences among institutions (for example, $F = 5.396$, $p < 0.01$) demonstrate that quality of institutions, including the quality of learner support systems, resources available at the institution and delivery methods used by the institutions, contribute significantly to success.

So, the study reflects that women gained social, political, educational, technological and economic strength, and developed intellectually. This is in support of the *theory of empowerment* of women which perceived that control over own earnings, access to information, expansion of knowledge, self-esteem oozed out of the feeling of self-dependence, etc. contribute to a great extent to the empowerment of women. As such, it can be concluded that the women postgraduates became empowered through the postgraduate level programs in the ODL mode as the benefits of the course, in terms of economic, political, intellectual, educational, social and technological benefits, were taken as the proxy of their empowerment. Further, the findings also supports the concept of empowerment which describes that empowerment is the increase in the social, political, spiritual or economic strength of an individual. It involves increasing the confidence level in their own capacities, and developing self-dependence and self-sufficiency, focusing on removing the need of help in future (Lal, 2011).

8. Implications for the study

The study makes it clear that even though ODL programs lead to women's empowerment, the degree to which such empowerment is realized will vary from institution to institution. This means that the quality of the institution matters. The success stories will have better strategies for supporting the learners, delivering the program and engaging the learners. It is, therefore, critical for policymakers to focus on quality assurance, institutional benchmarking and incorporation of best practices among ODL institutions. The curriculum ought to include skill building and digitization.

9. Conclusion

In Assam, the ODL system helps to widen the access of higher education for women who are left out of the formal education system. Most of the research participants in this study were

from the rural areas of Assam who became empowered through the ODL courses; as such, ODL is presumed to be important in the coming years to be a potent means of empowerment of rural women. A well-thought-out design of ODL program for the women of Assam can help in accelerating the pace of development of the state. Nevertheless, ODL is one of the best means to build human resources. India's efforts to become a successful nation depend on universal education for women, who make up an important part of the country's human resources. As India moves towards the knowledge economy, it becomes imperative to focus on the advancement of women acquiring required skills and knowledge. The country can reach its highest peak of development if its women are equipped with the power of education. It would be possible only when its men and women march together in all domains of developmental activities. Empowerment of women is not only a task of women and not only for women; is for men as well. With strong determination and continuous effort, a life of dignity and prosperity for women can be ensured.

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