



## Assessing the Preparedness of Undergraduate ODL Learners for Mobile Learning

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### ABSTRACT

The world has indeed been witnessing growing trend towards a networked, connected, mobile society. With easy access to diverse information and communication technology (ICT) options at home, work, school, etc., mobile technology is opening up new opportunities for learning and teaching. This study presents findings from a research on open and distance learners who were enrolled in the undergraduate programme of Indira Gandhi National Open University (IGNOU), New Delhi. The objective of the study was to assess the preparedness of these ODL for mobile learning. The study employed a survey method in which the research tool was questionnaire and a quantitative approach was used for data collection and analysis. The findings indicate that most undergraduate distance learners at IGNOU are interested in mobile learning, but some are not fully prepared and are unsure about the learner support. While most learners possess smart phones, some face financial barriers to accessing internet services on it. A total of 45% of ODL learners were found to be prepared to adopt mobile learning. The findings may help IGNOU make decisions about implementing mobile learning for undergraduate open and distance learners (ODL) of social science.

**Keywords:** Digital technologies/devices; ICT; m-learning; Mobile learning; Open and distance learner (ODL).

### I. Introduction to the Research Problem

Distance learners, in comparison to most cohorts of students on campuses, represent a more mobile, heterogeneous, and geographically dispersed group. Despite this, previous studies on

mobile learning for distance learners have received limited attention, with only 10% of mobile learning research focusing on distance learning settings (Krull & Duarte, 2017). The evolving landscape of knowledge, shifting demographics and expectations of learners, global competition in higher education provision, and the swift progress in information and communication technologies (ICT) necessitate a thorough reconsideration of how universities can effectively carry out their fundamental roles namely-producing, processing, storing, disseminating, and applying knowledge to real-world issues. In response to these challenges, mobile learning is emerging as proactive efforts to adapt to changing times and ensure relevance in the future. 'Effective mobile learning programs will require new digital communication skills, new pedagogies, and new practices' (Wagner, 2005, p. 52). So there is a clear need for further research in this area of preparedness for open and distance learners

The Indira Gandhi National Open University (IGNOU), India's premier central open university, addresses higher education by offering programmes through distance education to over 3.5 million learners globally. To design, develop and deliver the academic programme, IGNOU, uses diverse ICT platforms, including television (Gyandarshan, Swayam prabhaTV channel), radio (Gyanvani FM radio station), Internet Audio Service (Gyandhara), e-gyankosh, LMS etc. Smart digital devices and technologies are reducing the distance between ODL teachers and learners, leading to improved academic performance. Mobile technologies are advancing, becoming more integrated and interconnected, and offering enriched opportunities for social engagement,



context sensitivity, and internet access. These advancements hold promise for shifting learning beyond traditional classroom settings into both real and virtual environments. Consequently, learning becomes more contextualized, personalized, collaborative, and lifelong. The key challenge lies in harnessing mobile technologies to seamlessly integrate learning into everyday experiences to the extent that it becomes indistinguishable from regular life.

While IGNOU has developed and launched a mobile application for accessing self-learning materials (SLM) and providing admission-related support to its learners, it has not yet fully implemented mobile-based teaching and learning support. The institution is actively exploring the potential of leveraging various ICTs to their fullest extent and integrating them into its operations. As part of this ongoing effort, IGNOU has integrated broadcast technology with a web-based system, resulting in the emergence of Gyandhara (an internet audio counseling service). Guided by innovations in mobile technology, IGNOU is now exploring the feasibility and maximizing the potential of its integration with existing ICTs. Therefore, a comprehensive understanding of mobile technology, the essence of mobility, educational ideologies, and interpersonal

communication dynamics are very important. Their advanced functionality fosters interactivity, significantly expanding their potential benefits for both formal and informal learning. To effectively utilize mobile technologies for education delivery, a fundamental question arises: **how can we optimize their use for teaching and learning for the open and distance learners?**

The present research attempts to investigate the extent of access of IGNOU undergraduate ODL learner's to mobile technologies and examines whether they are capitalizing these tools to support their learning. This study would help ODL teachers and administrators in developing pedagogical strategies for teaching-learning and learner support.

## II. Conceptual Framework

Every research study should have clear theoretical or conceptual backgrounds (Bozkurt et al., 2015). The researcher has gained a deeper understanding of the intricacies of mobile learning by drawing insights from the Technology Acceptance Model (TAM). The technology acceptance model (TAM) was initially developed by Davis (1989). The conceptual framework in this study is illustrated in figure 1.

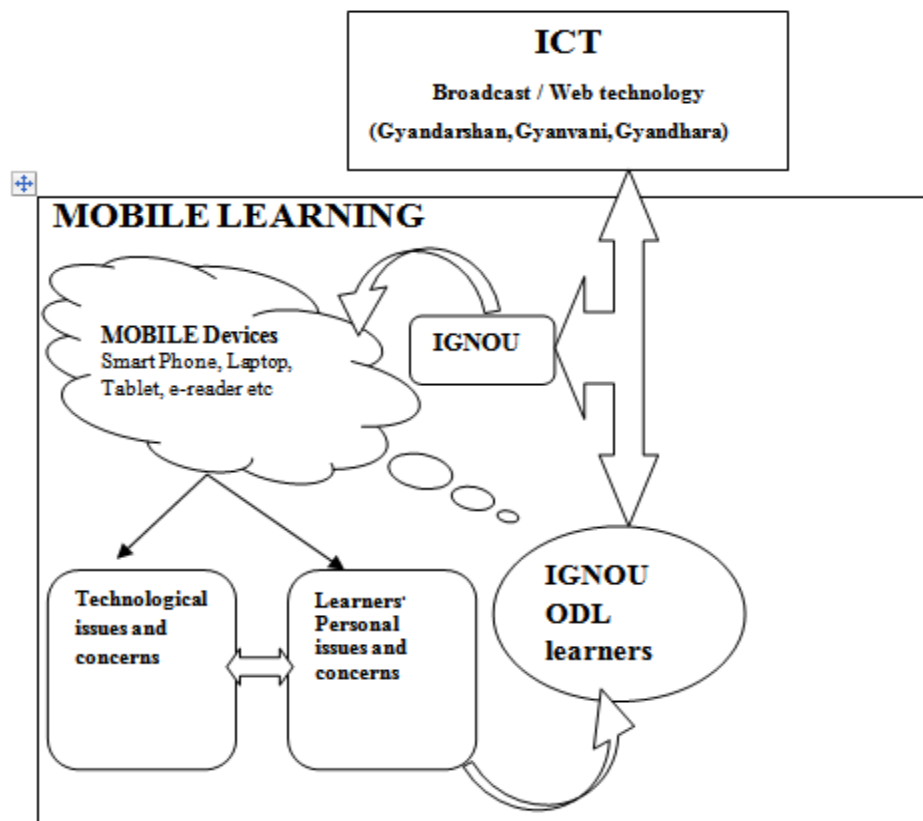


Figure 1: Conceptual Framework on preparedness of ODL learners for Mobile Learning.

In this study, mobile learning was defined as a system that utilizes wireless technology and mobile devices to fulfill its mission of delivering information to learners and facilitating interaction with them.

### III. Review of Related Literature

In this study, the research scope was limited to examining the usability of mobile applications and the accessibility of devices among ODL learners of IGNOU. It's important to note that mobile learning encompasses various dimensions beyond these factors. Due to the vastness of the topic, the researcher has opted to focus on meaning and usability and accessibility aspects, omitting other dimensions of mobile learning.

Traxler's (2005) defined mobile learning as, "any educational provision where the sole or dominant technologies are handheld or palmtop devices."

In India, the Department of Telecommunication, Government Of India, reported a significant growth in mobile phone subscribers. The number rose from 584.32 million in 2010 to a staggering 1142.02 million in the year 2022, indicating almost doubling of mobile phone

subscribers during this period (DOT, 2022). Particularly, in post Covid, the Government of India put more and more emphasis in incorporating digital technology into education sector. Thus the concept of mobile learning emerged with mass acceptance across the globe.

Traxler (2007) argued that mobile devices are fundamentally reshaping how we communicate and access knowledge in society. He discussed the utilization of mobile learning as pedagogic possibility- a flexible technology and a collaborative tool, which enriches personalized and informal learning experiences

Attewell (2005) emphasized the transformative potential of mobile learning, highlighting its ability to overcome resistance to ICT adoption and to narrow the disparity between mobile phone literacy and broader ICT literacy. In the realm of mobile learning (m-learning), the five levels of technology usage in education—presentation, demonstration, drill and practice, interaction, and collaboration—remain crucial. The temporal and spatial dimensions of m-learning are intricately tied to when and under what circumstances this form of learning takes place.



According to the Vavoula and Sharples (2002), there are three ways in which mobility may be conceived: in terms of space, in relation to different pursuits in life, and with respect to time. The capabilities of these devices are consistently improved by incorporating features from established technologies such as, portable media players, GPS navigation, digital cameras, Mobile Personal Assistants (MPA) and eBook readers (Alley & Gardiner, 2012). As a consequence, these devices facilitate the creation of learning environments that seamlessly integrate real-world and virtual resources, giving rise to ubiquitous learning experiences. Mobile devices vary widely in abilities, sizes, and prices, yet share mobility and wireless connectivity as common features. Mobile learning (m-learning) offers the flexibility for learning to occur at any time and in any location, providing a distinct advantage (Murphy et al., 2014). Learners can expand their learning activities at home, where learning can happen naturally. Incorporating mobile phones into educational activities will establish a novel learning environment, optimizing the effective utilization of mobile devices by learners (Ally & Samaka, 2016).

In the field of education, the primary types of mobile devices utilized include: Cellular Phones, Smartphone, Laptop/Notebook Computer, Tablet PC/ iPad, E-readers etc.

Several prior investigations and findings have demonstrated that employing ICT effectively can enhance educational standards and bridge learning with real-world contexts (Lowther, et al. 2008; Weert and Tatnall 2005). ICT has the tendency to broaden educational access by enabling learning to take place flexibly, anytime and anywhere.

Wainaina et al.(2019) undertook a comprehensive examination of the factors influencing successful open distance learning and its integration into higher education. Their findings highlight the importance for higher education institutions to enhance technological infrastructure and address the challenges posed by mobile device compatibility with learning management systems (LMS). Additionally, the study offers recommendations for enhancing instructors' skills in mobile learning, addressing student concerns, and implementing motivational strategies to encourage effective utilization of mobile learning.

Oliver & Goerke (2007) conducted a survey in 2005 and again in 2007, involving 413 and 290 undergraduate students respectively, from an Australian university to assess their mobile device ownership. They found that ownership of

laptops, mobile phones and music devices appears to be growing rapidly among students along with their use of tools like blogs, podcasts, instant messaging. Also he highlighted the importance of engagement and connectedness in the study.

Ismail et al., (2016) has investigated the readiness of respondents for mobile learning in relation to their ownership of mobile devices. It has been found that students who regularly utilize mobile phones express a willingness to incorporate them into their learning.

Recent research indicates that mobile technologies present distinct opportunities for learners to engage more actively in learning activities beyond the boundaries of the learning management system (Matias & Wolf, 2013). Mobile communications not only enable networks to integrate into socio-political organizations but also facilitate just-in-time, personalized access to education, distinguishing themselves from PC-based platforms.

Findings from the other research studies indicate that mobile learning proves to be a effective educational approach, surpassing traditional face-to-face teaching methods (Shih et al., 2010), possibility of pedagogic use in educational settings (Texler, 2007), and enriches the learning experience (Criollo-C et al., 2021). The majority of the research was conducted internationally, with limited findings in the context of Indian open and distance education. Enhancing technological infrastructure and resolving the compatibility issues between mobile devices and the learning management systems utilized by institutions are crucial areas for improvement.

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wireless communications. Their prices are still high.

- Tablet PC. These are one of the newest mobile devices. They also have full range of abilities as personal computers. Some of them haven't keyboard but have software to recognise handwritten text. It is relatively expensive.

- Personal Digital Assistant (PDA). They have small sizes and significant processor power. New models support more than 65000 colors, recognise handwritten text and can play different types of multimedia files. The main operating systems used are Palm and Microsoft Pocket PC.

- Cellular phones. The low class devices mainly can be used for voice



communication and sending and receiving of text messages (SMS). Some of their disadvantages are low memory capacity and low data transfer rate. The cellular phones from the higher class can be used to Internet access via WAP or GPRS technologies. They also can be used to send and receive the multimedia messages (MMS). Their prices continuously decrease.

- Smart Phones. They are hybrid devices which combine the abilities of cellular phones and PDA. They have smaller sizes than PDA and bigger than cellular phones. Typically they haven't full sized keyboard and can recognise handwritten text. They use Symbian, Windows Mobile or other operating system. As they have Internet browsers they have potentiality to be successfully used in the mobile multimedia education

The realise of mobile learning is impossible without use of the mobile devices. They vary significantly in their abilities, sizes and prices. The common ability which united them is their mobility and possibility to make wireless connections. The main types of mobile devices used in the education process are:

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#### IV. Research Objectives

The main objectives of this research were:

- To study the status of mobile devices ownership of ODL learners and the uses of smartphone for learning activities.
- To study the preparedness of ODL learners for mobile learning.

#### V. Research Methodology

This study employed a descriptive approach, utilizing quantitative surveys to assess the preparedness of undergraduate ODL learners of Social Science discipline for mobile learning. This quantitative survey was intended to elucidate the extent to which learners exhibit preparedness for engaging in m-learning. The Sample size was 320

undergraduate ODL learners from IGNOU's social science discipline, who were enrolled in the year 2023 in Delhi region. Out of these total 140 learners responded. The research instrument was a questionnaire which was distributed to 320 learners using the Google form link distributed on their email id and pursued them on phone call to respond. The reliability of the questionnaires had been assessed using Chronbach's alpha test followed by validity and pilot testing as well. The value of Coefficient of Cronbach's alpha was 0.79. The questionnaire comprised of three sections: I. Information demography of participants like name, gender, age, and residential background. II. Status of mobile device ownership and the uses of smartphone for learning activities. III. Mobile learning preparedness: This section comprise of 7 questions. Data analysis is conducted using percentage analysis and the findings are subsequently translated into a diagram format to streamline the interpretation of the study outcome. Microsoft Excel was used for analysis.

#### VI. Results

I. In order to study the preparedness of IGNOU distance learners enrolled in disciplines of Social Science for mobile learning in India, the demographic profile of these learners was investigated. The results are given in Table 1

**Table 1:** Demographic information

Category	Classification	Frequency (n=140)	Percentage (%)
Residential Background	Rural	48	34.29%
	Urban	92	65.71%
Gender	Male	93	66.43%
	Female	47	33.57%
	Other	nil	nil
Age Group	18-25	81	57.86%
	26-30	28	20%
	31-35	18	12.86%
	above 35	13	9.29%

**Table 1: Respondents' demographic profile**

II. Ownership status of the mobile devices and use of smartphone for learning activities.

This part contains three questions about

i) Which mobile devices do you have?

Based on the responses to the above questions, the survey questionnaire results are illustrated in Figure3.

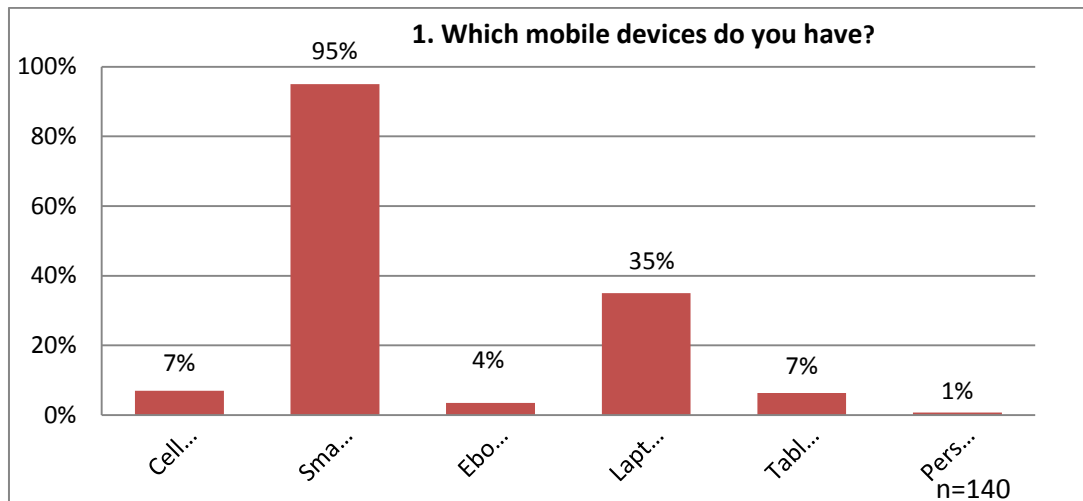


Figure.2 illustrate the possession of mobile devices byODL learners (n=140)

Unsurprisingly, smartphones emerge as the favored choice among distance learners. Irrespective to gender, age and residential background, the smartphone (95%) is the most used device followed by laptop (35%).

ii) What is the ownership status of these devices, private or parental-owned?

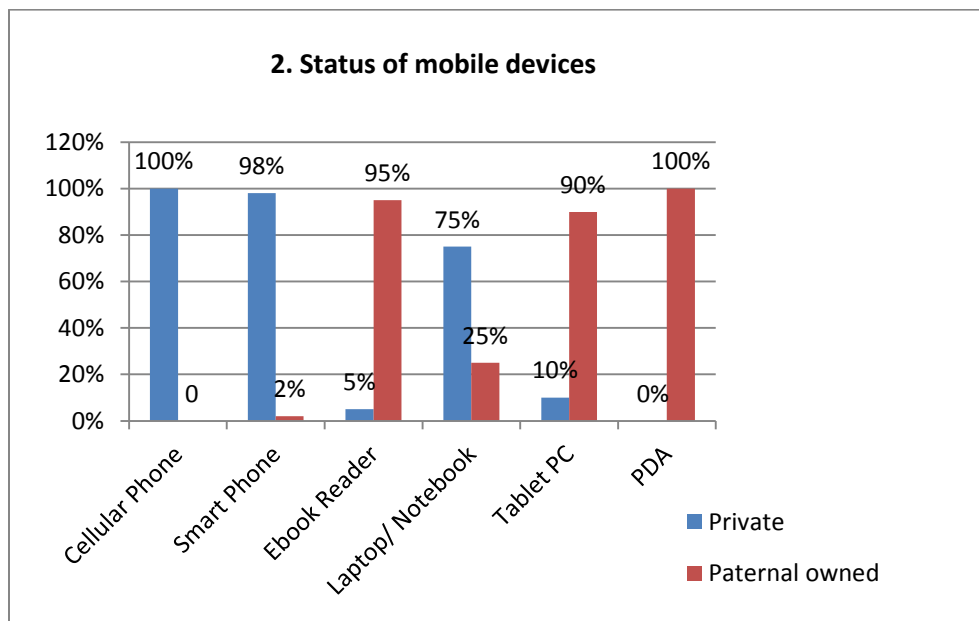


Figure 3. Illustrate the status of ownership of devices of ODL learners (n=140)

Figure.3 clearly illustrates that smart phones are privately owned by 98% of ODL learners, with laptops following closely behind at 75% private ownership. Due to its widespread ownership—almost 100% being privately owned—the smartphone stands out as a significant and popular device among ODL learners.

iii) The use of smartphone for learning activities.

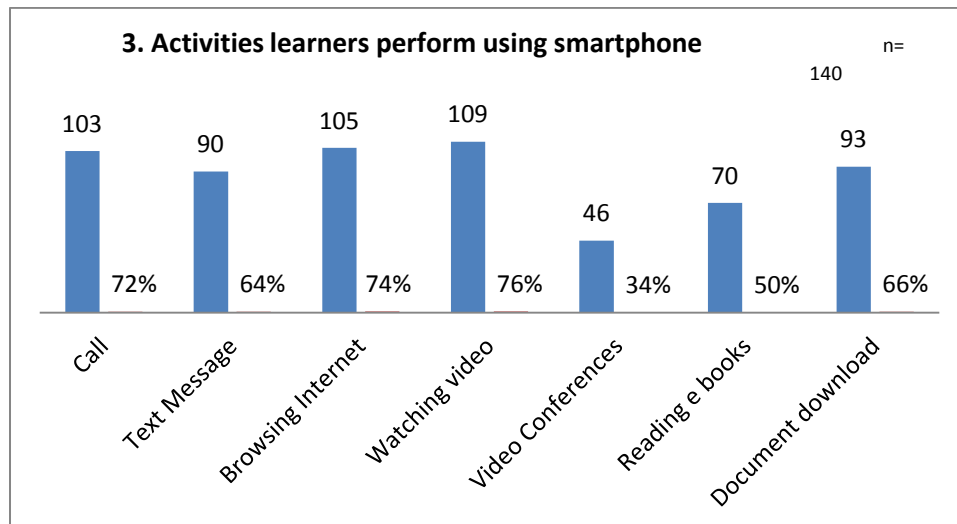


Figure 4. Illustrate the learning activities ODL learners perform using smartphones. (n=140) .

It's quite evident that ODL learners utilize their smart phones for a variety of purposes, which could be effectively harnessed for teaching and learning activities if properly utilized and effectively tapped. While they demonstrate considerable skill in usage, there is still room for improvement in functionalities such as video conferencing and reading books. Video conferencing- a very important feature of smartphone, has potential to mitigate the sense of isolation among ODL learners, a drawback inherent in distance education. Consequently, this could enhance learners' motivation toward academic activities to some degree. Every individual functionalities of smartphone have a potential to contribute in learning activities. Utilizing the 'call' function enables learners to swiftly clarify doubts or gather immediate information. 'Text messaging'

aids in receiving delivery reports, accessing various links, and receiving short, timely information, allowing learners to review messages at their convenience. 'Browsing the internet' on smartphones grants learners access to a plethora of learning resources, facilitates communication with peers and teachers, and supports research endeavors. 'Video playback', a cornerstone feature of smartphones, enhances visual and interactive learning experiences. Additionally, 'reading e-books' on smartphones presents a significant cost-saving advantage for learners who may struggle to afford physical books. Furthermore, 'document download' functionality empowers learners to securely store and access documents at any time, even without an internet connection, according to their convenience.

### III. Mobile learning preparedness.

Statements	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree		n
	Total No.	%	Total No.	%	Total No.	%	Total No.	%	Total No.	%	
1. I usually prefer traditional learning but am open to exploring mobile learning, even with added costs.	21	15%	18	13%	49	35%	20	14%	32	23%	140
2. I'd appreciate it if my teacher could incorporate both mobile learning and face-to-face interactions during counseling sessions.	19	14%	11	8%	30	21%	31	22%	49	35%	140



3. I believe mobile learning could be advantageous for my personal development and learning journey	18	13%	14	10%	28	20%	32	23%	48	34%	140
4. I feel unprepared for mobile learning if IGNOU were to implement it immediately.	31	22%	21	15%	35	25%	25	18%	28	20%	140
5. Although I'm willing to invest extra funds into mobile learning, I'm concerned it might complicate my daily life.	20	14%	18	13%	46	33%	20	14%	36	26%	140
6. I'm worried that integrating mobile learning into my studies might lead to increased expenses on my phone bill.	24	17%	27	20%	37	26%	24	17%	28	20%	140
7. I'm interested in having my teacher integrate mobile learning seamlessly into our course curriculum.	16	12%	11	8%	45	32%	35	25%	33	23%	140
	Total: Strongly Disagree and Disagree 27%				Total Neutral: 28%			Total: Agree and Strongly Agree 45%			

**Table 2. Response from learners.**

\*n=Total Respondents

Based on the findings, the data indicates that learners predominantly lean towards the agreed side of the spectrum; they want mobile technology to be introduced in teaching learning. However, a significant portion of learners remain undecided about whether mobile learning will indeed shape the future. Some of learners still opt for traditional learning (37%) as revealed in response 1.

A notable 57% of learners, as indicated by their responses in response 2, expressed agreement with the notion of dual teaching methods, incorporating both face-to-face interaction and mobile learning; however 22% learners were against this opinion.

Learners acknowledge that it becomes a significant consideration only when teachers provide quality output to them. They also acknowledge this is going to help in personal development and their learning journey as responded by 57% ODL in response 3.

The feedback from learners in the response 4 indicates that while they recognize the benefits of mobile learning, to which 37% learners express some hesitation towards its full-scale

implementation while 38% are in support of implementation at the institutional level immediately.

Learners are very conscious about their financial conditions. They are looking for cost effective solution. Reponse 5 and 6 indicating that current internet costs hold considerable importance for them and both the government and internet service providers to lower the cost of internet services, thereby facilitating the widespread acceptance of mobile learning across all segments of society. Learners may face financial problem if mobile learning compulsorily integrated with other mode of teaching. Similar to other basic necessities of life, mobile connectivity has significantly impacted learners' lives. Consequently, it has become a serious concern for many learners who struggle to manage their livelihood as reflected in response 5. In response 7, learners expressed very positive attitude to, stating their desire for teachers to incorporate mobile learning into the course curriculum.

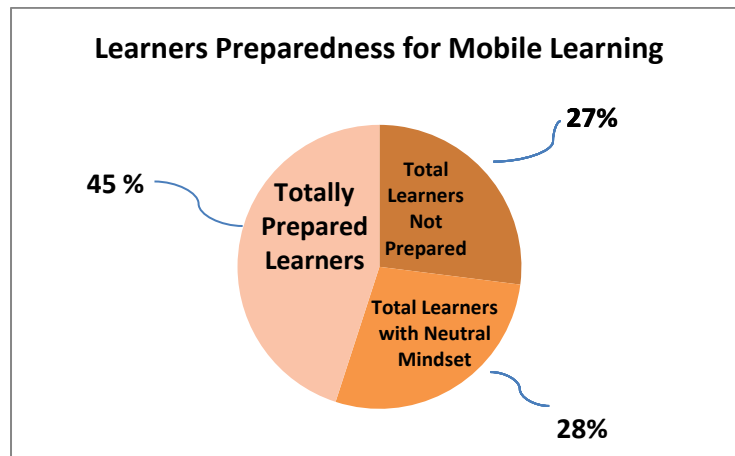


Figure 5 illustrate percentage distribution of learners' preparedness for mobile learning.

### VII. Discussion:

After analyzing the findings, the researcher inferred that undergraduate learners of social science stream in open and distance education are largely aware of the significance of mobile learning. It's noteworthy that the socio-demographic profile of ODL learners doesn't affect preparedness for mobile learning. Among learners aged 18 to 25, there is high energy and enthusiasm, with a willingness to embrace mobile technology integration alongside other ICTs. Furthermore, if the cost of internet services is reduced, learners would be more than willing to accept this integration. Finance issue is a major and most important point of consideration for learners prior to its acceptance. Integrating mobile learning into teaching learning can enhance the meaningfulness of learning experiences for ODL learners. Since the majority of ODL learners already own smart phones, ownership issues are unlikely to affect or influence mobile learning behavior. The findings from the activities using smart phones reveal that learners are skillfully utilizing its features. Undergraduate ODL learners of social science stream demonstrate a strong understanding of mobile functionalities and capabilities, enabling them to maximize its utilization to its fullest potential. With the ongoing advancements in ICT, particularly innovation in wireless technology, the mobile learning trends are expected to achieve phenomenal growth in future. Hence IGNOU should work out more on capitalizing this trend. Consequently, the findings of this study could serve as a valuable reference for future research endeavors focusing on the widespread adoption of mobile learning in social science subjects.

### VIII. Implications:

- The finding will be very helpful in programme development by highlighting areas where additional resources are needed to enrich mobile learning experience for ODL learners. These programmes could be tailored to mobile platforms or incorporate mobile friendly resources into existing programmes.
- helpful in building pedagogical strategies for delivering resource materials via smart phone or other mobile devices.
- helpful in empowering ODL learners by recommending various engaging and interactive learning activities.
- helpful in guiding technology integration. It means promoting more investment in developing mobile technology infrastructure to ensure seamless compatibility across a spectrum of mobile devices, wireless systems, existing Learning Management Systems (LMS), as well as broadcast technologies.
- findings could also suggest areas for further research like examining the impact of mobile learning on learning outcome, inquiring about learning style, exploring the role of socio economic factors in mobile learning readiness etc.

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