

The Adoption of E-Learning Platforms: A Comparative Study between Jharkhand and Other Indian States

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ABSTRACT

Public-private partnerships (PPPs) play a crucial role in the advancement of e-learning by integrating the resources and expertise of both sectors. In Jharkhand, the limited engagement in such collaborations has impeded the development and deployment of effective e-learning infrastructure and resources. This has led to gaps in technological support and content development. In contrast, states like Karnataka and Maharashtra have leveraged robust PPPs to enhance their e-learning initiatives, resulting in improved technology provision, localized content development, and comprehensive educator training. By fostering similar partnerships, Jharkhand can address existing infrastructure deficiencies, improve content accessibility, and accelerate the adoption of e-learning platforms, ultimately advancing the quality and reach of digital education for its students.

Keywords: Public-Private Partnerships, E-Learning, Digital Education

1. INTRODUCTION

The rapid advancement of technology has revolutionized various sectors, with education being a significant beneficiary. E-learning platforms have emerged as crucial tools, providing flexible and accessible education opportunities. In India, the adoption of these platforms varies significantly across states due to disparities in infrastructure, technological readiness, and socio-economic factors. This study delves into the adoption of e-learning platforms in Jharkhand, a state characterized by diverse geographical and socio-economic challenges, and compares it with more developed Indian states such as Maharashtra, Karnataka, and Kerala. Jharkhand, with its substantial rural population and limited digital infrastructure, faces unique challenges in integrating e-learning into its educational framework. The state's hilly terrain and widespread rural areas exacerbate issues of internet connectivity and accessibility to digital devices. Additionally, socio-economic constraints further hinder the widespread adoption of e-learning platforms. In contrast, states like Maharashtra, Karnataka, and Kerala have made significant strides in digital education, supported by better infrastructure, higher digital literacy rates, and proactive government policies. This comparative

study aims to evaluate the current status of e-learning adoption in Jharkhand, highlighting the barriers and challenges that impede its progress. By juxtaposing these findings with the experiences of other Indian states, the study seeks to identify best practices and effective strategies that can be tailored to Jharkhand's unique context. Through a comprehensive analysis of adoption rates, effectiveness, and the impact of government initiatives, this research aspires to provide actionable insights and recommendations. Ultimately, this study underscores the importance of addressing infrastructural deficiencies, enhancing digital literacy, and formulating supportive policies to foster the growth of e-learning in Jharkhand. By bridging the digital divide, Jharkhand can leverage e-learning platforms to enhance educational outcomes, ensuring equitable access to quality education for all its residents [1-4].

2. REVIEW OF LITERATURE

Swierczek, F. W., & Bechter, C. (2010). Cultural values have a significant impact on education. Learning needs to be adjusted to the cultural context in which it occurs in order to be effective. e-learning is neither culture-free nor does it eradicate cultural differences. The study's quantitative and qualitative results demonstrate two very different learning styles. Those from East Asia demonstrate a high-context focus. Europeans and South Asians both exhibit a clearly low-context learning style. The qualitative results show that cultural characteristics do influence e-learning behaviours. Participants from Europe are typically more achievement-oriented, individualistic, and value induction-based learning. South Asians exhibit both an accomplishment orientation and a high-power distance. A teacher-centric perspective is another sign of excessive power distance in East Asians. In learning circumstances, they shun significant ambiguity and place an emphasis on attachment. East Asians typically choose theory as the foundation for their analyses. There are notable variations between the regional categories, according to the quantitative study. Compared to their counterparts in Europe and South Asia, East Asians are noticeably more engaged and active in online learning. This implies that e-learning involvement is positively impacted by the high-context learning culture.

Roy et al (2010). The course materials are among an e-learning system's most crucial elements. Due to the growing popularity of e-learning, a large number of learning object repositories with excellent educational resources made especially for e-learning have been established. Making instructional materials of the highest calibre is costly. Therefore, it is crucial to guarantee the reuse of educational resources. Learning materials can be reused if they are semantically tagged with standard information. This chapter offers a comparison of learning object repositories and metadata that are currently accessible. Both manual and automatic tagging are available for the educational materials. Annotating manually takes a lot of time and money. They have investigated if it is possible to automatically tag educational resources using a set of IEEE LOM metadata specifications. They provide a conventional classification method that uses a probabilistic neural network to automatically determine the learning material's topic. A reasonable level of accuracy is demonstrated by the test result for the classifier.

Kumar et al (2011). Students can communicate electronically with their teachers and with each other through e-learning. Emails, discussion boards, and chat rooms can all be used for this kind of communication. Virtual learning environments (VLE) are online interactions of many kinds between students and teachers; however, it is acknowledged that the world at large will continue to utilise language and terminology in different ways. VLE systems are offered by numerous software packages. There are two versions of this software available: open source (OSS) and commercial. One of the e-learning platforms that has been progressively gaining popularity throughout the world is Moodle. This paper compares and contrasts various virtual learning management systems and highlights some authentication plug-ins that are compatible with Moodle. It centres on the architecture of Moodle and its comparative analysis. Many individuals and organisations all around the world have embraced the open-source learning management system (LMS) Moodle because it provides a tightly integrated suite of tools that are purportedly created from a socially constructive perspective. Many of Moodle's components, including its security services, were created without detailed design documentation because it was produced under a broad public license.

Kakoty et al (2011). E-learning is a fairly broad notion. The term "technology enhanced learning mechanism through the Internet" was first used in the late 1990s. To make the learning process more adaptable and user-friendly, it now records a wide variety of electronic media, including the Internet, intranets, extranets, satellite broadcasts, audio/video tape, interactive TV, and CD-ROM. Due to e-learning's flexibility, more and more people in our nation are requesting it, and this demand is growing daily. The moment has come to properly standardise the entire e-learning system and raise the calibre of the current standards in light of the growing demand. Many academics, institutions, and organisations have already adopted a large number of existing standards; however, there are still significant gaps, and efforts are ongoing to close these gaps and improve the standards' practicality and systematicity. This study examines the current state of e-learning and highlights future directions in this field that build upon the most significant and underutilised research topics to date. It also examines the significance of the e-learning system and the current e-learning procedure market.

Sakarkar et al (2012). Over the past few decades, information technology (IT) has grown extremely quickly, and the many applications that rely on IT have also seen significant changes. Online instruction and learning are one of the most widely used IT applications. This article's primary goal is to survey the different online e-learning designs and then compare them. Drawing from analytical and comparative studies of these different architectures, may offer some recommendations regarding the observed limits. They highlight a few of the research problems and design choices that have been made in an effort to successfully enhance the intelligent online e-learning architecture system, which provides the cultural elements of virtual classrooms.

Fuentes Pardo et al (2012). Over the past ten years, web-based education, or "e-learning," has taken the place of older distant learning strategies like traditional computer training or correspondence learning, becoming an essential part of higher education. Globally, the proportion of university students enrolled in online courses is steadily rising. Over 60% of traditional on-site courses in Spain employ this technology as a supplement to traditional face-to-face instruction, and approximately

90% of universities have an institutional e-learning platform. Among other benefits, this new mode of instruction permits the elimination of geographic boundaries and gives students the freedom to plan their own learning. Online learning is facilitated by specialised software known as a "virtual learning environment" (VLE) or "e-learning platform." There are presently a good number of web-based technologies accessible for offering distance learning courses. The most popular open-source software programs in Spanish universities' virtual campuses are Moodle, Sakai, dotLRN, and Dokeos. This study compares some of the most well-liked e-learning systems technically and examines the opportunities that virtual learning environments give to university instructors and students.

Ram, B., & Karn, B. (2013). The scientific community is starting to recognise e-journals for their consistency, ease of use, and popularity. The use of electronic resources enables e-learning, which increases staff and student attention and motivates them to pursue independent learning. This study examines how users of the universities in Jharkhand, Eastern India, are aware of and use the UGC Infonet consortium and e-Resources. In addition to this work, the concept of e-resources briefly discusses the consortium in the Indian context. These days, no publisher or organisation can meet the needs of users due to the significant development in the value of information and their needs. Therefore, consortia are far more significant.

Bhattacharya et al (2013). The need to implement technology-led healthcare services has become imperative due to factors such as evolving illness patterns, rising healthcare expenditures, a shortage of skilled healthcare personnel, and the desire to improve patient quality and safety. Furthermore, the dearth of qualified healthcare IT experts and the low penetration of information technology (IT) in the healthcare industry have increased the need for training and recognised "health informatics" and "health information management (HIM)" as new academic fields. It's becoming clear that experts in health informatics have the power to improve health care services' affordability, accountability, and accessibility despite significant regional and socioeconomic divides. Attention must be paid to the discrepancy between the demand and supply for qualified healthcare administrators and information to work in pharmaceutical firms, third-party administration, healthcare organisations in India, and other healthcare providers. Given the concerning health indicators that exist in India today, there is an urgent need for qualified health informaticists to handle a variety of duties, including data collection and analysis, resource allocation decision-making, and a wider uptake of technologically advanced healthcare services. Though still restricted, the formal and informal approaches to teaching health informatics courses are beginning to proliferate in India. This essay incorporates every health informatics course that is taught in India. Additionally, an effort has been made to assemble government-funded health informatics research innovation projects. In addition to the expertise of subject experts, new and old studies were acquired by reviewing the literature and conducting online searches. It was noted that the pool of human resource knowledge workers in this sector, which has the potential to significantly impact healthcare services in India, is becoming more and more composed of health information management specialists.

Balakrishnan et al (2014). Extension has a great deal of opportunity to explore new frontiers like e-learning, which may be used for virtual education, training, and information dissemination in a nation like India where the majority of farming communities have limited access to the relevant information sources. Along with its benefits, e-learning and its marketing come with a number of drawbacks. In the study conducted with sixty e-learner farmers in Kerala's Malappuram district, the most significant obstacle identified among the four categories of limitations that impede e-learning agricultural technology was technological barriers. It was discovered that the e-learner farmers were being impacted by a lack of timely responses to online enquiries and information requests, expensive establishment costs, a lack of time, and pertinent information on the website.

Sethi et al (2016). The technical abilities required by the IT industry are more demanding because the field is broad and dynamic by nature and new technologies are developed daily. This article discusses a model that was created for IT engineering students. It is an online learning platform that helps the aspirant grow their programming skills 24/7. The method that has been designed is a self-review model that allows students to assess their skill levels and save performance records for future reference. This system can be accessed from any Internet-enabled computing device and offers practical practice. This concept will undoubtedly support traditional technical education pedagogy and prepare candidates for direct industry deployment. They also addressed the difficulties and problems associated with the nation's e-learning model in this research. These problems could serve as a theoretical basis to help in decision-making when it comes to the implementation of an e-learning approach.

El-Masri, M., & Tarhini, A. (2017). This study looks at the key elements that could help or impede university students in developed (USA) and developing (Qatar) nations from using e-learning platforms. With trust acting as an external variable, they employed the expanded Unified Theory of Acceptance and Use of Technology 2 (UTAUT2). Data were gathered from 833 university students at two universities—one in the United States and one in Qatar—using an online poll. In this study, structural equation modelling served as the primary analytical technique. The findings indicate that in both populations, hedonic motivation, habit, performance anticipation, and trust are significant determinants of behavioural intention (BI). But in contrast to what we anticipated, there is little correlation between price value and BI. Our findings also demonstrate that, in developing nations but not in wealthy nations, students' use of e-learning platforms is positively correlated with effort expectation and social influence. Furthermore, affluent countries see higher adoption rates of e-learning due to enabling environments, whereas underdeveloped countries do not see this trend. All things considered, the suggested model fits the data well and accounts for its variance for 68% of the Qatari sample and 63% of the USA sample. We present these findings and their theoretical and practical ramifications.

Kannan et al (2018,). A definition of educational technology is the research and moral practice of developing, utilising, and overseeing appropriate technology procedures and resources to enhance performance and facilitate learning. The technology makes use of both tangible hardware and educational systems. It encompasses a number of areas, such as web-based learning, computer-based

training, and theoretical learning. Businesses, countries, and people all embrace new technologies—but only if they bring benefit. Understanding the variables influencing technology adoption is crucial to appreciating the value of such technologies. The elements in the adoption process are explained by well-established, tested models. The sources, technologies, and delivery strategies of ICT in educational institutions have been covered in this study. In addition, six important models—one from each of the following ten years: 1960–1970, 1970–1980, 1980–1990, 1990–2000, 2000–2010, and 2010–2020—have been examined regarding the adoption of new technologies in educational institutions.

Oduma et.al., (2019). This paper examined the e-learning platform in business education, the work reflected on the collaborative learning, informal e-learning, computer- based training, (CBT) and well-based training as the e-learning platforms in business education. The work also discussed eXe, flexible learning toolboxes, i-learning, video conferencing, youtube, respondus and smart board interacting, white board as e-learning tools on the web suitable for business. The benefit of e-learning platform, as well as e-learning skills acquisition in Business Education were also discussed. The study concluded that adequate awareness on the potentials of e-learning platforms in Business Education and availability of facilities to motivate the students and business educators to adapt to the more efficient and effective use of e-learning. It recommended that requirements meant for e-learning platform in Business Education should be made available.

Donath et.al., (2020). The paper is a conceptual approach to education for sustainable development using an e-learning platform. It starts from the observed reality that all education stakeholders need a learning environment where they can have access to knowledge, collaborate and share their experience, as a survey conducted among students and companies in Timisoara, Romania, region shows. The proposed multi-stakeholder environment accommodates two sections: the learning environment mostly dedicated to students, trainees, tutors and mentors and the virtual sustainability centre that is dedicated to on-line meetings, workshops, counselling, etc. Durable learning is supported by a range of written digital and multimedia resources, including pre-recorded on-line tutoring, videos and games. To engage online learners, various gamification techniques were used in the course design phase, such as recording and presenting the learner's progress, role-playing and similar. The article presents a conceptual design of the learner's journey and a mapping from gamification concepts to Moodle LMS elements.

Ouadoud et.al., (2021). Distance learning experiments have been launched since 2010 in several Moroccan universities as part of an experimental approach. It, therefore, seems to us that a strategy must be put in place to give this choice of education its place in training and grant it the means necessary to achieve these objectives. The objective of this article, on the one hand, presented the typologies of e-learning systems, the e-learning platforms, and the standardization in the e-learning field. And the other hand, present an overview of free and proprietary e-learning platforms for teaching and learning, their functional architectures, as well as the types of e-learning devices that can be created from these online learning platforms.



3. INFRASTRUCTURE AND CONNECTIVITY

The quality of infrastructure and internet connectivity is a cornerstone for the successful adoption of e-learning platforms. In Jharkhand, the digital divide is pronounced, with rural areas often lacking basic internet access and technological infrastructure. Many schools and educational institutions in these regions struggle with inadequate facilities, which hampers the integration of e-learning solutions. In contrast, states such as Kerala and Karnataka have made significant investments in digital infrastructure, resulting in better internet penetration and more technologically equipped schools. This disparity highlights the need for targeted infrastructure development in Jharkhand to bridge the gap and provide equitable access to digital education resources [5].

4. GOVERNMENT INITIATIVES

Government initiatives play a crucial role in the adoption and expansion of e-learning platforms. In Jharkhand, the government has launched several programs aimed at enhancing digital education, such as the "Vidya Vahini" project, which seeks to integrate technology into the educational framework. However, these initiatives often face implementation challenges due to inadequate infrastructure, limited funding, and a lack of trained personnel, which hinder their effectiveness. In contrast, other Indian states have seen more successful government-led efforts in promoting e-learning. For instance, Kerala's "KITE (Kerala Infrastructure and Technology for Education)" project has been highly effective in providing comprehensive digital resources and training for both students and teachers. Karnataka's "E-Vidya" initiative focuses on leveraging technology to deliver educational content across the state, ensuring wider reach and accessibility. These states have benefitted from strong political will, better infrastructure, and higher literacy rates, which facilitate smoother implementation of e-learning programs. The differences in the success of these initiatives underscore the need for Jharkhand to bolster its efforts by improving infrastructure, increasing funding, and providing extensive training for educators. By learning from the successes of other states, Jharkhand can enhance its e-learning initiatives to ensure more inclusive and effective digital education [6].

5. SOCIOECONOMIC CONDITIONS

Comparison of Socioeconomic Conditions Influencing E-Learning Adoption

Factor	Jharkhand	Other Indian States (e.g., Kerala, Karnataka, Maharashtra)
Poverty Levels	High poverty rates limit access to devices and internet.	Lower poverty rates enable more families to afford digital learning tools.
Literacy Rates	Lower literacy rates hinder the adoption and utilization of e-learning platforms.	Higher literacy rates facilitate easier adoption of digital education.

Household Income	Many households have limited disposable income for educational technology.	Higher household incomes support the purchase of devices and internet.
Urban-Rural Divide	Significant divide, with rural areas lacking basic infrastructure.	Smaller divide, with better infrastructure in rural areas.
Employment Opportunities	Limited job opportunities, leading to lesser investment in education.	Better employment rates, resulting in higher investment in education.
Government Support	Inconsistent and often inadequate support for digital education.	Strong and consistent government support for e-learning initiatives.
Access to Technology	Limited access to modern technology in rural and underprivileged areas.	Widespread access to modern technology and internet services.
Cultural Attitudes	Traditional views on education may resist digital adoption.	More progressive attitudes towards technology and education.

Source: Online Learning: Adoption, Continuance, And Learning Outcome – A Review of Literature – Science Direct

6. TEACHER TRAINING AND DIGITAL LITERACY

Teacher training and digital literacy are pivotal for effective e-learning adoption. In Jharkhand, many educators lack adequate training in using digital tools, which impedes the integration of e-learning into classrooms. Limited exposure to technology and insufficient professional development opportunities contribute to this issue. Conversely, states like Karnataka and Kerala offer extensive training programs and resources, ensuring that teachers are proficient in digital technologies and can effectively utilize e-learning platforms. Enhancing teacher training and digital literacy in Jharkhand is essential for maximizing the impact of e-learning and improving overall educational outcomes [7].

7. CONTENT AVAILABILITY AND LANGUAGE

- **Content Diversity and Accessibility:** In Jharkhand, the availability of e-learning content is limited, particularly in regional languages, making it challenging for students who do not speak Hindi or English. This scarcity restricts access to quality educational materials and hampers effective learning. In contrast, states like Maharashtra and West Bengal have developed a broader range of content, including resources in various regional languages, ensuring that students from diverse linguistic backgrounds can benefit from digital education.
- **Localized Content Development:** The development of localized and culturally relevant e-learning content is crucial for engaging students and enhancing their learning experience. Jharkhand's limited focus on content localization means that many students may struggle to relate to or understand the materials. Other states have successfully implemented strategies to create content that reflects local contexts and languages, leading to more effective and inclusive e-learning environments [8-].

8. PUBLIC-PRIVATE PARTNERSHIPS

Public-private partnerships (PPPs) are instrumental in advancing e-learning by leveraging the strengths of both sectors. In Jharkhand, such collaborations have been limited, which affects the development and deployment of e-learning infrastructure and resources. The lack of robust PPPs has resulted in insufficient technological support and content development for digital education. In contrast, states like Karnataka and Maharashtra have successfully engaged with technology companies, educational institutions, and NGOs to enhance their e-learning initiatives. These partnerships have facilitated the provision of state-of-the-art technology, development of localized content, and training programs for educators. By combining government resources with private sector expertise and innovation, these states have achieved significant improvements in digital education. For Jharkhand, fostering strong public-private partnerships could address infrastructure gaps, enhance content availability, and provide essential training, thereby accelerating the adoption of e-learning platforms and ensuring that more students benefit from high-quality digital education [10-11].

9. CONCLUSION

The effectiveness of e-learning initiatives is significantly enhanced through public-private partnerships, which combine government resources with private sector innovation. While Jharkhand faces challenges due to limited PPP engagement, other states demonstrate the substantial benefits of such collaborations. With establishing and strengthening PPPs, Jharkhand can overcome barriers to digital education, improve infrastructure, expand content availability, and provide better training for educators. Embracing this collaborative approach is essential for advancing e-learning and ensuring that more students gain access to high-quality digital education.

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