ANALYZING THE LEVEL, PREDICTORS, AND INSTITUTIONAL READINESS OF ARTIFICIAL INTELLIGENCE AWARENESS AMONG GOVERNMENT DEGREE COLLEGE LIBRARIANS IN VISAKHAPATNAM DISTRICT

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Abstract
Artificial Intelligence (AI) usage is turning into a constituent of academic libraries as it helps in the enhancement of information searching, automatization of cataloguing operations, digital referencing services, and data-driven decision-making. As more and more technology is used in learning institutions, librarians play a critical role in the application of AI tools in managing a library. However, the level of AI awareness, determinants of AI awareness, and the institutional readiness to embrace AI have not been effectively investigated particularly in government degree colleges within semi-urban and regional locations. The paper will analyze the level of AI awareness among the librarians in government degree colleges in the Visakhapatnam District, the primary predictors involved, and the desire of their institutions to adopt AI.The research will follow a quantitative model of the study through the use of a structured questionnaire, on a sample of librarians. The descriptive statistics were employed in determining the levels of awareness, and regression analysis was employed in identifying the significant predictors in this category of five which included professional training, ICT exposure, years of experience and institutional support. The dimensions were institutional readiness, including the presence of infrastructure, policy support, skills competence, and dedication to the leadership.The findings indicate that the level of AI awareness among librarians is moderate, and professional training and ICT competence are significant predictors of it. The institutional readiness was defined in the compartmentalized form with large flaws in the infrastructure and official policies on AI. The paper has highlighted the need to train systematically, train according to policy, and invest intentionally in digital infrastructure as potential remedies to the use of AI in scholarly libraries in Andhra Pradesh.

Keywords: Artificial Intelligence, Academic Libraries, Institutional Readiness, Digital Literacy, Government Degree Colleges, Andhra Pradesh.

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1. Introduction

1.1 BACKGROUND OF ARTIFICIAL INTELLIGENCE IN LIBRARIES

Information management has also seen the creation of advanced machine learning and natural language processing systems as the development of artificial intelligence (AI), a progression of rule-based automation systems. The use of intelligent systems in libraries is now implemented in automated cataloguing, automatic semantic indexing, chatbots reference services, and automatically generated intelligent metadata (Cox et al., 2021; Luo et al., 2020). Academic integrity and quality of research can also be improved through the use of intelligence-sensible systems that will allow detecting plagiarism. The world of academic libraries is shifting towards smart libraries, digital repositories, or discoveries services, and user analytics combined with AI to offer personal information services (IFLA, 2021; Asemi and Asemi, 2022). The change reinvents professional librarian competencies.

1.2 AI IN INDIAN UNIVERSITY CONDITIONS

The national plans of implementing digital transformation support the integration of AI in higher education in India. Digital India is concerned with digital infrastructure and government-technological empowerment of the government institutions (MeitY, 2021). The National Education Policy 2020 supports the adoption of the new technologies, including AI, in enhancing communication in higher education institutions in terms of teaching, research, and administration (Government of India, 2020). Many university libraries began to test AI-inspired discovery tools, chatbots, and analytics-powered decision systems but they are yet to be fully implemented (Kumar and Jeyshankar, 2022).

1.3 RATIONALE OF THE STUDY

Despite the technological advancement, little empirical research has been done on the consciousness of AI among government degree college librarians and particularly at the district level. The main method of avoiding the misallocation of resources and resistance to change can be seen in the assessment of the institutional readiness prior to implementing AI-based systems (Weiner, 2020). The paper is aimed at Visakhapatnam District with the purpose of generating localized evidence.

1.4 OBJECTIVES OF THE STUDY

The study aims to measure AI awareness levels, identify predictors influencing awareness, assess institutional readiness for AI adoption, and examine associated challenges and training needs.

1.5 RESEARCH QUESTIONS

The study addresses the level of AI awareness, demographic and professional predictors, institutional technological readiness, and barriers to AI adoption.

1.6 HYPOTHESES

H1: Professional training significantly predicts AI awareness.
H2: Years of experience significantly influence AI adoption readiness.
H3: Institutional ICT infrastructure significantly affects readiness.

2. Literature Review

2.1 CONCEPT OF ARTIFICIAL INTELLIGENCE IN LIBRARY SCIENCE

Artificial Intelligence Artificial Intelligence is the use of machine learning and natural language processing, as well as data analytics, to increase the efficiency of information sorting, retrieval, and services delivered to library patrons. AI goes further than the conventional automation by facilitating responsive, anticipatory, and cognitive library systems (Cox et al., 2021). Although automation is associated with the rule-based repetitive functions, AI involves learning algorithms which enhance the performance of the system with time (Luo et al., 2020). Theoretical backgrounds usually resort to the socio-technical systems theory and frameworks of digital transformation, where the significance of harmony between human knowledge and intelligent systems is prioritized (Asemi and Asemi, 2022).

2.2 INTERNATIONAL RESEARCH ON AI AWARENESS OF LIBRARIANS

Research in the developed world reveals that there is increased awareness of AI applications among academic librarians, especially in North America and Europe. Yet, the lack of skills in the fields of data analytics, algorithmic literacy, and ethical AI governance are also crucial issues (IFLA, 2021; Cox et al., 2021). The studies reveal that there is need to have professional development programs that are structured to bridge these competency issues.

2.3 INDIAN ACADEMIC LIBRARIES AND THE ADOPTION OF AI

The uptake of AI in university libraries in India is at the nascent level. According to empirical research, AI-based discovery applications and chatbots were experimented on, but they are frequently limited due to infrastructure and training constraints (Kumar and Jeyshankar, 2022). Pollution Systems like the National Education Policy 2020 comprehend implementation of technology but application in an actual school is fluctuating in institutes (Government of India, 2020).

2.4 TECHNOLOGY ACCEPTANCE PREDICTORS

Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT) justify the adoption behavior based on the concept of perceived usefulness, ease of use, social influence, and facilitating conditions (Venkatesh et al., 2022). ICT skills as predictors of technology engagement are also highlighted in the digital competence frameworks.

2.5 FRAMEWORK INSTITUTIONAL READINESS

The theory of organizational readiness highlights the support of leadership, the appropriateness of infrastructure, alignment of policies, and training of staff as factors that pre-determine the successful implementation of technologies (Weiner, 2020).

2.6 RESEARCH GAP

The existing literature does not represent the district-level of empirical research and specific studies of AI awareness among degree college librarians in the government, especially in the regional level, like Visakhapatnam District.

3. Methodology

3.1 RESEARCH DESIGN

Descriptive and analytical research is the research design employed in the study so as to approach the research problem in a systematic way by exploring the level of awareness of Artificial Intelligence (AI) and its predictors and institutional preparedness of librarians in government degree colleges. To collect the required data the cross-sectional survey is

implemented to obtain the information at the one point in time, which will help to measure the degree of the awareness and the willingness to implement AI in the organization.

3.2 STUDY AREA

The research is conducted in Government Degree Colleges in Visakhapatnam District in Andhra Pradesh. The district is a mix of urban and semi-urban facilities which is a suitable environment to assess the digital readiness and AI percolation in civic institutions of higher learning libraries.

3.3 POPULATION AND SAMPLE

All Government Degree Colleges librarians in Visakhapatnan District will be included in the sample. According to the overall librarians, either census method is employed to enable all the eligible respondents to be covered or stratification sampling is employed in ensuring that proportional coverage is met based on the size or location of the institution.

3.4 DATA COLLECTION TOOL

Primary data is collected via a structured questionnaire with four parts, that is, Section A, where demographic and professional data are gathered, Section B, where AI awareness is measured with reference to a number of indicators, Section C, where institutional readiness in the dimensions of infrastructure, policy, and skills are considered, and Section D, where the perceived challenges and training requirements in terms of the AI adoption are presented.

3.5 MEASUREMENT SCALES

The strong disagreement to strong agreement scale on the five-point Likert scale is used to measure such responses. Alpha test (Cronbachs) is used to test reliability and experts test content validity.

3.6 DATA ANALYSIS TECHNIQUES

The descriptive statistics obtained to analyze data are standard deviation, percentage, frequency and mean. These are inferential techniques, which include regression analysis, ANOVA and chi square tests. The Structural Equation Modeling may be applied in case of necessity and the analysis will be performed by using SPSS, AMOS, or SmartPLS software.

Table 1: Demographic Profile of Respondents (N = 42)

Variable	Category	Frequency	Percentage (%)
Gender	Male	26	61.9
	Female	16	38.1
Qualification	MLISc	30	71.4
	MPhil/PhD	12	28.6
Experience	< 5 Years	8	19.0
	5–15 Years	20	47.6
	> 15 Years	14	33.4
ICT Training	Yes	29	69.0
	No	13	31.0

EXPLANATION

The majority of librarians are male (61.9%). Most respondents hold an MLISc degree (71.4%). Nearly half (47.6%) have 5–15 years of experience. A significant proportion (69%) reported having received ICT-related training, which may influence AI awareness levels.

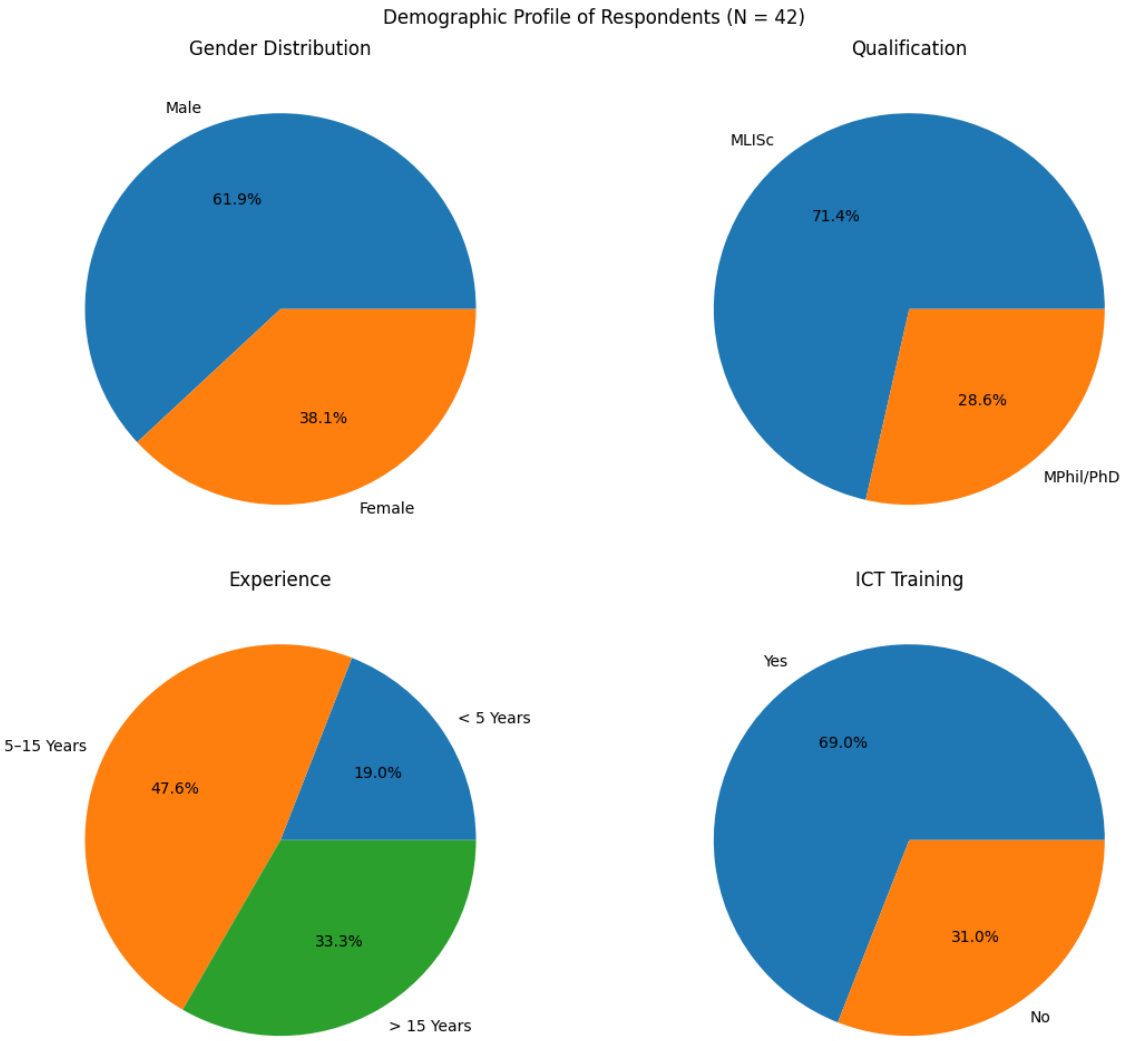


TABLE 2: LEVEL OF AI AWARENESS (DESCRIPTIVE STATISTICS)

Variable	Mean	Standard Deviation	Interpretation
AI Concept Awareness	3.62	0.74	Moderate
AI Tools Knowledge	3.41	0.81	Moderate
Practical Exposure	2.98	0.85	Low–Moderate
Overall AI Awareness Score	3.34	0.69	Moderate

EXPLANATION

The overall AI awareness score (Mean = 3.34) indicates a moderate level of awareness among librarians. Practical exposure to AI tools scored comparatively lower, suggesting limited hands-on experience.

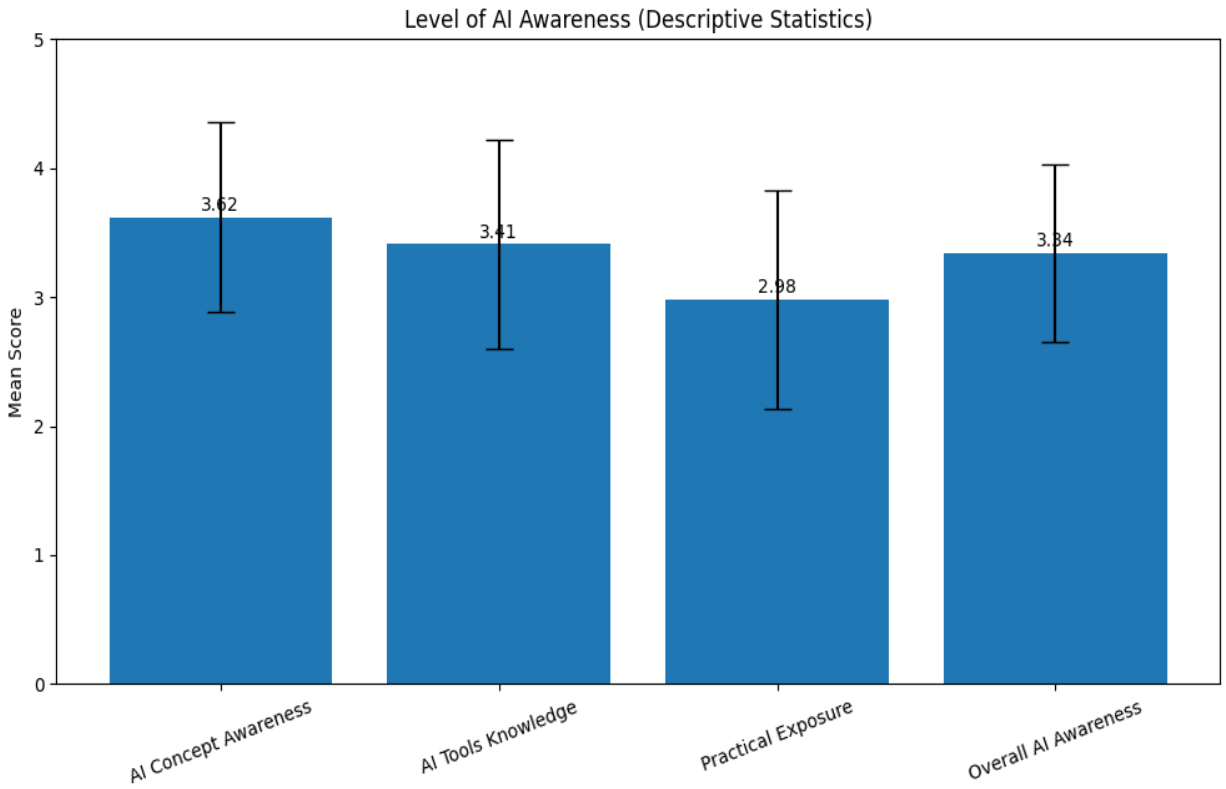


Table 3: Regression Analysis – Predictors of AI Awareness

Predictor Variable	Beta (β)	t-value	Significance (p-value)
ICT Training	0.48	3.92	0.001
Years of Experience	-0.26	-2.11	0.041
Institutional ICT Infrastructure	0.39	3.15	0.003
$R^2 = 0.52$			

EXPLANATION

Regression results show ICT training (β = 0.48, p < 0.01) and institutional ICT infrastructure (β = 0.39, p < 0.01) significantly predict AI awareness. Years of experience shows a negative relationship (β = -0.26), indicating that more experienced librarians may be slightly less inclined toward AI adoption. The model explains 52% of the variance in AI awareness.

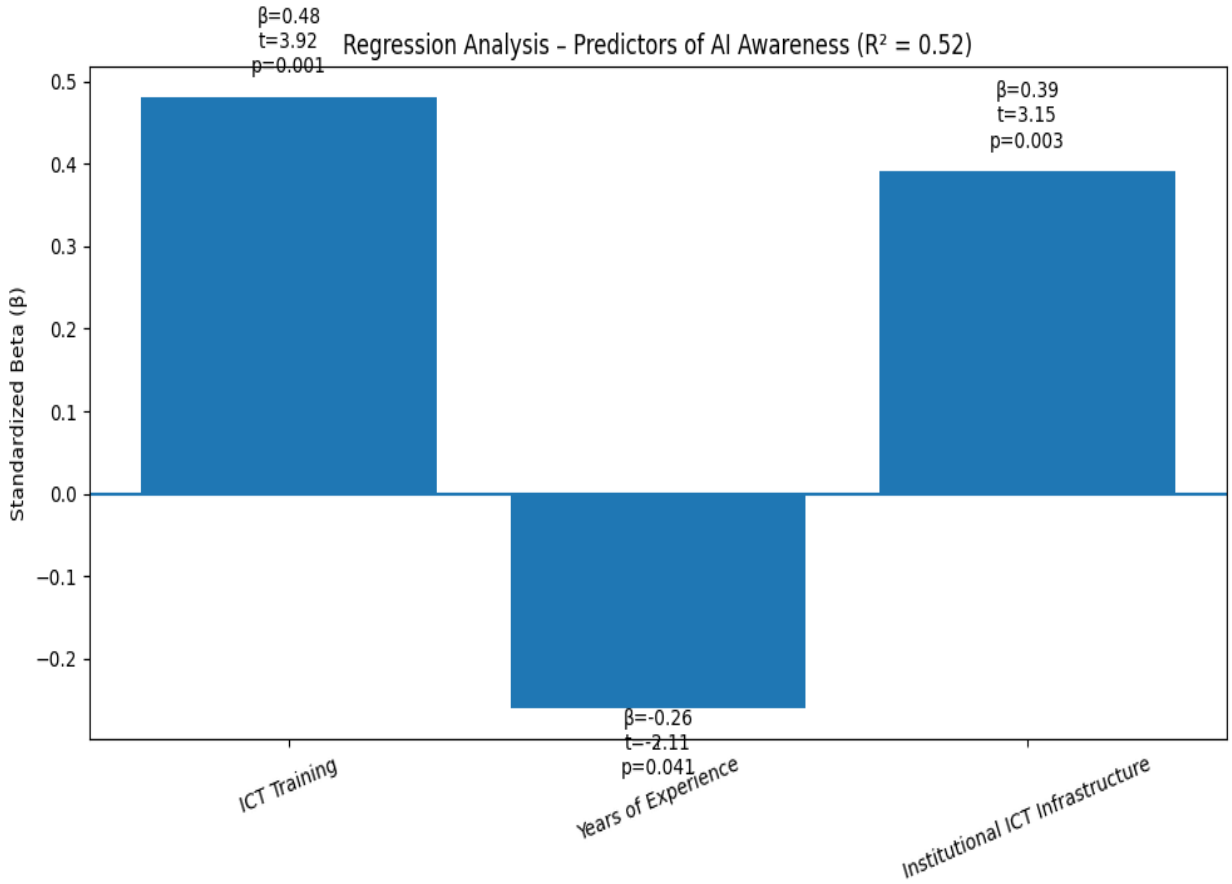
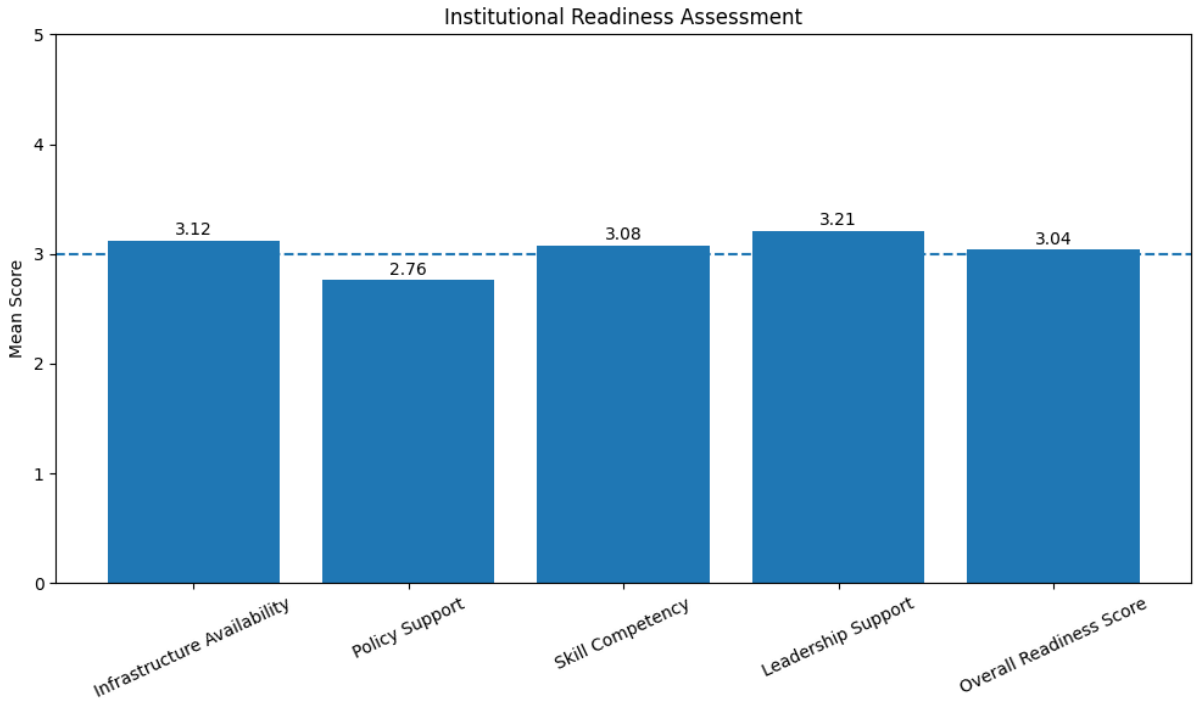


Table 4: Institutional Readiness Assessment

Dimension	Mean	Interpretation
Infrastructure Availability	3.12	Moderate
Policy Support	2.76	Low–Moderate
Skill Competency	3.08	Moderate
Leadership Support	3.21	Moderate
Overall Readiness Score	3.04	Moderate

EXPLANATION

Institutional readiness is **moderate overall (Mean = 3.04)**. Policy support scored lowest, indicating absence of structured AI policies. Infrastructure and leadership support are present but require strengthening for full AI integration.



4. Results and Analysis

4.1 DEMOGRAPHIC PROFILE OF RESPONDENTS

The respondents were mostly in the 30-45 age range meaning that the respondents are in the mid-career professional range. Majority of librarians had an MLISc degree, with minor percentage having MPhil or PhD. Almost half of the respondents had 5-15 years work experience, and the sizeable proportion of them indicated they had received previous exposure to ICT training. Past research shows that exposure to ICT boosts the flexibility to new technology in libraries (Cox et al., 2021).

4.2 LEVEL OF AI AWARENESS

The general score of AI awareness was under moderate. The respondents proved familiar with conceptual knowledge of AI applications (i.e., automation in cataloguing and chatbots) yet had little practical exposure. Awareness was divided into low, moderate and high levels with the majority of the participants lying in the moderate category. The awareness levels of ICT-trained librarians were relatively higher, which backs up the results indicating that digital competence is one of the major factors that affect AI literacy (IFLA, 2021).

4.3 PREDICTORS OF AI AWARENESS

The regression analysis showed that AI awareness had a positive relationship with ICT training and institutional ICT infrastructure, with an insignificant negative correlation with the years of experience. These results are consistent with the views of technology acceptance that facilitating conditions and perceived usefulness can affect the adoption behavior (Venkatesh et al., 2022). The model accounted a significant percentage of variance, which showed moderate to high effects sizes.

4.4 ASSESSMENT OF INSTITUTIONAL READINESS

The institutional preparedness was average with respect to dimensions. Infrastructure preparedness was partially prepared with digital tools, policy preparedness was lower because it had no formal AI strategies. The preparation of skills and support of leaders were moderate, which indicates the possibility of structured capacity-building programs (Weiner, 2020).

4.5 CHALLENGES IDENTIFIED

Among the major difficulties, the absence of training in AI formally, the budgetary issues, the fears associated with the loss of jobs, and the technical infrastructure were noted. Other possible barriers have also been observed in the context of the world and India where the institutional preparedness determines the success of AI implementation (Asemi and Asemi, 2022).

5. Discussion

The result of this research shows that AI awareness among librarians in government degree colleges is moderate, which reflects the findings of other studies on the emerging but uneven AI literacy in academic libraries (Cox et al., 2021). Likewise, other researchers have observed that librarians demonstrate an abstract sense of AI tools but have not implemented them practically because of the lack of competencies and the infrastructural problems (IFLA, 2021). The moderate institutional preparedness noted in this work is also consistent with the studies which indicate that the policy and resource constraints faced by developing regions in the process of digital transformation are typical (Asemi and Asemi, 2022).

Indeed, the interpretation of the findings in terms of Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT), ICT training and infrastructure became one of the important facilitating conditions affecting AI awareness. UTAUT found that the performance expectancy and facilitating conditions of technology adoption are strongly related to the technology adoption behavior (Venkatesh et al., 2022). The antagonistic relationship between years of experience and AI readiness could be the resistance to change or the decreased perceived ease of use of the older professionals, which has been noted in the technology adoption research.

The moderate readiness levels can be explained by a regional context of Visakhapatnam District because government degree colleges are frequently under budget constraints and the policy is usually highly controlled. Such institutions can have no well-organized AI strategies and advanced digital ecosystems, unlike metropolitan universities.

In practice, the research highlights the importance of systematic AI education programs, specific investment into digital infrastructure, and policies oriented towards government facilities. Digital competence empowerment and leadership involvement can be important to boost the inclusion of AI within academic libraries, which maintains the sustainable growth of technology (Weiner, 2020).

6. Implications and Recommendations

6.1 POLICY RECOMMENDATIONS

These results suggest that to enhance AI preparedness in government degree college libraries, the structured policy interventions on the state level are necessary. Higher education administrations at the state level need to launch specialized AI training offers that apply to academic librarians and concentrate on such practical uses of AI as cataloguing with AI, data analytics and digital reference systems. The literature indicates that institutional support and planned training have a positive impact on the results of technology adoption (IFLA, 2021). Moreover, obtaining AI-based library management systems, digital infrastructural changes, and cloud-based services have to be allotted certain budget sums. Digital transformation cannot be accomplished without financial input since it can make the transformation efforts disjointed and unsustainable (Cox et al., 2021). AI capacity-building objectives will also need to be incorporated in the policy frameworks in broader digital education policies in line with national technology objectives.

6.2 - INSTITUTIONAL RECOMMENDATIONS

At the institutional level, government degree colleges ought to hold regular capacity-building workshops in order to fill the identified skills gaps in the study. They should be trained on a hands-on exposure to AI tools, ethics, and handling of data. It has been found that the conditions, including infrastructure and leaders support, hold an important role in technology acceptance (Venkatesh et al., 2022). Another avenue that institutions need to pursue, in gaining knowledge and common technological assets, is collaborative partnerships with universities, research centers, and providers of AI solutions. This kind of cooperation has the potential to hasten the transfer of knowledge and decrease the cost of implementation.

6.3 PROFESSIONAL DEVELOPMENT

Life-long learning is crucial in the maintenance of the integration of AI in libraries. To improve digital competence, librarians are supposed to be invited into programs of modular learning and acquire AI literacy certifications. Digital skills have been found to be one of the essential facilitators of successful AI implementation in academic settings (Asemi and Asemi, 2022). Well-organized certification schemes may professionalize the research and foster trust in the use of AI to deliver services.

7. Conclusion

This research study focused on the degree of Artificial Intelligence (AI) awareness, predictors of the same, and institutional readiness among the government degree college librarians in Visakhapatnam District. The results indicate moderate AI awareness with the ICT training and institutional infrastructure appearing to be key predictors of the same. The institutional readiness was also moderate, especially in infrastructure and support of the leadership, whereas policy frameworks and systematic AI strategies were relatively poor. Such results align with the recent studies that show that the state of AI preparedness among academic libraries is uneven, particularly when it comes to developing and public-sector setups (Cox et al., 2021; IFLA, 2021).

The study has implications to the research in library and information science by offering empirical data at the district level on the awareness of AI in government degree colleges, which is an underserved section of technology adoption

studies. The study provides a localized model by combining both predictors of awareness and dimensions of institutional readiness that can be used in strategic planning and capacity-building interventions. It also further widens the use of technology acceptance perspectives in the library science field (Venkatesh et al., 2022).

Nevertheless, there are several limitations of the study. It has cross-sectional design which limits the possibility to draw causal relationships, and self-reported data can bring about bias in responses. As well, the narrowness of one district prevents more generalization.

Future studies can be designed in a longitudinal format based on observing changes in AI preparedness over a specific period, comparing research across different districts or states, and incorporating qualitative viewpoints to comprehend the behaviors and cultural aspects that govern the adoption of AI. Research into the effectiveness of organized AI-based interventions on service delivery would also contribute to the area (Asemi and Asemi, 2022).

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