Government of India's Artificial Intelligence Initiatives and Their Potential Implications for Academic Libraries: An Illustrative Analysis of IndiaAI Mission, AIKosh and BHASHINI

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ABSTRACT

Purpose: This paper integrates three Government of India initiatives—the IndiaAI Mission, AIKosh and BHASHINI—into an institutional-capability framework for academic libraries. Design/methodology: It is a methodological demonstration, not a survey or an impact evaluation. A researcher-generated synthetic dataset containing 240 cases across six equally sized analytical institution categories was recovered from the manuscript appendix and reanalysed using descriptive statistics, internal-consistency coefficients, Pearson correlations, one-way ANOVA, Tukey HSD, and seven-predictor ordinary least squares regression ($\alpha = .05$). The original simulation code, random seed and exact generative distributions were not supplied; consequently the dataset is reproducible as a fixed analytical table but the generating process cannot be independently replicated. Findings (illustrative only): Mean relevance was BHASHINI 4.04 (SD 0.49), IndiaAI Mission 3.93 (SD 0.55) and AIKosh 3.69 (SD 0.54), whereas the separately coded overall perceived-impact variable averaged 3.61 (SD 0.56). A one-way ANOVA returned $F(5,234) = 3.04$, $p = .011$, $\eta^2 = .061$, but no Tukey-adjusted pairwise contrast was significant. AI readiness ($r = .492$) and management support ($r = .483$) correlated with perceived impact. The model explained 33.1% of the generated outcome variance, with these two predictors retaining positive adjusted coefficients. Originality/value: The paper provides a transparent framework and audited analytical example that can inform future primary-data studies. No statistic estimates actual institutional awareness, adoption or policy impact in India.

Artificial intelligence is disrupting higher education and the services that support it. This paper assesses the likely effects of the Government of India's India AI Mission, AIKosh and BHASHINI on academic libraries, regarding their preparedness, professionalism, and multilingual services, information retrieval and research support. To enable statistical modeling of the data, a researcher-generated synthetic analytical dataset of 240 instances was developed across six institutional types. Descriptive statistics, Cronbach's alpha, one-way ANOVA, Tukey HSD, Pearson correlation and multiple regression were applied at $\alpha=0.05$. Of the three initiatives, BHASHINI had the highest average perceived relevance ($M = 4.04$, $SD = 0.49$) followed by the India AI Mission ($M = 3.92$, $SD = 0.55$) and AIKosh ($M = 3.69$, $SD = 0.54$). The overall mean for AI initiatives was 3.61 ($SD = 0.56$). There were significant differences among institutions, $F(5,234) = 3.04$, $p = .011$, $\eta^2 = .061$, but no significant differences were found by Tukey tests. AI-readiness correlated with overall impact at $r = .492$, and Management support correlated at $r = .483$. Regression explained 33.1% of impact variance, and both were found to be significant. The results of this study indicate that (national) AI-infrastructure can best support libraries if staff is developed, governance is improved and implemented along with access to AI-based services.

Keywords: Artificial intelligence; Academic libraries; IndiaAI Mission; AIKosh; BHASHINI

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1. Introduction

Artificial intelligence (AI) presents opportunities for academic libraries in information retrieval, metadata support, research assistance, reference services and multilingual access. Yet technological availability should not be equated with institutional implementation. Scholarship on intelligent libraries and augmented intelligence identifies professional judgement, service workflows and the ethical management of systems as central design considerations (Asemi et al., 2020; Wójcik, 2020; Hamad et al., 2023).

For Indian higher education, linguistic diversity and variation in institutional digital capacity make readiness and access particularly relevant. Survey-based scholarship among library and information science (LIS) professionals in India identifies both interest in AI applications and

a need for competencies, infrastructure and ethical guidance (Kalbande et al., 2024). International evidence similarly locates gaps in hands-on expertise, governance and institutional strategy (Yoon et al., 2022; Huang et al., 2023; Lo, 2024). Unlike those observational studies, the present work does not collect evidence from Indian libraries.

The Indian policy context offers three complementary technological pathways. Approved in March 2024 with an outlay of ₹10,371.92 crore, the IndiaAI Mission addresses compute, datasets, applications, skills and safe AI (Press Information Bureau, 2024). AIKosh offers a national dataset/model platform: the August 2025 official release reported over 1,200 datasets and 217 AI models (Press Information Bureau, 2025b). BHASHINI advances multilingual language technologies, including translation and speech services (Press Information Bureau, 2025a). These facts describe policy infrastructure; they do not establish adoption or service gains inside academic libraries.

The study asks how a conceptual model could connect national AI resources with organisational capability and library-facing service opportunities. It distinguishes (i) awareness of an initiative, (ii) perceived relevance to a service, (iii) organisational readiness, (iv) modelled or perceived service outcomes and (v) actual implementation. Only the first four are represented as synthetic numeric indicators; actual implementation is not measured. The contribution lies in specifying testable relationships and verifying an illustrative analytical workflow—not in estimating the programmes' effects on Indian institutions.

Table 1 Research questions, hypotheses and operational variables

Research question / hypothesis	Statement	Operational variables / test
RQ1 / H1	Is AI readiness positively associated with overall AI-initiative impact? H0: no positive association. H1: positive association.	AI_Readiness; Overall_AI_Initiative_Impact; Pearson correlation and regression
RQ2 / H2	Does staff AI competency relate positively to user-service innovation? H0: no positive association. H1: positive association.	Staff_AI_Competency; User_Service_Innovation; Pearson correlation
RQ3 / H3	Does digital infrastructure relate positively to digital-library enhancement? H0: no positive association. H1: positive association.	Digital_Infrastructure; Digital_Library_Enhancement; Pearson correlation
RQ4 / H4	Does perceived BHASHINI relevance relate positively to multilingual-service improvement? H0: no positive association. H1: positive association.	Perceived_BHASHINI_Relevance; Multilingual_Service_Improvement; Pearson correlation
RQ5 / H5	Does overall AI-initiative impact differ by institution type? H0: equal means. H1: at least one mean differs.	Institution_Type; Overall_AI_Initiative_Impact; one-way ANOVA and Tukey HSD

2. Literature review and conceptual background

2.1 Artificial intelligence and academic libraries

Research on AI in academic libraries can be grouped into three strands. A technical/service strand describes expert systems, retrieval and support for professional decisions (Asemi et

al., 2020; Wójcik, 2020). An organisational strand finds that infrastructure, implementation strategy and service redesign vary across academic settings (Yoon et al., 2022; Huang, 2022; Huang et al., 2023; Asim et al., 2023). A third strand addresses institutional readiness, AI literacy, ethics and evaluation of generative outputs (Lo, 2024; Kalbande et al., 2024). Considered together, these studies caution against inferring service transformation from access to AI technology alone.

2.2 Generative AI and AI Literacy

Generative AI may support drafting, summarisation and some reference interactions, but professional reviews stress source evaluation, inaccurate responses, bias, privacy and responsible scholarly communication (Inamdar, 2023; Vogus, 2023; James and Filgo, 2023; Johnson et al., 2024). Comparisons of generative assistants with other reference tools reinforce the need to appraise answer quality rather than assume accuracy from fluent output (Wheatley and Hervieux, 2024).

AI literacy research increasingly regards evaluation, responsible use and practical experience as essential professional capabilities. Lo (2024) reports training and ethical-guidance needs in a survey of predominantly US academic-library employees; Deshen and Aharony (2024) examine librarians' AI literacy; and Mughari et al. (2024) relate literacy to work performance in a specific medical-library setting. Higher-education work on AI literacy provides wider pedagogical context (Kong et al., 2021; Chu et al., 2022), while library-focused contributions discuss leadership and professional responsibilities (Miltenoff, 2024; Lo, 2025). Such empirical findings support conceptual variable selection but cannot validate a dataset that contains no real respondents.

2.3 India AI Mission and AIKosh

IndiaAI Mission components could indirectly support libraries through institutional compute access, research skills and responsible-AI guidance; no dedicated academic-library programme is established by the cited approval announcement (Press Information Bureau, 2024). AIKosh may be relevant to library-supported research data discovery, dataset description and reproducibility. These are plausible service pathways, not observed usage metrics. The difference between policy availability and library uptake is therefore an explicit feature of the framework.

2.4 BHASHINI and multilingual access

BHASHINI offers translation, speech and document-oriented language technologies that could inform multilingual discovery interfaces, service guidance and accessible learning materials. The cited government release describes use cases in public communication and education, rather than a controlled evaluation of Indian academic libraries (Press Information Bureau, 2025a). Library-specific accessibility, translation quality, copyright and privacy would require separate testing.

2.5 Research gap

Previous studies illuminate AI adoption, academic-library strategy, generative AI literacy and professional competencies, but they do not by themselves evaluate the combined relevance of IndiaAI Mission, AIKosh and BHASHINI to Indian academic libraries (Huang et al., 2023; Lo, 2024; Kalbande et al., 2024). The specific gap addressed here is analytical integration: a pre-specified set of awareness, capability and service variables through which future primary-data research could investigate these initiatives. Because empirical data were unavailable, the current 240-case demonstration evaluates numerical coherence and statistical interpretation only. It neither fills the empirical evidence gap nor establishes a causal pathway.

3. Materials and methods

3.1 Design and analytical dataset

The design is an illustrative quantitative analysis of a researcher-generated synthetic cross-sectional table (N = 240). The observational units are synthetic cases, not sampled libraries or practitioners. The appendix contains two panels of 240 records joined one-to-one by an artificial case identifier (R001–R240). Institution type and region are balanced by design: 40 cases per category within each of six institution types and six regions. Library sizes comprise 56 small, 92 medium and 92 large cases; the experience categories comprise 51 (<5 years), 88 (5–10 years), 62 (11–20 years) and 39 (>20 years). Balanced institutional composition serves numerical comparison and must not be taken to resemble the population distribution of Indian higher education institutions.

Data-generation provenance: The original manuscript states that latent capability/awareness dimensions were correlated and varied by institution, with additional random variation. However, no generating script, seed, marginal probability distributions, dependence coefficients, item-generation algorithm or independent validation record accompanies the file. Those unavailable parameters cannot be reconstructed reliably from the finished table, and no particular probability law is asserted here. What can be independently reproduced is the fixed 240 × 24 numeric-variable table printed in Appendix A. Thus, this is an analysis-reproduction exercise, not a replication of the original generative process. Any future version intended as a formal simulation study must deposit its complete code, parameter specification and random seed.

The case file was checked by joining both appendix panels on unique case IDs. It contains 240 unique IDs, no missing fields, numeric responses within the stated 1–5 bounds, and the categorical counts reported in Table 2. Descriptive statistics, test statistics, 15 Tukey contrasts and regression coefficients were recalculated against this single recovered table. Figures 1–5 were regenerated from the same rows. These are internal reproducibility checks; they are not external validation against observed institutional behaviour.

3.2 Variables and statistical analysis

Each numeric field in Appendix A is an individual integer-valued, five-level synthetic rating, with 1 representing low awareness/relevance/capacity or strong disagreement, and 5 representing high awareness/relevance/capacity or strong agreement, as appropriate. Four distinct domains are used: awareness (general AI, IndiaAI Mission, AIKosh, BHASHINI),

capacity (AI readiness, digital infrastructure, staff AI competency, management support), initiative relevance (three separate programme-specific fields) and modelled service assessments (multilingual improvement, retrieval improvement, reference service, research support, digital-library enhancement, user innovation and efficiency). Five barrier fields are separate measures. Overall AI initiative impact is one separately generated rating, not the arithmetic mean of the three initiative-relevance measures or of the seven service fields. 'Perceived' denotes the intended rating construct within a synthetic exercise; no human perception was elicited.

Operationalisation and internal consistency: The four awareness indicators, four capacity indicators, seven service-assessment indicators and five barrier indicators define the four sets used for Cronbach's alpha (k = 4, 4, 7 and 5, respectively). Alpha is computed from the raw indicators as $\alpha = k/(k-1) \times [1 - \Sigma Var(item)/Var(sum\ of\ items)]$. No unreported underlying questionnaire items or factor scores are assumed. A single field (e.g., AI Readiness) must not be confused with the broader four-indicator capacity set. Because covariation was embedded in synthetic generation, high alpha values are descriptive of this table rather than psychometric validation of an instrument.

3.3 Analytical limitation

The prespecified tests are Pearson r for H1–H4, a six-group one-way ANOVA for H5, Tukey's honestly significant difference (HSD) for multiplicity-adjusted pairwise comparisons, and an exploratory seven-predictor OLS model for the separately coded overall-impact rating. Pearson/ANOVA/OLS approximate five-level scores as interval-scale responses; Spearman rank correlations, a Kruskal–Wallis comparison and heteroskedasticity-consistent HC3 regression checks assess directional robustness. Regression uses AI readiness, digital infrastructure, staff competency, management support and awareness of the three initiatives. There are no intervention or time-order data; model terms describe conditional statistical associations only. Significance tests use $\alpha = .05$ as an analytical convention for generated records and have no sampling-based generalisability to Indian institutions. Reported 95% intervals are conditional on the same simulation and model assumptions.

Table 2 Constructed profile of the synthetic analytical dataset (N = 240)

Characteristic	Category	n	%
Institution type	Central university	40	16.7
	State university	40	16.7
	Private university	40	16.7
	Deemed university	40	16.7
	Government college	40	16.7
	Autonomous HEI	40	16.7
Region	North	40	16.7
	South	40	16.7
	East	40	16.7
	West	40	16.7

Characteristic	Category	n	%
	Central	40	16.7
	North-East	40	16.7
Library size	Small	56	23.3
	Medium	92	38.3
	Large	92	38.3
Professional experience	<5 years	51	21.2
	5-10 years	88	36.7
	11-20 years	62	25.8
	>20 years	39	16.2

4. Results and data analysis

4.1 Descriptive statistics and reliability

The 240 synthetic cases are evenly allocated to six institution categories (40 per category). The proportions rated high/very high (scores 4–5) for initiative awareness are 78.75% for BHASHINI, 59.17% for IndiaAI Mission and 20.42% for AIKosh (Fig. 1). The distinct overall-impact variable has M = 3.61 and SD = 0.56. Internal consistency of indicator sets is α = .826 for institutional capacity, .811 for general/initiative awareness, .873 for the seven service assessments and .760 for barriers. These statistics describe generated ratings; they are not national estimates or empirical perceptions.

Within the synthetic relevance ratings, BHASHINI has M = 4.04 (SD = 0.49), followed by IndiaAI Mission, M = 3.93 (SD = 0.55), and AIKosh, M = 3.69 (SD = 0.54). The arithmetic average of these three distinct ratings is not equivalent to overall-impact M = 3.61. The simulated service-assessment means are retrieval 3.85, multilingual services 3.84, digital-library enhancement 3.82 and research support 3.79. The five coded barriers have means of skills 3.95, infrastructure 3.71, privacy 3.59, finance 3.48 and ethics 3.43 (Fig. 4). Relative ordering is a feature of the constructed cases, not a ranking established from actual respondents.

Table 3 Descriptive statistics of synthetic single-item proxy variables

Construct	N	Mean	SD	Min	Max
AI Awareness	240	3.54	0.63	2	5
IndiaAI Mission Awareness	240	3.63	0.58	2	5
AIKosh Awareness	240	2.95	0.72	1	5
BHASHINI Awareness	240	3.92	0.59	2	5
AI Readiness	240	3.53	0.55	2	5
Digital Infrastructure	240	3.60	0.61	2	5
Staff AI Competency	240	3.36	0.61	2	5
Management Support	240	3.60	0.58	2	5

Construct	N	Mean	SD	Min	Max
Perceived IndiaAI Relevance	240	3.93	0.55	3	5
Perceived AIKosh Relevance	240	3.69	0.54	2	5
Perceived BHASHINI Relevance	240	4.04	0.49	3	5
Multilingual Service Improvement	240	3.84	0.60	2	5
Information Retrieval Improvement	240	3.85	0.56	3	5
Research Support Improvement	240	3.79	0.59	2	5
Digital Library Enhancement	240	3.82	0.58	2	5
User Service Innovation	240	3.71	0.62	2	5
Perceived Efficiency	240	3.80	0.59	3	5
Overall AI Initiative Impact	240	3.61	0.56	2	5

Table 4 Reliability coefficients of multi-item constructs

Note: alpha describes the co-movement of the listed synthetic indicator sets; it does not demonstrate construct validity or field-tested questionnaire reliability.

Scale	Items (k)	Cronbach alpha	Interpretation
Institutional capacity indicators	4	0.826	Good
AI/initiative awareness indicators	4	0.811	Good
Service-assessment indicators	7	0.873	Good
Adoption-barrier indicators	5	0.760	Acceptable

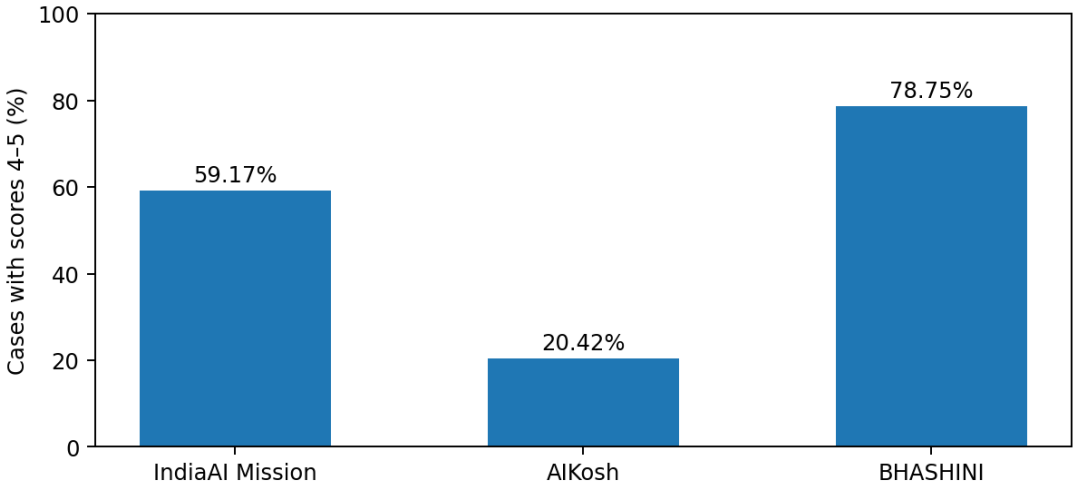


Fig. 1 Percentage of synthetic cases with initiative-awareness scores of 4–5 (N = 240)

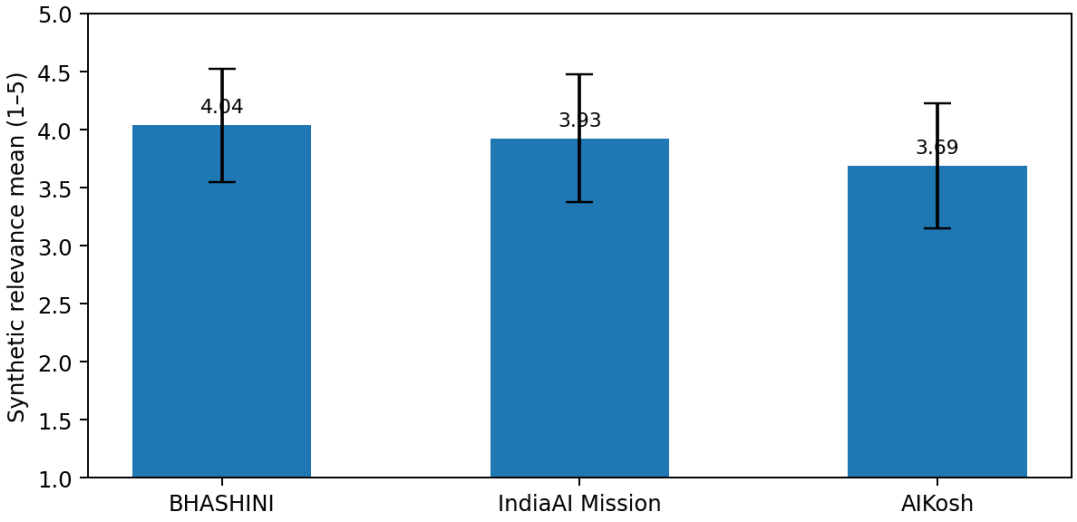


Fig. 2 Synthetic initiative-relevance ratings (means ± sample SD; scale 1–5)

Table 5 Comparison of three separate synthetic relevance variables

Initiative	Mean	SD	Rank	Interpretive emphasis
BHASHINI	4.04	0.49	1	Multilingual access and language services
IndiaAI Mission	3.93	0.55	2	Institutional AI ecosystem and capacity
AIKosh	3.69	0.54	3	Datasets, models and research support

4.2 Institution differences and associations

The synthetic overall-impact score varies across the six programmed institution categories (Table 6): $F(5,234) = 3.038$, $p = .0112$, $\eta^2 = .061$. Deemed-university cases have the highest mean (3.750), followed by central and private universities (both 3.725), autonomous institutions (3.600), and state universities and government colleges (both 3.425). The omnibus F test evaluates equality of all six group means simultaneously. Its rejection does not identify a particular pair. With 15 comparisons corrected for family-wise error using Tukey HSD, no pairwise difference reached adjusted $p < .05$; the smallest adjusted p was .0905 (deemed versus government college and deemed versus state university, mean difference 0.325). Thus there is weak simulated evidence of a distributed group-level pattern, but no individually resolved institutional contrast and no conclusion about actual institutions.

The four pre-specified bivariate hypotheses show positive associations in the fixed dataset: AI readiness versus overall perceived impact, $r = .492$; staff competency versus service innovation, $r = .402$; digital infrastructure versus digital-library enhancement, $r = .363$; and BHASHINI relevance versus multilingual-service improvement, $r = .393$ (all $p < .001$). The additional correlations between overall impact and management support ($r = .483$), multilingual improvement ($r = .437$), retrieval improvement ($r = .359$) and research support improvement ($r = .357$) describe the same generated data. Correlation measures association; these findings neither demonstrate programme effects nor identify real institutional conditions.

Table 6 Institution-type comparisons of generated overall-impact scores

Institution type	n	Mean	SD	95% CI of mean
Central university	40	3.73	0.55	3.55–3.90
State university	40	3.43	0.64	3.22–3.63
Private university	40	3.73	0.51	3.56–3.89
Deemed university	40	3.75	0.54	3.58–3.92
Government college	40	3.43	0.55	3.25–3.60
Autonomous HEI	40	3.60	0.50	3.44–3.76
ANOVA: F(5,234)=3.04			p=0.011	eta-squared=0.061; Tukey: no adjusted pair significant

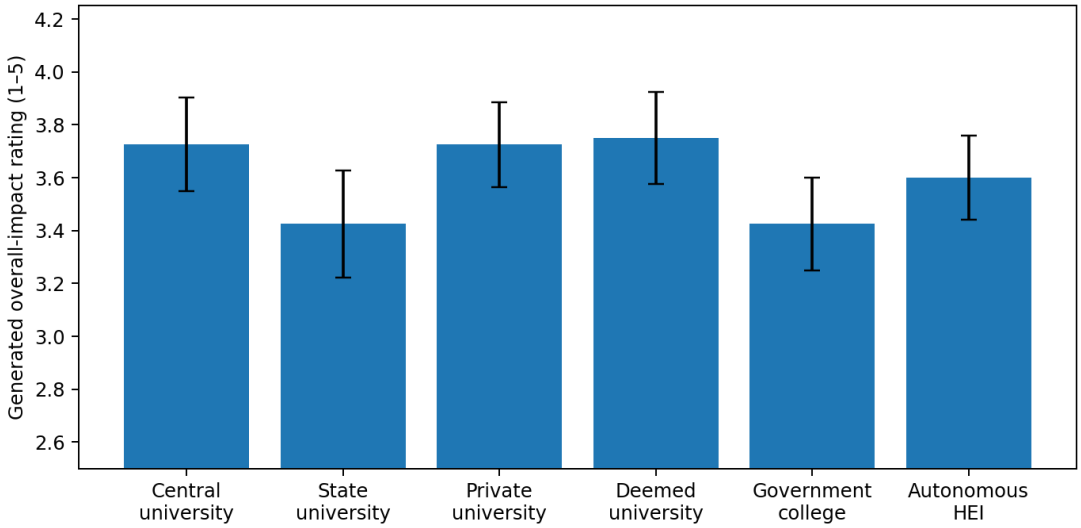


Fig. 3 Synthetic overall-impact ratings by institution type (mean ± 95% t interval)

Table 7 Pearson correlations among selected generated capacity and service ratings

Variable	Readiness	Infrastructure	Competency	Mgmt support	Multilingual	Retrieval	Research support	Overall impact
Readiness	1.000	0.545***	0.557***	0.558***	0.398***	0.344***	0.341***	0.492***
Infrastructure	0.545***	1.000	0.549***	0.511***	0.326***	0.335***	0.319***	0.317***
Competency	0.557***	0.549***	1.000	0.543***	0.385***	0.307***	0.367***	0.318***
Mgmt support	0.558***	0.511***	0.543***	1.000	0.348***	0.241***	0.317***	0.483***
Multilingual	0.398***	0.326***	0.385***	0.348***	1.000	0.516***	0.546***	0.437***
Retrieval	0.344***	0.335***	0.307***	0.241***	0.516***	1.000	0.503***	0.359***
Research support	0.341***	0.319***	0.367***	0.317***	0.546***	0.503***	1.000	0.357***
Overall impact	0.492***	0.317***	0.318***	0.483***	0.437***	0.359***	0.357***	1.000

Note: Pearson coefficients use N = 240 synthetic cases. * p < .05; ** p < .01; *** p < .001 (two-sided, unadjusted; descriptive within the generated dataset).

4.3 Multiple regression

The seven-predictor OLS model accounts for $R^2 = .331$ (adjusted $R^2 = .311$) of variation in the synthetic overall-impact score, $F(7,232) = 16.40$, $p < .001$. AI readiness (B = .336, 95% CI [.190, .482], β = .328, $p < .001$) and management support (B = .306, 95% CI [.172, .441], β = .315, $p < .001$) retain positive conditional associations. Infrastructure ($p = .461$), competency ($p = .496$), and awareness of IndiaAI Mission ($p = .383$), AIKosh ($p = .332$) and BHASHINI ($p = .245$) are not individually significant after mutual adjustment. Bivariate relationships can coexist with nonsignificant adjusted terms because correlated predictors share explained variation; unadjusted effects and unique conditional contributions are not interchangeable. VIF values of 1.46–1.81 do not indicate severe multicollinearity, but modest common variance remains. These coefficients are properties of the data-construction exercise, not independently verified predictors of Indian library performance.

Sensitivity analysis: Spearman rank coefficients support the direction of H1–H4 (ρ = .491, .377, .349 and .391, respectively; all $p < .001$). Kruskal–Wallis $H(5) = 15.64$, $p = .008$, similarly detects an omnibus category pattern without resolving significant Tukey-adjusted pairs. HC3 robust-standard-error regression retains AI readiness ($p < .001$) and management support ($p < .001$) as positive conditional terms; the remaining five predictors stay nonsignificant. These checks strengthen numerical stability within the generated table, but they cannot replace independent empirical validation.

Table 8 OLS model of generated overall-impact rating (N = 240)

Predictor	B	SE	Beta	t	p	95% CI	VIF	Decision
AI Readiness	0.336	0.074	0.328	4.53	<.001	0.190, 0.482	1.81	Significant
Digital Infrastructure	-0.048	0.065	-0.053	-0.74	.461	-0.177, 0.080	1.76	Not significant
Staff AI Competency	-0.045	0.066	-0.049	-0.68	.496	-0.175, 0.085	1.80	Not significant
Management Support	0.306	0.068	0.315	4.49	<.001	0.172, 0.441	1.71	Significant
IndiaAI Mission Awareness	0.056	0.064	0.057	0.87	.383	-0.070, 0.181	1.49	Not significant
AIKosh Awareness	0.049	0.051	0.063	0.97	.332	-0.051, 0.150	1.46	Not significant
BHASHINI Awareness	0.078	0.067	0.083	1.17	.245	-0.054, 0.210	1.75	Not significant

Model summary: R = 0.575; R-squared = 0.331; adjusted R-squared = 0.311; F(7,232) = 16.40; p < .001.

Table 9 Consolidated hypothesis tests for the 240-case synthetic dataset

Hyp.	Operational relationship	Statistical test	Statistic	p	Interpretation
H1	Readiness–overall perceived impact	Pearson r	.492	<.001	Positive association in synthetic cases
H2	Staff competency–user service innovation	Pearson r	.402	<.001	Positive association in synthetic cases
H3	Infrastructure–digital-library enhancement	Pearson r	.363	<.001	Positive association in synthetic cases
H4	BHASHINI relevance–multilingual improvement	Pearson r	.393	<.001	Positive association in synthetic cases
H5	Six institution categories–overall perceived impact	ANOVA F(5,234)	3.038	.0112	Omnibus unequal means; no Tukey pair significant

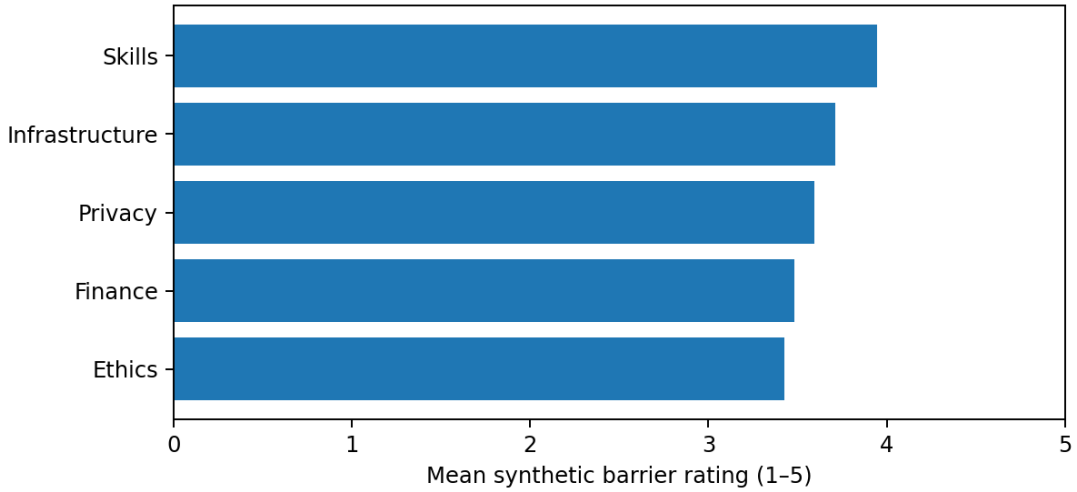


Fig. 4 Mean synthetic barrier ratings (scale 1–5; N = 240)

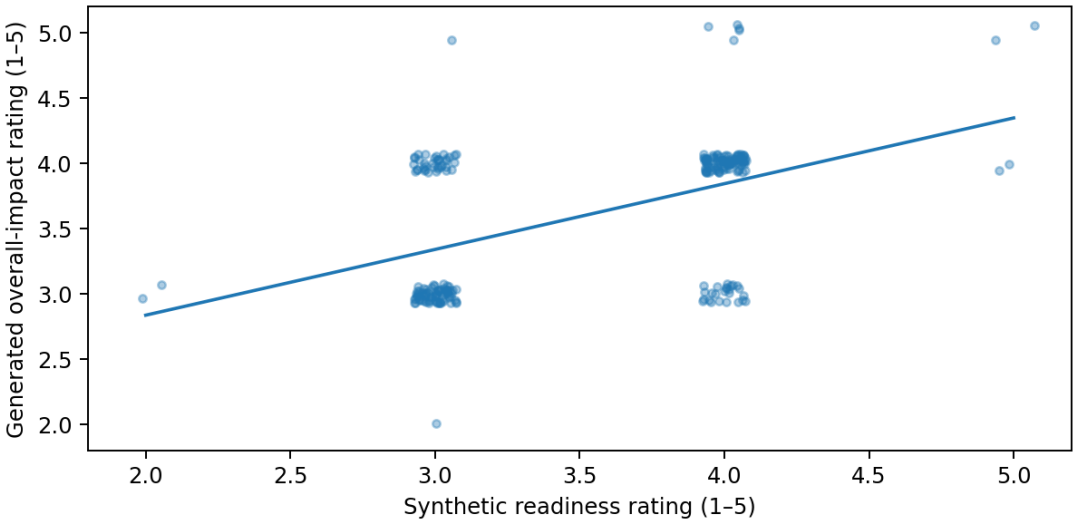


Fig. 5 AI readiness and generated overall-impact rating (jittered display; N = 240)

5. Discussion

The exercise separates programme availability from organisational preparedness and from demonstrated service outcomes. In this synthetic configuration, an initiative can receive a high relevance rating while the associated awareness score is lower; awareness, relevance, readiness and implementation are therefore not interchangeable. The two positive adjusted OLS terms—readiness and management support—illustrate one possible capacity-oriented

analytical pattern. However, this pattern was not observed in real academic libraries and cannot establish that capacity causes policy uptake. Prior observational and conceptual research supports the importance of organisational strategy and AI literacy (Huang et al., 2023; Lo, 2024), but it must be distinguished from the current generated-data example.

The higher simulated BHASHINI relevance score serves as a useful scenario for discussing multilingual access, not as evidence that Indian librarians rank BHASHINI first. Translation and speech services might support multilingual discovery, navigational interfaces and service interactions. The positive BHASHINI–multilingual-rating correlation ($r = .393$) reflects built-in covariation in the numerical example and cannot be treated as a measured benefit. Before adoption, libraries would need task-based assessments of translation accuracy, accessibility, language coverage, content rights, privacy and reader satisfaction (Press Information Bureau, 2025a).

IndiaAI Mission policy components create potential pathways for universities and libraries to explore compute access, research support and responsible-AI skills development (Press Information Bureau, 2024). Actual benefits would depend on procurement constraints, technical expertise, data-governance policy and user needs. Literature cautions that indexing and reference automation can amplify bias or error and may compromise accountability unless monitored by library professionals (Wójcik, 2020; Bubinger and Dinneen, 2024). These are policy and practice considerations, not effects identified in the present modelling exercise.

AIKosh appears lower on the constructed awareness and relevance scales, but such scores do not establish lower strategic value. Its datasets and models may be more relevant to curation, metadata, data-literacy instruction and research reproducibility than to visible circulation or reference interfaces. The August 2025 policy update documents platform resources (Press Information Bureau, 2025b); it supplies no measure of AIKosh use by Indian academic libraries. An appropriate next step would be a field audit of repository discoverability, licensing, data quality and actual academic use.

The simulated barrier ordering places the skill-gap item first, followed by infrastructure and privacy concerns; it must not be cited as a survey-derived ranking for India. Nevertheless, professional development, infrastructure assessment and policy readiness emerge as defensible agenda items from the broader literature (Hussain, 2023; Kalbande et al., 2024). Libraries could pilot limited, low-risk use cases, document selection criteria and establish human review of generated records or answers, while collecting real baseline and follow-up outcome measures.

A practical evaluation protocol for future empirical work should record exposure to each national initiative, training hours, platform usage logs, metadata or reference-task accuracy, multilingual task completion and user accessibility outcomes. Pre-registered surveys across institution types, qualitative interviews with LIS professionals, and matched before/after or comparison-group designs could test whether any service change is attributable to an intervention. Ethical approval and informed consent would be required where research

participants are involved; policy or platform information alone cannot substitute for this evidence (Vogus, 2023; Wheatley and Hervieux, 2024; Lo, 2025).

6. Limitations and empirical validation requirements

The most important limitation is the absence of empirical observations: all 240 records were generated by a researcher and are explicitly illustrative. The reported p-values, confidence intervals, effect sizes and alpha coefficients have mathematical meaning within this fixed dataset, but do not carry population-level inferential meaning. Institutional and regional categories were balanced by construction, and the sizes and experience counts were assigned analytically rather than sampled. The generative algorithm, probability laws, latent dependencies and seed were not supplied; although the appendix permits reanalysis, it cannot establish simulation-process reproducibility or independent construct validity.

Other limitations include single-item ordinal proxy ratings, correlations embedded by design, no evidence of questionnaire development or response validity, no measures of actual implementation, and the absence of longitudinal observations or exogenous variation. Ordinary least squares and conventional ANOVA assume approximately interval responses and model errors; rank-based/robust checks mitigate but do not eliminate the resulting concerns. No causal effects, national prevalence estimates, ranking of actual programmes by Indian libraries, or generalisations by institutional type can be made. A follow-up study should document sampling frame and ethics, piloted multi-item instruments, pre-analysis hypotheses, response rates, model diagnostics and independently accessible analytical code.

7. Conclusion

IndiaAI Mission, AIKosh and BHASHINI provide policy and technology resources with plausible implications for academic-library capacity, research support and multilingual access. The synthetic demonstration establishes only that a specified set of ratings can be analysed consistently: BHASHINI receives the highest programmed relevance score; readiness and management support retain positive conditional associations with a separately generated impact rating; and an omnibus institution-type difference does not translate into significant Tukey-adjusted pairwise contrasts. These statements describe the numerical example, not implementation or impact in India. The manuscript’s contribution is an explicitly bounded conceptual framework, a fully auditable 240-case table and a clarified statistical workflow. Testing the practical value of the three initiatives requires ethically collected library-level evidence, objective service-performance measures and transparent replication materials.

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Appendix A: Complete analytical dataset

The complete researcher-generated 240-case analytical table is presented in two linked panels. Matching synthetic case IDs (R001–R240) identify constructed records, not survey participants, field sites or actual academic institutions. The table reproduces the numeric analysis but the generating code, random seed and distribution parameters were not supplied.

Appendix Table A1. Synthetic case profiles, programme awareness, capacity and relevance (part 1)

Synthetic case ID	Institution Type	Region	Library Size Category	Professional Experience Category	AI Awareness	IndiaAI Mission Awareness	AIKosh Awareness	BHASHINI Awareness	AI Readiness	Digital Infrastructure	Staff AI Competency	Management Support	Perceived IndiaAI Relevance	Perceived AIKosh Relevance
R001	Autonomous HEI	West	Medium	>20 years	3	3	3	3	4	4	4	4	5	4
R002	Autonomous HEI	West	Small	11-20 years	2	3	2	3	3	3	2	3	3	3
R003	Central university	South	Large	<5 years	4	3	3	4	4	4	3	4	5	4
R004	State university	South	Small	>20 years	3	4	3	4	4	4	4	4	5	4
R005	Government college	North	Small	5-10 years	3	4	2	3	3	3	3	3	3	3
R006	Autonomous HEI	East	Small	5-10 years	3	3	2	3	4	3	4	4	4	4
R007	Government college	North-East	Small	5-10 years	3	3	2	3	3	3	3	3	4	4
R008	Autonomous HEI	North-East	Medium	5-10 years	3	3	2	3	3	3	3	3	4	4
R009	Government college	East	Small	11-20 years	3	3	2	3	4	3	3	3	4	3
R010	Private university	South	Large	5-10 years	3	4	4	4	3	4	3	4	4	4
R011	Private university	West	Large	11-20 years	4	5	4	5	4	4	4	3	4	3
R012	State university	Central	Small	<5 years	4	4	3	4	4	4	3	3	3	3
R013	Private university	South	Large	<5 years	4	3	2	4	4	4	3	4	5	3
R014	Central university	Central	Large	11-20 years	3	3	3	4	3	4	3	4	4	4
R015	Government college	North	Medium	>20 years	3	3	2	3	3	3	3	3	3	3
R016	Private university	East	Medium	<5 years	3	4	3	4	3	3	3	4	4	4
R017	State university	North-East	Medium	>20 years	4	4	3	4	4	3	3	4	4	3
R018	Autonomous HEI	Central	Large	5-10 years	4	4	3	4	4	4	3	3	4	3
R019	State university	South	Medium	>20 years	3	3	2	3	3	4	3	3	3	4
R020	Central university	North	Medium	5-10 years	5	5	4	5	4	3	3	4	4	4
R021	Autonomous HEI	North-East	Small	5-10 years	3	3	3	3	3	3	2	3	3	3
R022	Government college	South	Large	5-10 years	4	3	3	5	4	4	4	3	4	4
R023	Autonomous HEI	North	Large	<5 years	4	4	3	5	4	5	3	4	4	4
R024	Autonomous HEI	West	Medium	5-10 years	3	4	3	4	3	3	3	4	4	4
R025	State university	South	Medium	>20 years	3	4	3	4	3	4	3	3	4	3
R026	Private university	East	Small	5-10 years	3	3	2	4	3	2	3	3	4	3
R027	Private university	South	Medium	<5 years	3	3	3	3	3	3	3	3	3	3
R028	State university	Central	Small	<5 years	3	4	4	4	3	3	3	3	4	3
R029	Deemed university	North	Large	11-20 years	5	5	4	5	4	4	4	4	5	3
R030	Central university	West	Medium	5-10 years	4	4	3	4	3	3	3	3	4	4
R031	Autonomous HEI	West	Medium	11-20 years	4	4	3	4	4	4	4	5	5	4

Synthetic case ID	Institution Type	Region	Library Size Category	Professional Experience Category	AI Awareness	IndiaAI Mission Awareness	AIKosh Awareness	BHASHINI Awareness	AI Readiness	Digital Infrastructure	Staff AI Competency	Management Support	Perceived IndiaAI Relevance	Perceived AIKosh Relevance
R032	Autonomous HEI	South	Medium	<5 years	3	4	3	4	3	3	2	3	3	3
R033	Autonomous HEI	East	Medium	>20 years	4	5	4	5	4	3	3	4	4	4
R034	Deemed university	North	Small	<5 years	3	4	3	4	3	3	2	3	4	4
R035	Private university	West	Medium	11-20 years	4	4	3	4	4	4	4	3	4	3
R036	Private university	North-East	Small	>20 years	3	4	3	4	4	3	4	3	4	3
R037	Autonomous HEI	North-East	Large	5-10 years	4	3	3	4	4	3	3	3	4	4
R038	Central university	West	Small	<5 years	4	3	3	4	4	4	4	4	4	4
R039	Deemed university	Central	Small	<5 years	5	5	4	4	4	4	3	3	4	4
R040	Private university	West	Small	5-10 years	3	3	2	3	4	4	3	3	4	4
R041	Private university	North-East	Large	5-10 years	5	5	4	5	4	4	4	3	4	4
R042	State university	North	Medium	5-10 years	3	3	2	4	3	3	2	3	4	4
R043	State university	North	Large	5-10 years	4	4	4	4	5	5	5	5	4	5
R044	State university	North	Small	5-10 years	3	3	3	3	3	3	3	3	4	3
R045	Deemed university	South	Large	<5 years	4	4	3	4	4	4	4	4	4	4
R046	Central university	East	Medium	5-10 years	3	4	3	4	3	3	3	3	5	3
R047	Deemed university	West	Medium	<5 years	4	3	3	4	3	3	3	3	4	4
R048	Autonomous HEI	North-East	Medium	11-20 years	3	3	2	3	3	3	3	4	4	3
R049	Autonomous HEI	Central	Medium	5-10 years	4	4	3	5	4	4	4	4	4	4
R050	Government college	South	Small	11-20 years	4	4	3	3	3	3	3	3	4	3
R051	Central university	South	Large	5-10 years	4	4	3	4	3	4	3	4	4	4
R052	Private university	East	Large	<5 years	3	4	2	3	4	3	3	3	4	4
R053	State university	Central	Small	<5 years	3	3	3	3	3	4	3	3	4	3
R054	Central university	West	Large	11-20 years	4	4	3	4	3	4	4	4	4	4
R055	Deemed university	East	Large	5-10 years	4	4	4	5	4	4	4	4	4	4
R056	Autonomous HEI	East	Large	5-10 years	3	3	3	4	4	4	4	4	4	4
R057	Private university	North-East	Medium	5-10 years	3	3	3	4	3	3	4	4	4	4
R058	Private university	North	Large	<5 years	3	3	3	3	3	4	4	4	4	4
R059	Government college	North-East	Small	>20 years	4	3	3	4	4	3	3	3	4	4
R060	Government college	North	Large	>20 years	4	3	3	4	4	4	4	4	4	3
R061	Central university	South	Small	5-10 years	4	3	3	4	3	3	3	3	4	3
R062	Central university	North	Large	<5 years	4	4	3	4	4	4	4	4	4	5
R063	Government college	West	Small	<5 years	4	3	3	4	4	3	3	3	4	4
R064	Autonomous HEI	East	Large	11-20 years	4	4	3	5	3	4	4	3	4	5
R065	Central university	West	Medium	11-20 years	4	4	3	4	4	4	4	4	4	5
R066	Government college	North-East	Medium	5-10 years	3	3	2	3	4	4	4	4	3	4
R067	Autonomous HEI	Central	Large	5-10 years	3	4	3	5	4	4	4	5	5	4
R068	Government college	South	Medium	5-10 years	4	4	4	4	3	3	3	3	4	4
R069	Private university	West	Large	>20 years	4	3	2	3	4	4	4	4	3	3
R070	Deemed university	South	Medium	11-20 years	3	3	3	4	4	4	3	4	4	4
R071	Central university	Central	Large	5-10 years	3	3	2	4	3	3	3	4	3	4

Synthetic case ID	Institution Type	Region	Library Size Category	Professional Experience Category	AI Awareness	IndiaAI Mission Awareness	AIKosh Awareness	BHASHINI Awareness	AI Readiness	Digital Infrastructure	Staff AI Competency	Management Support	Perceived IndiaAI Relevance	Perceived AIKosh Relevance
R072	Autonomous HEI	South	Medium	<5 years	3	4	3	4	3	3	3	4	4	4
R073	State university	West	Large	5-10 years	3	4	2	4	3	4	3	4	4	4
R074	Deemed university	East	Large	5-10 years	4	3	3	4	4	4	4	4	4	3
R075	Deemed university	North	Large	11-20 years	3	4	3	5	4	4	3	3	4	4
R076	Private university	Central	Large	11-20 years	3	4	2	3	4	4	4	4	4	4
R077	State university	North-East	Medium	5-10 years	3	3	3	4	3	3	3	3	4	4
R078	Central university	West	Large	5-10 years	5	4	5	5	4	4	4	4	4	4
R079	Autonomous HEI	North	Large	5-10 years	4	3	3	5	4	4	4	3	4	4
R080	Autonomous HEI	South	Small	>20 years	4	4	2	4	3	4	3	3	4	4
R081	State university	North-East	Small	5-10 years	4	4	3	4	3	4	3	4	4	3
R082	Central university	North	Medium	5-10 years	4	4	2	4	4	4	3	3	4	4
R083	Central university	West	Large	<5 years	4	4	4	4	4	4	3	4	5	3
R084	State university	West	Medium	<5 years	4	4	2	4	3	3	3	4	3	3
R085	Government college	South	Small	5-10 years	2	3	2	3	3	2	2	3	4	3
R086	Government college	East	Large	5-10 years	4	4	4	4	4	4	4	4	5	4
R087	Private university	Central	Medium	>20 years	5	4	3	4	4	3	3	4	4	4
R088	Private university	South	Large	<5 years	4	5	3	5	5	4	4	4	4	4
R089	State university	Central	Medium	>20 years	3	3	3	4	4	4	4	4	4	4
R090	Government college	East	Medium	<5 years	3	3	3	3	3	3	3	3	3	3
R091	Autonomous HEI	North	Large	>20 years	4	4	3	5	4	4	4	4	4	4
R092	State university	West	Medium	11-20 years	4	4	3	4	3	3	2	3	4	3
R093	Central university	South	Large	>20 years	4	5	2	4	4	4	4	4	4	4
R094	Central university	East	Medium	<5 years	3	3	2	3	4	4	3	4	4	4
R095	State university	West	Large	11-20 years	3	4	3	4	4	4	4	4	4	4
R096	Deemed university	North	Medium	5-10 years	4	4	4	4	4	4	3	5	5	4
R097	Government college	South	Small	11-20 years	3	3	2	3	2	2	2	3	4	3
R098	Government college	South	Large	11-20 years	3	4	3	4	4	4	4	4	3	4
R099	Government college	North	Small	<5 years	3	3	2	4	3	3	3	3	3	3
R100	Central university	South	Medium	>20 years	4	4	3	4	3	4	3	4	4	3
R101	State university	East	Large	5-10 years	3	3	2	4	4	4	4	4	4	4
R102	Government college	North-East	Large	5-10 years	3	4	3	3	3	4	3	3	3	4
R103	State university	East	Small	5-10 years	3	4	3	4	2	3	2	2	4	3
R104	Deemed university	North-East	Medium	>20 years	3	3	4	4	4	4	3	3	4	4
R105	Autonomous HEI	Central	Large	5-10 years	3	4	3	4	3	4	4	4	3	4
R106	Autonomous HEI	South	Large	5-10 years	4	4	4	4	3	4	3	3	3	4
R107	Government college	South	Medium	11-20 years	4	4	3	4	3	4	4	3	4	4
R108	Government college	East	Large	11-20 years	5	4	4	5	4	4	3	4	3	4
R109	Private university	Central	Large	11-20 years	4	3	3	4	3	3	3	4	4	4
R110	Deemed university	North-East	Large	11-20 years	5	5	4	5	5	5	4	4	5	5
R111	Autonomous HEI	West	Medium	<5 years	3	4	3	4	3	3	3	3	3	4

Synthetic case ID	Institution Type	Region	Library Size Category	Professional Experience Category	AI Awareness	IndiaAI Mission Awareness	AIKosh Awareness	BHASHINI Awareness	AI Readiness	Digital Infrastructure	Staff AI Competency	Management Support	Perceived IndiaAI Relevance	Perceived AIKosh Relevance
R112	Deemed university	West	Medium	5-10 years	3	3	3	3	3	3	3	3	3	3
R113	Private university	Central	Medium	5-10 years	3	3	4	4	4	3	3	4	4	4
R114	Deemed university	North-East	Large	5-10 years	3	4	3	4	4	4	4	4	4	3
R115	Private university	East	Large	<5 years	4	4	3	5	4	4	4	4	5	4
R116	Deemed university	North	Medium	5-10 years	3	3	2	3	4	3	3	4	4	3
R117	Central university	East	Small	11-20 years	4	4	3	4	4	3	3	4	3	4
R118	Government college	East	Small	5-10 years	4	3	3	4	3	3	3	3	4	3
R119	Private university	East	Medium	11-20 years	3	4	2	4	3	3	4	3	4	4
R120	Government college	South	Medium	5-10 years	3	4	2	4	3	3	3	3	4	4
R121	State university	Central	Small	<5 years	4	4	3	4	4	4	4	3	4	3
R122	Government college	East	Medium	5-10 years	4	4	3	4	4	4	3	3	4	4
R123	Autonomous HEI	Central	Medium	<5 years	3	4	3	4	4	4	4	4	4	3
R124	Government college	North	Small	11-20 years	3	3	2	3	3	3	2	3	4	3
R125	Private university	North-East	Medium	5-10 years	3	3	3	4	3	2	3	4	3	4
R126	Deemed university	South	Large	5-10 years	4	4	4	5	4	5	4	4	4	4
R127	Private university	West	Large	<5 years	4	3	2	4	4	5	5	5	4	4
R128	Deemed university	Central	Large	11-20 years	4	4	3	5	4	4	4	4	4	4
R129	Central university	East	Large	5-10 years	4	3	3	4	4	5	4	4	4	4
R130	Autonomous HEI	North	Medium	5-10 years	4	4	3	4	4	4	4	4	4	3
R131	State university	North	Medium	11-20 years	4	4	3	4	3	3	3	3	4	3
R132	Autonomous HEI	North-East	Medium	5-10 years	4	4	3	4	3	3	3	3	4	4
R133	Central university	North-East	Large	5-10 years	4	3	2	4	4	4	4	4	4	4
R134	Deemed university	North-East	Large	11-20 years	2	3	1	3	4	3	3	4	3	4
R135	Central university	South	Medium	5-10 years	4	3	4	4	3	3	3	3	4	4
R136	Deemed university	North	Large	>20 years	4	4	3	4	4	5	5	5	5	4
R137	Private university	South	Large	<5 years	3	4	2	4	4	5	4	4	5	4
R138	Deemed university	East	Medium	5-10 years	3	3	2	4	3	4	4	4	4	3
R139	Central university	West	Medium	11-20 years	3	4	3	3	3	4	3	3	4	4
R140	Central university	South	Small	<5 years	4	4	4	5	3	3	3	3	5	3
R141	State university	South	Medium	5-10 years	4	4	4	4	4	4	4	4	5	4
R142	Deemed university	North-East	Small	>20 years	3	4	2	4	4	4	3	4	4	4
R143	Private university	Central	Large	11-20 years	3	4	3	4	4	4	4	4	4	3
R144	Private university	North	Large	<5 years	3	3	2	4	4	3	4	4	3	3
R145	Private university	East	Medium	<5 years	4	4	3	4	3	3	4	4	4	4
R146	Deemed university	East	Large	>20 years	3	3	2	3	4	4	4	4	4	3
R147	Autonomous HEI	East	Small	5-10 years	4	3	3	4	4	3	3	4	4	4
R148	State university	Central	Medium	5-10 years	3	2	2	3	3	3	3	3	3	4
R149	Autonomous HEI	North-East	Small	<5 years	4	3	3	4	4	4	3	4	4	3
R150	Central university	East	Large	5-10 years	5	4	4	4	4	4	5	5	4	4
R151	Government college	East	Small	5-10 years	4	4	2	4	3	3	2	3	4	3

Synthetic case ID	Institution Type	Region	Library Size Category	Professional Experience Category	AI Awareness	IndiaAI Mission Awareness	AIKosh Awareness	BHASHINI Awareness	AI Readiness	Digital Infrastructure	Staff AI Competency	Management Support	Perceived IndiaAI Relevance	Perceived AIKosh Relevance
R152	Private university	West	Medium	5-10 years	4	3	3	4	3	3	3	3	3	4
R153	Government college	North-East	Small	>20 years	3	3	2	4	3	3	3	3	5	3
R154	Deemed university	East	Medium	11-20 years	3	4	3	3	3	3	3	3	3	3
R155	Autonomous HEI	Central	Small	5-10 years	3	3	1	3	3	4	3	4	3	3
R156	Deemed university	North	Small	<5 years	4	4	3	5	3	3	3	3	4	4
R157	Private university	South	Large	5-10 years	4	4	3	4	4	4	4	5	5	4
R158	State university	East	Small	11-20 years	3	3	3	3	3	3	3	3	4	3
R159	State university	North-East	Medium	5-10 years	3	4	4	4	3	3	3	3	4	4
R160	State university	North	Medium	11-20 years	3	3	2	3	3	3	3	3	4	3
R161	Autonomous HEI	East	Small	11-20 years	3	3	3	4	3	4	4	4	4	4
R162	Central university	North-East	Large	11-20 years	3	3	4	4	4	4	4	4	4	3
R163	Deemed university	West	Medium	5-10 years	3	3	4	3	4	4	4	3	4	4
R164	Private university	East	Medium	<5 years	4	4	4	4	3	3	3	3	4	4
R165	Central university	Central	Medium	>20 years	3	3	3	4	4	4	3	4	5	4
R166	Government college	North	Large	>20 years	4	4	3	4	4	4	3	4	4	4
R167	Deemed university	North-East	Large	11-20 years	4	4	4	5	5	4	4	4	4	3
R168	State university	West	Medium	5-10 years	3	4	2	4	3	3	3	3	3	3
R169	Government college	Central	Small	11-20 years	3	3	2	3	3	3	4	3	4	3
R170	Central university	Central	Large	11-20 years	4	4	4	5	3	4	3	4	4	4
R171	State university	Central	Small	5-10 years	3	3	3	3	3	3	3	3	4	2
R172	Deemed university	North	Small	11-20 years	4	4	3	4	4	4	4	4	4	4
R173	Central university	East	Large	>20 years	4	4	4	4	3	4	3	4	4	4
R174	Central university	Central	Large	11-20 years	3	3	4	3	4	3	3	4	4	3
R175	State university	West	Large	5-10 years	2	3	2	3	3	3	3	3	3	4
R176	Autonomous HEI	North	Medium	11-20 years	4	4	3	5	4	4	4	4	4	4
R177	Deemed university	West	Medium	<5 years	3	3	3	4	4	4	4	4	4	4
R178	Government college	Central	Medium	5-10 years	3	4	3	4	3	4	3	3	3	4
R179	Private university	North-East	Large	5-10 years	4	4	4	4	4	5	4	4	5	4
R180	Deemed university	North-East	Large	11-20 years	4	4	3	4	4	4	4	5	5	4
R181	Private university	East	Large	5-10 years	3	3	3	4	4	4	4	4	4	4
R182	Autonomous HEI	South	Large	<5 years	4	4	3	4	3	4	3	4	3	4
R183	Central university	Central	Medium	11-20 years	4	4	3	4	4	4	3	4	4	4
R184	Private university	North	Medium	11-20 years	4	3	3	4	3	3	3	3	4	4
R185	Private university	East	Medium	5-10 years	3	4	2	3	4	3	3	4	4	3
R186	Government college	West	Small	11-20 years	3	3	2	3	4	4	3	3	4	3
R187	Deemed university	North	Large	11-20 years	3	3	2	4	4	4	4	4	4	4
R188	State university	West	Large	5-10 years	4	4	4	4	4	4	4	4	4	4
R189	Government college	South	Large	>20 years	3	3	2	4	4	3	4	4	4	3
R190	Government college	North	Medium	<5 years	3	3	3	4	3	3	3	3	4	4
R191	Government college	South	Medium	>20 years	3	3	4	4	3	3	3	3	3	3

Synthetic case ID	Institution Type	Region	Library Size Category	Professional Experience Category	AI Awareness	IndiaAI Mission Awareness	AIKosh Awareness	BHASHINI Awareness	AI Readiness	Digital Infrastructure	Staff AI Competency	Management Support	Perceived IndiaAI Relevance	Perceived AIKosh Relevance
R192	Government college	West	Medium	>20 years	4	4	3	4	4	4	3	4	4	3
R193	State university	West	Medium	11-20 years	4	4	3	4	3	4	2	3	4	4
R194	Deemed university	North-East	Large	11-20 years	5	4	4	5	3	4	4	4	4	4
R195	Central university	West	Large	<5 years	3	4	3	4	4	4	4	4	4	4
R196	Government college	Central	Large	5-10 years	5	5	5	5	4	5	4	4	4	4
R197	Deemed university	West	Medium	>20 years	4	4	3	4	4	3	4	3	4	4
R198	Government college	North	Large	<5 years	4	4	4	4	3	3	3	3	4	4
R199	State university	West	Small	11-20 years	3	4	2	4	3	3	3	4	4	3
R200	State university	North-East	Large	>20 years	4	4	4	4	3	4	4	3	4	4
R201	Central university	South	Large	5-10 years	4	4	3	4	3	3	3	3	3	3
R202	Autonomous HEI	East	Large	<5 years	3	3	3	4	3	4	3	4	4	4
R203	Deemed university	Central	Medium	11-20 years	3	4	3	4	4	4	3	4	3	4
R204	Private university	North	Medium	>20 years	3	3	4	4	4	4	4	4	4	4
R205	Central university	North	Large	11-20 years	3	4	4	4	4	4	4	4	3	4
R206	Private university	North-East	Medium	<5 years	3	4	4	4	3	4	3	4	4	3
R207	Government college	Central	Medium	>20 years	3	3	2	4	3	3	3	3	3	5
R208	State university	North-East	Large	5-10 years	3	4	3	4	3	3	3	3	3	4
R209	Deemed university	East	Small	>20 years	4	4	3	4	3	3	3	3	5	4
R210	Central university	North-East	Small	<5 years	3	4	3	3	3	3	2	3	5	3
R211	Government college	Central	Medium	11-20 years	4	4	3	4	4	4	3	4	3	4
R212	Deemed university	Central	Medium	11-20 years	4	4	3	4	3	3	4	3	4	3
R213	State university	North	Small	<5 years	3	3	2	3	4	4	3	4	4	3
R214	Central university	North	Large	>20 years	5	5	4	5	4	4	4	5	4	4
R215	Central university	Central	Medium	5-10 years	4	4	3	4	3	3	3	3	4	3
R216	Private university	North-East	Medium	>20 years	4	4	4	4	3	4	3	4	4	4
R217	Autonomous HEI	Central	Large	<5 years	4	4	3	4	4	4	4	4	4	4
R218	Deemed university	North-East	Large	11-20 years	5	4	4	5	4	4	4	4	5	5
R219	State university	North-East	Large	11-20 years	3	3	2	4	4	5	4	4	5	4
R220	State university	Central	Medium	>20 years	3	3	3	3	3	4	3	3	4	4
R221	Central university	North	Small	5-10 years	4	4	3	4	3	3	3	3	4	3
R222	Deemed university	North	Large	11-20 years	3	4	3	4	4	4	3	4	4	4
R223	Government college	South	Small	11-20 years	3	3	2	2	3	2	3	3	3	3
R224	Private university	West	Medium	<5 years	4	4	3	4	3	3	3	3	4	3
R225	Deemed university	North-East	Large	5-10 years	3	3	2	4	4	4	4	4	4	4
R226	Private university	Central	Medium	11-20 years	4	4	3	4	4	3	4	4	4	4
R227	State university	Central	Small	11-20 years	3	3	3	4	3	3	3	3	3	3
R228	Deemed university	West	Large	5-10 years	4	4	3	4	4	4	4	4	5	4
R229	Autonomous HEI	East	Medium	5-10 years	4	4	3	5	4	4	4	4	5	4
R230	Autonomous HEI	South	Medium	>20 years	4	4	4	5	4	3	3	4	4	4
R231	Central university	North	Large	<5 years	4	4	3	4	3	4	4	4	4	4

Synthetic case ID	Institution Type	Region	Library Size Category	Professional Experience Category	AI Awareness	IndiaAI Mission Awareness	AIKosh Awareness	BHASHINI Awareness	AI Readiness	Digital Infrastructure	Staff AI Competency	Management Support	Perceived IndiaAI Relevance	Perceived AIKosh Relevance
R232	Private university	South	Small	>20 years	3	3	2	4	3	4	3	3	3	3
R233	Government college	North-East	Medium	5-10 years	4	4	3	4	4	4	3	4	4	5
R234	Autonomous HEI	West	Medium	5-10 years	3	3	4	4	4	4	4	4	4	4
R235	Autonomous HEI	East	Medium	11-20 years	4	4	3	4	3	3	3	3	4	4
R236	State university	South	Small	<5 years	5	4	4	4	3	3	3	4	4	4
R237	Autonomous HEI	North-East	Large	<5 years	3	4	3	4	3	4	3	3	4	4
R238	State university	Central	Small	>20 years	3	3	2	3	3	3	4	3	3	4
R239	Central university	Central	Medium	11-20 years	3	3	2	3	4	4	3	4	3	3
R240	Deemed university	West	Small	5-10 years	3	3	2	3	4	3	4	4	3	4

Appendix Table A2. Synthetic case service ratings, barriers and perceived overall impact (part 2)

Synthetic case ID	Perceived BHASHINI Relevance	Multilingual Service Improvement	Information Retrieval Improvement	Reference Service Improvement	Research Support Improvement	Digital Library Enhancement	User Service Innovation	Perceived Efficiency	Data Privacy Concern	Skill Gap	Financial Constraint	Infrastructure Constraint	Ethical Concern	Overall AI Initiative Impact
R001	5	4	4	5	4	4	4	4	4	4	4	4	3	4
R002	4	3	3	3	3	3	3	3	3	4	4	4	4	3
R003	4	4	5	5	4	5	4	4	3	4	3	4	4	4
R004	4	4	4	4	4	4	3	4	3	4	3	3	3	4
R005	4	4	4	4	4	4	4	4	3	4	3	4	3	3
R006	4	4	4	4	4	4	4	5	3	3	3	4	3	4
R007	4	4	4	4	4	3	3	4	4	4	3	3	3	4
R008	3	3	3	3	3	3	3	3	4	5	4	4	4	4
R009	3	4	4	3	4	3	3	4	4	4	3	4	3	4
R010	4	4	4	4	4	4	4	4	4	3	3	4	3	4
R011	5	4	5	4	4	4	4	4	3	4	3	4	3	4
R012	5	4	4	3	4	4	4	4	3	4	4	4	4	3
R013	4	4	4	4	4	4	4	4	3	4	3	3	3	4
R014	4	3	3	3	3	3	3	3	3	3	3	3	3	4
R015	4	4	3	3	3	3	3	4	3	4	4	4	3	3
R016	4	4	4	4	4	4	4	4	3	4	4	4	3	4
R017	4	3	3	3	3	4	4	3	3	4	4	3	3	3
R018	4	5	5	5	5	4	4	5	4	4	5	4	4	4
R019	4	3	4	4	4	4	3	4	4	3	3	4	3	3
R020	4	5	4	4	5	4	4	5	4	4	4	4	4	4
R021	3	4	4	2	3	3	4	3	3	4	3	4	3	3
R022	4	3	4	3	3	3	4	4	3	3	3	3	3	3
R023	4	4	4	4	4	4	3	4	2	3	4	3	2	4
R024	4	3	4	4	4	4	4	4	3	4	4	4	4	4
R025	4	3	3	3	3	3	3	3	3	4	4	5	4	3
R026	4	4	5	4	4	4	3	4	3	5	4	4	4	4
R027	4	4	3	4	4	3	3	3	4	5	4	4	4	3
R028	3	3	3	3	4	4	3	4	4	4	3	4	3	3
R029	5	4	4	4	4	4	4	4	4	4	3	3	4	4
R030	4	4	4	3	3	3	4	3	3	4	3	4	4	3
R031	5	4	4	4	5	4	4	5	3	3	3	3	3	4
R032	4	3	3	3	4	4	3	3	4	4	5	4	4	4
R033	5	3	3	3	4	4	4	4	3	4	3	3	3	4
R034	4	3	3	3	3	3	3	3	3	4	3	3	3	3
R035	4	4	4	4	4	4	4	4	4	4	4	4	3	3
R036	4	4	4	4	4	4	4	5	3	4	3	4	3	4
R037	5	4	3	4	4	4	4	3	3	3	3	4	3	4
R038	4	4	4	4	4	4	4	4	4	5	4	4	4	4

Synthetic case ID	Perceived BHASHINI Relevance	Multilingual Service Improvement	Information Retrieval Improvement	Reference Service Improvement	Research Support Improvement	Digital Library Enhancement	User Service Innovation	Perceived Efficiency	Data Privacy Concern	Skill Gap	Financial Constraint	Infrastructure Constraint	Ethical Concern	Overall AI Initiative Impact
R039	4	4	5	3	4	4	4	4	3	4	4	4	4	4
R040	4	3	3	3	4	3	4	3	3	5	4	4	3	4
R041	4	4	4	4	3	4	4	4	4	4	3	4	3	4
R042	4	3	3	3	3	3	3	3	4	4	3	4	4	4
R043	4	5	5	5	5	5	5	5	4	5	4	5	4	5
R044	4	3	3	4	3	3	4	3	4	4	4	4	3	4
R045	4	4	4	4	4	4	4	4	4	4	3	3	4	4
R046	4	4	4	4	4	4	4	4	3	3	3	3	3	3
R047	4	4	4	4	4	4	4	5	3	4	3	4	3	3
R048	4	3	3	3	3	4	3	4	4	5	4	4	4	3
R049	4	5	4	4	4	5	4	5	4	4	4	4	4	4
R050	5	5	3	3	4	4	4	3	4	4	4	5	3	3
R051	4	4	4	4	4	4	4	4	4	4	4	4	4	4
R052	4	3	3	4	4	4	4	4	3	5	3	3	3	4
R053	3	3	4	3	3	4	4	3	4	5	4	4	4	3
R054	4	3	4	4	4	3	3	3	4	4	3	4	3	3
R055	4	4	4	4	4	5	4	4	4	4	3	4	3	4
R056	4	4	4	4	4	4	4	4	3	4	3	3	3	4
R057	4	4	3	3	3	4	4	3	3	4	4	3	3	4
R058	4	4	4	3	4	3	4	3	3	4	3	3	3	3
R059	4	4	4	4	4	4	3	4	5	5	5	4	4	4
R060	4	4	4	4	4	4	3	4	4	4	2	4	3	3
R061	4	4	4	4	4	4	4	4	3	4	3	3	4	3
R062	5	5	5	4	5	4	4	5	4	4	3	3	4	4
R063	4	4	4	3	4	4	3	3	5	5	4	4	4	4
R064	4	3	4	4	4	4	3	4	4	4	4	4	3	3
R065	4	4	4	4	4	4	4	4	2	4	2	2	3	4
R066	3	3	4	4	4	4	3	4	4	5	4	4	4	3
R067	4	4	4	5	5	4	5	4	3	4	4	3	2	4
R068	4	2	3	3	3	4	3	3	3	4	3	4	3	3
R069	4	4	4	3	4	4	3	3	5	4	4	4	4	3
R070	4	3	4	4	4	4	4	4	4	4	4	4	4	4
R071	4	3	4	3	4	4	4	4	3	4	3	3	4	3
R072	4	4	3	3	3	3	3	3	4	4	4	4	4	3
R073	3	4	4	4	4	4	3	3	3	4	4	4	3	3
R074	4	4	4	3	4	4	4	3	3	4	4	4	3	3
R075	4	4	4	3	3	4	3	4	3	4	4	4	3	3
R076	4	4	4	4	3	4	4	4	3	4	3	3	3	3
R077	3	3	3	3	4	4	3	4	4	3	3	4	4	3
R078	4	4	4	4	4	4	3	4	3	4	3	3	3	4

Synthetic case ID	Perceived BHASHINI Relevance	Multilingual Service Improvement	Information Retrieval Improvement	Reference Service Improvement	Research Support Improvement	Digital Library Enhancement	User Service Innovation	Perceived Efficiency	Data Privacy Concern	Skill Gap	Financial Constraint	Infrastructure Constraint	Ethical Concern	Overall AI Initiative Impact
R079	4	4	4	3	4	4	4	4	3	4	3	3	3	3
R080	4	4	4	4	3	4	4	4	4	4	4	4	4	4
R081	4	5	4	4	4	4	4	5	3	3	3	4	3	4
R082	4	4	4	3	3	3	3	4	5	4	4	4	4	3
R083	4	4	5	4	4	4	5	4	3	4	3	3	3	3
R084	4	3	4	3	4	4	3	4	4	4	4	4	3	3
R085	4	3	3	4	3	3	3	3	4	4	4	4	4	4
R086	4	4	5	4	4	4	4	4	5	4	3	4	4	4
R087	4	4	4	4	3	4	4	4	4	4	3	4	4	4
R088	5	4	4	4	3	4	4	4	4	4	4	3	4	5
R089	4	4	4	4	4	4	4	4	4	5	3	4	3	4
R090	4	4	3	4	4	4	3	4	4	4	3	4	3	3
R091	4	4	4	4	3	4	4	4	3	4	3	2	3	4
R092	4	3	3	3	3	3	4	3	4	4	4	4	4	3
R093	4	4	4	4	4	5	4	5	3	3	3	3	3	4
R094	4	4	4	4	4	4	3	4	4	4	4	5	4	4
R095	4	4	4	4	4	4	4	4	5	4	4	5	4	4
R096	4	5	4	5	5	5	4	4	4	4	3	4	4	4
R097	4	3	3	2	3	3	2	3	3	4	3	3	4	3
R098	4	4	4	4	4	4	4	4	4	4	3	3	4	4
R099	4	3	3	3	3	3	3	3	4	4	3	4	4	3
R100	4	4	3	4	3	2	3	4	4	4	3	4	3	3
R101	4	4	4	4	4	4	5	4	4	5	4	4	4	3
R102	4	3	4	3	4	4	3	4	3	3	3	3	3	3
R103	4	3	4	4	3	3	3	3	4	5	3	5	4	3
R104	3	3	4	3	4	3	3	4	3	4	3	4	3	3
R105	4	4	4	3	4	4	4	4	3	3	3	3	3	3
R106	3	4	4	4	4	4	4	4	3	4	4	3	3	3
R107	4	4	4	3	4	4	3	4	4	5	4	4	4	4
R108	4	4	3	4	4	4	4	3	3	4	4	4	3	4
R109	4	4	3	4	3	3	3	3	4	4	3	4	3	4
R110	5	5	5	5	5	5	5	4	4	4	5	4	4	4
R111	4	4	4	3	4	3	4	4	4	4	4	4	3	3
R112	4	3	3	3	3	3	3	3	4	5	4	4	3	3
R113	4	4	4	4	3	4	4	4	4	4	3	4	4	4
R114	4	4	4	3	4	4	4	4	4	4	4	4	4	4
R115	5	4	4	5	4	4	4	5	3	4	4	3	3	4
R116	4	4	4	4	5	4	5	4	3	4	4	3	3	4
R117	4	4	4	3	4	4	4	4	4	4	4	4	4	4
R118	4	4	5	4	4	4	4	4	4	5	4	4	4	3

Synthetic case ID	Perceived BHASHINI Relevance	Multilingual Service Improvement	Information Retrieval Improvement	Reference Service Improvement	Research Support Improvement	Digital Library Enhancement	User Service Innovation	Perceived Efficiency	Data Privacy Concern	Skill Gap	Financial Constraint	Infrastructure Constraint	Ethical Concern	Overall AI Initiative Impact
R119	3	4	3	3	3	4	4	3	4	4	4	4	4	3
R120	4	4	4	4	4	4	4	4	3	4	4	3	4	3
R121	4	4	4	3	4	4	3	4	4	4	4	5	4	4
R122	4	4	5	4	4	4	4	5	4	4	4	4	4	4
R123	4	4	3	4	4	5	4	4	4	4	3	3	3	4
R124	3	3	3	3	3	3	3	4	5	4	3	3	3	3
R125	4	4	4	4	3	3	4	3	4	4	4	4	4	4
R126	4	4	4	4	4	4	4	4	4	4	4	4	3	4
R127	5	4	4	5	5	5	5	4	3	4	4	4	4	4
R128	5	5	4	4	4	4	4	4	4	5	4	4	4	4
R129	5	5	4	4	5	4	4	4	4	4	3	3	4	4
R130	4	4	4	4	4	4	4	4	3	4	3	3	4	4
R131	4	4	4	3	4	5	4	4	4	5	3	4	3	4
R132	4	4	4	3	4	4	3	3	3	3	2	4	3	3
R133	4	4	4	4	4	4	4	4	3	4	3	3	3	4
R134	4	3	4	3	3	3	3	3	4	4	4	4	4	4
R135	3	4	4	4	4	4	4	4	3	4	3	3	4	3
R136	5	4	4	4	4	5	5	4	3	4	4	4	3	4
R137	5	4	4	4	4	4	4	4	3	4	4	3	3	4
R138	4	3	4	3	3	3	3	3	3	3	3	3	3	4
R139	4	4	4	4	4	4	3	3	3	3	3	4	2	3
R140	4	4	4	4	4	4	4	4	3	4	4	4	4	4
R141	5	5	5	5	4	5	5	4	3	4	4	4	3	5
R142	4	4	4	4	4	4	3	4	3	4	3	4	4	4
R143	4	3	3	4	2	4	3	3	4	4	4	4	4	3
R144	4	3	4	4	4	4	4	4	3	4	3	3	4	4
R145	4	4	4	3	4	4	4	4	5	4	3	5	4	4
R146	3	4	4	3	3	3	4	4	4	4	4	4	3	3
R147	4	4	4	3	4	4	4	4	4	4	4	4	4	4
R148	4	3	4	3	3	3	3	3	2	4	3	3	3	2
R149	5	4	4	3	4	4	4	4	4	4	4	4	4	4
R150	5	5	5	5	5	5	5	5	4	4	3	4	4	5
R151	4	4	4	3	4	4	4	3	4	3	3	4	3	4
R152	4	3	3	3	3	4	3	4	4	3	3	4	3	3
R153	4	3	3	3	4	4	3	3	4	4	4	4	3	4
R154	4	4	4	3	4	3	3	3	3	4	3	4	3	3
R155	3	3	3	3	3	3	3	3	4	4	4	5	5	3
R156	4	4	4	4	4	4	3	3	4	4	4	4	4	4
R157	4	4	4	4	4	5	4	5	4	4	3	3	4	4
R158	4	3	4	4	3	3	4	3	4	4	3	3	4	4

Synthetic case ID	Perceived BHASHINI Relevance	Multilingual Service Improvement	Information Retrieval Improvement	Reference Service Improvement	Research Support Improvement	Digital Library Enhancement	User Service Innovation	Perceived Efficiency	Data Privacy Concern	Skill Gap	Financial Constraint	Infrastructure Constraint	Ethical Concern	Overall AI Initiative Impact
R159	4	3	4	4	3	3	3	4	3	3	3	3	3	3
R160	4	4	4	3	3	3	4	4	4	5	4	5	4	3
R161	4	3	4	4	4	4	3	3	3	4	3	4	3	3
R162	4	3	3	3	3	3	4	3	3	3	3	3	3	4
R163	4	5	4	4	4	4	4	4	4	3	3	3	3	4
R164	4	4	4	3	4	4	3	4	3	4	3	4	4	3
R165	4	4	4	4	4	3	4	3	3	4	3	4	3	4
R166	5	4	4	4	4	4	3	4	3	4	4	4	4	5
R167	5	4	4	4	4	4	4	4	4	4	4	4	3	4
R168	4	3	3	2	3	3	3	3	3	4	4	3	3	3
R169	3	3	3	3	4	3	3	4	3	3	3	4	3	3
R170	4	4	4	4	4	4	3	3	4	5	5	4	4	4
R171	5	4	4	3	4	4	4	3	4	4	4	4	4	3
R172	4	4	4	4	4	4	4	4	4	3	3	4	3	4
R173	4	4	4	4	3	4	4	3	3	3	3	3	3	4
R174	4	4	4	4	4	3	3	4	3	3	2	3	3	4
R175	3	3	3	3	4	3	3	3	4	4	3	4	3	3
R176	4	4	4	3	4	4	4	4	3	4	4	4	3	4
R177	4	4	3	4	4	4	4	4	4	3	3	3	3	3
R178	4	4	3	3	3	4	3	3	4	4	3	3	3	4
R179	5	5	4	4	5	5	4	5	4	4	4	4	4	4
R180	5	5	5	4	5	5	4	5	4	4	3	4	4	5
R181	4	5	4	4	5	4	5	5	4	4	3	3	3	4
R182	4	3	3	3	3	3	3	3	4	3	3	3	3	3
R183	4	5	5	4	4	4	5	5	4	5	4	4	4	5
R184	5	4	4	4	4	4	4	4	4	4	4	4	3	4
R185	5	4	4	4	3	4	4	4	3	3	3	3	3	4
R186	3	3	3	3	3	3	3	4	4	4	4	4	5	3
R187	4	4	4	4	4	4	4	4	3	4	3	4	3	4
R188	4	5	5	5	4	5	5	4	4	4	5	4	5	4
R189	4	4	4	3	4	3	4	4	3	4	3	4	3	3
R190	4	4	4	4	4	4	3	4	4	4	3	4	4	3
R191	4	4	4	3	4	4	3	4	4	4	4	4	3	3
R192	4	4	4	4	4	4	4	4	3	3	3	3	3	3
R193	4	3	3	3	3	3	3	3	4	3	3	4	3	3
R194	5	5	5	5	4	5	5	5	4	4	4	3	3	5
R195	4	5	4	5	4	4	4	4	4	3	3	4	3	4
R196	5	5	5	5	5	5	5	4	3	3	3	3	3	4
R197	4	4	4	4	4	4	4	4	4	5	3	4	4	3
R198	4	4	4	4	4	4	4	4	4	4	3	3	3	3

Synthetic case ID	Perceived BHASHINI Relevance	Multilingual Service Improvement	Information Retrieval Improvement	Reference Service Improvement	Research Support Improvement	Digital Library Enhancement	User Service Innovation	Perceived Efficiency	Data Privacy Concern	Skill Gap	Financial Constraint	Infrastructure Constraint	Ethical Concern	Overall AI Initiative Impact
R199	4	3	3	3	3	3	3	3	3	3	3	3	3	3
R200	4	4	5	4	5	5	5	4	3	4	3	3	4	4
R201	3	4	3	3	4	4	4	4	3	3	3	4	2	3
R202	4	5	4	4	5	4	5	4	4	4	4	4	4	4
R203	4	4	4	4	4	4	4	4	4	4	3	4	3	4
R204	4	4	4	4	3	4	3	4	3	3	3	3	3	4
R205	5	4	4	4	4	4	4	4	3	4	4	4	3	4
R206	4	3	4	3	3	3	3	3	3	4	3	4	3	3
R207	4	4	4	3	4	4	3	3	3	4	4	4	4	3
R208	4	4	4	3	4	4	3	4	4	4	4	4	3	3
R209	4	4	5	4	5	4	5	4	3	3	3	3	3	3
R210	4	3	4	3	3	3	4	4	4	5	4	4	4	4
R211	4	4	4	4	3	4	4	4	3	3	3	3	3	3
R212	4	4	4	4	4	3	4	4	4	3	4	3	3	3
R213	4	4	4	4	3	4	4	3	4	4	4	5	3	3
R214	5	5	4	4	4	4	5	4	3	3	3	3	2	4
R215	4	4	3	4	3	3	3	3	4	4	4	4	4	3
R216	4	3	4	3	3	3	4	4	4	4	4	4	4	3
R217	4	4	4	4	4	4	4	4	4	4	4	3	3	4
R218	5	4	3	3	4	4	4	4	4	4	3	4	3	4
R219	5	5	4	4	4	4	4	4	3	3	2	2	3	4
R220	4	3	4	4	3	4	3	4	4	4	4	4	3	4
R221	3	4	3	4	3	4	4	3	4	5	4	4	4	3
R222	4	4	4	4	4	4	4	5	4	4	4	3	4	4
R223	3	3	4	4	3	4	3	3	4	4	4	4	3	3
R224	3	4	3	3	3	4	4	3	4	5	4	4	4	3
R225	4	4	5	4	4	4	4	4	4	4	3	3	4	4
R226	4	4	4	3	4	4	4	4	2	3	2	3	2	4
R227	3	3	3	3	3	2	2	3	4	5	3	4	5	3
R228	4	4	4	5	5	4	4	5	4	4	3	4	4	4
R229	4	4	4	4	3	4	3	3	3	4	4	4	4	4
R230	4	5	4	4	4	4	4	3	4	4	4	4	3	4
R231	4	4	3	3	4	3	3	3	4	4	4	4	4	4
R232	4	4	4	3	4	3	4	3	5	5	4	4	4	4
R233	4	4	4	4	4	4	4	4	4	4	4	4	3	4
R234	4	3	3	3	4	4	4	4	4	4	3	4	3	3
R235	4	4	4	4	4	4	3	4	4	4	4	4	4	3
R236	4	4	4	4	4	4	4	4	3	4	3	4	3	4
R237	3	3	4	4	4	3	4	4	4	4	4	4	3	3
R238	4	4	3	3	3	3	3	4	3	4	3	3	3	3

Synthetic case ID	Perceived BHASHINI Relevance	Multilingual Service Improvement	Information Retrieval Improvement	Reference Service Improvement	Research Support Improvement	Digital Library Enhancement	User Service Innovation	Perceived Efficiency	Data Privacy Concern	Skill Gap	Financial Constraint	Infrastructure Constraint	Ethical Concern	Overall AI Initiative Impact
R239	4	3	4	4	4	4	3	4	4	4	4	4	3	4
R240	4	4	3	3	4	4	4	4	3	4	4	4	3	4

Appendix B: Complete Tukey HSD comparison audit

Category 1	Category 2	Mean diff.	Tukey p-adj	95% simultaneous CI	Sig.
Autonomous HEI	Central university	0.125	0.9117	[-0.228, 0.478]	No
Autonomous HEI	Deemed university	0.150	0.8261	[-0.203, 0.503]	No
Autonomous HEI	Government college	-0.175	0.7119	[-0.528, 0.178]	No
Autonomous HEI	Private university	0.125	0.9117	[-0.228, 0.478]	No
Autonomous HEI	State university	-0.175	0.7119	[-0.528, 0.178]	No
Central university	Deemed university	0.025	1.0000	[-0.328, 0.378]	No
Central university	Government college	-0.300	0.1461	[-0.653, 0.053]	No
Central university	Private university	0.000	1.0000	[-0.353, 0.353]	No
Central university	State university	-0.300	0.1461	[-0.653, 0.053]	No
Deemed university	Government college	-0.325	0.0905	[-0.678, 0.028]	No
Deemed university	Private university	-0.025	1.0000	[-0.378, 0.328]	No
Deemed university	State university	-0.325	0.0905	[-0.678, 0.028]	No
Government college	Private university	0.300	0.1461	[-0.053, 0.653]	No
Government college	State university	0.000	1.0000	[-0.353, 0.353]	No
Private university	State university	-0.300	0.1461	[-0.653, 0.053]	No

Note: All 15 pairwise comparisons were performed on the same 240 synthetic cases (40 per institution category); Tukey controls family-wise error at .05. Differences are group 2 minus group 1. No confidence interval excludes zero.