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The Status of Data Literacy among Razi University Students

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Abstract

Purpose: This study evaluates the data literacy status of Razi University students.

Methodology: The research, employing a survey-based approach, targeted all Razi University students for the 2022–2023 academic year (N = 11,080). Using the Krejcie and Morgan table, a stratified random sample of 371 students was selected. Data were collected via the Data Literacy Questionnaire by Waili, Sinnamon, & Kopak (2022), and analyzed using inferential and descriptive statistics.

Findings: The data literacy levels of students were below average. Among the dimensions assessed, data usage had the highest proficiency, whereas data management was the weakest. Data literacy correlated significantly with educational level and age but showed no significant association with gender, academic term, field of study, or faculty.

Conclusion: The findings reveal inadequate data literacy among students, underscoring the need for educational interventions such as targeted programs and seminars. Universities should prioritize improving these skills, while students must actively seek to enhance their competencies.

Value: This study provides actionable insights for universities to design programs aimed at strengthening students' data literacy, fostering analytical capabilities in data-intensive disciplines.

Keywords: *Data usage, Data comprehension, Data management, Razi University, Higher education*

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Extended Abstract

Introduction: In the era of data-driven decision-making, data has emerged as a vital resource for personal and professional success. The growing volume of data across domains necessitates robust data literacy skills to manage, interpret, and utilize data effectively. This study explores the data literacy levels of students at Razi University to identify strengths and areas requiring improvement, aiming to contribute to the development of informed educational strategies.

Purpose: This research aims to determine the data literacy status of Razi University students and investigate variations based on demographic factors.

Methodology: This applied research utilized a survey approach. The statistical population comprised 11,080 Razi University students enrolled in the 2022–2023 academic year. A sample of 371 students, determined using the Krejcie and Morgan table, was selected via stratified random sampling. Data were gathered using the 13-item Data Literacy Questionnaire by Waili, Sinnamon, & Kopak (2022), which assesses five dimensions: data understanding, finding, reading and interpreting, managing, and usage. Responses were recorded on a five-point Likert scale. The data were analyzed using one-sample t-tests, ANOVA, and LSD post hoc tests.

Findings: The analysis revealed that the average data literacy score ($M = 30.71$, $SD = 6.415$) was significantly below the cutoff point of 39 ($t = -24.896$, $p < 0.05$). Among the dimensions, students performed best in data usage ($M = 8.05$) and worst in data management ($M = 4.52$).



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Table 1. Comparison of Data Literacy Mean with Its Cutoff Point

Variable	N	Mean	Standard Deviation	Test Value=39		
				T	Degrees of Freedom	Significance
Data Literacy	371	30.71	6.415	- 24.896	370	0.001

Demographic analysis indicated no significant differences in data literacy by gender, academic term, field of study, or faculty. However, educational level and age were significant predictors of data literacy. Doctoral students demonstrated significantly higher data literacy scores compared to bachelor's and master's students ($p < 0.05$). No significant differences were observed between bachelor's and master's students. Furthermore, academic semester did not significantly influence data literacy scores, suggesting that progression in semesters does not necessarily enhance these skills.

Table 2. LSD Post Hoc Test for Significant Differences in Data Literacy

Education Level	BA		MA	
	Difference	Significance	Difference	Significance
MA	0.039	(0.961)		
PhD	-3.416*	(0.002)	-3.455*	(0.005)
* Significance at the 0.05 level				

Conclusion: The findings highlight critical gaps in students' data literacy, particularly in data management, encompassing metadata handling and data reuse practices. Conversely, strengths were observed in data usage, such as ethical

utilization, statistical software proficiency, and result communication. These results emphasize the urgent need for universities to develop structured programs aimed at improving data literacy. Initiatives such as workshops, seminars, and curricular enhancements focusing on weaker areas like data management can bridge these gaps.

Value: By evaluating the data literacy levels of university students, this study offers a framework for designing targeted educational programs. These programs can enhance students' analytical and critical thinking skills, fostering proficiency in data-related fields and preparing graduates for data-intensive roles in academia and industry.

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