The Digital Divide 2.0:

Exploring AI Knowledge and Adoption Gaps in Kathmandu

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Abstract

Kathmandu is online, but is it ready for AI? This study asks who actually thrives when intelligent systems quietly shape search, news, payments, and study help. Using a cross-sectional survey of residents aged 13 and above (n = 101), we map Digital Divide 2.0 in the Valley, where the key currency is not connection but capability. We measure AI knowledge, usage, exposure through everyday apps, attitudes, and the gap between what people do and what they think they do with AI. The results are stark. Younger and more educated respondents lead on every metric of awareness and use, while older and less educated groups engage chiefly with AI integrated into everyday tools.

Forty two point six percent of participants use AI more than they realize, an invisible segment that clicks and swipes through algorithmic systems without naming them. Knowledge and use move together (r = 0.52). Adoption is high in ages 20 to 29 at 83 percent, low in ages 40 to 49 at 13 percent, and near zero for 50 plus. People see opportunity and want AI taught in schools, yet worry about displacement and trust. The take away is simple and urgent. Kathmandu's divide is now about skills, language, and confidence. Turn unconscious exposure into conscious competence and the gap can narrow. The study concludes that Kathmandu's digital divide is now defined by awareness and skill, not access, underscoring the importance of inclusive AI education and local-language learning initiatives.

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List of Abbreviations

AI	Artificial Intelligence
Apps	Applications
NIST	National Institute of Standards and Technology
r	Correlation Coefficient (statistical measure)
SME	Small and Medium Enterprises
STEM	Science, Technology, Engineering, and Mathematics
UNESCO	United Nations Educational, Scientific and Cultural Organization

Introduction

The rapid advancement of artificial intelligence (AI) is reshaping industries, education, and everyday life across the world. However, access to and understanding of these technologies are not evenly distributed, creating new forms of inequality in the digital era. Traditional notions of the digital divide which once defined mainly by who owns computers or has internet access are no longer sufficient to explain the disparities emerging today. In cities like Kathmandu, where internet penetration and smartphone use are relatively high, the divide has shifted from access to ability. Differences now arise from how people understand, interact with, and benefit from AI tools. This study explores these new dimensions of digital inequality, that we referred to as the Digital Divide 2.0, focusing on how residents of Kathmandu vary in their knowledge, awareness, and adoption of AI technologies.

The central problem addressed in this research lies in the growing gap between individuals who can understand, use, or benefit from AI technologies and those who cannot, even when both groups have similar access to digital infrastructure. This emerging AI literacy and adaptation gap risks reinforcing existing socio-economic inequalities and could limit the country's digital transformation. Understanding how such disparities form and persist is therefore essential for ensuring that AI-driven innovation contributes to inclusive growth rather than deepening existing divides.

The primary purpose of this study is to investigate the current level of AI knowledge, awareness, and adoption among residents of Kathmandu and to identify the factors that influence these differences. Specifically, the study seeks to examine how variations in age, education, and digital experience shape AI usage patterns and how these disparities reflect a broader shift toward capability-based digital inequality.

To achieve these aims, the study is guided by six key research questions: What is the current level of AI knowledge and awareness among residents of Kathmandu? How widely are AI-based tools and applications being adopted, and for what purposes? What socio-economic or educational factors are associated with AI adaptation and understanding? What are the major barriers to AI literacy and use, such as cost, lack of awareness, or language barriers? And finally, how do perceptions of AI differ across demographic groups in Kathmandu?

This study holds significance as one of the first localized analyses of AI literacy and adaptation in Nepal. Its findings are expected to inform educators, policymakers, and development practitioners who design digital literacy and AI awareness programs. Understanding where gaps exist will help shape more targeted interventions to ensure that all segments of the population can meaningfully participate in an AI-driven future.

The study is limited to the urban population within Kathmandu Valley and does not cover rural or semi-urban areas. Additionally, certain age groups, especially older adults are underrepresented, as the sample primarily includes younger respondents who are more digitally active. The scope is further limited to AI-related awareness and usage rather than broader aspects of digital or technological inequality. It is assumed that all respondents answered the questionnaire honestly and shared their genuine experiences and understanding of AI.

This paper comprises five chapters. The Introduction presents the background, objectives, and scope. The Literature Review explores prior studies on the digital divide and AI-related inequalities. The Methodology outlines the research design and analytical approach. The Findings detail and interpret survey results, while the Discussion and Conclusion summarize key insights and suggest directions for future research and policy.

Literature Review

Introduction to Concept

The digital divide has long been understood as the gap between individuals who have access to and can effectively use digital technologies, such as computers, mobile devices, and the Internet, and those who cannot. Early interpretations focused on physical access, whether people owned devices or had Internet connectivity, but this view soon proved too narrow. As technologies became integral to education, work, and communication, scholars emphasized that meaningful participation depends not only on access but also on digital literacy, motivation, and capability (van Dijk, 2005, 2017). This shift changed the focus from the digital divide to digital inequality, viewing technology not just as a tool or infrastructure but as a social resource that different groups benefit from unequally.

In recent years, the rise of artificial intelligence (AI) has introduced an advanced layer of disparity, often described as Digital Divide 2.0. This new divide distinguishes between those who can understand, adopt, and benefit from AI and those who cannot. Whereas the original divide asked who is online, the contemporary question asks who can thrive in an AI-driven society. Bridging this gap requires more than hardware distribution – it demands education systems and policies that foster critical awareness, algorithmic understanding, and responsible AI use.

Theoretical Background

The evolution of digital inequality is best captured through van Dijk's multi-level framework, which distinguishes between first-level (access), second-level (skills and usage), and third-level (outcome) divides (van Dijk, 2017). The first-level divide centers on device and network availability, while the second-level examines disparities in the ability to use technology

effectively. The third-level focuses on the benefits people gain from digital participation, such as information access, productivity, and social capital. These divides are sequential yet overlapping; unequal access leads to unequal use, which then leads to unequal outcomes.

Contemporary researchers have extended this logic to AI technologies, arguing that new gaps are forming along cognitive, linguistic, and ethical dimensions. AI adoption and its benefits disproportionately favor educated, English-proficient, and high-income users. This phenomenon, often referred to as the AI Divide, reflects how unequal exposure to algorithmic systems and machine-learning tools reinforces existing social hierarchies. Similarly, As AI increasingly permeates employment and education, inequalities in digital skills may evolve into inequalities in cognitive agency (UNESCO, 2023). These theories suggest that in the AI era, closing the digital divide means addressing not just infrastructure, but the human capacities like literacy, confidence, and trust required to participate in an intelligent digital ecosystem.

National and Local Context: Nepal and Kathmandu

Nepal exemplifies the coexistence of high connectivity and deep inequality in digital engagement. The Digital 2023 Report indicates that Internet penetration stands at 51.6% with 15.85 million users, while smartphone ownership reaches over 73% of the population (Kemp, 2023; MyRepublica, 2023). Yet, the Nepal Rastra Bank (2023) highlights that only 31% of Nepalis are digitally literate, despite a reported 91% network coverage. This mismatch between access and effective use reveals a structural skill gap that limits how citizens engage with emerging technologies.

Within Kathmandu Valley, these disparities manifest in subtle ways. Urban users enjoy better access to high-speed Internet and AI-enabled apps, but awareness and literacy remain uneven.

Many residents use AI-powered tools, such as social media recommendations, digital payment systems, and translation apps without recognizing them as AI. Traditional practices like preferring cash transactions or verifying online payments at banks reflect limited digital confidence (Online Khabar, 2023). Moreover, cybercrime trends indicate that increasing connectivity without adequate education amplifies risks. Thus, Kathmandu presents a paradox: it is digitally connected yet socially stratified, where technology's benefits depend heavily on education, English proficiency, and exposure to digital environments.

Barriers, Risks, and Governance

Despite national ambitions for digital transformation, Nepal faces significant structural, linguistic, and institutional challenges that restrict equitable AI adoption. The Digital Nepal Framework (2019) outlines goals for connectivity and e-services, but rural areas still face unreliable networks and affordability constraints. Limited English fluency, a shortage of trained teachers, and minimal AI-specific curricula hinder skill development in both schools and small enterprises. Data privacy and cybersecurity concerns further undermine trust, even as the Privacy Act (2018) and National Cyber Security Policy (2023) attempt to regulate these domains (Government of Nepal, 2018; 2023).

At the global level, governance frameworks such as the UNESCO Recommendation on the Ethics of AI (2021), the OECD AI Principles (2019/2024), and the NIST AI Risk Management Framework (2023) emphasize fairness, transparency, and accountability in AI systems. Nepal's recent National AI Policy (2025) aims to align with these standards, prioritizing human-resource development, privacy, and collaboration (Kathmandu Post, 2025; OneTrust DataGuidance, 2025). However, detailed implementation and local capacity building remain limited. Without clear training pathways, local-language support, and ethical oversight, these governance

measures risk becoming symbolic rather than transformative. As a result, trust deficits and uneven institutional readiness continue to hinder AI literacy and participation, particularly among marginalized groups.

Synthesis and Research Gap

Across the reviewed literature, a consistent pattern emerges: Nepal's digital transformation has expanded connectivity but not inclusivity. Most national studies quantify Internet or device access, leaving unexamined how individuals understand and use AI-enabled systems in daily life. Existing evidence shows that younger, educated, and urban populations are early adopters of generative AI, while older or less-educated citizens report low awareness and digital confidence. Yet, there is minimal empirical research exploring these disparities at the city level.

This study therefore addresses the unexplored dimension of AI-related digital inequality in Kathmandu Valley. It investigates how AI knowledge, awareness, and adoption vary across age, education, and occupation; identifies the main barriers including cost, language, and trust, then assesses whether AI is deepening existing digital gaps. By examining these factors through local data, the study contributes to understanding how Digital Divide 2.0 unfolds in an urban South Asian context, informing both education and policy strategies aimed at inclusive AI literacy and participation.

Methodology

This study employed a cross-sectional descriptive survey to explore how artificial intelligence (AI) contributes to or further exacerbates digital inequality among residents of Kathmandu Valley. The research aimed to capture a snapshot of people's AI knowledge, awareness, and usage across different demographic groups within a short timeframe. The target population included individuals aged 13 years and above residing in Kathmandu, representing a range of educational and occupational backgrounds.

A non-probability convenience sampling approach was adopted, as most participants were reached through the researcher's personal and professional contacts. This method was appropriate for an exploratory study intended to identify emerging trends rather than to produce generalizable statistical estimates. In total, 101 valid responses were collected over a period of about three weeks in October 2025. The sample was skewed toward younger participants, reflecting the greater digital activity and accessibility of youth compared with older adults.

Data were collected using a structured Google Form questionnaire distributed via social media and email. For individuals with limited literacy or English proficiency, short in-person interviews were conducted, and the researcher entered their responses directly into the same online form. The questionnaire included sections on demographic characteristics (age, gender, education, occupation), AI knowledge and awareness, patterns of AI use and applications, perceived benefits such as time savings or quality improvements, and barriers including awareness, cost, language, trust, and privacy concerns. Email addresses were collected solely to manage response verification and prevent duplication. All data were stored securely in Google Sheets within a private Google Drive folder accessible only to the researcher.

Data analysis was conducted using descriptive statistics such as frequencies, percentages, and mean scores to summarize participants' responses. Simple bar charts and tables were generated in Google Sheets to visualize differences across age and education groups. The analysis focused on identifying patterns of AI knowledge, adoption, and attitudes, and on highlighting the ways in which these may reflect or deepen the existing digital divide in Kathmandu.

Ethical considerations were prioritized throughout the study. Participation was entirely voluntary, and respondents were informed about the purpose and scope of the research prior to data collection. Only limited personal information was gathered, and findings are presented in aggregate form to ensure anonymity and confidentiality. All procedures complied with basic ethical standards of privacy and informed consent.

However, several limitations must be acknowledged. The convenience sampling method may have led to selection bias, overrepresenting younger, more educated, and digitally active individuals. As such, the findings should be interpreted as indicative rather than representative of the wider Kathmandu population. The reliance on self-reported data also introduces potential bias in participants' perceptions of their own skills and behaviors. Moreover, individuals with very low digital comfort or Internet access may be underrepresented. Despite these limitations, the study provides useful exploratory insights into the patterns and challenges of AI-related digital inequality within Kathmandu's increasingly digital environment.

Findings

Demographic Profile

Table 1: Distribution of Respondents by Age and Occupation

Age group	Student	Office/ Professional	Business Owner	Homemaker	Retired	Other	Total
13–19	41 (93.2%)	1 (2.3%)	0	0	0	2 (4.5%)	44
20–29	26 (74.3%)	6 (17.1%)	1 (2.9%)	0	0	2 (5.7%)	35
30–39	0	2 (66.7%)	1 (33.3%)	0	0	0	3
40–49	2 (13.3%)	8 (53.3%)	3 (20.0%)	1 (6.7%)	1 (6.7%)	0	15
50+	0	2 (50.0%)	1 (25.0%)	1 (25.0%)	0	0	4
Total	69 (68.3%)	19 (18.8%)	6 (5.9%)	2 (2.0%)	1 (1.0%)	4 (4.0%)	101

The study analyzed 101 valid responses from residents of Kathmandu Valley. The age distribution was skewed toward younger participants, with 43.6 percent aged 13–19 and 34.7 percent aged 20–29. Smaller shares were aged 40–49 (14.9 percent), 50 and above (4.0 percent), and 30–39 (3.0 percent). Education levels were relatively high overall, with more than half of respondents reporting higher secondary or bachelor's qualifications, and a sizable proportion identifying as students. This profile reflects a digitally active urban sample and helps explain several patterns observed in knowledge, adoption, and attitudes that follow. At the same time, the underrepresentation of older adults means results should be interpreted as indicative of trends rather than statistically representative of the broader population.

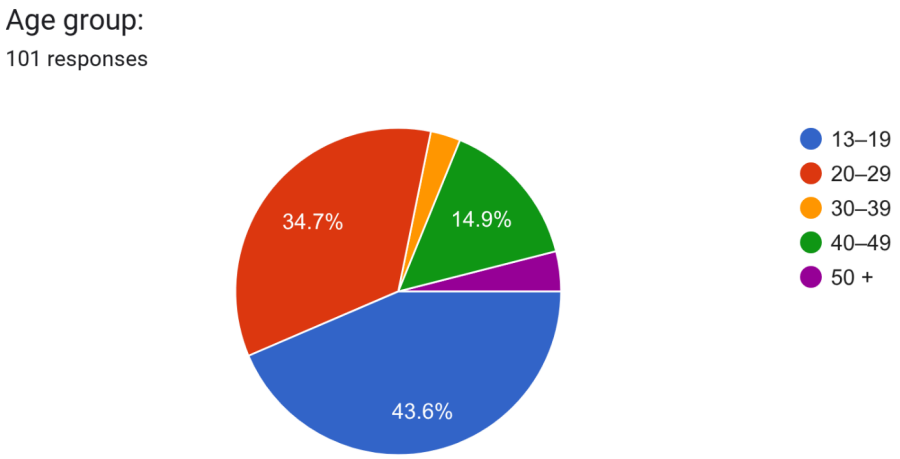

Figure 1: Demographics by Age

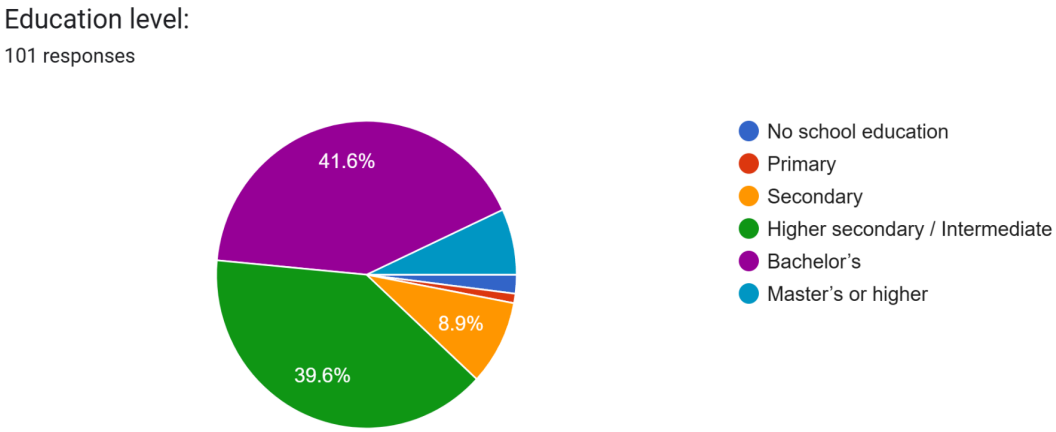

Figure 2: Demographics by Education Level

AI Knowledge and Awareness

The AI Knowledge Index, constructed as the mean of five Likert items on a 1 to 5 scale, averaged approximately 3.85 across the sample, indicating moderate awareness. Knowledge varied strongly by age and education. Respondents aged 20–29 reported the highest mean score at 4.13, followed by those aged 13–19 at 3.95. Scores declined among older adults, with means of 2.52 for ages 40–49 and 1.95 for ages 50 and above, while the small 30–39 group averaged

3.33. An education gradient was also evident. Bachelor's degree holders averaged 4.11 and master's or higher averaged 3.97, compared with 3.73 for higher secondary, 2.29 for secondary, 1.40 for primary, and 1.00 for no school education.These patterns suggest that AI awareness in Kathmandu is concentrated among younger and more educated residents and that knowledge gaps widen with age and lower levels of formal education.

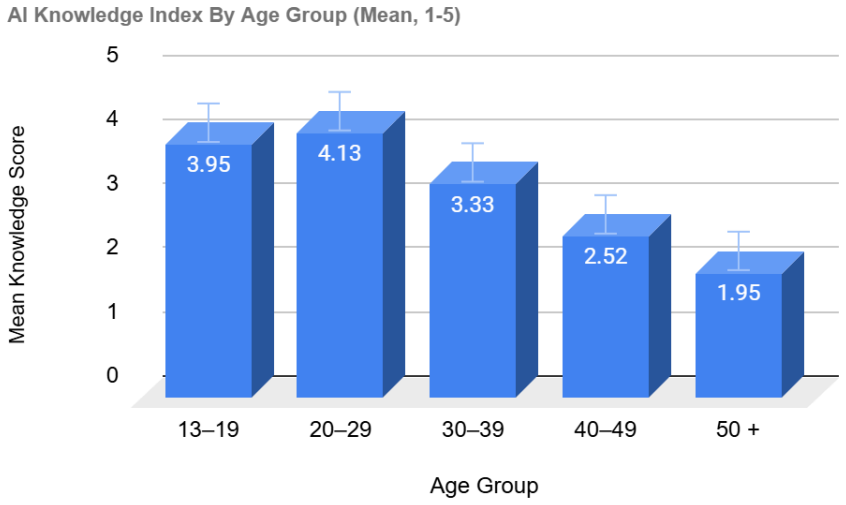

Figure 3: AI Knowledge Index By Age Group

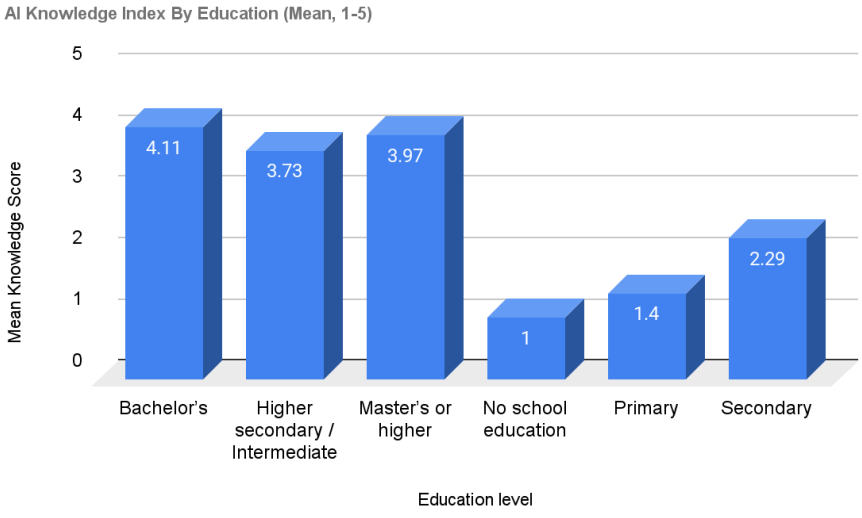

Figure 4: AI Knowledge Index By Education

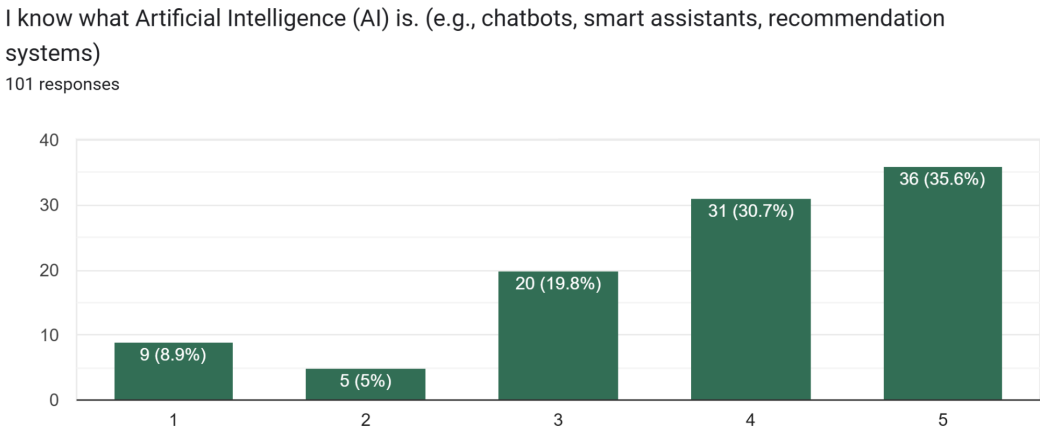

Figure 5: Bar graph showing respondents' understanding of artificial intelligence

About three-quarters of the participants indicated that they clearly understand what Artificial Intelligence is. With a mean score of roughly 4.1, the data reveal a high level of conceptual awareness of AI among respondents. Neutral responses (≈ 15 %) suggest some individuals possess only a general idea of AI, while a small minority (≈ 10 %) remain unfamiliar with it. Overall, the findings highlight widespread familiarity with AI concepts such as chatbots, virtual assistants, and recommendation systems within the sample population.

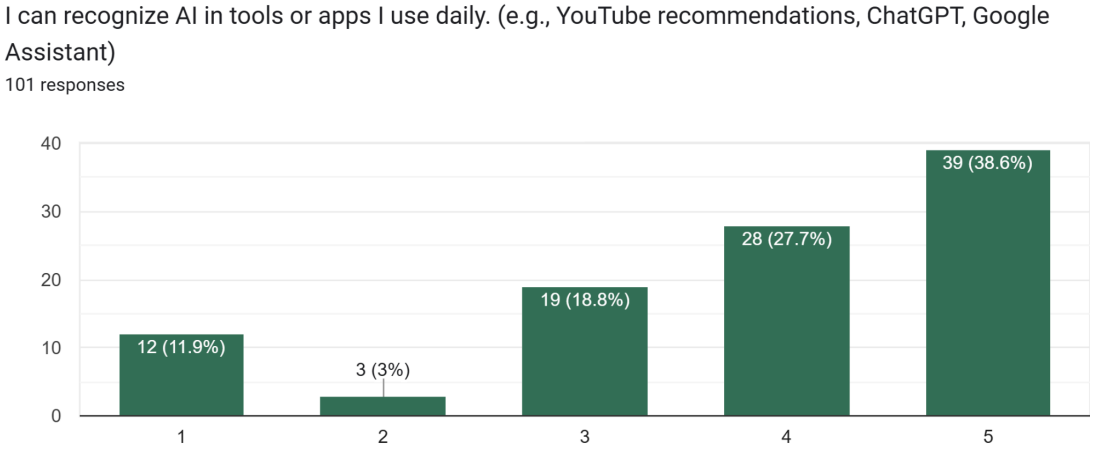

Figure 6: Recognition of AI in everyday tools and apps

The majority of respondents (about 65 %) demonstrated the ability to recognize Artificial Intelligence in the digital tools and applications they use daily. With a mean score slightly above

4, the findings indicate that AI features in mainstream services such as YouTube recommendations, ChatGPT, and Google Assistant are widely visible and familiar to users. Approximately 18% of participants expressed uncertainty about AI's presence, while only 10 % showed low recognition. Overall, this suggests that most users are conscious of how AI shapes their everyday app experiences.

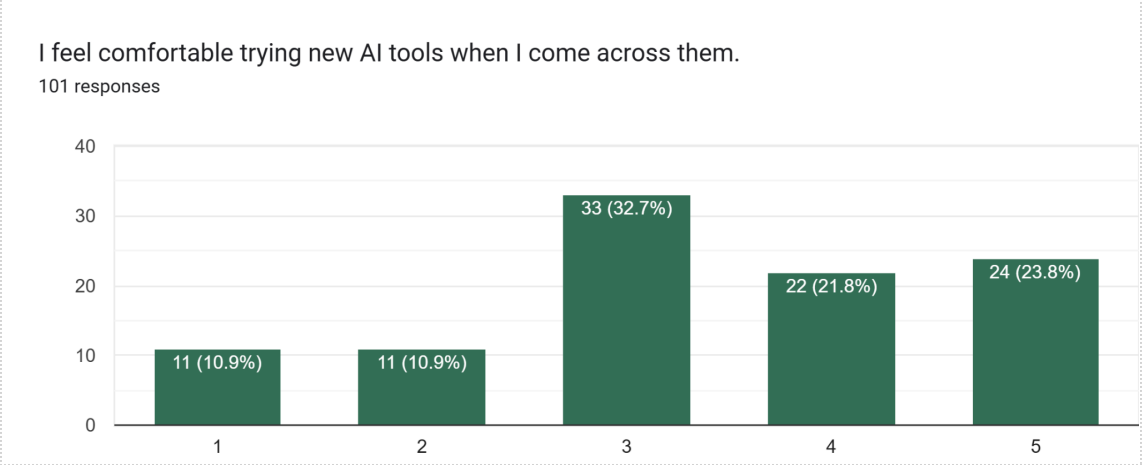

Figure 7: Comfort level in trying new AI tools

Responses to this item revealed moderate comfort in exploring new AI tools. The average score (≈3.4) and high frequency of neutral ratings suggest that while participants are generally receptive to experimenting with AI, many remain cautious or uncertain. Compared to earlier items that measured AI awareness and recognition, comfort with hands-on exploration is relatively lower. This indicates that familiarity with AI concepts does not always translate into confident engagement with new AI technologies.

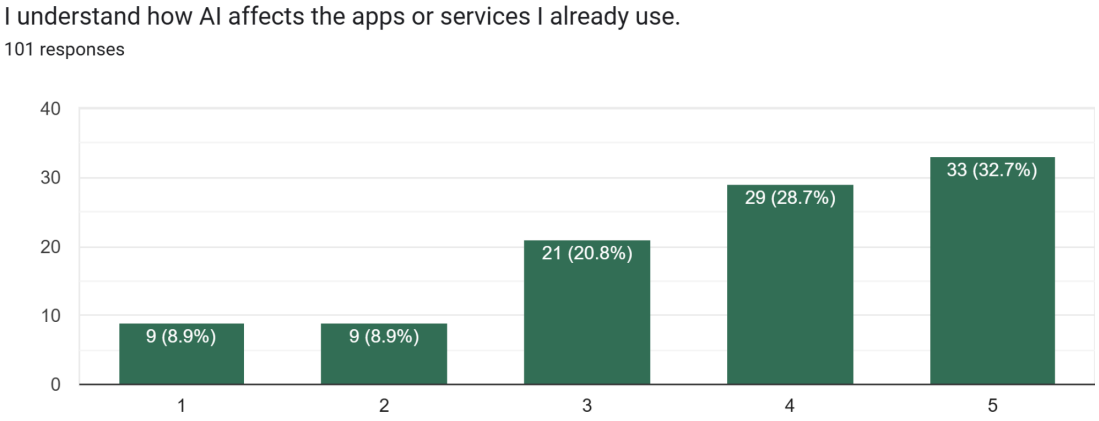

Figure 8: Understanding of how AI affects apps and services used

The majority of respondents (about 60 %) expressed confidence that they understand how AI influences the digital services they use. Around one-fifth (20 %) were neutral, indicating partial awareness but limited comprehension of AI mechanisms, while only 14 % disagreed or strongly disagreed. The mean rating of approximately 3.9 reflects a generally high level of understanding of AI's role in everyday applications such as personalized recommendations, smart search, or predictive features.

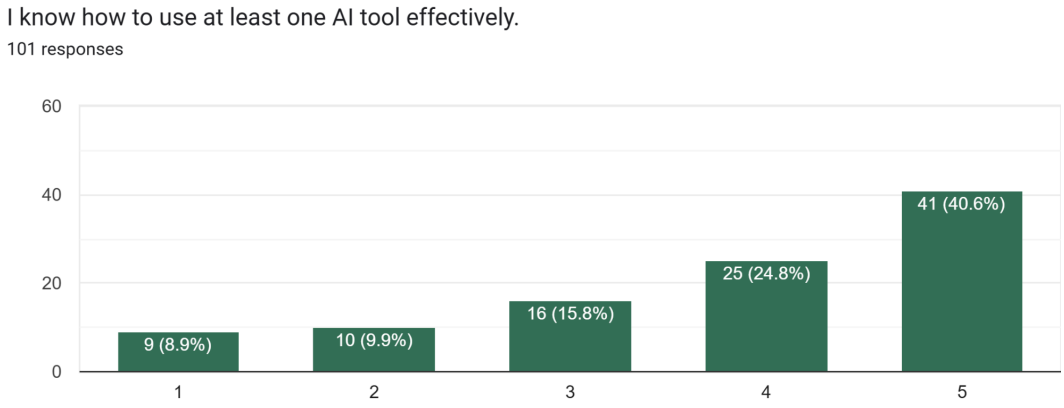

Figure 9: Ability to use at least one AI tool effectively

Nearly seven in ten respondents (around 66 %) stated that they can effectively use at least one AI tool, indicating a strong level of functional literacy with artificial intelligence applications. The average rating of about 4.0 shows a generally high degree of practical ability. However, 15 % of

participants expressed low confidence in their skills, while 16 % remained neutral, suggesting that although AI awareness is widespread, hands-on proficiency still varies among users. These findings point to an encouraging but uneven level of practical AI competence within the group.

AI Usage and Adoption Patterns

Table 2: Percent Using AI Often or Always by Age

Age Group	**% Often or Always**
20-29	82.9
13-19	68.2
30-39	100.0 (small n=3 interpret cautiously)
40-49	13.3
50+	0

Table 3: Percent using AI Often or Always by Education

Education level	**% Often or Always**
Master's or higher	85.7
Bachelor's	76.7
Higher secondary	56.4
Secondary	33.3
Primary	0
No school education	0

Self-reported frequency of AI use showed similarly stratified adoption. Overall, about 74 percent of respondents indicated they use AI-powered tools often or always. Adoption was highest among those aged 20–29 at 82.9 percent, followed by ages 13–19 at 68.2 percent. Reported frequent use fell sharply in the 40–49 group at 13.3 percent and was absent in the 50 and above group. The small 30–39 group reported 100 percent frequent use, which should be treated with caution due to the very small cell size. Education was also associated with adoption. Frequent use was reported by 85.7 percent of master's or higher, 76.7 percent of bachelor's, 56.4 percent of higher secondary, and 33.3 percent of secondary respondents, while primary and no school education groups reported no frequent use. Knowledge and use moved together, with a moderate positive correlation between the AI Knowledge Index and AI use frequency at $r = 0.52$.

AI Exposure Through Everyday Apps

Table 4: Common AI-Enabled Applications Used by Respondents

Category	**Users %**
YouTube, TikTok, Facebook recommendations	92.1
Banking or payment apps	74.3
Chatbots or virtual assistants	70.3
Photo or camera filters	68.3
Navigation or maps	65.3
Translation or typing tools	46.5
Learning apps	30.7

Table 5: Percentage of Respondents Using Selected AI-Related App Categories by Age Group

Age group	Chatbots	Translation	Learning apps	Banking	Social recom.
13–19	75	43.2	38.6	79.5	90.9
20–29	94.3	62.9	40	82.9	94.3
30–39	33.3	33.3	0	33.3	66.7
40–49	26.7	33.3	0	53.3	100
50+	0	0	0	50	75

Respondents reported substantial exposure to AI through common digital services. The most widely used AI-enabled category was social media recommendations in platforms such as YouTube, TikTok, and Facebook at 92.1 percent. Banking and payment apps such as eSewa, Khalti, and IME Pay followed at 74.3 percent, and chatbots or virtual assistants at 70.3 percent. Photo filters were used by 68.3 percent and navigation and maps by 65.3 percent, while translation or typing tools were used by 46.5 percent and learning apps by 30.7 percent. Disaggregated patterns show that ages 20–29 had the highest engagement with chatbots at 94.3 percent and translation tools at 62.9 percent, while the 40–49 group reported universal use of recommendation feeds at 100.0 percent but far lower engagement with task-oriented AI such as chatbots at 26.7 percent and learning apps at 0.0 percent. The 50 and above group reported high exposure to background AI such as feeds and banking but almost no use of visible task tools. These results indicate that many residents interact with AI implicitly through platforms, while explicit adoption of productivity-oriented AI is concentrated among the young and educated.

Awareness Gap

Table 6: Distribution of Respondents by AI Awareness Gap Category

AI Awareness Gap Category	Respondent Share (%)
Unconscious AI use (apps > perceived AI)	42.6
Aligned (apps = perceived AI)	43.6
Over-claimed AI use (perceived AI > apps)	13.9

A comparison of general app-use frequency and perceived AI-use frequency revealed a notable awareness gap. Approximately 42.6 percent of respondents used AI-enabled applications more often than they believed, indicating unconscious AI use. Another 43.6 percent aligned their perceived AI use with their app use, and 13.9 percent reported perceived AI use that exceeded their general app use. The large share of unconscious users suggests that a significant portion of the population interacts with AI without recognizing when and how it operates. This finding has implications for informed consent, privacy management, and the ability to develop skills that convert background exposure into meaningful gains.

Attitudes and Perceptions

Table 7: Mean Scores of Respondents' Attitudes Toward AI

Attitude Statement	Mean Score (1-5)
AI tools are easy for me to use once I try them.	3.8
I enjoy exploring or testing new AI apps or features.	3.45
I sometimes worry that AI might replace human skills or jobs.	3.33
I want to learn more about how AI actually works.	3.64
AI is making daily life in Kathmandu easier and more efficient.	3.47
Only some people in Kathmandu can truly benefit from AI tools.	3.3
People without AI knowledge will struggle to keep up in the future.	3.91
AI could create new opportunities for learning and employment.	3.95
I feel AI should be taught in schools and colleges to reduce the digital gap.	3.87

Attitudes toward AI were cautiously positive. Mean agreement was highest for the statements that AI could create new opportunities for learning and employment at 3.95 and that people without AI knowledge will struggle to keep up in the future at 3.91. There was strong support for teaching AI in schools and colleges to reduce the gap at 3.87. Perceived benefits for daily life were moderate at 3.47, and concern that AI might replace human skills or jobs averaged 3.33. Age differences were consistent with the knowledge and adoption patterns. Younger respondents were more optimistic about AI's potential and more likely to support AI education, yet they also expressed slightly higher concern about job impacts compared with older adults. Together these results indicate a population that sees value in AI while recognizing risks and the need for guided learning.

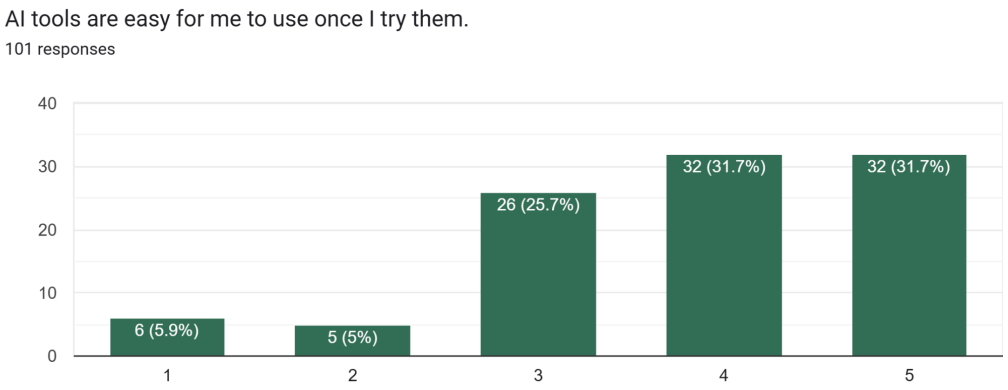

Figure 10: Ease of using AI tools once tried

The data shows that 63% of respondents hold a positive attitude toward AI usability, agreeing that AI tools are easy to use once they are tried. Meanwhile, 25% remain neutral, reflecting cautious or limited experience, and 11% express negative perceptions, finding AI tools challenging or unfamiliar. Overall, the results highlight a predominantly positive outlook, indicating that most users are comfortable engaging with AI technology once they gain direct exposure, though a small proportion may still require introductory support or training.

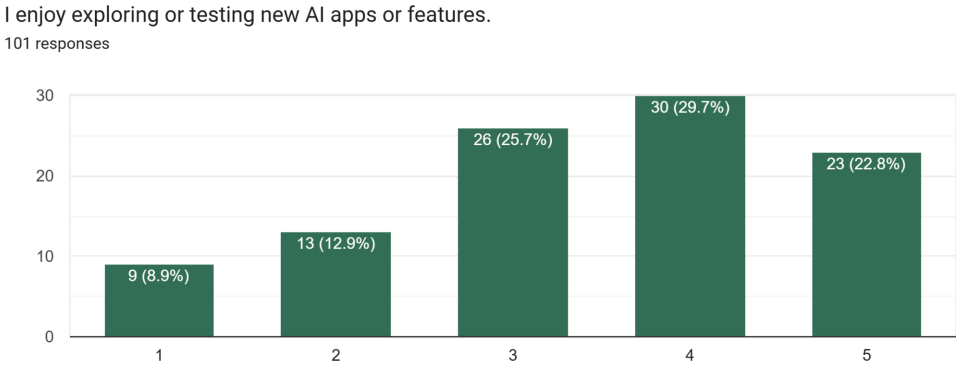

Figure 11: Interest in exploring or testing new AI applications

Out of 101 respondents, most showed a positive attitude toward exploring new AI technologies. About 53% (Agree or Strongly Agree) expressed clear interest, while 25% remained Neutral and only 20% disagreed. The diagram reveals a right-skewed trend, indicating that participants are largely curious, open, and enthusiastic about testing AI features.

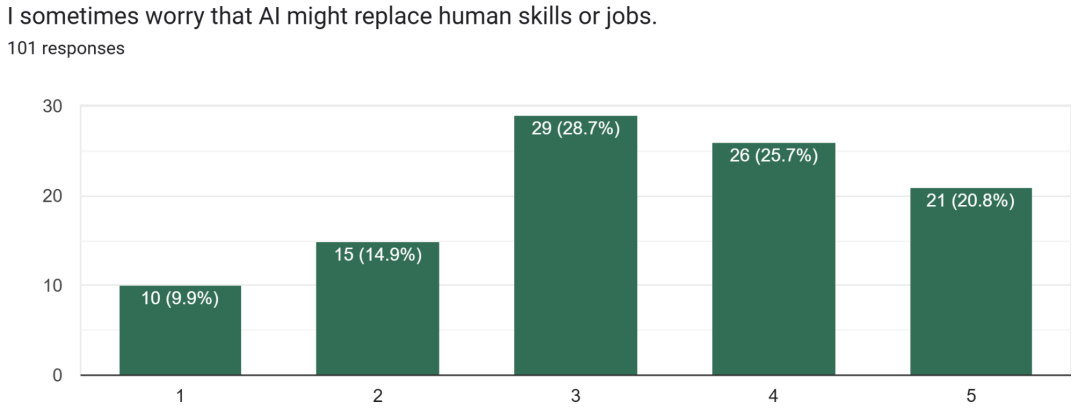

Figure 12: Concern that AI might replace human skills or jobs

Nearly half of the respondents expressed concern that AI could replace human skills or jobs, with 46% agreeing or strongly agreeing. About 28% remained neutral, while 25% disagreed. The diagram reflects a cautious yet aware attitude toward AI's impact on future employment.This suggests that while many recognize AI's benefits, there remains an underlying uncertainty about how it might reshape human roles and job security in the future.

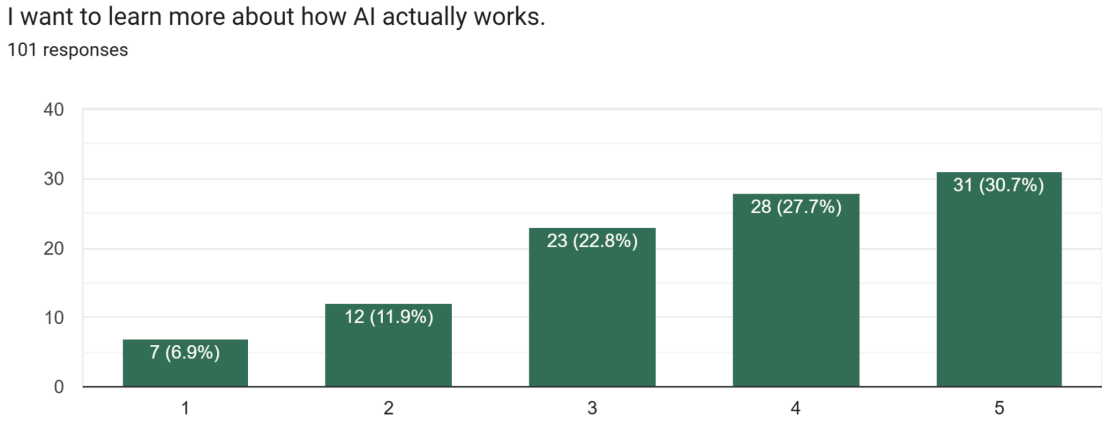

Figure 13: Desire to learn how AI works

Most respondents expressed a strong interest in understanding how AI works. Nearly 60% agreed or strongly agreed with the statement, showing clear curiosity and motivation to learn. Around 22% remained neutral, while about 19% disagreed. Overall, the diagram reflects a

positive and learning-oriented attitude, suggesting that participants are eager to deepen their understanding of AI.

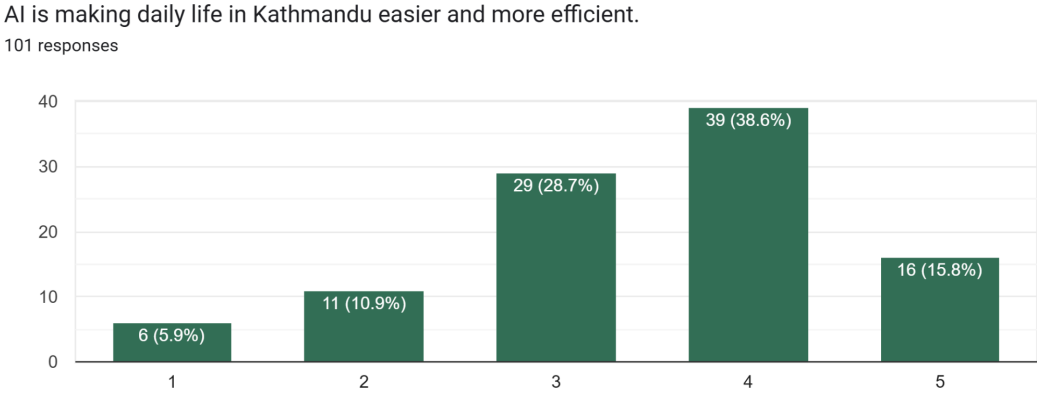

Figure 14: Perception of AI making daily life in Kathmandu easier and more efficient

Most participants perceive AI as having a positive influence on everyday life in Kathmandu. Over half agreed or strongly agreed that AI makes life easier and more efficient, while around a third remained neutral and a small group expressed doubt. The diagram reflects a moderately optimistic outlook, suggesting that people recognize AI's growing presence but may differ in how strongly they feel its impact.

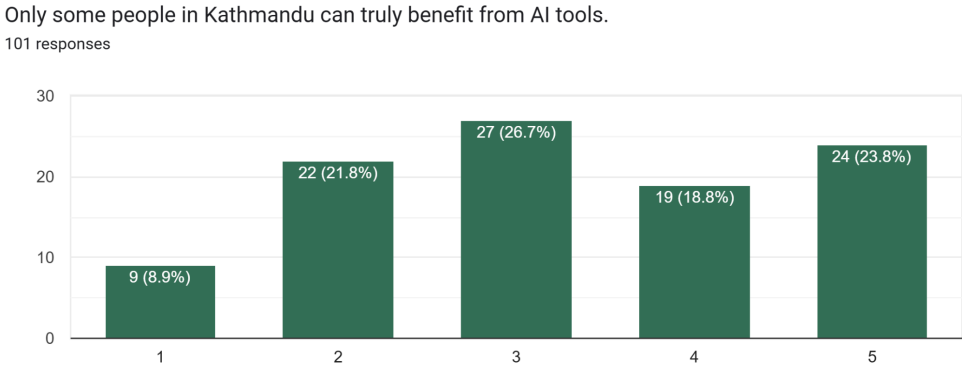

Figure 15: Belief that only some people in Kathmandu can benefit from AI tools

Responses show a divided perception about AI accessibility in Kathmandu. Around 41% agreed that only some people can truly benefit from AI tools, 26% remained neutral, and 29% disagreed. The diagram shows a slightly right-skewed pattern, indicating that many recognize an uneven

distribution of technological advantages. This suggests growing awareness of the digital gap, where access to AI tools and skills still favors those with greater resources or exposure.

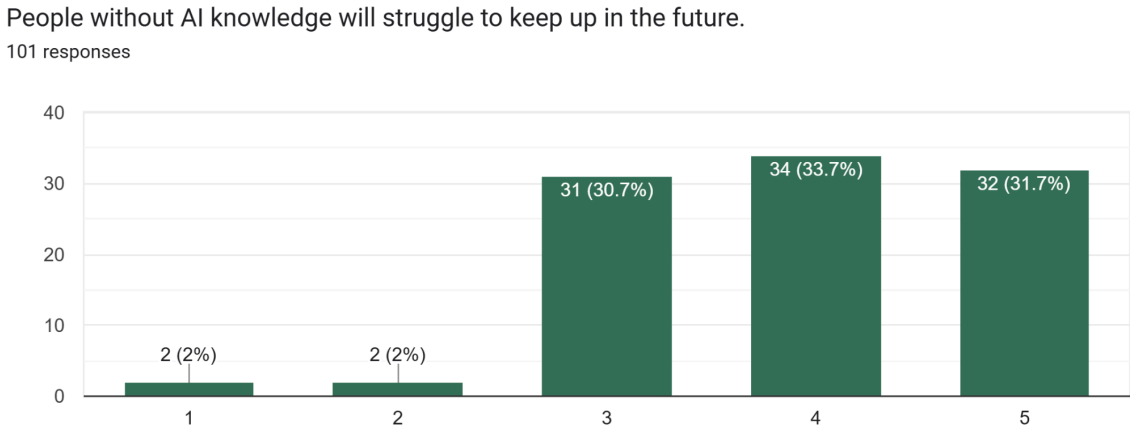

Figure 16: Perception that people without AI knowledge will struggle to keep up

Figure 16 reveals a strong consensus that AI knowledge will be essential for the future. A significant majority, 65% (Agree or Strongly Agree), believed that people without AI knowledge will struggle to keep up, while 30% remained neutral and only 4% disagreed. The diagram shows a clear right-skewed trend, reflecting a widespread belief in the growing importance of AI literacy. This suggests that most participants view AI understanding as a key factor for future competitiveness, adaptation, and career relevance.

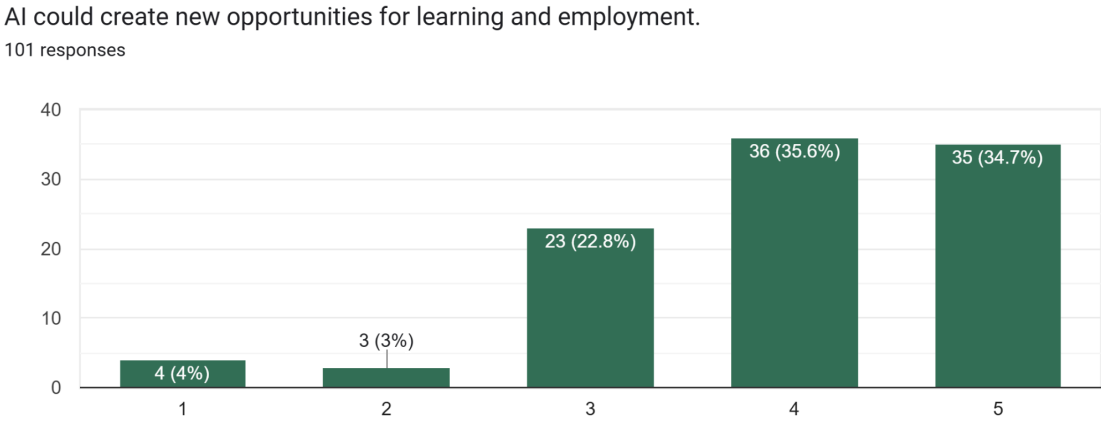

Figure 17: Belief that AI can create new opportunity for learning and employment

Most participants showed strong optimism about AI's potential to create new opportunities in learning and employment. About 70% agreed or strongly agreed, while only a small fraction disagreed. The diagram highlights a clear positive trend, suggesting that respondents largely view AI as a source of growth, innovation, and opportunity in the future.

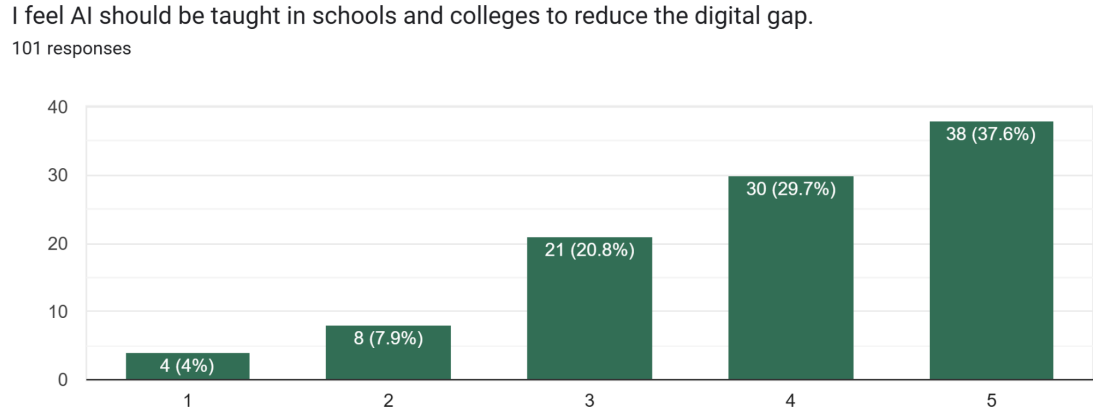

Figure 18: Support for teaching AI in schools and colleges to reduce the digital gap

Most participants expressed strong support for integrating AI education into schools and colleges. Nearly 65% agreed or strongly agreed, showing belief in its role in narrowing the digital divide. The diagram demonstrates a clear positive trend, suggesting that respondents view AI education as essential for preparing future generations and promoting digital inclusion.

Summary

The findings show that Kathmandu's emerging digital divide is driven primarily by differences in AI knowledge, confidence, and active use rather than by connectivity alone. Younger and more educated participants report higher awareness and more frequent use and are more likely to engage with task-oriented AI such as chatbots and translation tools. Older and less-educated groups demonstrate substantial exposure to background AI in platforms but lower recognition and lower adoption of visible tools, which limits their ability to realize benefits. A large segment of unconscious users further indicates that many residents are interacting with AI without sufficient awareness to exercise agency or develop skills. Correlations between knowledge and use suggest that targeted literacy and practice can translate into adoption and outcomes. Given the sample's youth skew and convenience design, results should be interpreted as indicative trends that motivate deeper city-level research and program design focused on inclusive AI literacy and local-language support.

Discussion

This study examined how artificial intelligence is reshaping digital inequality among residents of Kathmandu Valley by describing patterns of knowledge, adoption, exposure, and attitudes. The results show sharp gradients by age and education. Respondents aged 20–29 reported the highest AI knowledge and the highest rates of frequent use, followed by 13–19, while reported knowledge and use were much lower among adults 40–49 and virtually absent among those 50 and above. Education showed a similar ladder, with bachelor's and master's groups scoring highest on both awareness and adoption. A large segment of the sample appeared to use AI without recognizing it, since 42.6 percent used AI-enabled apps more often than they believed. Across the sample, knowledge correlated positively with self-reported use ($r = 0.52$). Together, these patterns point to a capability-driven divide rather than a simple access gap.

Interpreted through established frameworks, the Kathmandu evidence aligns with the progression from first-level to second- and third-level divides described by van Dijk (2005, 2017). Access to smartphones and connectivity is now widespread in urban Nepal, yet meaningful participation depends on skills, confidence, and the ability to translate use into outcomes. Our data mirror that logic. Younger and more educated respondents not only know more about AI but also apply it to visible, task-oriented tools (for example chatbots and translation), while older groups interact mainly with background AI embedded in platforms such as social feeds and banking. This is consistent with recent work that emphasizes multi-dimensional digital inclusion and shows that benefits concentrate among users with higher education, English proficiency, and prior digital experience (Keskin & Vermeulen, 2025). The large share of unconscious users in your sample adds a Kathmandu-specific angle to the "AI divide" discussion: people can be subject to

algorithmic curation and automated decisions without realizing when and how AI operates, which limits agency, informed consent, and skill building.

The findings have several practical implications for education, workforce preparation, and digital policy. First, basic AI literacy should be treated as a core competency, not an advanced elective. Programs that start with everyday tasks already present in residents' lives (search support, translation, form filling, writing assistance) are likely to move unconscious users into conscious and confident users. Second, language is a pivotal moderator. Local-language interfaces, prompts, examples, and micro-lessons can reduce cognitive load for Nepali-dominant users and help older adults and lower-education groups cross the first competency threshold. Third, short guided practice with feedback can convert background exposure into measurable gains. Prior research shows that well-designed assistance yields the largest productivity improvements for lower-baseline users, which suggests that targeted training in schools, community centers, and SME hubs could narrow gaps if delivered in accessible formats. Fourth, public communications and platform disclosures should make AI presence visible and understandable. Clear signals about where AI operates, how to verify outputs, and how to manage privacy strengthen user agency and trust.

Several limitations temper the interpretation of these results and point to next steps. The sample is a convenience sample with a strong youth skew, so estimates should be viewed as indicative rather than representative of Kathmandu as a whole. Self-reports may over- or under-state knowledge and use, and small cell sizes in older age bands reduce precision. Future work should recruit a larger and more balanced sample across age, education, and occupation, and should include simple measures of English proficiency and prior digital experience to explain heterogeneity more precisely. It would also be valuable to add a few behavioral items (for

example short applied tasks scored for accuracy and time) to complement self-perceptions. Finally, a Kathmandu–outside Kathmandu comparison, or ward-level contrasts within the Valley, would help separate citywide trends from neighborhood differences in connectivity, schooling, and income.

In sum, the evidence suggests that Kathmandu's digital divide is increasingly defined by AI literacy, confidence, and purposeful use. Many residents already meet AI through everyday platforms, yet a large share remains unaware of this interaction, and the ability to turn AI into tangible benefits is concentrated among younger and more educated groups. Framed against the literature, this is a textbook example of the shift from access to capability and outcomes. Local programs that combine Nepali-first materials, visible disclosure, guided practice, and school-based AI literacy can move the city from passive exposure toward inclusive and informed participation in an AI-enabled economy.

Conclusion

This study set out to describe how artificial intelligence is shaping digital inequality among residents of Kathmandu Valley. Using a cross-sectional survey of 101 respondents, it found that the divide is driven less by connectivity and more by differences in knowledge, confidence, and purposeful use. Younger and more educated participants reported higher AI knowledge and much more frequent use, while older and less educated groups showed lower awareness and limited engagement with task-oriented tools such as chatbots and translation. Many residents already encounter AI through everyday platforms like social media recommendations and digital payments, yet a large share use these features without recognizing them, which limits individuals' control over their choices and their ability to learn and grow.

The evidence points to a capability-based divide that fits the second and third levels of the digital divide framework. Knowledge and use moved together, and attitudes were cautiously positive, with broad support for AI education and recognition that future opportunities will favor those who can work with AI. At the same time, moderate concerns about job impacts and privacy suggest that adoption must be paired with guidance, transparency, and safeguards.

These results have clear practical implications. Basic AI literacy should be treated as a foundational skill. Short, task-focused training delivered in Nepali, supported by simple examples and guided practice, can help convert background exposure into confident use, especially for older adults and lower education groups. Schools, community centers, and SME hubs can serve as delivery points for micro-modules on search support, translation, writing assistance, and verification. Clearer disclosure about where AI is operating and how to check outputs can strengthen trust and user control.

Findings should be interpreted as indicative rather than representative, given the convenience sample and youth skew, the reliance on self-reports, and small cell sizes in older age bands. Future research should use larger and more balanced samples, include simple measures of English proficiency and prior digital experience, add a few behavioral tasks to complement self-perceptions, and compare wards within Kathmandu or urban and non-urban settings.

Overall, the study shows that Kathmandu's digital divide is no longer about who is connected, but about who can recognize, adopt, and benefit from AI in everyday life. With targeted literacy, local language support, practical training, and transparent governance, the city can shift from passive exposure to inclusive, informed participation in an AI-enabled economy.

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Appendices

Appendix A: Survey Questionnaire

Section A – About You

1. **Age group:**

   ☐ 13–19 ☐ 20–29 ☐ 30–39 ☐ 40–49 ☐ 50+

2. **Gender:**

   ☐ Male ☐ Female ☐ Other / Prefer not to say

3. **Education level:**

   ☐ No school education ☐ Primary ☐ Secondary

   ☐ Higher secondary / Intermediate ☐ Bachelor's ☐ Master's or higher

4. **Occupation:**

   ☐ Student ☐ Office worker / Professional ☐ Business owner

   ☐ Homemaker ☐ Retired ☐ Other (specify _____)

Section B – AI Awareness (Knowledge and Confidence)

Scale: 1 = Strongly Disagree 5 = Strongly Agree

Statement	**1**	**2**	**3**	**4**	**5**
I know what Artificial Intelligence (AI) is. (e.g., chatbots, smart assistants, recommendation systems)	☐	☐	☐	☐	☐
I can recognize AI in tools or apps I use daily. (e.g., YouTube recommendations, ChatGPT, Google Assistant)	☐	☐	☐	☐	☐

I feel comfortable trying new AI tools when I come across them.	☐	☐	☐	☐	☐
I understand how AI affects the apps or services I already use.	☐	☐	☐	☐	☐
I know how to use at least one AI tool effectively.	☐	☐	☐	☐	☐

Section C – AI Usage and Awareness

C1. Which of the following do you use regularly? (Select all that apply)

☐ YouTube, TikTok, or Facebook recommendations

☐ Chatbots or Virtual Assistants (ChatGPT, Siri, Google Assistant)

☐ Learning apps (Khan Academy, Duolingo, Coursera, Google Lens for study help)

☐ Banking or payment apps (eSewa, Khalti, IME Pay, etc.)

☐ Health or fitness apps (step tracking, calorie counter, smartwatch tracking)

☐ Ride-hailing or delivery apps (Pathao, Foodmandu, Indrive, etc.)

☐ Shopping or e-commerce apps (Daraz, SastoDeal, Amazon)

☐ Translation or typing tools (Google Translate, Nepali typing prediction, Grammarly)

☐ Photo or camera filters (Snapchat, Instagram, FaceApp, or phone camera “portrait mode”)

☐ Navigation or map apps (Google Maps, Apple Maps)

☐ None of these

C2. How often do you use the apps you selected in C1?

☐ Never ☐ Rarely ☐ Sometimes ☐ Often ☐ Always

C3. How often do you think you use AI-powered tools or apps?

☐ Never ☐ Rarely ☐ Sometimes ☐ Often ☐ Always

C4. Attitudes Toward AI Usage

Scale: 1 = Strongly Disagree 5 = Strongly Agree

Statement	1	2	3	4	5
AI tools are easy for me to use once I try them.	☐	☐	☐	☐	☐
I enjoy exploring or testing new AI apps or features.	☐	☐	☐	☐	☐
I sometimes worry that AI might replace human skills or jobs.	☐	☐	☐	☐	☐
I want to learn more about how AI actually works.	☐	☐	☐	☐	☐

Section D – AI in Everyday Life and the Digital Gap

Scale: 1 = Strongly Disagree 5 = Strongly Agree

Statement	1	2	3	4	5
AI is making daily life in Kathmandu easier and more efficient.	☐	☐	☐	☐	☐
Only some people in Kathmandu can truly benefit from AI tools.	☐	☐	☐	☐	☐
People without AI knowledge will struggle to keep up in the future.	☐	☐	☐	☐	☐
AI could create new opportunities for learning and employment.	☐	☐	☐	☐	☐
I feel AI should be taught in schools and colleges to reduce the digital gap.	☐	☐	☐	☐	☐

Appendix B: Interview Guidelines

The short interviews were done with people who could not fill out the Google Form themselves due to language or technical difficulties.

Each interview followed the same questions as the online form so that all responses would stay consistent.

Procedure:

- The researcher explained the purpose of the study in simple words before starting.
- Participants were informed that their answers would be kept private and used only for this research.
- The interview was done in English or Nepali or local language, depending on what the participant was comfortable with.
- Each interview took about 5–10 minutes.
- Questions from the Google Form were read out loud, and the researcher selected the answers as told by the participant.
- If any question was unclear, the researcher explained it with short examples (like ChatGPT, Google Assistant, or eSewa).
- No audio recordings were made; only the written answers were saved in the same form as others.