Reflection: Education and Pedagogical Insights

Location-Based Analysis of Household Internet Access Trends in Indonesia Using Chi-Square Analysis

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ABSTRACT

This study examines the percentage of Indonesian households accessing the internet in the past three months, disaggregated by location, during the period 2015–2017. Using secondary data from the National Socio-Economic Survey (SUSENAS) conducted by the Central Statistics Agency (BPS), the study applies descriptive statistics to identify access patterns and chi-square tests to evaluate potential relationships between household conditions and internet access location. The findings show a steady increase in household internet access over the three-year period, with home-based access emerging as the most dominant and growing mode of connectivity. Conversely, access via mobile vehicles declined, while internet use at workplaces and public facilities remained low. Chi-square analysis indicates no significant relationship between household conditions and access location. These results highlight the increasing reliance on household internet access and its potential role in supporting learning and digital literacy in Indonesia. However, persistent disparities across regions and socio-economic groups suggest that policies must go beyond infrastructure expansion to address issues of affordability, inclusiveness, and digital literacy. This study contributes to the literature on digital inclusion and provides implications for policymakers, educators, and stakeholders in advancing equitable access to education in the digital age.

Keywords: Internet Access; Households; Digital Inclusion; Education; Indonesia; SUSENAS

Field: Education Technology; Information and Communication Technology; Socio-Economic; Statistics; Quantitative Social Research

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SDG's: Quality Education (4); Industry, Innovation, and Infrastructure (9); Reduced Inequalities (10); Partnerships for the Goals (17)

INTRODUCTION

The internet has become a crucial element in supporting education, communication, and socio-economic development in the 21st century (Nyoto et al., 2023). In Indonesia, internet access is no longer considered a luxury, but rather a necessity that influences how individuals learn, work, and interact. Particularly for the education sector, internet connectivity provides opportunities for digital learning, access to knowledge, and participation in global information networks (Sudarno et al., 2022). However, disparities in household internet access remain a challenge, especially when viewed across different locations and social contexts (Renaldo, Suhardjo, et al., 2022).

National statistics show a steady increase in the percentage of households accessing the internet over the past decade. However, the level of access and the location of households connected to the internet vary widely. Understanding these patterns is crucial, not only for evaluating technological developments but also for addressing the digital inequality that impacts educational opportunities.

This study analyzes the percentage of Indonesian households accessing the internet in the past three months, broken down by location, during the period 2015–2017. Using data from the National Socioeconomic

Survey (SUSENAS) conducted by the Central Statistics Agency (BPS), this study aims to provide insights into how internet access trends are evolving across households and their implications for digital inclusion, particularly in education. By identifying these trends, this research contributes to a better understanding of how access to digital infrastructure shapes educational participation and supports the government's efforts to advance digital literacy.

LITERATURE REVIEW

Internet Access and Education

Internet access has transformed the way education is delivered and consumed. According to Warschauer (2004), digital technologies provide new opportunities for learning, collaboration, and information sharing, but unequal access to these technologies often reinforces existing social inequalities (Renaldo, Junaedi, et al., 2022). In the context of education, internet access enables online learning, the development of digital literacy, and access to global knowledge resources (Anderson & Rainie, 2018). This highlights the importance of internet connectivity as a foundation for inclusive and equitable education.

Digital Divide

The concept of the "digital divide" refers to the gap between individuals or households with access to digital technology and those without. Van Dijk (2006) emphasized that digital inequality is not just about access to technology but also about differences in skills, usage patterns, and outcomes. Research in developing countries shows that households in rural areas tend to have less internet access than urban households, which impacts opportunities for education and socioeconomic advancement (Hilbert, 2011).

Internet Access in Indonesia

In Indonesia, internet penetration has grown rapidly, driven by mobile technology and government initiatives to expand digital infrastructure. According to the Indonesian Internet Service Providers Association (APJII, 2017), the number of internet users increased significantly between 2015 and 2017, with the highest concentration in urban households. Studies by Nugroho (2016) and Sari (2018) highlight that despite the increase in household internet access, disparities persist across regions, income levels, and educational backgrounds. These disparities impact how different groups, particularly students, can benefit from online learning resources and digital services.

Research Gaps

While several studies have examined the overall growth of internet users in Indonesia, fewer have specifically analyzed trends in household access across locations using national statistical data. Understanding where households access the internet (e.g., at home, at school, or in public spaces) is crucial for designing policies that promote digital inclusion. This gap is particularly relevant in the educational context, as reliable household internet access is a prerequisite for supporting students in online and blended learning environments (Renaldo, Fadrul, et al., 2022). Based on this gap, this study focuses on analyzing the percentage of Indonesian households accessing the internet in the past three months by location during the period 2015–2017. By providing empirical evidence from official statistics, this study contributes to the literature on digital inclusion and offers implications for educational equity in the digital age.

METHODOLOGY

Research Design

This study uses a quantitative descriptive research design with secondary data analysis (Sekaran & Bougie, 2016). The objective is to examine the percentage of Indonesian households accessing the internet in the past three months, categorized by location, during the period 2015–2017. This analysis aims to identify patterns and changes in household internet access over time, and to evaluate whether access differs significantly across locations (Lind et al., 2021).

Data Sources

The data used in this study were obtained from the National Socioeconomic Survey (SUSENAS) conducted by the Central Statistics Agency (BPS) for 2015, 2016, and 2017. SUSENAS is a large-scale national survey designed to capture the socioeconomic characteristics of Indonesian households (Renaldo et al., 2023), including access to technology and communications. This survey provides reliable and nationally representative data that is widely used in academic and policy-oriented research (Kersiati et al., 2023).

Variables

The main variable studied is the percentage of households accessing the internet in the past three months. This is further disaggregated by access location, such as access at home, school, workplace, internet cafe, or mobile/transportation arrangements.

Data Analysis

Data analysis was conducted in two stages:

Descriptive Statistics

Tabulations and graphical representations were used to illustrate the distribution and trends of household internet access between 2015 and 2017. Percentages were calculated to indicate the proportion of households accessing the internet in various locations (Ngatno et al., 2022).

Inferential Statistics

A Chi-Square (X^2) Test of Independence was applied to examine whether there was a significant relationship between the location of household access and the level of internet usage. Hypothesis testing was conducted at a 5% significance level ($\alpha = 0.05$).

Scope and Limitations of the Study

This study was limited to secondary data analysis for 2015–2017 and focused solely on household access in the last three months as reported in the National Socioeconomic Survey (SUSENAS). These results did not include qualitative aspects of internet usage, such as skills (Suhardjo et al., 2023), digital literacy, or access purposes (Hidayat et al., 2022). Therefore, these findings provide a general overview of access patterns but cannot fully explain the behavioral or sociocultural determinants behind internet usage.

RESULTS AND DISCUSSION

Results

Household Internet Access Trends

Based on data from the 2015–2017 National Socioeconomic Survey (SUSENAS), the percentage of households accessing the internet in the past three months showed a steady increase throughout the observation period (Susanti et al., 2025). Among various access locations, home-based internet access consistently accounted for the highest proportion and showed year-over-year growth (Nasien et al., 2025).

Conversely, internet access from public or mobile locations, such as in moving vehicles, showed a downward trend during the same period (Zuhairra & Putri, 2020). Access through internet cafes and workplaces fluctuated but remained lower than home-based access (Suharti & Shinta, 2021). This indicates a shift in preference toward more personal and convenient access points, especially within households (Nasien et al., 2024).

Chi-Square Test Results

A chi-square test was used to assess whether household location was associated with differences in internet access patterns. The results showed a calculated chi-square value of $X^2 = 18.307$, compared to the chi-square critical value of 6.9749 at the 5% significance level. These results indicate no statistically significant relationship between household conditions and internet access location (Marlim et al., 2025).

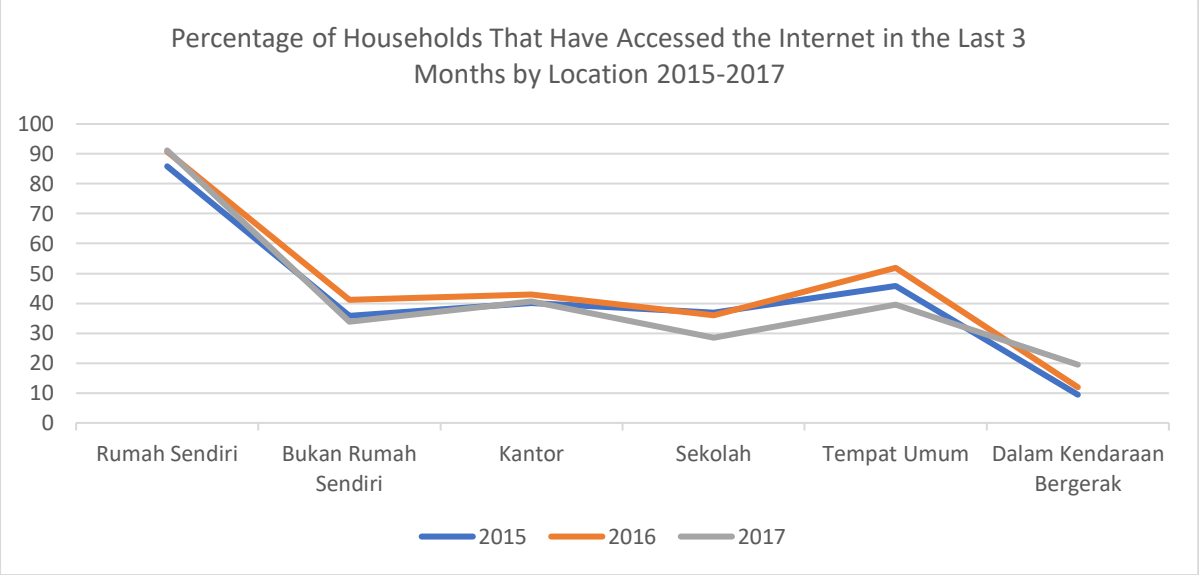

Figure 1. Data

Discussion

These results reflect broader trends in digital access in Indonesia during the 2015–2017 period. The increasing reliance on household internet access can be attributed to the expansion of affordable broadband and mobile internet services during this period (Renaldo, 2024). With the rapid growth of smartphones and home-based connections, households increasingly choose to access the internet from their homes, which is more convenient and cost-effective (Chandra et al., 2024).

The decline in access from moving vehicles may reflect the cost and practicality of mobile connections during transit, as well as increased household and workplace connectivity that reduces the need to rely on mobile internet outside of fixed locations (Suhardjo et al., 2024).

From an educational perspective, the dominance of home-based internet access is significant. Reliable internet access at home increases opportunities for students to engage in online learning, access digital resources (Junaedi, Renaldo, Yovita, Augustine, et al., 2023), and develop digital literacy. However, the lack of a significant relationship between household conditions and location of internet access, as indicated by the chi-square test, suggests that other socioeconomic and cultural factors may play a more important role in shaping internet use (Junaedi, Renaldo, Yovita, Veronica, et al., 2023).

These findings are consistent with global literature on the digital divide, where increasing internet penetration does not necessarily eliminate disparities in digital literacy, quality of access (Renaldo, Hafni, et al., 2022), or educational outcomes (Purnama et al., 2025). For Indonesia, while progress in expanding internet access is clear, attention must also be directed to ensuring equitable access across regions and socio-economic groups (Renaldo et al., 2024). Policies that promote affordable access, infrastructure in rural areas, and digital literacy training are crucial to maximizing the educational benefits of internet connectivity (Renaldo, Tanjung, et al., 2025).

CONCLUSION

Conclusion

This study analyzes the percentage of Indonesian households accessing the internet in the past three months, broken down by location, during the 2015–2017 period using data from the National Socioeconomic Survey (SUSENAS). The results show a steady increase in household internet access, with home-based access emerging as the dominant mode (Arlia et al., 2025). Conversely, internet access in mobile vehicles declined, while access in public spaces or workplaces remained relatively low (Renaldo, Junaedi, et al., 2025). A chi-square analysis showed no significant relationship between household conditions and location of internet access. These findings highlight that although internet penetration continues to increase, usage patterns are more influenced by the ease and availability of infrastructure than by household characteristics alone.

Implications

These findings have several implications for education and digital inclusion. The growth of household-based internet access creates a foundation for expanding online learning opportunities, digital literacy, and equitable access to educational resources. However, disparities across regions and socioeconomic groups persist, which could limit the effectiveness of digital learning initiatives if not addressed. Policymakers and educators should consider both access and quality when designing digital education programs.

Limitations

This study is limited to secondary quantitative data from the National Survey of Indonesia (SUSENAS), which only captures access patterns but not the quality, frequency, or purpose of internet use. This analysis does not explore socioeconomic or demographic variables such as income, education level, or regional disparities that may influence access. Thus, these findings provide a general overview of trends but cannot fully explain the underlying factors driving internet access behavior.

Recommendations

For policymakers, expand affordable broadband infrastructure, especially in rural areas, to reduce digital inequality. For educators, integrate digital literacy programs into school curricula to maximize the educational benefits of internet access. For stakeholders, encourage public-private partnerships to provide affordable access packages for households, ensuring inclusiveness in the digital transformation.

Future Research

Future studies should incorporate socioeconomic and demographic variables to better understand the determinants of internet access. Qualitative approaches can also provide deeper insights into household behavior, digital literacy, and cultural factors that influence internet use. Additionally, examining more recent data (post-2017) will capture the impact of significant events, such as the COVID-19 pandemic, which accelerated digital learning and reshaped internet access patterns in Indonesia.

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