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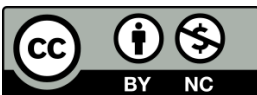
# Digital Divide and Classifying Social Class in Rural Development: Voices from the Secondary Data of Field

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## ABSTRACT

This paper aims to investigate the digital divide and to classify social class as a significant indicator in the context of rural development. The study employed secondary data analysis derived from the Data Desa Presisi (DDP). The researces meticulously analyzed and reinterpreted statistical data to identify new potential avenues for development planning, with a particular focus on Neglasari Village. The findings indicate that the predominant social class in the research area consists largely of lower-class individuals or casual laborers, who are categorized as impoverished in terms of rural development. This categorization aligns with the conclusion that poverty, as revealed through social class mapping, contributes to the digital divide, which is predominantly influenced by the upper social class. Consequently, this dynamic tends to create a segmentation of development information at the initial level. Conversely, it is noteworthy that the lower class exhibits the highest purchasing power for communication expenses, raising questions about the effectiveness and utility of network access and communication costs. This study serves as a valuable resource for village development planners, emphasizing the importance of considering the dynamics of social class, the implications of the digital divide, and the necessity for evaluative and accountable development monitoring models in the distribution of targeted programs.

## Introduction

The classification of social classes within the context of rural development carries significant implications for the ability of various stakeholders to effectively identify, map, plan, and formulate sustainable development projects (Ardoin & McNamee, 2020; Dudzińska et al., 2022; Jensen, 2018). In pursuit of these objectives, numerous rural development initiatives have been transformed through the integration of new digital media, thereby modernizing the distribution of development resources in developing

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regions, including Africa, Asia, and Latin America (Gough et al., 2004; Nkomo et al., 2016; Saarinen et al., 2020; Tian et al., 2018; Wirutomo, 2014). Nevertheless, many issues related to the digital divide in the rural development process have not been adequately addressed in policy formulation. A primary concern is the limited access of rural communities to digital-based development information, which has been consistently identified as a barrier to effective sustainable rural development planning (Akkoyunlu, 2015; Dandekar, 2016; Voronina & Milovidova, 2021). However, only a limited number of studies have demonstrated success in bridging the digital divide within the rural community development process, and these studies often have minimal implications for long-term projects aimed at community empowerment (Astuti et al., 2024; Kumpulainen et al., 2022; Kvartiuk & Curtiss, 2019). Although the digital divide in social development has been frequently discussed in the literature concerning developing countries, such as Indonesia, there remains a surprising lack of comprehensive studies focused on digital-based social class mapping.

The digital divide and the mapping of social class are frequently identified as emerging indicators in the context of rural development planning, as evidenced by both academic research and existing literature, which remains somewhat ambiguous (Hadi, 2018; Mathrani et al., 2022; Moon et al., 2012; Rundel & Salemink, 2021a). However, there is a notable deficiency in studies that examine communication costs, job classification, and the progression of digital technologies in relation to the objectives of rural community development initiatives. Consequently, this paper seeks to address these gaps by re-evaluating the Data Desa Presisi (DDP) from Neglasari Village, located in Bogor Regency, Indonesia. Specifically, this investigation employs a secondary data analysis that is both current and reliable, thereby addressing the inadequacies in exploratory interpretations of previously collected quantitative data. This research is crucial for the governance of village development, as it fosters inclusive and participatory values while encouraging collaborative actions among relevant stakeholders (Dawood, 2019; Saputra et al., 2023). Additionally, this paper highlights the practical implications of new research findings as tools for mapping local potential and assets within the framework of long-term development processes. Furthermore, the exploratory and analytical outcomes of this study contribute to a deeper understanding at the local level. Ultimately, the findings of this research can serve as technical guidelines for facilitators and policymakers, thereby reflecting the practical contributions of this study.

## Digital Divide in Rural Development: An Overview of Indonesian Local Cases

The term "digital divide" was first introduced in the 1990s, arising from the technological determinism associated with social groups lacking access to emerging technologies and advancements in information technology (Ajrun, 2023; Law et al., 2022; Mabweazara, 2021). The digital divide is often conceptualized as a Manichean discourse, positing a dichotomy within society between the 'haves' and the 'have-nots', which is fundamentally

linked to access to technology (Heeks, 2022). In this context, the digital divide represents a critical issue that warrants examination within specific geographical parameters and should be considered by policymakers in the pursuit of more inclusive and equitable rural development (Lembani et al., 2020; Otioma et al., 2019). Consequently, village development can be assessed through the lens of social stratification factors such as education, employment, race, age, income, and social capital, which contribute to the digital divide in the context of local community development processes (Faloye & Ajayi, 2022; Hargittai et al., 2019;Martínez-Domínguez & Mora-Rivera, 2020).

Limited access to digital advancements can entrap rural communities in a cycle of social inequality, which subsequently leads to persistent poverty (Ragnedda, 2017). This situation creates disparities among individuals, groups, communities, and social organizations in their ability to access various development programs initiated by the state (Mazya, 2021). Rather than serving as a catalyst for equality, prosperity, and access to justice, rural development has been increasingly influenced by technological advancements, particularly in the context of internet-based development (Oktavianoor, 2020). For instance, numerous social development models in developing countries, including Indonesia, have advocated for information technology-based welfare programs through various platforms. These initiatives encompass the digitalization of village assets, the distribution of social assistance via smartphones, technology-driven population surveys, and the transformation of welfare services into digital formats (Izudin & Fittaqiya, 2024; Larasati et al., 2023; Law et al., 2023). Consequently, digital-based development emerges as a novel approach to enhancing social services, fostering group-oriented community development, and expediting the distribution of aid.

According to Dijk (2005), the digital divide can be categorized into three distinct types: the knowledge gap, computer literacy, and participation in the information society. Within this framework, rural communities are often classified as a social group that exhibits deficiencies in knowledge related to the use of digital media, which hinders their ability to access information pertinent to development initiatives. Additionally, these social groups in rural areas frequently demonstrate limited computer literacy, resulting in experiences of digital exclusion. Consequently, rural communities may exhibit diminished interest in engaging in digital-based social and economic activities, such as announcements regarding development outreach programs implemented by the government in various villages (Ali et al., 2023; Herval et al., 2020). Given that Indonesia is classified as a developing country within the Asia-Pacific region, the digital divide concerning access to or ownership of digital devices—such as cell phones, smartphones, and laptops—demands attention from a range of stakeholders, particularly the government, which serves as a provider of social services and development (Booth, 2010; Larasati et al., 2023). This typology of the digital divide offers researchers a valuable framework for mapping and developing research methodologies through socio-economic assessments of communities at the research site.

The examination of social class delineation through the National Socio-Economic Classification (NS-SEC) reveals that the digital divide significantly affects the status of rural communities (Gagné & Brown, 2021). Generally, the economic condition of a society is indicative of its social class, which is categorized based on assets, income, and available resources. Social class, as determined by assets, pertains to an individual's ownership of property and digital devices, which correspond to high, middle, and low class classifications (Dawood, 2019;Feurich et al.,2024). In terms of income categorization, the Bureau of Statistics (BPS) employs specific metrics to assess whether an individual is classified as prosperous or impoverished. Rakasiwi and Kautsar (2021) delineate income groups into four categories: very high, characterized by an average income exceeding IDR 3,500,000 per month; high, with an average income ranging from IDR 2,500,000 to IDR 3,500,000; middle class, with an average income between IDR 1,500,000 and IDR 2,500,000; and low, defined as an average income of less than IDR 1,500,000 per month. Moreover, an individual's resources serve as a further indicator of the digital divide, particularly in relation to the balance between income and expenditure, as well as access to affordable digital technology. For instance, individuals who can readily purchase a set of gadgets or digital tools are classified as having adequate digital access and are thus categorized as prosperous, while those who cannot are classified otherwise (Wahyudi & Wahyudin, 2022). The mapping of socio-economic status and the digital divide informs the development of targeted plans for community development and social services, facilitating the participation of communities, social groups, and individuals in these initiatives.

The digitalization era plays a crucial role in enhancing the sustainability of development programs in rural areas; however, the digital divide adversely affects equitable development (Sjaf, Arsyad, et al., 2022). Generally, rural communities in Indonesia are characterized as agricultural regions, where disparities in the distribution of development contribute to variations in welfare (Clark, 2017; Nurlena et al., 2021; Setiawan et al., 2017). A pertinent example of this distribution gap can be observed in Neglasari Village, located in Bogor Regency, West Java Province. Despite the village possessing diverse local potential and assets that could facilitate local development, it faces a poverty rate of approximately 14.67% among its total population of 10,116 individuals. According to Muljono et al. (2022), the average poverty rate in Neglasari Village exceeds the national poverty rate of 9.82%. To elucidate the empirical challenges faced by Neglasari Village, researchers assert that addressing the digital divide is essential for mapping potential programs aimed at designing and promoting adaptive and accountable development planning.

Based on an analysis of data from the DDP (Data Desa Presisi) (Arsyad et al., 2021; Muhammad et al., 2021; Sjaf, Sampean, et al., 2022), the digital divide in Neglasari Village can be attributed to several factors. Firstly, this divide is exacerbated by disparities in social class, which affect the purchasing power for digital quotas and the ability to engage in digital device activities. Secondly, the infrastructure that supports digital activities significantly influences the disparities experienced by rural communities

(Salemink et al., 2017; Young, 2019). Thirdly, rural ecosystems face challenges in enhancing agricultural production through information and technology, including issues related to data ownership and control, technology production and data development, and data security (Rotz et al., 2019). Given the mapping of the digital divide at the village level, it is pertinent to conduct a more in-depth study, particularly as there is a scarcity of research focused on this scale. Therefore, this study aims to analyze the digital divide and map the rural Muslim communities in Neglasari Village, serving as a clear instrument to facilitate rural development in a precise and contextual manner.

## Description Area and Method

*Brief Demographic of Research Area*

Neglasari Village is situated within the Dramaga District of Bogor Regency. In terms of administrative boundaries, Neglasari Village is bordered to the northwest by Cihideung Ilir Village, to the south by Petir Village, and to the east by Sinar Sari Village. The village encompasses both residential and forested areas. As illustrated in Figure 1, the rice field area is represented by a brownish hue. Neglasari Village comprises three hamlets, six Citizens Associations (*Rukun Warga* – RW), and twenty-seven Neighborhood Associations (*Rukun Tetangga* – RT)(Azizah et al., 2021),and the total area of Neglasari Village is 164.16 hectares (Muhammad et al., 2021). According to a census conducted by Data Desa Presisi (DDP (see, Sjaf,Arsyad, et al., 2022; Sjaf, Sampean, et al., 2022), the village is home to 2,798 households and a population of 10,116 individuals. Neglasari Village is characterized as an agricultural community, with its land predominantly utilized for smallholder plantations covering an area of 78.218 hectares. This plantation area is cultivated with a variety of flora, including palm trees, horticultural crops, and other tree species.



Figure 1. Maps of study area. *Source*: https://webgis.desapresisi.id, 2024.

Figure 1 illustrates the demographic composition of household heads in Neglasari Village, revealing that females constitute 17.51% or 490 individuals of the total, while males account for 82.49% or 2,308 individuals, resulting in a total of approximately 2,798 heads of household. This data indicates a gender ratio of 4.71, suggesting that for every female head of household, there are between four to five male heads. Such an analysis offers valuable insights into the gender distribution of household leadership in Neglasari Village. Additionally, the village has a productive population of 7,007 individuals and a non-productive population of 3,090 individuals, leading to a dependency ratio of 44.09%. This statistic implies that for every 100 individuals of productive age, there are 40 individuals of non-productive age. A dependency ratio of 44.09% further suggests that Neglasari Village is entering a demographic bonus phase. It is imperative to effectively harness the potential of this demographic bonus to enhance economic development, increase productivity, stimulate social change, and improve various aspects of social life within the village.
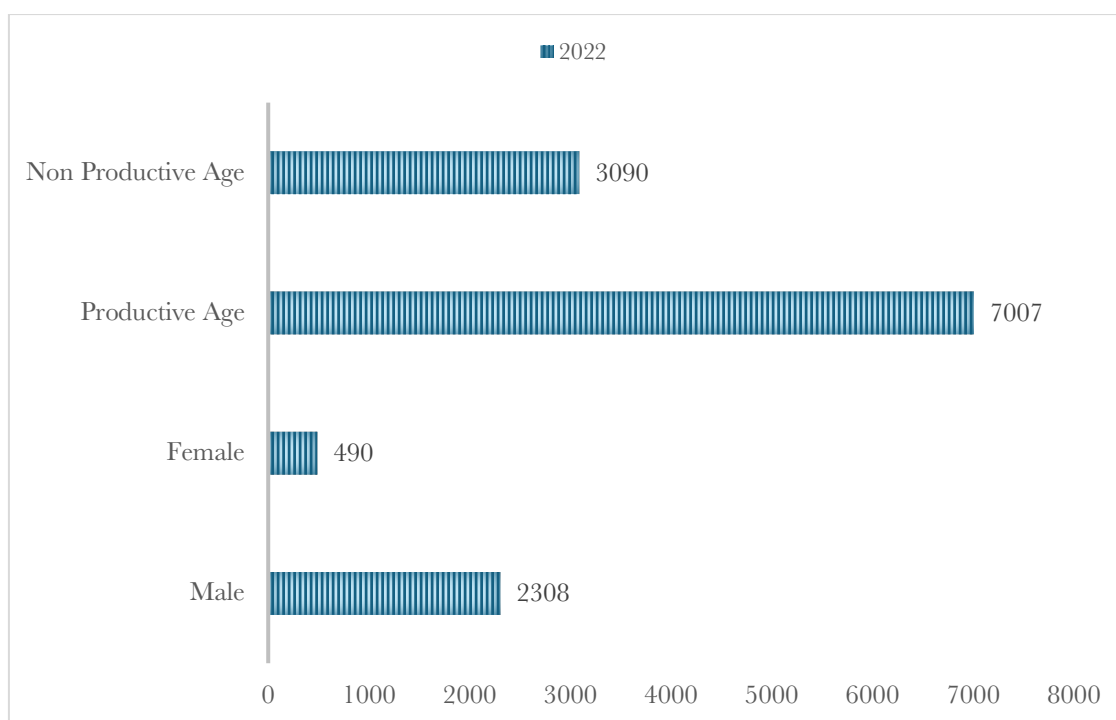


Figure 2. A number of male and female on their status as head of household families in Neglasari Village's. *Source*: Authors' elaborations from DDP.

The demographic bonus may pose significant challenges if the government fails to effectively harness this potential. Such a failure could lead to social pathologies, which would exacerbate unemployment rates, thereby becoming a burden on developmental efforts. This situation would likely increase the demand for health and social services in the future and contribute to low per capita income levels. In the context of Neglasari Village, the population is characterized as expansive, as evidenced by several indicators.

Firstly, a substantial portion of the community consists of individuals aged 15 to 64 years, categorizing them as productive members capable of optimizing their potential for village development. Secondly, the age structure exhibits minimal sharp changes, suggesting that fertility rates remain high while mortality rates among the young are low. Thirdly, the relatively high life expectancy presents two scenarios: if the majority of the population enjoys good health, it will positively influence the village; conversely, if a significant portion of the population experiences frequent illness, it will adversely affect the community. Finally, the population growth rate in Neglasari Village is relatively rapid, accompanied by a high dependency ratio.

*Design Study*

This study was conducted utilizing secondary analysis of data derived from a primary dataset available in the research conducted by Sjaf, et al. (2022). According to Long-Sutehall et al. (2011), the design of studies employing secondary data constitutes a research activity that leverages existing qualitative or quantitative data to identify new issues that have not been thoroughly examined in prior research. This methodological approach inherently obviates the need for the distribution of questionnaires, interviews, observations, and various validity assessments during the data exploration process (Cheong et al., 2023). Nevertheless, by employing open data such as the DDP, this study aims to delineate the geographical coverage of Neglasari Village, an area that has not been previously investigated. The objectives of re-exploring the data are categorized into several scopes: the application of new research questions derived from earlier studies; the utilization of existing data to generate novel insights; the validation of findings from prior research; and the exploration of data from alternative perspectives.

DDP is characterized by a high degree of accuracy and precision, enabling a comprehensive overview of the actual conditions within villages and facilitating the identification of individuals based on their names, addresses, and geographic coordinates (Arsyad et al., 2021). Researchers commenced the collection of this data in August 2022, employing a village data collection model that integrates census methodologies, spatial analysis, and community participation, focusing on individuals and families as the unit of analysis. The research encompasses various dimensions of family welfare, including essential needs such as clothing, food, and shelter. Additionally, the study investigates factors related to education and culture, health, employment, social security, social interactions, legal protection, human rights, infrastructure, and environmental conditions. Furthermore, secondary data was gathered from the DDP, taking into account several considerations: the comprehensive nature of the data for each resident of Neglasari Village, which was obtained through a census; the existence of data reflecting the first level of the digital divide within Neglasari Village; and the financial expenditures of each resident. Consequently, the data is deemed complete, usable, and accessible, thereby facilitating the determination of social class and digital disparities. This comprehensive

dataset significantly streamlines the research process, eliminating the need for fieldwork and conserving valuable time.

*Data analysis*

In the data analysis process, researchers undertook three key steps to explore the research findings. First, they accessed data through the DDP, which provides online access. Second, the data was organized into two primary themes aligned with the study's objectives, specifically focusing on the digital divide and social class classification within Neglasari Village. During the data sorting phase, researchers categorized social disparities into three main themes: social class, employment, and ownership of devices or smartphones. Subsequently, the researchers proposed a study topic concerning the income and communication expenses incurred by each villager, stratified by social class. Finally, the researchers analyzed the conclusions drawn from the data and considered the practical implications of their findings. To ensure the integrity of the analysis, each step was conducted meticulously, with thorough checks and balances applied to the data associated with each topic addressed.

## Findings

This research focuses on the secondary data analysis and identifies three key issues related to rural development within the context of the digital divide, specifically in the planning of social mapping for Neglasari Village. The subsequent sub-sections will elaborate on these issues.

   *Category 1* – Social Class or Social Stratum Neglasari Village comprises 2,798 families. The analysis of household income is conducted using the metrics established by the DDP, which evaluates the expenditures of each family head across various dimensions, including education, infrastructure, social life, legal protection and human rights, health, employment, social security, food, clothing, and housing. The findings of this analysis are illustrated in Figure 3, which categorizes the social classes within Neglasari Village. The data indicates that there are 664 family heads classified as upper class, 945 as middle class, and 1,189 as lower class. Notably, the majority of family heads in Neglasari Village, accounting for 42%, belong to the lower class, while the upper class constitutes a minority at 23%. These statistics suggest that village development efforts have not effectively addressed the issue of poverty, which was recorded at 14.67% in 2019, indicating that lower social groups continue to predominate.
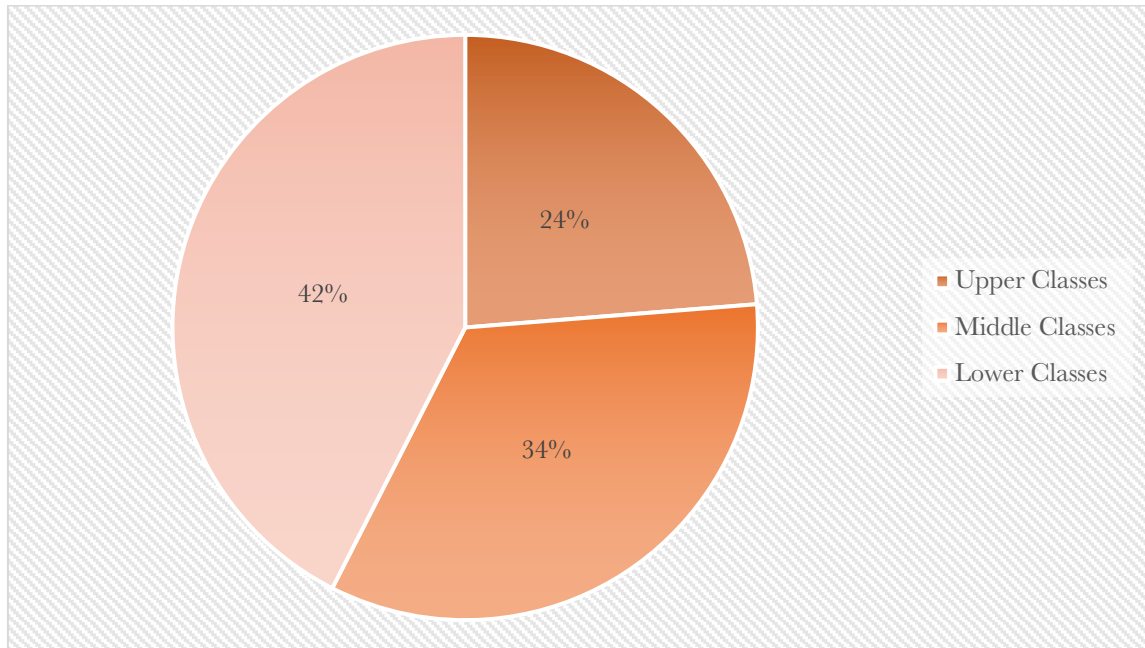
Figure 3. Social Class Classification in Neglasari Village. *Source*: Data Desa Presisi (2022), analysed by authors' work elaboration.

The population of Neglasari Village, comprising 2,798 households, has been categorized into distinct social classes, which are subsequently classified according to their respective occupations, as illustrated in Figure 4. These social classes are organized into eight occupational categories, with the numbers fluctuating in accordance with the employment preferences of each social group.



Figure 4. Social classes based on the types of vacancy jobs in Neglasari Village. *Source*: DDP, analysed by authors' work elaboration.

The distribution of employment across various social classes is delineated as follows. Firstly, the upper class comprises 674 heads of families, among which there are 17 unemployed individuals (2.53%), 7 retirees receiving pensions (1.03%), 2 students (0.30%), 272 casual laborers (40.35%), 77 private employees (11.43%), 55 civil servants (8.16%), 60 housewives (8.91%), and 184 self-employed individuals (27.29%). Secondly, the middle class consists of 945 heads of families, with the following worker composition: 52 unemployed individuals (5.51%), 6 retired pensioners (0.63%), 2 students (0.21%), 406 casual laborers (42.96%), 85 private employees (8.99%), 19 civil servants (2.02%), 119 housewives (12.59%), and 256 self-employed individuals (27.09%). Lastly, the lower class includes 1,189 heads of families, with the recorded employment types as follows: 94 unemployed individuals (2.53%), 4 retirees receiving pensions (1.03%), 3 students (0.30%), 594 casual laborers (40.35%), 73 private employees (11.43%), 12 civil servants (8.16%), 166 housewives (8.91%), and 243 self-employed individuals (27.29%).

*Category 2 – Digital divide.* The disparities that arise from the possession or lack thereof of digital resources can be attributed to variations in an individual's economic status (Mabweazara, 2021). The digital divide is also believed to stem from persistent and significant differences in socio-economic conditions (Mutsvairo et al., 2019). The initial level of digital inequality is frequently observed in developing countries, particularly concerning access to digital devices such as mobile phones, smartphones, and laptops. In Neglasari Village, a population mapping based on social class (upper, middle, and lower) allows for an analysis of the digital gap within each social class. Table 1 presents the distribution of digital device ownership as an indicator of the first level of digital inequality across the different social classes. The data indicates that each social class experiences the first level of the digital divide in varying proportions. In the upper class, 125 individuals, or 4.47%, lack a cell phone, while 539 individuals, or 19.26%, possess one. In the middle class, 303 individuals, or 10.83%, do not own a cell phone, whereas 642 individuals, or 22.94%, do. In the lower class, 851 individuals, or 30.41%, lack a cell phone, while 338 individuals, or 12.08%, own one. This data illustrates that even individuals in the upper class are experiencing a first-order digital divide.

| Social Class | Neglasari Vllage (%) |
|---|---|
| **Upper** | |
| owns a cell phone | 19.26% |
| don't have a cell phone | 4.47% |
| **Middle** | |
| owns a cell phone | 22.94% |
| don't have a cell phone | 10.83% |
| **Lower** | |
| owns a cell phone | 12.08% |
| don't have a cell phone | 30.41% |

Table 1. Percentage of number of mobile phones/smartphones owned by social class
*Source*: DDP, processed by researchers.

The digital divide can be categorized from largest to smallest based on both numerical and percentage representations, specifically among the lower class, middle class, and upper class. This categorization indicates that the primary level of digital inequality is closely associated with an individual's income or economic status. The lower class, characterized by the most precarious economic conditions, experiences the most significant first-order digital gap, whereas the upper class, with the most robust economic standing, encounters the least pronounced first-order digital gap. Consequently, it can be inferred that an individual's economic condition is intricately linked to the degree of digital inequality they face. Moreover, it is imperative for all individuals within rural communities, particularly those in the lower class, to acquire technological proficiency to enhance their welfare and elevate their social standing. The lack of technological mastery, as observed in Cikarawang Village, Dramaga District, Bogor Regency, results in farmers remaining in the lower class and incurring losses due to the manipulations of intermediaries (Sjaf, Arsyad, et al., 2022). By leveraging technology, rural communities—predominantly composed of farmers—can participate in Industry 4.0 partnerships through digital platforms, facilitating collaboration with fellow farmers, government entities, the private sector, and the broader community, thereby enabling farmers to improve their welfare equitably.

*Category 3 – Income and a social class of communication cost.* . Each social class is associated with a distinct average income. According to data regarding the number of individuals who do not encounter the first level of the digital divide within each class, the average monthly income for the upper class is IDR 3,700,847.00, with a sample size of 539 individuals. The middle class has an average monthly income of IDR 2,088,854.00, represented by 642 individuals, while the lower class averages IDR 1,179,925.00 per month, with 338 individuals. This information is illustrated in Table 2. The upper class members who do not experience the first level of the digital divide have incomes ranging from IDR 2,501,667 to IDR 11,483,333. Similarly, the middle class, with incomes between IDR 1,500,000 and IDR 2,500,000, also does not experience the first level of the digital divide. In contrast, the lower class individuals who do not experience this level of the digital divide have incomes ranging from IDR 510,000 to IDR 1,497,000.

Data indicates that the consumer behavior of individuals in the upper class regarding the financing of internet and mobile phone communication needs demonstrates a higher purchasing power in comparison to those in the lower social class. The lower class incurs communication expenses ranging from IDR 10,000 to IDR 300,000 per month, with an average expenditure of IDR 69,989. In contrast, the middle class allocates between IDR 10,000 and IDR 426,000 monthly, averaging IDR 104,566. The upper class, on the other hand, spends between IDR 15,000 and IDR 911,000 per month, with an average communication cost of IDR 190,000. This data illustrates that, although the minimum expenditures across these classes are relatively similar, the upper class incurs significantly higher communication costs than the lower class.

| Social Class | Average communication costs per month (IDR) | Average monthly income (IDR) |
|---|---|---|
| Upper class | 190,347 | 3,700,847 |
| Middle class | 104,566 | 2,088,854 |
| Lower class | 69,989 | 1,179,925 |

Tabel 2: Average income and communication costs by social class. *Source*: DDP, processed by researchers.

Table 2 indicates that the upper class possesses a higher purchasing power in relation to communication costs when compared to the lower class. However, Figure 5 illustrates the data by converting nominal values into the average proportion of communication costs relative to revenue. This figure reveals that the distribution of communication costs as a percentage of income across different social classes is relatively equitable, with each class exhibiting percentages close to 5%. Specifically, the upper class allocates 5.14% of their income to communication costs, the middle class allocates 5.01%, and the lower class allocates 5.93%. This data suggests that when the perspective shifts from nominal values to the proportion of communication costs relative to income, it becomes evident that the lower class allocates a larger proportion of their spending to internet consumption and communication.
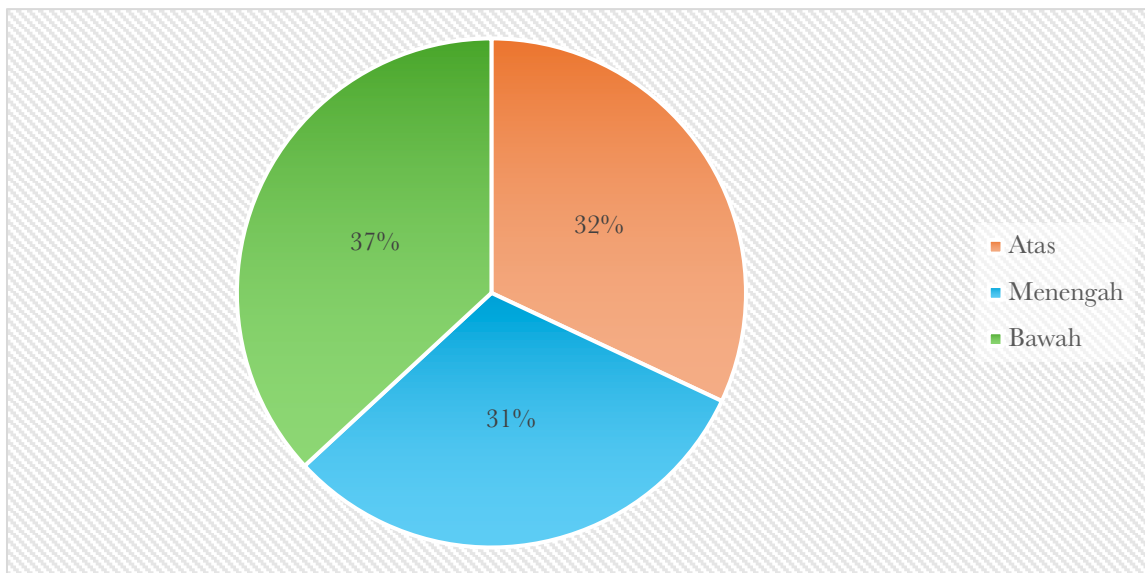


Figure 5. Average proportion of communication costs to revenue. *Source*: DDP, processed by researchers.

## Discussion and Practical Implications

This study effectively delineates three significant categories within Neglasari Village that can serve as a reference for the promotion and development of sustainable villages: social

class, the digital divide, and family income in relation to the purchase of digital communication products. While it has been posited that social class mapping facilitates the development planning process, the issue of the digital divide has introduced a novel perspective in the analytical framework of rural development transformation (Bowen & Morris, 2019; Morris et al., 2022). Existing literature often correlates social class mapping in development planning with an understanding of the social dynamics of specific groups within a given area, particularly in identifying the challenges faced by vulnerable populations. This understanding enables policymakers to formulate appropriate strategies for rural communities (Holgersen & Haarstad, 2009; Moore et al., 2017; Vergunst et al., 2016). However, a contemporary challenge in fostering a more adaptive and accountable rural development process is the necessity to address various digital disparities (Chen et al., 2022; Rundel & Salemink, 2021b). This study reveals that the ownership of gadgets or digital devices necessary for accessing various development program assistance is predominantly limited to upper and middle-class households. Additionally, family expenditure on communication products, such as cellphones, smartphones, and laptops, emerges as a significant theme in the research findings. This underscores that upper and middle-class social groups possess greater access to information regarding the planning and implementation of development programs (Akkoyunlu, 2015; Holgersen & Haarstad, 2009). The three mapping outcomes derived from this research indicate that community development in Neglasari Village necessitates further demographic mapping as a means to promote inclusive and equitable development.

The current research theoretically contributes to the development of rural communities by examining the impact of disparities in access to and utilization of information technology. It elucidates three key dimensions derived from the research findings: social class disparities, the digital divide, and the income levels of local communities in acquiring communication technologies. This framework offers a novel perspective on the underlying factors contributing to the marginalization of rural communities and suggests that development planning should prioritize the equitable application of digital technology. In this context, Kelly et al. (2023), Koch (2022), and Kupriyanova et al. (2019) assert that understanding the digital divide among specific social groups can assist policymakers and program developers in addressing emerging challenges at the grassroots level, thereby facilitating the formulation of innovative and effective programs. Conversely, the inability to accurately map the digital divide may exacerbate existing social inequalities within rural areas (Williams et al., 2016; Zerrer & Sept, 2020). Consequently, it is anticipated that the theoretical framework and mapping of the digital divide will serve as a valuable narrative, informed by research conducted in the Neglasari Village community, and will provide a reference point for similar initiatives across other regions in Indonesia.

In order to enhance the practical application of existing research findings, researchers can delineate various strategies for the formulation of alternative village development programs. For instance, Neglasari Village, which is primarily inhabited by

lower socioeconomic groups, serves as a pertinent case study for other villages seeking to identify the fundamental needs of their communities. By conducting a mapping exercise based on the predominant occupations filled by casual laborers (Holgersen & Haarstad, 2009; Kvartiuk & Curtiss, 2019), it becomes evident that a significant portion of Neglasari Village's residents can be classified as impoverished. Consequently, the planning of development programs must prioritize the targeted allocation of resources and the establishment of effective service systems (references). It is imperative that communities characterized by lower socioeconomic status are designated as primary targets for development initiatives (Saputra et al., 2023; Seemann, 2021), as this focus will facilitate the enhancement of underdeveloped infrastructure and superstructure, thereby optimizing the utilization of existing resources.

In Neglasari Village, the initial level of digital inequality is notably pronounced, particularly among the lower socioeconomic class, followed by the middle class, and subsequently the upper class. This observation suggests that the first level of digital inequality is significantly influenced by individuals' social status. Additionally, those who do not experience this initial level of the digital divide must possess sufficient purchasing power to finance communication services or internet access to facilitate their mobile phone usage. According to Zucman's analysis (2019, p. 122), individuals in the upper class typically exhibit greater purchasing power compared to those in the lower class. This assertion is substantiated by an analysis of average communication expenditures across social classes, which reveals that the upper class incurs an average cost of IDR 190,347.00, the middle class IDR 104,566.00, and the lower class IDR 69,989.00. However, when evaluating the proportion of average communication costs relative to the average income of each class, it becomes evident that the lower class demonstrates the highest purchasing power, with a percentage of 5.93%. This finding indicates that Zucman's analysis may not hold true in this context (Zucman, 2019). Consequently, it is imperative for development facilitators to devise prioritized strategies for effective community empowerment, concentrating on social groups that require the most support to enhance their welfare.

In conclusion, the implications of this research are anticipated to provide an alternative approach for development planners in the compilation of data, serving as a method for monitoring and evaluating programs. The data derived from the mapping of social class and digital inequality, as presented in the findings, should serve as a reference point for the assessment of development programs (Akkoyunlu, 2015; Hartoyo, 2018). Future initiatives must ensure that the objectives of social equality are pursued in a manner that is both fair and equitable, in accordance with the principles of sustainable development (Ngo et al., 2018). Furthermore, researchers may advise stakeholders that local economic development efforts must take into account the dynamics of social class and the digital divide in order to foster a more equitable local economy. This approach should promote the active participation of underrepresented social groups in broader economic activities. Although the three research implications have been articulated, the researcher acknowledges that further analysis is necessary. Given that the current study

focuses on secondary data analysis, it is advisable to explore the same topic across various contexts, scales, or indicators. Nonetheless, this study serves as a preliminary approach to mapping the digital divide in rural development, which will necessitate the incorporation of additional instruments in future research.

## Conclusion

This research underscores the substantial influence of the digital divide on social structures within rural areas, where access to technology and the internet significantly affects social class dynamics. The limited digital access in these regions represents not only an infrastructural challenge but also highlights the inequitable distribution of power and resources. Affluent socio-economic groups typically enjoy superior access to technology, thereby reinforcing their societal position, while less affluent groups face increasing marginalization. The digital divide intensifies disparities in education, economic opportunities, and access to information, all of which contribute to the entrenchment of social class stratification. For instance, farmers or small entrepreneurs in rural areas with internet access can leverage technology to expand their markets, enhance productivity, and foster innovation. Conversely, those lacking such access are left behind, struggle to compete, and are less engaged in the currents of contemporary development.

This study highlights that the digital divide constitutes not merely a technological challenge, but also a significant social issue that necessitates a comprehensive approach for resolution. It is imperative for governments and other stakeholders to formulate inclusive policies that not only enhance infrastructure but also empower rural communities by equipping them with digital skills and facilitating access to pertinent information. By adopting this strategy, rural development can become more equitable, enabling active participation from all social groups in economic and social advancement, thereby mitigating existing social disparities.

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**Availability of data and materials**

All data are available from the authors.

**Competing interests**

The authors declare no competing interest.

**Additional information**

No additional information from the authors.

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