

Determinants of Economic Functioning among Informal Worker Households Using the District Minimum Wage as a Benchmark: Empirical Evidence from Gunungkidul

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Abstract.

Measuring welfare in the informal sector can be biased when it relies on fluctuating nominal income rather than actual household expenditure. This study applies the Capability Approach to examine how resources shape the economic functioning of informal worker households in Gunungkidul, Indonesia, using real household consumption expenditure as a proxy for functioning. The study contributes by shifting the unit of analysis to households and introducing the District Minimum Wage (UMK) as a conceptual benchmark. Using March 2025 National Socioeconomic Survey (Susenas) data covering 464 informal worker households, the study applies binary logistic regression. The model shows good discriminatory capacity, with an AUC of 0.788 and a Nagelkerke R-squared of 0.321. Male-headed households have substantially higher odds of achieving expenditure above the UMK. Financial inclusion shows contrasting effects: account ownership is negatively associated with the outcome, while credit, digital money, and combined financial services are positively associated, with combined services showing the largest odds ratio. Business-oriented internet use has a stronger positive association than general internet access. Higher education and longer working hours are positively associated with the probability of expenditure above the UMK, whereas age has a negative association. The findings highlight the importance of human capital, productive financial inclusion, business-oriented digitalization, and demographic characteristics in expanding the economic capabilities of informal worker households.

Keywords: Informal sector; household consumption expenditure; Capability Approach; District Minimum Wage; financial inclusion; digitalization and binary logistic regression.

I. INTRODUCTION

The informal sector has distinctive characteristics because entry generally requires relatively low levels of capital, education, and skills (Pitoyo, 2007). It therefore serves as a livelihood strategy for low-income communities and workers who lose formal employment (Armansyah & Sukamdi, 2021). In Indonesia, informal employment accounted for 59.40% of total employment in 2025, or approximately 86.58 million workers (Badan Pusat Statistik, 2025). This large share indicates that many working households depend on economic activities with unstable income and limited social protection.

Income is commonly used as a welfare indicator (Mankiw, 2018; Badan Pusat Statistik, 2024). However, income from informal activities can fluctuate substantially, which can make it a less stable representation of actual living standards. Household consumption expenditure is more closely related to realized consumption and tends to be more stable than short-term income (Mankiw, 2018; Modigliani & Brumberg, 1954). The Capability Approach further argues that welfare depends not only on resources, but also on the capability of individuals or households to convert resources into valued functionings (Sen, 1999).

Human capital, financial inclusion, digital technology adoption, working time, and household demographic characteristics can shape this conversion process (Becker, 1993; Allen et al., 2016; van Deursen & van Dijk, 2014; ILO, 2018; Hastuti, 2015). In this study, household consumption expenditure represents economic functioning. The District Minimum Wage (UMK) is used as a conceptual benchmark. Although the UMK is not legally applicable to informal workers, it provides a reference point for assessing whether household consumption reaches a level comparable with the minimum income standard established for formal workers (Pemerintah Republik Indonesia, 2021; Syafitri et al., 2024).

Gunungkidul provides a relevant empirical setting. Informal workers accounted for 63.30% of employed residents in March 2025. The poverty rate was 14.15%, with a poverty gap index of 1.99 and a poverty severity index of 0.42 (BPS Kabupaten Gunungkidul, 2025). Previous studies have largely examined individual informal businesses, micro-enterprise characteristics, or business income. Studies of the UMK have also focused mainly on formal workers. This study therefore shifts the unit of analysis to informal worker

households, integrates multiple dimensions of resources within the Capability Approach, and evaluates household consumption against the UMK benchmark using microdata from Susenas March 2025.

II. LITERATURE REVIEW

The Capability Approach provides the theoretical foundation for this study. Sen (1999) distinguishes resources from capabilities and functionings. Resources become meaningful for welfare only when households can convert them into real opportunities and valued outcomes. In the present study, education and working hours represent human-capital resources, financial services represent environmental conversion factors, digitalization represents an external conversion factor, and age and gender represent demographic conversion factors. The outcome is economic functioning, operationalized as household consumption expenditure above or below the UMK benchmark.

Human Capital Theory argues that education raises productivity and economic returns through accumulated knowledge and skills (Becker, 1993). Working hours also represent the allocation of productive time and can influence income-generating capacity in informal activities (Alkumairoh & Warsitasari, 2022). Financial inclusion can improve households' ability to manage liquidity and access productive capital. However, ownership of a formal account does not necessarily imply active financial use (Allen et al., 2016; Sahputri et al., 2024). Digitalization can further expand market access and reduce information and transaction barriers. The digital divide increasingly concerns differences in the ways technology is used, rather than access alone (van Deursen & van Dijk, 2014). These theoretical relationships motivate the empirical model used in this study.

III. METHODS

This study uses secondary data from the March 2025 National Socioeconomic Survey (Susenas). The unit of analysis is a household whose head works in the informal sector in Gunungkidul. From 787 sampled households, screening based on the head's employment status and household employment protection resulted in 464 households in the final sample.

Informal workers were identified from the employment status of the household head, including self-employed workers, workers assisted by temporary or unpaid workers, and casual workers. Households were then excluded when any household member had employment-related protection through pension or veteran insurance, old-age security, work-accident insurance, death insurance, or job-loss insurance. This procedure reduced the likelihood that formal employment income would influence the measurement of household economic functioning.

The dependent variable is binary household consumption expenditure: 0 for expenditure below the UMK and 1 for expenditure above the UMK. The benchmark is Rp2,330,263.67. The UMK benchmark was selected because only three of the 464 observations were classified as poor using the Gunungkidul poverty line of Rp413,617 per capita, which would create a highly imbalanced outcome for a poverty-based logistic model.

Education is measured using the highest certificate attained by the household head on Susenas item R615, coded from 0 to 4. Working hours are measured continuously from item R707. Financial inclusion combines ownership of a bank account (R701), formal credit (R1701), and electronic money (R1702), producing five categories including the reference category without formal financial services. Digitalization is constructed from internet-use purposes in item R811. General internet uses receive a value of 1, while selling goods or services receives a value of 10. Households are then classified as non-users, general users, or business users. Age is taken from R407 and gender from R405.

The empirical specification uses binary logistic regression to estimate the probability that a household reaches economic functioning above the UMK. The model is evaluated using the ROC-AUC and Nagelkerke R-squared. The analysis also uses Susenas survey weights, as reflected in the model assessment reported in the manuscript.

IV. RESULTS

Descriptive statistics show that the 464 informal worker households are characterized by relatively low education, substantial working hours, limited productive financial service use, and limited digitalization. Mean education is 1.2672, mean weekly working hours are 40.32 hours, mean financial inclusion is 1.5388, mean digitalization is 0.6142, mean age of the household head is 58.25 years, and 85.78% of household heads are male.

The binary logistic model has an AUC of 0.788 and a Nagelkerke R-squared of 0.321. These values indicate good discriminatory capacity and that the model explains a meaningful share of variation in the binary outcome. All independent variables reported in the model are statistically significant at the 5% level.

Education has a positive association with the probability of expenditure above the UMK ($B = 0.321$; $OR = 1.379$). Working hours also show a positive association ($B = 0.012$; $OR = 1.012$). Compared with households without formal financial services, account ownership has an odds ratio of 0.921, formal credit 2.007, digital money 3.073, and combined financial services 3.940. Compared with households that do not access the internet, general internet access has an odds ratio of 1.617 and business-oriented access 3.022. Age has a negative association ($OR = 0.982$), while male-headed households have an odds ratio of 4.447.

Table 1. Research Variables and Operational Definitions

No	Variable	Model coding / measurement
1	Household expenditure	0 = Below UMK; 1 = Above UMK
2	Education	0 = No schooling/not completed primary; 1 = Primary; 2 = Junior secondary; 3 = Senior secondary; 4 = Higher education
3	Working hours	Actual hours worked per week
4	Financial inclusion	0 = No formal financial service; 1 = Account; 2 = Credit; 3 = Electronic money; 4 = Combined services
5	Digitalization	0 = No internet access; 1 = General access; 2 = Business access
6	Age	Age of household head in years
7	Gender	0 = Female; 1 = Male

Source: Data Processed, 2026

Table 2. Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Education of household head	464	0.00	4.00	1.2672	1.01911
Working hours	464	0.00	96.00	40.32	16.373
Financial inclusion	464	0.00	4.00	1.5388	1.54647
Digitalization	464	0.00	2.00	0.6142	0.59142
Age of household head	464	23.00	89.00	58.25	13.083
Gender	464	0.00	1.00	0.8578	0.34967

Source: Data Processed, 2026

Table 3. Logistic Regression Estimates

Variable	B	S.E.	Wald	df	Sig.	Exp(B)
Education of household head	0.321	0.010	1008.726	1	0.000	1.379
Working hours	0.012	0.000	744.744	1	0.000	1.012
Account (vs. no service)	-0.082	0.017	22.224	1	0.000	0.921
Credit (vs. no service)	0.697	0.023	958.115	1	0.000	2.007
Digital money (vs. no service)	1.123	0.033	1181.592	1	0.000	3.073

Variable	B	S.E.	Wald	df	Sig.	Exp(B)
Combined services (vs. no service)	1.371	0.021	4174.102	1	0.000	3.940
General internet access (vs. no access)	0.481	0.017	806.262	1	0.000	1.617
Business internet access (vs. no access)	1.106	0.053	432.845	1	0.000	3.022
Age	-0.018	0.001	576.064	1	0.000	0.982
Male (vs. female)	1.492	0.021	5101.691	1	0.000	4.447
Constant	-0.912	0.062	214.839	1	0.000	0.402
Note: Nagelkerke $R^2 = 0.321$; Omnibus Chi-Square = 35310.417 ($p < 0.001$); AUC = 0.788. Source: Author's data processing.						

Source: Data Processed, 2026

V. DISCUSSION

The results support the Capability Approach because the observed outcome depends not only on the availability of resources but also on households' ability to convert those resources into economic functioning. Demographic characteristics operate as personal and social conversion factors. The substantially higher odds associated with male household heads indicate a gender difference in the observed probability of reaching expenditure above the UMK. The result should be interpreted as an empirical association rather than as evidence of a single causal mechanism.

The negative association between age and the outcome is consistent with the role of declining physical capacity in the conversion of labor into economic returns. In a context where informal workers often lack formal employment protection, older workers may face narrower economic options.

Education is positively associated with economic functioning. The result is consistent with Human Capital Theory and with the Capability Approach, because education can strengthen the ability to identify opportunities, adapt to economic changes, and convert labor and other resources into improved living standards. The positive association of working hours indicates that productive time remains relevant for informal households, although the relatively small odds ratio suggests a modest change for each additional hour.

Financial inclusion produces the most notable contrast. Account ownership alone is negatively associated with the outcome, while credit, digital money, and combined services show positive associations. This pattern suggests that formal account ownership should not automatically be interpreted as substantive financial inclusion. Active use of financial instruments may be more closely related to the capacity to manage liquidity and finance productive activity. However, the cross-sectional design does not establish whether financial services cause higher expenditure or whether economically stronger households are more likely to use them.

Digitalization shows a similar distinction between access and functional use. Business-oriented internet use has a stronger association than general use. This finding is consistent with the argument that the digital divide increasingly reflects differences in use and capability rather than simple access. For informal households, business-oriented digital use can facilitate market access, marketing, and information exchange. The evidence supports the relevance of functional digitalization within the Capability Approach.

The study also has limitations. The cross-sectional Susenas design limits causal interpretation. The UMK is used as a conceptual benchmark, not as a legal income requirement for informal workers. The operationalization of digitalization and financial inclusion depends on available Susenas questionnaire items. Future studies can incorporate longitudinal data and spatial characteristics to examine changes in capability formation across areas

VI. CONCLUSION

The study finds that demographic characteristics, human capital, financial inclusion, and digitalization are associated with the ability of informal worker households in Gunungkidul to reach household expenditure above the UMK benchmark. Male household heads, higher education, longer working hours, active financial services, and business-oriented internet use are positively associated with the outcome, while age and account ownership alone show negative associations.

The findings strengthen the application of the Capability Approach at the household level by showing that resources do not automatically translate into economic functioning. Their effects depend on how households can convert resources into practical economic opportunities. For local policy, the results point to the relevance of education and skills development, adaptive social protection for older informal workers, productive financial inclusion, and business-oriented digital literacy. Future research should incorporate spatial characteristics and longitudinal data to test the stability and causal direction of these relationships.

Limitation

The study uses cross-sectional survey data, so the estimated relationships should not be interpreted as causal effects. The UMK serves only as a conceptual benchmark because it is not legally applicable to informal workers. In addition, the measurement of financial inclusion and digitalization is constrained by the Susenas questionnaire structure. These limitations should be considered when generalizing the findings beyond the study population.

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