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Article

Building household resilience: The effect of livelihood capital during and after pandemic COVID-19 in Bekasi Regency

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Abstract: The COVID-19 pandemic has significantly restricted household resilience, particularly in developing countries. The study investigates the correlation between livelihood capital and household resilience amid uncertainties due to the COVID-19 pandemic, specifically in Bekasi Regency, West Java Province, Indonesia. Livelihood capital encompasses social, human, natural, physical, and financial, which are crucial in shaping household resilience. This study used the SEM-PLS method and utilized a survey of 120 respondents (household heads) from four villages in two districts (Muaragembong and South Tambun) in Bekasi Regency to identify critical factors that either enhance or impede rural household resilience during and after the pandemic. Findings reveal that households possessing human capital, financial capital, and empowerment are more adept at navigating socioeconomic difficulties during and after the pandemic. However, this research stated that trust and social networks enhance household resilience during the pandemic, whereas social norms are crucial for rebuilding household resilience in the post-pandemic phase. The finding revealed that social cohesion adversely affected household resilience during and after the pandemic, while trust diminished household resilience in the post-pandemic COVID-19 phase. These findings offer insight to policymakers, scholars, and other stakeholders aiming to foster household resilience during and in recovery efforts after the pandemic.

Keywords: livelihood capital; household resilience; pandemic COVID-19; after pandemic COVID-19 recovery; developing countries; socioeconomic; rural

1. Introduction

The extensive proliferation of the COVID-19 pandemic has affected the living conditions of the global population. The COVID-19 pandemic has negatively impacted households in developing countries, including rising unemployment, reduced incomes, heightened food insecurity, and increased poverty levels (Asegie et al., 2021). Indonesia is ranked 19th globally in active COVID-19 cases among 230 nations and has the top position in the Southeast Asia area (Worldometers, 2022). The Indonesian government is endeavoring to implement lockdown measures and extensive social restrictions to curtail the transmission of the COVID-19 pandemic. Consequently, limiting individual movements and economic activity has led to a crisis. This situation has led to the closure of numerous business sectors and subsequent layoffs, resulting in heightened unemployment, diminished purchasing power, and escalated poverty levels. Extended periods of lockdown have placed substantial

pressure on the financial stability of households, increasing existing vulnerabilities and inequalities (Bélair et al., 2023). Throughout the challenging times brought on by the pandemic, many households faced partial or complete job losses with a drastic drop in household earnings (Huynh and Bui, 2024). The pandemic has led households to diminish their confidence in the economy, adjust their risk preferences, and adopt a more cautious approach to safeguarding their financial resources (Li et al., 2020; Yue et al., 2020). The Indonesian government has been financing a national economic recovery program aimed at health, economic revitalization, and protecting affected communities from the beginning until the end of the COVID-19 pandemic. Indonesia's economy began to recover and exhibit positive growth from late 2021 to 2022 after a period of stagnation at the onset of the pandemic (Wartoyo et al., 2024).

The COVID-19 pandemic's economic disruption has also affected Bekasi Regency in West Java Province, Indonesia. West Java Province has the highest gross domestic regional product in Indonesia. Bekasi Regency has the highest gross regional domestic product among all the West Java Province regencies. Bekasi Regency's economy is primarily driven by the manufacturing industry, which accounts for 78.43% of its gross regional domestic product (Central Bureau of Statistics, 2023). The economic growth in Bekasi Regency declined to −3.39% in 2020, compared to 3.95% in 2019. The COVID-19 pandemic pressured growth of the industry, trade, services, construction, and mining sectors to become negative rate in 2020. The unemployment rate in Bekasi Regency rose from 9% in 2019 to 11.54% in 2020, then decreased to 8.87% in 2023. Simultaneously, the poverty rate rose from 4.01% in 2019 to 4.82% in 2020, declining to 4.10% in 2023. Households are unequivocally the most significant ones impacted by this economic downturn.

The income-generating acts have been disrupted by the pandemic events, causing the resilience of most vulnerable households to be lower than before the pandemic, lowering access to food and leaving some other households without food to eat (Mkupete et al., 2022). The susceptibility of households regarding the ramifications of COVID-19 has significantly influenced their sense of well-being (Zhao et al., 2023). This vulnerability stems from low educational levels among household heads, limited access to stable employment, and insufficient support from local governments, community organizations, and NGOs (Huynh and Bui, 2024). COVID-19 shocks negatively impacted rural household's food security and weakened their resilience capacity (Suh et al., 2023). Most households managed to keep food costs unchanged, while expenses on education and others decreased (Janssens et al., 2021). Other households reduced their food expenditure, spent their savings, borrowed money, and improved their livelihoods by increasing working time and household labor (Mahmud and Riley, 2021).

Since the beginning of the COVID-19 pandemic, households in Bekasi Regency have employed strategies to sustain their livelihoods. Some households attempt to reduce expenditures, enhance their savings practices, and seek additional employment, while others depend on government aid (Marsus et al., 2024). A household's livelihood strategy is closely associated with its capacity to endure and recover in the post-COVID-19 pandemic. This study seeks to investigate the impact of household livelihoods on a household's capacity to survive and adapt during and after the COVID-19 pandemic. The study aims to enhance insight into households, as prior

research has predominantly concentrated on the effects of disasters, including pandemics, solely on livelihoods or household resilience.

Furthermore, Bekasi Regency, the research area, is an urbanized region. The results of this present research are particularly pertinent to emerging nations with analogous social and economic traits and characteristics. This research provides a comprehensive perspective on household coping strategies and adaption methods that might guide subsequent policies and building resilience initiatives.

2. Literature review

A livelihood consists of an individual's abilities and means of support, encompassing earnings, resources, and food (Chambers and Conway, 1992). It is essential to access various input sources, namely economic, social, human, and natural, to attain sustainable livelihoods when pursuing various livelihood strategies (Scoones, 1998). Households require five capital types to generate beneficial outcomes: natural, social, economic, physical, and human (DFID, 1999). The capacity of a household to effectively control and utilize its livelihood capital is the determining factor in its ability to attain the desired lifestyle. Adequate livelihood capital bolsters the resilience of rural households by enabling them to devise strategies for managing and adapting to changes and threats.

During the COVID-19 pandemic, household livelihoods face threats due to dependence on single income sources, limited access to assistance, financial issues, and insufficient resources of nature. Additionally, inadequate skills and awareness regarding alternate means of subsistence paths, lack of safety nets, weak social networks, social inequality, institutional limitations, insufficient community leadership, and cooperation exacerbate the risk (Bhowmik et al., 2021). The access and utilization of livelihood capitals or resources are essential for rural households to bounce back from shocks, catastrophes, and climate change impacts. This study employs the Sustainable Livelihood Framework, which identifies 5 (five) categories of capital for households: human, social, financial, physical, and natural (Quandt, 2018). Livelihood capital plays a significant role in helping households endure disasters and recover during and after such events (Islam and Walkerden, 2022). Household resilience pertains to a household's capacity to handle difficult situations and conditions by leveraging its resources, structure, and internal relationships (Yang et al., 2021). Communities are diverse, and each household from one community may possess different levels of resilience. It is beneficial to analyze livelihoods and resilience from a household rather than a community perspective (Quandt, 2018). Various studies have examined how natural disasters and climate change influence rural household resilience (Ahmad and Afzal, 2021; Fang et al., 2014; Li et al., 2024). Several factors impacting household resilience during catastrophes, changes in the climate, and food insecurity are assets, accessibility to fundamental services, earnings or income, access to food, adaptive capability, social welfare schemes, and the steadiness of livelihood (Alinovi et al., 2010; Mekuyie et al., 2018; Myeki and Bahta, 2021). According to Ado et al. (2019), a correlation between income, food access, assets, and adaptive capability is vital to a household's resilience to food insecurity due to the agriculture sector's heightened susceptibility to climatic variability.

The livelihood assets utilized by rural households significantly affect their resilience during disasters (Azzahra and Dharmawan, 2015). The research indicated that financial, natural, social, and physical capital influence the resilience of farming households during floods. A study in Iran reveals that the five capital livelihoods (financial, social, human, natural, and physical capital) can significantly improve rural household's abilities to recover from droughts (Savari et al., 2023). Other research indicates that social capital (bridging and bonding) and human capital (dimension of economic activity) significantly influence household resilience in flood occurrences (Anuradha et al., 2021). During the COVID-19 pandemic threat, the disruption experienced by farmers exceeded the danger of disease, and their household resilience was diminished following the pandemic (X. Zhao et al., 2023). The study also indicated that financial and social capital can successfully assist farmers in overcoming livelihood challenges. In contrast, natural capital exerts a restricted influence, whereas physical and human capital demonstrate no discernible effect.

Household livelihoods and resilience can have multiple dimensions at different levels, making it challenging to integrate the two concepts for benchmarking and operationalization (Liu et al., 2020). According to prior studies, sustainable livelihoods encompassing natural, social, financial, physical, and human capital influence the categorization of what is perceived as resilience in households: optimist, cooperative, and pessimist (Yang et al., 2021). The study indicated that rural households with greater natural, physical, social, and human resources are more likely to be resilient and, hence, adaptive, according to an assessment of sustainable livelihoods throughout the resilience groups of households. Thus, the conceptual framework of the study is illustrated in **Figure 1**.

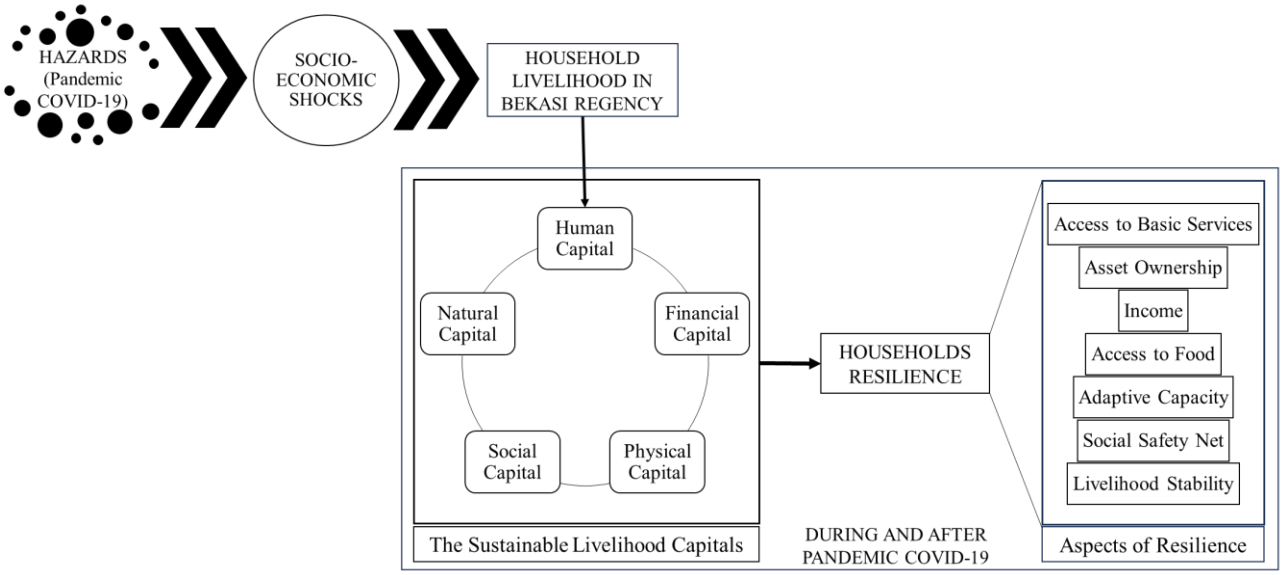

Figure 1. Conceptual framework.

Source: Author's construct, 2024.

3. Methods

3.1. Overview of location

The location study was conducted at Bekasi Regency in West Java Province, Indonesia. This area is part of the Jakarta Metropolitan Region and is currently experiencing the growth of suburbs resulting from the effects of spillover and growth of the urban regions stemming from the rapid urbanization of Jakarta, industrial development, population migration, and the relocation of production facilities (Kurnia et al., 2020). The processing sector is crucial to the local economy, while the services industry provides the most substantial contributor to the working-age population at 61.5%. In comparison, the processing industry accounts for 34.05%, and agriculture contributes 4.45% (Central Bureau of Statistics, 2023). As Jakarta is the primary epicenter of COVID-19 transmission, Bekasi Regency is among the regions most impacted by the pandemic, attributable to increased mobility and interaction via commuter train lines and the proliferation of housing developments (Pribadi et al., 2021). The data collection was conducted between August 2022 and February 2023.

For this research, the sample was gathered using a multistage sampling technique, which involved choosing the location through purposive sampling and selecting the respondents using simple random sampling. The study locations were identified by the use of purposive sampling (**Figure 2**), taking into account the following considerations: First, choosing the location's study using the purposive sampling method: (1) Bekasi Regency has one of the most significant cumulative positive confirmed cases in West Java Province (Pemerintahan Provinsi Jawa Barat, 2022); (2) Two districts in Bekasi Regency were selected, namely South Tambun district as the district which has the highest cumulative positive confirmed cases, while Muaragembong district as the district which has the lowest cumulative positive confirmed cases (Bekasi Regency Health Office, 2022); (3) Two villages in South Tambun district were chosen: Mangunjaya village as the village which has the highest cumulative of COVID-19 positive confirmed cases, while Setiadarma village as the village which has the lowest cumulative of COVID-19 positive confirmed cases (Bekasi Regency Health Office, 2022); (4) Two villages in Muaragembong district were chosen: Pantai Mekar village as the village which has the highest cumulative of COVID-19 positive confirmed cases, while Jayasakti village as the village which has the lowest cumulative of COVID-19 positive confirmed cases (Bekasi Regency Health Office, 2022); and (5) Two Neighborhood Associations or Rukun Warga (RW) were chosen in each village to represent the highest and the lowest cumulative of COVID-19-positive confirmed cases (Bekasi Regency Health Office, 2022). Rukun Warga is a neighborhood community consisting of residences or houses within a village. In the Muaragembong District, Pantai Mekar Village comprises 8 RW, and Jayasakti Village comprises 6 RW. In the South Tambun district, Mangunjaya Village contains 33 RW, and Setiadarma Village has 4 RW. The Rukun Warga or neighborhood Associations selected for study are as follows: (1) Mangunjaya Village: RW 21 as the RW which has the highest cumulative positive confirmed cases and RW 23 as the RW which has the lowest cumulative positive confirmed cases; (2) Setiadarma Village: RW 1 as the RW which has the highest cumulative positive confirmed cases and RW 2 as the RW which has the lowest cumulative positive confirmed cases; (3) Pantai Mekar Village: RW 1 as the RW which has the highest cumulative positive confirmed cases and RW 3 as the RW which has the lowest cumulative positive confirmed cases; and (4) Jayasakti Village: RW 4 as the RW which has the highest cumulative positive

confirmed cases and RW 5 as the RW which has the lowest cumulative positive confirmed cases.

Second, the respondents were selected using simple random sampling. The respondents in this study were 120 heads of households in 8 RWs in 4 villages. The Central Limit theory was used to choose 30 respondents from each village. Based on the Central Limit Theory, when the sample size is at least 30, the sample averages will closely resemble a normal distribution, even if we do not know the variability of the population or the cost of drawing the sample (Juanda, 2009; Kwak and Kim, 2017). In each neighborhood association or Rukun Warga, 15 respondents were chosen using random sampling. Household head respondents in each Rukun Warga were randomly selected using Microsoft Excel from demographic data, which combined the 2010 Population Census data with data obtained from the neighborhood heads. The survey was carried out by directly distributing the questionnaires to respondents, accompanied by a representative of the Rukun Warga apparatus.

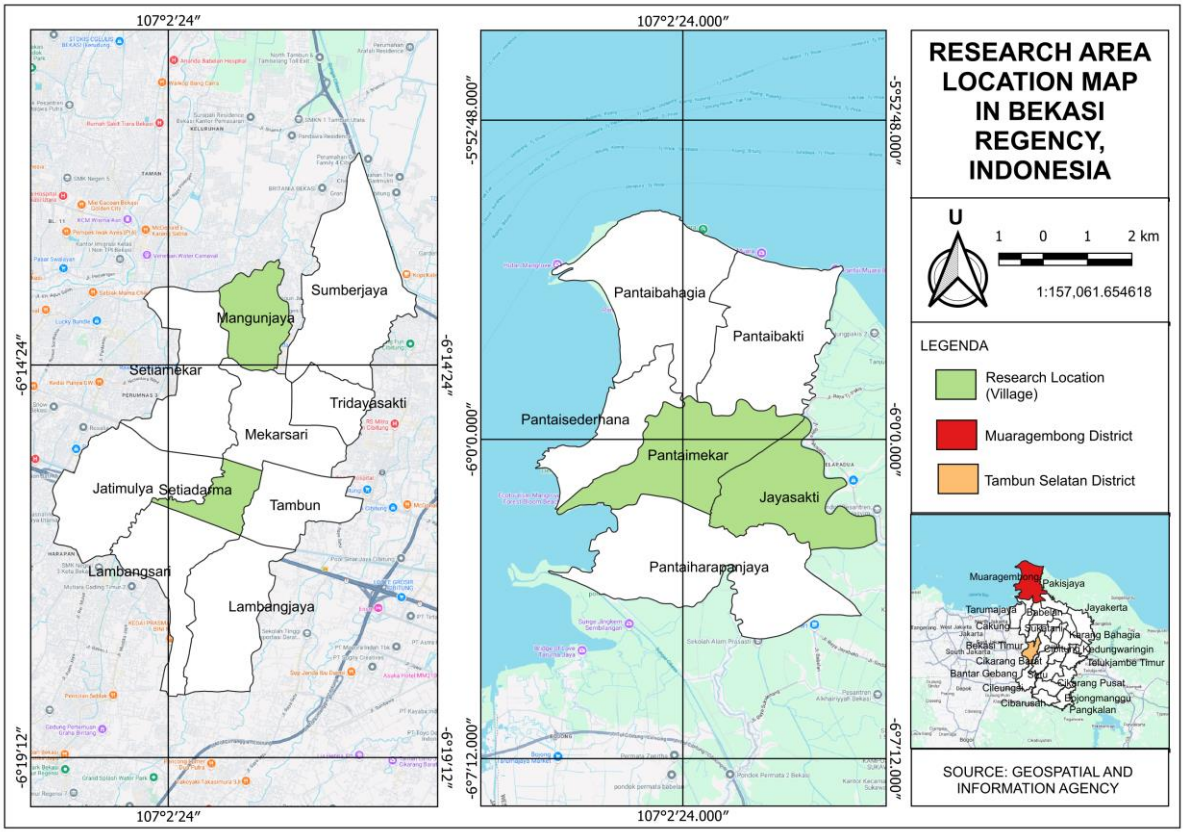

Figure 2. Research location map.
Source: Geospatial and information agency, 2024.

3.2. Method of analysis

This research utilized five livelihood capitals as independent variables, while household resilience was the dependent variable (**Figure 3**). Human capital is an individual attribute shaped by education, experience, and skills (Daou et al., 2019). Education is an essential aspect of developing human capital. Research has shown that schooling considerably increases household resilience to food shocks (Mgomezulu et al., 2024). When the head of the family has higher education, the household has more

opportunities for better employment, higher income, and information about addressing fundamental needs for better nutrition and health (Mutisya et al., 2016). Individuals, families, or communities in rural areas with better human resource capabilities can also improve their resilience by acquiring digital ability. Digital ability is connecting to and using digital and mobile devices. Digital skills help to strengthen catastrophe resilience through communication and information, community competency, and economic development (Marshall et al., 2023). Household heads and other household member knowledge and abilities also improve when they receive capacity-building training that assists them in making a living for their families (Paudel Khatiwada et al., 2017; Ramilan et al., 2022). Improving rural households' understanding of sustainable agricultural practices is essential for strengthening their resilience against global warming (Keshavarz and Moqadas, 2021). This study proposes the following hypotheses according to the above discussion:

H1. Human Capital positively affects household resilience in facing the pandemic COVID-19 and after the pandemic COVID-19.

Financial capital is the essential source of capital, including cash and deposits for all economic activities carried out by rural households, and enables them to enhance their living standards (Wang et al., 2023). Research has indicated that households with adequate income and savings tend to be more resilient when faced with different life crises, including natural catastrophes (Wu and Wan, 2023). The study also implies that households with stable employment have greater financial resilience and are less vulnerable to the effects of external shocks. Households that encounter economic challenges often struggle to obtain gas and electricity, which is intricately associated with household headwork status (Burlinson et al., 2024). In addition to the job situation, saving money is a crucial approach that households must embrace to effectively manage the detrimental impacts of global warming and food shortages (Demisse et al., 2024). The decline in multiple dimensions of poverty across rural households can be attributed, in part, to their savings practices and the presence of more financially capable household members, resulting in a modest enhancement of the household's resilient capacity (Haile et al., 2021). The resilience of households varies based on their savings practices, debt levels, and financial management capabilities (Pandey and Tiwari, 2022). Households may encounter challenges or hesitance in obtaining loans or credit during financially pressured circumstances caused by the necessity of managing unexpected fluctuations in interest rates, earnings, and property values (Almenberg et al., 2022). The ownership of debt is significantly linked to a deterioration in a household's financial stability following an economic shock since the use of credit imposes an extra strain on the household's accumulated expenses (Bufe et al., 2022). However, several economically vulnerable households use consumer credit to meet daily living needs as they experience income shocks during the COVID-19 pandemic (Midões and Seré, 2022). Considering these points, this research states the subsequent hypothesis.

H2. Financial Capital positively affects household resilience in facing the pandemic COVID-19 and after the pandemic COVID-19.

Natural capital is derived from natural resources in a household's neighborhood, such as water, air, and land (Xu et al., 2023). Natural capital constitutes the collection of natural resources that can supply essential services and materials for sustaining

livelihoods (Peacock, 2010), such as land, water, and air (Scoones, 1998). Natural capital correlates positively with agricultural livelihood methods, with households being more likely to participate in farming activities when they live closer to natural capital (Fang et al., 2014). The condition of critical resources, such as water, land, and air, along with the activities that utilize and affect these resources, served a vital function in ascertaining sustainability and resilience (Simon et al., 2023). The pandemic has been the cause of notable improvements in air quality across numerous cities globally, mitigated emissions of greenhouse gases, diminished noisy pollution, and contamination of water, all contributing to the potential recovery of the environment (Rume and Islam, 2020). The health of the soil improves air and water quality while also maintaining the health of living creatures, which is critical for enhancing food security among rural neighborhoods, encouraging farming sustainability and resilience to global warming, and assisting in the development of new economic opportunities, poverty reduction, and sustainable development (Doran, 2002).

H3. Natural Capital positively affects household resilience in facing the pandemic COVID-19 and after the pandemic COVID-19.

Physical capital refers to the private items, equipment, and facilities owned by households that are required to sustain livelihoods (Habib et al., 2023), such as housing (Nguyen et al., 2020) and access to the Internet (Sanchez et al., 2021). Physical capital is the basic infrastructure that allows households to maintain their livelihoods, comprising housing or residential structures, infrastructure, and critical facilities (Peacock, 2010). Prior research indicates that households in higher socioeconomic positions demonstrate greater positivity and perseverance throughout the COVID-19 pandemic, mainly due to their physical capital (Thompson, 2005). Key elements such as home ownership and access to information communication technology (ICT) play vital roles in providing the necessary welfare services that bolster household resilience in countering the spread of COVID-19 while enhancing both the physical and emotional well-being of all members (Suleimany et al., 2022). In contrast, households that rent their residences had an increased probability of acute food insecurity, reflecting a lack of household resilience (Elsahoryi et al., 2020). Households enjoying internet connectivity reported enhanced subjective well-being during the pandemic, as increased productivity and greater social and economic resilience were evident amidst the restrictions on travel and physical interactions (Barrero et al., 2021). The COVID-19 pandemic has intensified family conditions, grappling with reduced income and food insecurity (The Lancet Public Health, 2020). Households that utilize clean cooking energy sources, such as liquid petroleum gas and electricity, can experience reduced household food insecurity compared to households that rely on traditional or biomass energy sources like firewood, grass, and charcoal (Adekoya et al., 2023).

H4. Physical capital positively affects household resilience in facing the pandemic COVID-19 and after the pandemic COVID-19.

The term “social capital” frequently incorporates aspects that contribute to social existence, such as norms of society, reliance, and connections that facilitate collaboration in a societal environment (Putnam et al., 1994). This study adopted factors affecting social capital: trust, networks, norms, information and communication, social cohesion, and empowerment (Coleman, 1988; Fukuyama,

1996; Grootaert et al., 2004; Putnam et al., 1994). Social capital enhances the resilience needed by households in rural areas against adverse effects of climate unpredictability and shortages of food (Demisse et al., 2024). The significance of social capital in reducing a household's likelihood of experiencing poverty surpasses the impact of human capital (Rustiadi and Nasution, 2017). Trust is a personal expectation that one agent holds regarding the future behavior of another, informed by past experiences of their interactions (Mui, 2002). Societal trust is favorably associated with national resilience to COVID-19 and with the adaptive escalation of government intervention stringency during epidemic surges (Lenton et al., 2022). A social network is characterized as a collective of individuals or entities that establish a network of relationships (Magsino, 2009). Social networks can increase households' willingness to borrow money from relatives and friends, provide valuable human resources, and improve their ability to withstand risks, which increases household consumption (Liu et al., 2024). Social norms are guidelines or codes of behavior that regulate individuals' conduct, establish expectations for the behavior of others, and enhance coordination within social interactions (Smith, 2020). Adherence to social norms is one of the main coordination mechanisms that allow groups to coordinate for survival in the face of collective threats such as the COVID-19 pandemic (Gelfand et al., 2021). Information and communication encompass the delivery of accurate and dependable information, the establishment of a shared understanding of events and matters, and a basis for disseminating knowledge, which is considered a crucial element of resilience (Norris et al., 2008). Besides that, households that primarily rely on mass media and external organizations (such as government or non-government) for climate information are more than twice as likely to evaluate their resilience as better when compared with households that depend on personal experience (Amoak et al., 2023). Social cohesion encompasses ties and relations among individuals and groups, characterized by both structural/material mechanisms (for instance, the exchange of goods and economic interactions) and non-material mechanisms (including informal connections and shared identity) that foster ways of unity, collaboration, and sharing among them (Botterman et al., 2012). Higher social cohesion within a community increases the likelihood that households will have confidence in their neighborhood's capability to handle and recuperate from disasters (Cagney et al., 2016). Households that maintain social cohesion with their surroundings through regular food sharing tend to have greater resilience to food insecurity than households that do not (Ayuya, 2024). Being a member of a farmer's group is one of the most critical factors that may significantly improve climate resilience because these organizations encourage communities and provide practical assistance with the planting process, preservation, harvesting, and marketing, as well as supporting access to market and empowering the farmers to influence policy on agriculture (Chimi et al., 2024). Empowerment is the household's ability to make crucial choices and decisions that affect their way of life (Nega et al., 2009). Empowerment includes autonomy in community decision-making, direct democracy, social learning, and locally-based self-reliance (Haq et al., 2016). Rural household empowerment is one of the factors to consider while measuring poverty and implementing poverty alleviation strategies (Kyaw and Routray, 2006).

H5. Trust positively affects household resilience in facing the pandemic COVID-19 and after the pandemic COVID-19.

H6. The network positively affects household resilience in facing the pandemic COVID-19 and after the pandemic COVID-19.

H7. Norm positively affects household resilience in facing the pandemic COVID-19 and after the pandemic COVID-19.

H8. Information and communication positively affect household resilience in facing the pandemic COVID-19 and after the pandemic COVID-19.

H9. Social cohesion positively affects household resilience in facing the pandemic COVID-19 and after the pandemic COVID-19.

H10. Empowerment positively affects household resilience in facing the pandemic COVID-19 and after the pandemic COVID-19.

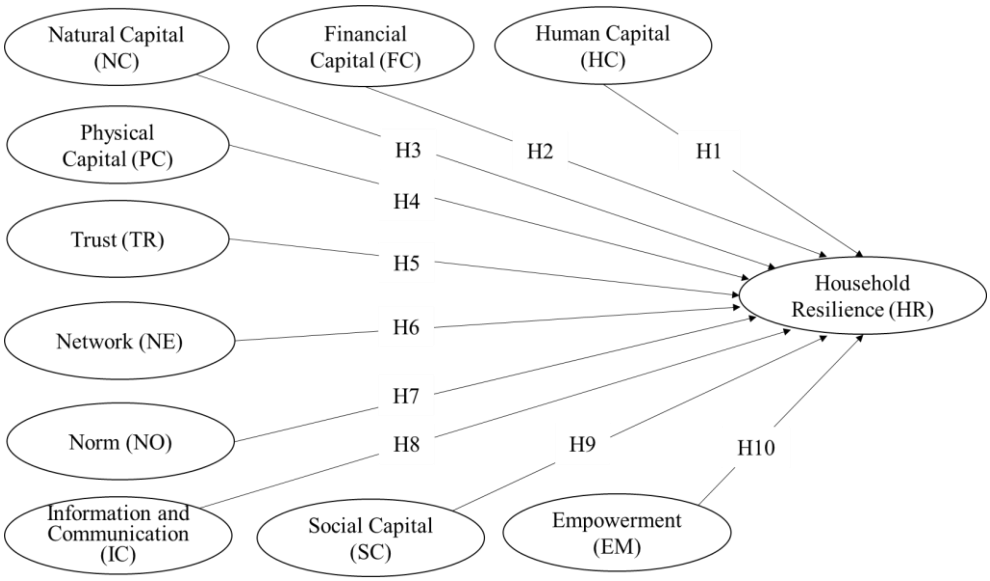

Figure 3. Research model.

Source: Author's construct, 2024.

The research utilizes a quantitative methodology and a questionnaire to gather the data. Variables are determined by relevant theory and previous research. Ten variables were examined: human capital (HC), financial capital (FC), physical capital (PC), natural capital (NC), trust (TR), network (NE), norms (NO), information and communication (IC), social cohesion (SC), and empowerment (EM). Each variable was assessed according to its specific indicators. The research employed a questionnaire with a structure to gather data on multiple research variables and their corresponding indicators, as detailed in **Table 1**. Questionnaires were distributed to 120 household heads as respondents. The questionnaire is presented in the Appendix. Each respondent was requested to respond to each question regarding both during the COVID-19 pandemic and the post-pandemic period. The questionnaire's validity and reliability were subsequently verified.

Table 1. Variables and indicators.

No	Variables	Sources	Indicator
1	Human Capital (HC)	Daou et al. (2019); Mashall et al. (2023); Ramilan et al. (2022); Khatiwada et al. (2017)	Head household formal education (HC1), Household head digital ability (HC2), Household head non-formal education/training (HC3)
2	Financial Capital (FC)	Burlinson et al. (2024); Demisse et al. (2024); Almenberg et al. (2022)	Occupation status (FC1), Saving habit (FC2), Ability to avoid debt/loan (FC3)
3	Natural Capital (NC)	Simon et al. (2023); Xu et al. (2023)	Air condition (NC1), Soil condition (NC2), Water condition (NC3)
4	Physical Capital (PC)	Nguyen et al. (2020); Suleimany et al. (2022); Adekoya et al. (2023)	House ownership status (PC1), Cooking fuel often used (PC2), Intensity use of Internet (PC3)
5	Household Resilience (HR)	Alinovi et al. (2010); Mekuyie et al. (2018); Myeki and Bahta (2021)	Access to basic services (AB), Asset ownership (AO), Income (IN), Access to food (AF), Adaptive capacity (AC), Social safety net (SS), Livelihood stability (LS)
6	Trust (TR)	Zeleke et al. (2023); Saleh (2024); Grootaert et al. (2004)	Trust in family (TR1), Trust in neighbors (TR2), Trust in others of the same ethnicity (TR3), Trust in others from different ethnicity (TR4), Trust with the government (TR5), Trust with community/religious leaders (TR6), Trust in health workers (TR7), Trust in security officers (TR8)
7	Network (NE)	Völker (2023); Grootaert et al. (2004)	Strength of Relationship with Family and Relatives (NE1), Strength of Relationship with Neighbor (NE2), Strength of Relationship with Friends (NE3), participation in community activities/groups (NE4)
8	Norms (NO)	Andrighetto et al. (2024); Grootaert et al. (2004)	Willingness to help neighbors/others (NO1), Ease of getting help from neighbors or others (NO2), Traditional values that have existed for generations (NO3), Religious values that are believed and embraced (NO4)
9	Information and Communication (IC)	Beogo et al. (2022); Grootaert et al. (2004)	Ease of Information (IC1), Ease of Communication (IC2)
10	Social Cohesion (SC)	Den Broeder et al. (2022); Saiz et al. (2021); Grootaert et al. (2004)	Social Engagement (SC1), Sense of belonging (SC2)
11	Empowerment (EM)	Dickin et al. (2021); Grootaert et al. (2004)	Expressing opinion in a public meeting (EM1), opinion heard in a public meeting (EM2), participation in empowerment activities/programs (EM3)

The research utilizes the Structural Equation Model with a Partial Least Squares method and data processing using the Smart-PLS 3 program (Hair et al., 2011). This work employed the two-stage approach, which facilitates the determination of latent variable scores in SEM-PLS; therefore, results for first-order latent variables can be obtained (Chin, 1998). The outside and inner models are examined in the evaluation process (Sarstedt et al., 2021). External or measurement models are evaluated by examining validity and reliability. The testing procedure assesses the inner model to predict the causal link between latent variables. This examination employs R-square analysis for dependent construct variables and determines the path coefficient value by examining the t-statistic value obtained during the bootstrapping process.

4. Results

Table 2 presents the socio-demographic traits of the household heads who responded to the questionnaire. About 92.5% of the respondents were male, while females made up 7.5% of the respondents. Furthermore, most respondents were married, accounting for 90.0%. The participants were predominantly between age 41 and 60, comprising 58.3% of the respondents. Besides that, respondents aged 21–40 accounted for 29.2% of the total. On the other hand, respondents aged above 61

constituted the smallest number, at 12.5%. Most respondents (51.7%) obtained a secondary education, 35.8% achieved a primary education, and 12.5% completed tertiary-level education (diploma, bachelor's degree, and others). Regarding occupation, 26.7% of respondents were self-employed, 19.2% were fishermen, 18.3% were laborers, 15.8% were private employees, and the remaining respondents engaged in other occupations.

Table 2. Respondent's socio-demographic characteristics.

Variables	Description	Frequency	Percentage (%)
Age	21–40	35	29.2
	41–60	70	58.3
	61 and above	15	12.5
Gender's type	M (Male)	111	92.5
	F (Female)	9	7.5
Status of Marital	Married	108	90.0
	Divorced	3	2.5
	Widowed	9	7.5
Education Attainment Level	Primary education	43	35.8
	Secondary education	62	51.7
	Diploma	6	5.0
	Bachelor's Degree	4	3.3
	Others	5	4.2
Occupational	Self-employed	32	26.7
	Fisherman	23	19.2
	Labor workers	22	18.3
	Private employee	19	15.8
	Farmer	13	10.8
	Housewife	5	4.2
	Hamlet officer	3	2.5
	Retired Civil Servants	2	1.7
	Civil servant	1	0.8

Source: Field survey, 2023.

4.1. Measurement model analysis

The measuring model was built utilizing a reflecting indicator and assessed through two different validations: convergent validity and discriminant validity. The convergent validity of the outer model is evaluated by examining loadings outer, average variance extracted (AVE), and composite reliability (CR). The presence of outer loadings that exceeded 0.5 (Chin, 1998), an Average Variance Extracted value exceeding 0.5, and a Composite Reliability (CR) value of more than 0.7 (Sarstedt et al., 2021) demonstrates that the model has satisfied the criteria for convergent validity. The study removes the following items due to low loadings (loading value below 0.5): NC1, NC3, PC1 (Pandemic COVID-19) and SS3, TR31, TR41, TR43, PC1 (After Pandemic COVID-19) in **Table 3**.

Table 3. Measurement results.

Constructs (after deletion of items)	Pandemic COVID-19				After Pandemic COVID-19			
	Item	**Loading**	**CR**	**AVE**	**Item**	**Loading**	**CR**	**AVE**
Access to food (AF)	AF1	0.946	0.936	0.829	AF1	0.906	0.918	0.788
	AF2	0.886			AF2	0.844		
	AF3	0.898			AF3	0.912		
Access to basic services (AB)	AB1	0.765	0.855	0.663	AB1	0.755	0.841	0.638
	AB2	0.851			AB2	0.864		
	AB3	0.824			AB3	0.773		
Ease of Information (ICI)	ICI1	0.780	0.895	0.740	ICI1	0.837	0.913	0.777
	ICI2	0.917			ICI2	0.930		
	ICI3	0.877			ICI3	0.876		
Ease of Communication (IC2)	IC21	0.872	0.934	0.824	IC21	0.895	0.946	0.854
	IC22	0.931			IC22	0.957		
	IC23	0.920			IC23	0.921		
Relationship with Family/Relatives (NE1)	NE11	0.864	0.868	0.688	NE11	0.871	0.905	0.760
	NE12	0.737			NE12	0.873		
	NE13	0.879			NE13	0.871		
Relationship with Neighbor (NE2)	NE21	0.880	0.934	0.825	NE21	0.919	0.963	0.897
	NE22	0.920			NE22	0.955		
	NE23	0.925			NE23	0.967		
Relationship with Friend (NE3)	NE31	0.856	0.944	0.849	NE31	0.851	0.931	0.819
	NE32	0.959			NE32	0.915		
	NE33	0.946			NE33	0.946		
Participation in community activities/groups (NE4)	NE41	0.853	0.942	0.845	NE41	0.838	0.937	0.833
	NE42	0.963			NE42	0.963		
	NE43	0.939			NE43	0.932		
Social Safety Nets (SS)	SS1	0.785	0.794	0.568	SS1	0.894	0.858	0.752
	SS2	0.864			SS2	0.839		
	SS3	0.585						
Adaptive Capacity (AC)	AC1	0.618	0.825	0.619	AC1	0.800	0.858	0.752
	AC2	0.947			AC2	0.899		
	AC3	0.761			AC3	0.606		
Asset Ownership (AO)	AO1	0.900	0.818	0.604	AO1	0.939	0.819	0.608
	AO2	0.775			AO2	0.718		
	AO3	0.633			AO3	0.654		
Social Engagement (SC1)	SC11	0.940	0.953	0.871	SC11	0.889	0.940	0.838
	SC12	0.962			SC12	0.934		
	SC13	0.896			SC13	0.923		
Sense of belonging (SC2)	SC21	0.937	0.953	0.871	SC21	0.944	0.970	0.914
	SC22	0.919			SC22	0.973		
	SC23	0.943			SC23	0.950		

Table 3. (*Continued*).

Constructs (after deletion of items)	Pandemic COVID-19				After Pandemic COVID-19			
	Item	**Loading**	**CR**	**AVE**	**Item**	**Loading**	**CR**	**AVE**
Natural Capital (NC)	NC2	1.000	1.000	1.000	NC1	0.930	0.856	0.750
					NC2	0.797		
Physical Capital (PC)	PC2	0.606	0.791	0.666	PC2	0.694	0.836	0.724
	PC3	0.982			PC3	0.983		
Financial Capital (FC)	FC1	0.853	0.869	0.691	FC1	0.844	0.880	0.710
	FC2	0.895			FC2	0.909		
	FC3	0.737			FC3	0.770		
Human Capital (HC)	HC1	0.888	0.829	0.623	HC1	0.894	0.836	0.633
	HC2	0.832			HC2	0.806		
	HC3	0.622			HC3	0.670		
Willingness to help neighbors/others (NO1)	NO11	0.807	0.882	0.714	NO11	0.902	0.939	0.837
	NO12	0.904			NO12	0.944		
	NO13	0.821			NO13	0.899		
Ease of getting help from neighbors/others (NO2)	NO21	0.942	0.937	0.833	NO21	0.938	0.960	0.890
	NO22	0.965			NO22	0.972		
	NO23	0.825			NO23	0.920		
Adhere to traditional values (NO3)	NO31	0.947	0.921	0.797	NO31	0.846	0.902	0.754
	NO32	0.959			NO32	0.915		
	NO33	0.757			NO33	0.842		
Adhere to religious values (NO4)	NO41	0.875	0.942	0.845	NO41	0.796	0.913	0.778
	NO42	0.945			NO42	0.910		
	NO43	0.936			NO43	0.934		
Empowerment (EM)	EM1	0.811	0.918	0.790	EM1	0.917	0.949	0.862
	EM2	0.944			EM2	0.945		
	EM3	0.905			EM3	0.922		
Income (IN)	IN1	0.820	0.819	0.607	IN1	0.755	0.815	0.599
	IN2	0.879			IN2	0.896		
	IN3	0.612			IN3	0.652		
Trust to Family (TR1)	TR11	0.925	0.942	0.844	TR11	0.908	0.898	0.746
	TR12	0.898			TR12	0.909		
	TR13	0.933			TR13	0.766		
Trust to Neighbor (TR2)	TR21	0.926	0.937	0.833	TR21	0.921	0.898	0.746
	TR22	0.894			TR22	0.883		
	TR23	0.917			TR23	0.781		
Trust in the same ethnic group (TR3)	TR31	0.865	0.923	0.800	TR32	0.889	0.885	0.794
	TR32	0.908			TR33	0.893		
	TR33	0.911						

Table 3. (*Continued*).

Constructs (after deletion of items)	Pandemic COVID-19				After Pandemic COVID-19			
	Item	**Loading**	**CR**	**AVE**	**Item**	**Loading**	**CR**	**AVE**
Trust in different ethnic groups (TR4)	TR41	0.974	0.967	0.907	TR42	1.000	1.000	1.000
	TR42	0.944						
	TR43	0.939						
Trust to Government (TR5)	TR51	0.959	0.956	0.879	TR51	0.909	0.932	0.821
	TR52	0.943			TR52	0.908		
	TR53	0.910			TR53	0.901		
Trust community leaders (TR6)	TR61	0.939	0.952	0.870	TR61	0.937	0.955	0.876
	TR62	0.937			TR62	0.927		
	TR63	0.922			TR63	0.945		
Trust in the health worker (TR7)	TR71	0.933	0.961	0.892	TR71	0.833	0.896	0.742
	TR72	0.936			TR72	0.885		
	TR73	0.964			TR73	0.865		
Trust the local security staff (TR8)	TR81	0.960	0.973	0.924	TR81	0.917	0.947	0.856
	TR82	0.975			TR82	0.954		
	TR83	0.948			TR83	0.905		
Livelihood stability (LS)	LS1	0.919	0.925	0.804	LS1	0.915	0.885	0.721
	LS2	0.884			LS2	0.717		
	LS3	0.888			LS3	0.901		

Source: Smart PLS 3 data processing.

Table 4. Heterotrait-monotrait ratio.

	AB	**AF**	**IC**	**SS**	**NE**	**AC**	**AO**	**SC**	**NC**	**FC**	**PC**	**HC**	**NO**	**EM**	**IN**	**TR**	**LS**
Pandemic COVID-19																	
AB																	
AF	0.327																
IC	0.281	0.156															
SS	0.193	0.156	0.277														
NE	0.149	0.161	0.248	0.267													
AC	0.206	0.157	0.188	0.247	0.288												
AO	0.237	0.160	0.336	0.224	0.128	0.244											
SC	0.146	0.114	0.286	0.258	0.353	0.183	0.224										
NC	0.207	0.091	0.228	0.240	0.125	0.060	0.132	0.063									
FC	0.494	0.311	0.195	0.318	0.132	0.233	0.196	0.082	0.215								
PC	0.250	0.231	0.127	0.137	0.147	0.178	0.222	0.097	0.035	0.100							
HC	0.816	0.265	0.266	0.265	0.143	0.129	0.165	0.152	0.270	0.510	0.214						
NO	0.186	0.179	0.328	0.377	0.507	0.224	0.243	0.331	0.187	0.132	0.180	0.153					
EM	0.084	0.223	0.254	0.079	0.162	0.214	0.158	0.090	0.249	0.067	0.140	0.097	0.219				
IN	0.344	0.373	0.184	0.234	0.238	0.394	0.325	0.077	0.193	0.554	0.109	0.363	0.290	0.113			
TR	0.130	0.140	0.272	0.151	0.335	0.184	0.196	0.406	0.082	0.136	0.131	0.161	0.404	0.126	0.233		
LS	0.188	0.152	0.167	0.181	0.124	0.165	0.086	0.062	0.099	0.369	0.180	0.269	0.228	0.043	0.194	0.155	

Table 4. (*Continued*).

	AB	AF	IC	SS	NE	AC	AO	SC	NC	FC	PC	HC	NO	EM	IN	TR	LS
After Pandemic COVID-19																	
AB																	
AF	0.281																
IC	0.214	0.170															
SS	0.388	0.270	0.365														
NE	0.219	0.143	0.340	0.412													
AC	0.413	0.442	0.127	0.162	0.115												
AO	0.169	0.132	0.182	0.219	0.137	0.235											
SC	0.206	0.214	0.257	0.335	0.467	0.176	0.123										
NC	0.225	0.133	0.237	0.160	0.241	0.175	0.154	0.147									
FC	0.588	0.404	0.177	0.210	0.129	0.428	0.159	0.107	0.194								
PC	0.272	0.096	0.080	0.198	0.105	0.128	0.221	0.069	0.114	0.224							
HC	0.816	0.304	0.165	0.205	0.167	0.428	0.194	0.167	0.287	0.697	0.331						
NO	0.190	0.200	0.347	0.206	0.427	0.182	0.153	0.319	0.288	0.212	0.100	0.125					
EM	0.098	0.187	0.274	0.158	0.182	0.212	0.250	0.202	0.221	0.136	0.114	0.119	0.269				
IN	0.359	0.406	0.162	0.175	0.228	0.673	0.198	0.091	0.200	0.564	0.119	0.444	0.203	0.157			
TR	0.330	0.124	0.334	0.378	0.370	0.190	0.138	0.221	0.159	0.168	0.165	0.203	0.339	0.112	0.291		
LS	0.271	0.243	0.207	0.112	0.106	0.309	0.098	0.047	0.284	0.327	0.134	0.364	0.211	0.051	0.268	0.198	

Source: Smart PLS 3 Data Processing.

The Fornell-Larcker criterion, Cross-loadings, and Heterotrait-Monotrait (HTMT) ratio are three ways to assess discriminant validity. A better alternative is to use The Heterotrait-Monotrait ratio (HTMT) of correlations to measure discriminant validity (Henseler et al., 2015). The HTMT can be used to evaluate discriminant validity by comparing it to a predetermined threshold. The HTMT threshold value for indicating discriminant validity is 0.90 for structural models with conceptually comparable constructs and 0.85 for models with conceptually more dissimilar constructs. Based on the results, it statistically met the HTMT ratio discriminant validity criterion, with all values less than 0.90 (**Table 4**).

4.2. Structural model analysis

After confirming that the measurement model is valid and reliable, the structural model evaluation is performed. **Table 5** presents the path coefficients in the structural model, which helps when performing hypothesis testing. The path coefficients were tested for significance using a bootstrapping approach. The test results show that human capital, financial capital, and empowerment have positive and significant effects on the resilience of households in the face of pandemic COVID-19 and post-COVID-19 pandemic.

Table 5. The structural model results.

Relationship	Path coefficient	Standard deviation	*T* values	*P* values	Supported	R^2	Q^2	VIF	f^2
Pandemic COVID-19									
H1: HC → HR	0.481	0.071	6.789	0.000	Yes	0.542	0.234	1.349	0.375
H2: FC → HR	0.274	0.077	3.549	0.000	Yes			1.223	0.134
H3: NC → HR	−0.071	0.069	1.030	0.152	No			1.201	0.009
H4: PC → HR	0.038	0.062	0.614	0.270	No			1.077	0.003
H5: TR → HR	0.130	0.075	1.724	0.043	Yes			1.194	0.031
H6: NE → HR	0.117	0.087	1.347	0.089	Yes			1.205	0.025
H7: NO → HR	0.053	0.078	0.688	0.246	No			1.267	0.005
H8: IC → HR	−0.009	0.072	0.120	0.452	No			1.189	0.000
H9: SC → HR	−0.109	0.077	1.426	0.077	Yes			1.248	0.021
H10: EM → HR	0.157	0.089	1.771	0.039	Yes			1.130	0.048
After pandemic COVID-19									
H1: HC → HR	0.393	0.080	4.884	0.000	Yes	0.537	0.212	1.636	0.204
H2: FC → HR	0.327	0.081	4.041	0.000	Yes			1.474	0.157
H3: NC → HR	−0.084	0.087	0.966	0.167	No			1.191	0.013
H4: PC → HR	−0.041	0.060	0.680	0.248	No			1.121	0.003
H5: TR → HR	−0.194	0.069	2.795	0.002	Yes			1.223	0.066
H6: NE → HR	0.027	0.063	0.427	0.335	No			1.261	0.001
H7: NO → HR	0.131	0.063	2.086	0.019	Yes			1.209	0.030
H8: IC → HR	−0.045	0.082	0.542	0.294	No			1.125	0.004
H9: SC → HR	−0.142	0.077	1.856	0.032	Yes			1.177	0.037
H10: EM → HR	0.163	0.083	1.948	0.026	Yes			1.136	0.050

Source: Smart PLS 3 data processing.

This research's finding provides evidence in support of hypotheses H1, H2, and H10 which states that human capital, financial capital and empowerment have a positive effect on household resilience in facing the COVID-19 pandemic and the period after the COVID-19 pandemic. Trust exhibits a positive and significant effect on household resilience to withstand the challenges posed by the COVID-19 pandemic, confirming hypothesis H5. However, trust demonstrates an adverse effect when coping with the after-pandemic COVID-19 era, contradicting hypothesis H5. While norms do not significantly affect households' resilience in facing the COVID-19 pandemic, they do have a positive and significant effect on household resilience in the after-pandemic COVID-19 period, confirming hypothesis H7. Social cohesion has a negative and significant impact on household resilience during the COVID-19 pandemic and after the COVID-19 pandemic, which contradicts hypothesis H9. Natural capital, physical capital, and information and communication do not significantly affect a household's resilience in facing the COVID-19 pandemic and after the COVID-19 pandemic, which does not support hypotheses H3, H4, and H8. The network positively and significantly influences household resilience during the COVID-19 pandemic, which supports H6. However, the network does not

considerably influence household resilience in facing the post-COVID-19 pandemic and thus does not support H6.

The R^2, f^2, and predictive relevance values (Q^2) assess the importance of the path coefficients in the structural models. The R^2 value, Q^2 value, f^2 value, VIF, and statistical significance are all used to evaluate the path coefficients in structural models. Based on the R^2 value obtained, the structural results reveal that the model explains 54.2% of the variance or variation in the endogenous variable (household resilience in facing the COVID-19 pandemic) and 53.7% of the variance or variability in the endogenous variable (household resilience in facing the post-pandemic) explained by the exogenous variables. The VIF value signifies the absence of substantial collinearity among the constructs. Furthermore, this study used the structural model's prediction accuracy for these constructs, indicating that the Q^2 values, which are all greater than zero, and f^2 effect sizes explain the magnitude of the effect of exogenous latent variables at the structural level (Sarstedt et al., 2021).

5. Discussion

This study states that human capital positively affects the resilience of households in facing pandemic COVID-19 and after pandemic COVID-19. The education of a household can enhance its ability to recover from the challenges posed by a crisis or disaster (Jones et al., 2018). According to the respondent's characteristics in **Table 2**, 64.2% of head households had attained formal secondary or higher education. Household heads with higher educational attainment typically possess enhanced skills, information, and knowledge, enabling them to earn higher incomes and resulting in improved household financial capacities. Enhanced financial capacities enable households to more effectively meet everyday necessities, including food access and health maintenance. Households with higher education levels have greater resilience in recovering from the problematic situation induced by the pandemic as they attempt to enhance their abilities, such as digital competencies (Van Deursen and Van Dijk, 2011), work skills, and other skills that can support work and become an entrepreneur (Rosas et al., 2017). The digital literacy skills possessed by the head of household help their household's daily activities, including activities to earn a living, learn and gather the necessary information, communicate with others, maintain health, and make other efforts to survive during and after the COVID-19 pandemic. Besides, offering non-formal education to households can assist them in addressing difficulties throughout and after the pandemic, encompassing the employment skills and financial management training they acquire.

The study establishes that financial capital positively influences the resilience of households experiencing the COVID-19 pandemic and after the COVID-19 pandemic. Household head respondents with formal employment status have an increased probability of better resilience for households, such as state-owned enterprise employees, civil servants, and some private employees. Meanwhile, households that have household heads with irregular incomes working as self-employed, such as small-scale fishermen, small farmers, small traders, freelance or odd-job workers, and family or unpaid workers, are households that are vulnerable to the COVID-19 pandemic. Household heads who have informal jobs mean that their households may

be more vulnerable to adverse shocks, as they are likely to lose more than expected at any time without social protection (Romero et al., 2021). Savings emerged as the predominant means of coping and the most frequently employed strategy for each specific category of shock. About 52.5% of household heads attempted to allocate a portion of their income for savings during the COVID-19 pandemic, which rose to 61.7% of household heads after that era. As a reaction to the ramifications of the COVID-19 pandemic's impact on employment and income, several households are attempting to reduce expenditures and enhance their precautionary savings (Li et al., 2020). In response to concerns about the unpredictability of future economic and livelihood recovery, household heads intensify their saving practices to ensure security in both periods. During the COVID-19 pandemic, 15.0% of respondents utilized credit, increasing to 35% of respondents in post-pandemic COVID-19. While households are making more significant efforts to reduce expenditure and save in the post-COVID-19 era, a few respondents have taken out credit due to the escalating necessities of daily life, even when incomes have not experienced significant growth compared to the COVID-19 pandemic. Households exhibiting low levels of resilience can possess low savings rates, insufficient income, existing debt, and limited financial management skills.

The study's findings indicate that natural capital, such as land, water, and air, has not substantially contributed to enhancing household resilience during and after the COVID-19 pandemic. Head households who work as farmers have to put more effort into restoring the fertility of the land they cultivate due to soil contamination caused by chemical fertilizer (Oktavia et al., 2020), household waste (Krisnanti and Dwijaya, 2021), and industrial waste (Noer, 2017). Households often face water scarcity and purchase clean water due to the unsanitary water conditions caused by the dry season and catastrophic events such as floods due to significant precipitation. The subsequent land subsidence has caused the infiltration of saline seawater into groundwater reservoirs in coastal areas, such as the Muaragembong district. Although households perceived air pollution to be decreasing during the COVID-19 pandemic, it was still present and caused them health problems in post-pandemic COVID-19. The relatively rapid growth of transport use and industrialization has caused air pollution to increase in concentration again in the post-COVID-19 period (Soemarko et al., 2023).

Homeownership, primary cooking fuel, and access to the Internet are some of the substantial physical capital needed to fulfill basic household needs. Nevertheless, its existence could not enhance households' capacity to endure the crisis during and after the COVID-19 pandemic, as this study states. About 90.8% of respondents live in their own homes. However, these dwellings have not generated any income to enhance the resilience of their households during and after the COVID-19 pandemic. The house provides shelter and protection for households during large-scale social distancing measures. The varying conditions of residences, including poor lighting, inadequate ventilation, and high occupancy, may exacerbate vulnerability during and after a COVID-19 outbreak (Dubey et al., 2022). In the supply of food for the household, most households utilize LPG as their primary cooking fuel due to its accessibility. Households with insufficient incomes during and after the COVID-19 pandemic exhibit greater susceptibility to food insecurity as they attempt to procure more economical food and diminish other expenditures to lower household costs. However,

only a few respondents use cooking fuel to create income as a food seller to make additional income to sustain their household's needs. Besides that, internet use has increased during the COVID-19 pandemic due to the execution of extensive social separation measures policies and staying at home. 69.2% of respondents regularly utilized the Internet for employment, education, and information access during the COVID-19 pandemic, and approximately 81.67% during the post-COVID-19 pandemic era. The difference in internet utilization is due to educational background, employment status, ownership of digital technology tools, and internet connection (Roberts et al., 2017).

Based on this study, trust positively affects households' resilience during the COVID-19 pandemic, while trust adversely impacts household resilience after the COVID-19 pandemic. Throughout the COVID-19 pandemic, intimate, trustworthy relationships within households intensified due to extensive social restrictions and governmental advisories to remain within the house to curb the spread of the virus. Most respondents trust healthcare workers, security officers, and government authorities, leading them to comply with health regulation standards and receive vaccinations (Ahorsu et al., 2022), hence enhancing protection against the COVID-19 outbreak. The existence of trust between household members can provide strength, care, and a positive attitude in facing a crisis such as the COVID-19 pandemic (Gayatri and Irawaty, 2022). The COVID-19 pandemic has fostered more robust connections between respondents, household members, and neighbors, enhancing mutual assistance and resilience while complying with health protocols under challenging times, such as food, cash, medicine, and moral support. The trust within households has influenced the strength of households to withstand adversity during lockdowns, as governments and community leaders have constantly fostered collaborative initiatives at the local level (Ahmad et al., 2022). However, trust negatively affects the resilience of households in the post-COVID-19 pandemic. In the post-COVID-19 pandemic, most respondents felt that household economic conditions were becoming increasingly challenging due to the slow economic recovery and rising costs of food, electricity, gas, and other essential needs. In addition, Bekasi Regency experiences higher migration flows from other regions seeking employment opportunities (Arfian, 2020). This occurrence was perceived as hindering local household members from obtaining better employment opportunities. Despite the household heads placing high trust in the family, neighborhood, and government, they bear significant anxieties and pessimism about the challenging economic situation. The likelihood of households rebuilding their capacity from adversity was perceived to have declined, and this was attributed to the anxiety and pessimism expressed by households regarding the restoration of social and economic conditions, including the difficulty of finding a better job in the post-pandemic period (Franke and Elliott, 2021).

The results from this research demonstrate that networks positively and significantly influence the resiliency of the household when coping with issues caused by the COVID-19 pandemic. During the COVID-19 pandemic, it has been challenging for all sectors of society, especially households, to preserve social connectedness and engagement. Despite extensive social restrictions, households are attempting to engage with one another while complying with health protocols and employing digital communication technologies to mitigate the threat of COVID-19 transmission. Most

households attempt to develop solid connections with family members, relatives, neighbors, and friends, which has increased during the COVID-19 crisis compared to the period before the COVID-19 pandemic (Zetterberg et al., 2021). These social networks significantly enhance household resilience when dealing with the COVID-19 pandemic by promoting physical and psychological healing from stress and trauma, fostering mutual trust, and fulfilling the demand for information and other resources (Agashe et al., 2021). The study's findings indicate that social networks have been ineffective in enhancing the resilience of households in the post-COVID pandemic era. Indeed, nearly all respondents continue to experience financial hardships in the aftermath of COVID-19. The challenges of job life and the effect of urban culture have resulted in a rise in individuality and a decline in the involvement of the head of household in their neighborhood's community (Wang et al., 2017; Zhang et al., 2017). Some heads of households willingly engage in "gotong royong" or mutual help activities, usually on weekends, as in the South Tambun district, such as cleaning sewers and fixing residential roads. At the same time, their spouses voluntarily prepare food and beverages. Despite the head of the household and their spouse's increased involvement in social or socio-religious activities, including integrated service posts or "Pos Pelayanan Terpadu (Posyandu)", the family welfare program or "Pemberdayaan Kesejahteraan Keluarga (PKK)", recitation group, and neighborhood safety system or "Sistem Keamanan Lingkungan (Siskamling)", there is only a small number of the household have ever received food or other assistance. Although a network connects households and the surrounding community, it does not work to augment their adaptive potential to confront the challenges of post-pandemic COVID-19. Moreover, household heads with elevated incomes engage less in social networks due to constrained time resulting from their demanding work schedules, perceiving the opportunity cost of departing from work as exceeding the benefits of participation (Luo et al., 2020).

Based on this study, social norms do not significantly affect the ability of households to manage challenging circumstances throughout the COVID-19 pandemic. Social norms are perceived as individual conceptions of psychological states, including emotional feelings or personal beliefs (Legros and Cislaghi, 2020). While staying at home and undergoing social distancing appeals, respondents' religious beliefs predominantly shape social norms that help households navigate the problems posed by the COVID-19 pandemic. Following religious norms assist in alleviating feelings of anxiety, isolation, boredom, and frustration when confronted with many difficulties. However, the adherence to their beliefs varies based on their degree of compliance, understanding, and attitude towards their faith. During the social distance period, besides going to work, the obligation of household members to worship at mosques, churches, or other religious places of worship must comply with health regulations, including social distancing and mask usage, to prevent transmission of COVID-19. Some household members who are infected with the COVID-19 outbreak persist in engaging in activities such as working, worshipping, or other activities outside their homes without disclosing their illness and neglecting self-isolation. The principles of kindness and honesty are disregarded due to fear of social exclusion from neighbors or friends and the necessity of earning a livelihood. As a result, the spread of the COVID-19 outbreak has accelerated and expanded, affecting

health and disrupting the activities of households, neighbors, and others. Thus, the norms adhered to by households did not significantly enhance their resilience throughout the COVID-19 pandemic (Ardi et al., 2022; Iqbal and Adriani, 2021). This study also confirms that norms positively and significantly influence the resilience of households in the post-COVID-19 pandemic. In the post-COVID-19 pandemic, each household's activities ran as before the COVID-19 pandemic, including interactions with neighbors or other people. They prefer to adhere to social norms to live a peaceful life, show respect for others, and help those in need whenever possible. As collective constructs, social norms are defined as characteristics or attributes of groups or social institutions (Legros and Cislaghi, 2020). Most households express gratitude for their ability to endure the challenges posed by the COVID-19 pandemic. For instance, fishermen and farmers in the Muaragembong district adhere to social norms based on cultural customs. They collaborated to conduct collective events called "Syukuran" within their neighborhood or broader scope and worried that abstaining from this event may result in bad fortune. This event custom was postponed during the COVID-19 pandemic due to extensive social restriction policies implemented to mitigate the spread of the virus. Thus, adherence to these norms leads them to act together helpfully and support one another, creating household resilience in post-pandemic COVID-19.

The results of this study show that information and communication do not substantially influence household resilience during and after the COVID-19 pandemic. This outcome arises from the overwhelming range of information acquired from communications with relatives, neighbors, friends, and neighborhood leaders. In addition, the household has access to diverse sources of information about the COVID-19 pandemic and recovery after COVID-19 from television and radio. The extensive information derived from many sources, including social media, has led to heightened confusion, worry, and stress in households (Manan et al., 2023). Most respondents acquired information, such as government assistance and vaccination, via engaging and communicating with the leaders of the neighborhood associations and the village officers, who were perceived as closer and more accessible to the people. However, inadequate government information and communication has resulted in uncertainty and misinterpretation, leading to significant problems for households in addressing the socioeconomic and health risks associated with the COVID-19 pandemic and in the recovery process after the COVID-19 pandemic (Kim and Kreps, 2020).

The study findings indicate that social cohesion negatively affects household resilience during and after the COVID-19 pandemic. Most households have experienced income reduction, and even the household head has faced job loss since the COVID-19 pandemic. Thus, the COVID-19 pandemic endangers the household's economy and the health of all its members. To minimize household expenditures and mitigate the risk of infection with the COVID-19 virus, household members ought to limit external activities except work, save financial resources, and decrease consumption. Household resources are mainly used to meet and secure their needs; some are used for the nearest neighbor instead of the broader community. Households are hesitant to engage in local social activities due to concerns regarding the transmission of the COVID-19 virus. Hence, their contribution to social cohesion is low. After the COVID-19 pandemic ended, community activities returned to normal before the pandemic. A household with robust connections to its neighborhood

community will enhance its participation in community activities. For instance, households within a community will reciprocate with contributions (food items or gifts or monetary) when one of their community members organizes a wedding and circumcision event for their children. This practice becomes obligatory and may impose financial strain on household expenditures. The households will face ostracism and scorn if they fail to reciprocate their neighbors' monetary or material offerings. Indeed, some households have to borrow money from family or others to do this. It resembles a convention established by households to foster a pleasant social existence. This finding aligns with a study conducted by Patel and Gleason (2018) which stated that household representatives, particularly women, may spend more time in their community or engage more with it, potentially fostering cohesion at the expense of daily needs.

According to the research results, empowerment exhibits an encouraging and substantial influence on household resilience in facing the COVID-19 pandemic and its aftermath. Participation that involves action from household representatives in the community is one of the markers that can describe the implementation of household empowerment. Most respondents are willing to participate in community meetings to discuss empowerment initiatives, as it allows them to articulate their concerns and needs. During the COVID-19 pandemic, household representatives engaged in community empowerment initiatives within their neighborhoods, adhering to health protocols and social distancing. These initiatives included (1) family welfare empowerment or "Pemberdayaan and Kesejahteraan Keluarga (PKK)" activities to educate how to manage household finances, increase skills, and ensure food security, while integrated service posts or "Pos Pelayanan Terpadu (Posyandu)" activities to promote health awareness for households, including infants, toddlers, pregnant women, and the elderly; and (2) neighborhood security system or "Sistem Keamanan Lingkungan (Siskamling)" activities to uphold neighborhood security and ensure households compliance with health protocols and social distancing regulations. After the COVID-19 pandemic, most respondents perceived the economic recovery was slow, while some households are looking for additional work, and their spouses run small businesses to increase the household's income. Therefore, initiatives to improve knowledge and job skills, livelihood diversification, health maintenance, entrepreneurship, and household financial management are also essential household empowerment activities in the post-COVID-19 pandemic. Heads of households engaged in fishing and farming derive significant empowerment advantages from participating in community organizations, such as fishermen's and farmer's groups or associations. Empowerment efforts accessible to their groups from governmental and non-governmental organizations encompass training and capacity building in fisheries and agriculture, production input help, capital support, marketing, and supplementary resources. Moreover, empowering women, as heads of households or partners, through PKK activities is highly beneficial for strengthening household resilience in the post-COVID-19 era, encompassing financial literacy, cultivating food crops in home gardens, skills training, and fostering an entrepreneurial spirit. Thus, empowerment enhances the quality of life and well-being while fostering household resilience, self-reliance, and independence in creating a sustainable and equitable future (Dushkova and Ivlieva, 2024).

6. Conclusion

Since the onset of the pandemic, households have encountered considerable obstacles in their socioeconomic recovery. The results of this study indicate that human capital, financial capital, and empowerment beneficially impact the strength of the household's capability throughout and subsequently to the COVID-19 pandemic. Then, trust positively affects household resilience during the COVID-19 pandemic, while trust reduces household resilience after the COVID-19 pandemic. Norms have no substantial effect on household resilience during the COVID-19 pandemic, while norms positively impact household resilience after the COVID-19 pandemic. The results of this research also indicate that social cohesion exerts detrimental and considerable implications for household resilience during the COVID-19 pandemic and after the COVID-19 pandemic. However, networks exert a favorable and substantial influence on household resilience during the COVID-19 pandemic while having no meaningful effect on resilience in the post-pandemic period. Besides that, our study revealed that natural capital, physical capital, information, and communication do not affect household resilience over the pandemic and post-pandemic. The findings underscore the varying impacts of each type of livelihood capital possessed by households on their resilience throughout the COVID-19 pandemic and the subsequent post-pandemic period.

6.1. Policy implications

First, this study's findings highlight the significance of human capital in enhancing households' resilience during and after the COVID-19 pandemic. Most of the household heads as respondents possessed secondary and primary education. According to a study by Morgan and Trinh (2021), an increase in the educational attainment of the head of household beyond secondary education correlates with a decreased probability of encountering financial hardships during the COVID-19 pandemic. This study offers clear direction that policy interventions should focus on enhancing access and engagement for the school-age population to ensure they complete their education at least senior high school in all districts in Bekasi Regency, including districts with geographical limitations, such as the Muaragembong district. Furthermore, the provincial government and the regency government should undertake initiatives to fulfill 12 years of compulsory education, assist school dropouts, ensure the provision of qualified educators or teachers, and enhance the availability of sufficient educational facilities. The local education curriculum for secondary schools, including vocational high schools and universities, should be revised to align with industry, the business sector requirements, and entrepreneurship, which predominantly contribute to the development of Bekasi Regency. Despite all four research villages having adequate access to mobile phones and internet services (Central Bureau of Statistics, 2023), a small percentage of respondents employ digital technology for jobs or businesses to fulfill their household requirements. This condition indicates the necessity for the regency government, with district and village authorities, non-governmental organizations, and researchers, to deliver media learning, assistance, mentoring, and training in digital skills essential for household

heads to enhance their livelihoods, particularly in the agricultural, marine, fisheries, and small to medium enterprise sectors.

Second, the research indicates the significance of financial capital in bolstering household resilience during and after the COVID-19 pandemic. Local government initiatives are important to enhance the financial management capacity of households. Such initiatives may commence in incorporating financial literacy education into school curricula and workplace programs. Regardless of income and education, head households or household members have a higher financial literacy than others and generally save more formally and informally than those with lower financial literacy (Morgan and Long, 2020). This study indicates that training and capacity building in household financial management with financial literacy education might increase household emergency savings (Fan and Zhang, 2021) and enhance household caution about borrowing. Local governments, Village governments, and community empowerment cadres including family welfare empowerment cadres or "Pemberdayaan Kesejahteraan Keluarga (PKK)" require collaboration with enterprises, universities, and other related stakeholders to facilitate training, mentoring, and making interactive learning media for households to enhance their financial literacy, job-skill, entrepreneurship, and digital business development competencies for household heads and other household members. The government needs to provide access to finances, production assistance, and supporting infrastructure to enhance the livelihoods of households adversely affected by the COVID-19 pandemic, particularly those led by small-scale fishermen, small-scale farmers, small traders, casual laborers, and head households who have lost their employment.

Third, the study's findings indicate that empowerment can enhance household resilience during and after the COVID-19 pandemic. Policymakers at the central, provincial, district, and village levels can utilize this study's findings to develop appropriate empowerment initiatives for households by identifying the challenges, particularly those impacted by the COVID-19 pandemic, enabling them to endure and recover from hardship. Consequently, representatives from households, particularly those impacted, specifically farmers, fishers, individuals affected by layoffs, informal laborers, and the jobless, should be actively engaged in the collaborative design and implementation of the empowerment program. The empowerment policies aimed at resilience rely on a comprehensive grasp of local settings and the capacity to customize solutions to address specific household/community requirements (Dushkova and Ivlieva, 2024). Household empowerment attempts to enhance household earnings, food security, and the ability to adapt to difficult conditions. The government should prioritize household economic recovery during and after the COVID-19 pandemic by acquiring job skills through training and learning for individuals in the informal sector and those laid off, enabling them to get better employment and income opportunities. Empowerment of farmers, fishers, and small businesses or merchants requires governmental and private sector support in financing, market access, ecologically sustainable technologies, and financial management. The presence of women as heads of households or spouses significantly contributes to enhancing household income and food security. Therefore, policymakers should focus on suitable empowerment strategies for women to increase their knowledge in financial management,

entrepreneurship, maintaining household health, and utilization of garden space for self-sustaining household food security.

Fourth, this study found that trust and networks improve household resilience during the COVID-19 pandemic. The difficult circumstances naturally strengthen trust and social networks among households and household interactions with related stakeholders to ease the burden of crises. Consequently, enhancing social networks and trust should be incorporated as a strategy for disaster management. Individuals or household members exhibiting heightened concerns regarding the COVID-19 pandemic demonstrate greater trust and social networks (Tabery and Pilnacek, 2021). The study indicated that individuals or household members possess significant trust and networks with actors directly involved in managing the COVID-19 outbreak, including healthcare professionals and security personnel. The capability of institutions and relevant actors (governmental and non-governmental) in managing disasters such as the COVID-19 pandemic significantly influences the enhancement of trust and networks between individuals or households. Therefore, the government has to create the appropriate communication strategy to deliver COVID-19 pandemic handling policies to the public, provide clear guidelines for handling the COVID-19 pandemic for actors who play a significant role, such as health workers and security officers, and carry out openness in every control measure taken. Consequently, governments are expected to maintain public trust, enhance competence, and provide equitable, transparent, and truthful communication in addressing the health and economic crisis resulting from the COVID-19 pandemic (Liu et al., 2022).

Lastly, according to this study, household resilience in the post-COVID-19 pandemic was significantly positively influenced by norms. Social norms should serve as a guide for every household in return to activities and movements that have normalized following the conclusion of the pandemic. While certain households are familiar with engaging through digital telecommunications technology like smartphones, social norms must still be obeyed. The governments should establish rules, instructions, and guidance to protect and preserve social norms including custom values to enhance harmony and avert social discord. The government enforces social and non-social sanctions based on specific norms violated, involving relevant stakeholders such as security personnel, including “Bhayangkara Pembina Keamanan dan Ketertiban Masyarakat (Babinkamtibmas)”, “Bintara Pembina Desa (Babinsa)”, leaders of local neighborhood associations, “Satuan Perlindungan Masyarakat (Satlinmas)”, and community representatives. Policymakers may need to specifically target those less responsive to social norms and their unpredictable changes (Liu et al., 2022).

6.2. Limitations and suggestions for future research

The findings of this study should be regarded cautiously due to inherent limitations. First, the research site, Bekasi Regency, is characterized as a semi-urban environment. Additional research must be performed over a wider range of areas and samples to validate the external validity of this study’s findings. Second, this study examines the correlation between livelihood capital and household resilience at two distinct intervals: during pandemic COVID-19 and post-pandemic. Future research

can test the same hypothesis by including observable time, specifically the era preceding the COVID-19 pandemic. Third, governmental roles, gender, and the socio-economic context that may influence perceptions and actions of resilience were not controlled for; thus, future studies should account for their impact.

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Appendix

Table A1. Questions survey.

Latent Variables	Code	Items Description	Response
Human Capital (HC)	HC1	Formal education attainment of the household head.	(Diploma or above = 5, Senior High School = 4, Junior High School = 3, Elementary/Primary School = 2, Not Finish Primary School/Never went to school = 1)
	HC2	Household heads usually use digital technology tools in work/daily activities.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	HC3	Household heads have attended non-formal education/training that enhances job skills.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
Financial Capital (FC)	FC1	Head household status in the main occupation.	(Employer assisted by permanent worker/paid worker = 5, Employer assisted by temporary worker/unpaid worker = 4, Regular Employee = 3, Casual Employee = 2, Family worker/Unpaid worker = 1)
	FC2	My habit of setting aside some money for savings.	(Always = 5, Often = 4, Sometimes = 3, Rarely = 2, Never = 1)
	FC3	I endeavor to fulfill my household living requirements without depending on the debt.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
Natural Capital (NC)	NC1	The air condition in the neighborhood.	(Very clean = 5, Clean = 4, Fairly Clean = 3, Not clean enough = 2, Very unclean = 1)
	NC2	The soil condition in the neighborhood.	(Very fertile = 5, Fertile = 4, Moderately fertile = 3, Less fertile = 2, Infertile = 1)
	NC3	The water condition in the house and neighborhood.	(Very clean = 5, Clean = 4, Fairly Clean = 3, Not clean enough = 2, Very unclean = 1)
Physical Capital (PC)	PC1	Ownership status of the house occupied by my household.	(Self-owned = 5, Rent-free = 4, House from Office = 3, Rent = 2, Others = 1)
	PC2	The type of fuel is often used for cooking in my household.	(Electric = 5, Gas = 4, Kerosene = 3, Firewood = 2, Others = 1)
	PC3	The intensity of use of the Internet in the household's daily activities.	(Always = 5, Often = 4, Sometimes = 3, Rarely = 2, Never = 1)
Trust (TR)			
Trust in family (TR1)	TR11	I trust every household member cares and helps each other.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	TR12	I trust every household member wears a mask outside the home or when sick.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	TR13	I trust every household member tries to maintain their health.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
Trust in neighbors (TR2)	TR21	I trust my neighbors care for each other and help each other.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	TR22	I trust my neighbors to wear masks outside the home or when sick.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	TR23	I trust my neighbors to try to maintain their health.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
Trust in others of the same ethnicity (TR3)	TR31	I trust others from the same ethnic group to care for and help each other.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	TR32	I trust others from the same ethnic group to wear masks outside the house or when sick.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	TR33	I trust others from the same ethnic group to try to maintain their health.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)

Table A1. (*Continued*).

Latent Variables	Code	Items Description	Response
Trust in others from different ethnicity (TR4)	TR41	I trust others from different ethnic groups to care for and help each other.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	TR42	I trust others from different ethnic groups to wear masks outside the home or when sick.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	TR43	I trust others from different ethnic groups to try to maintain their health.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
Trust in the government (TR5)	TR51	I trust that the government, including village authorities and neighborhood association officers, has fulfilled its responsibilities.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	TR52	I am willing to obey government suggestions and rules.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	TR53	I believe that all household members appreciate the government's effort.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
Trust in community/ religious leaders (TR6)	TR61	I trust that community leaders foster solidarity in their neighborhoods.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	TR62	I trust that community leaders help people experiencing difficulties.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	TR63	I trust that community leaders encourage neighboring households to comply with government rules and recommendations.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
Trust in institutions/ health workers (TR7)	TR71	I believe the institution/health worker is doing their job well.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	TR72	I believe all household members appreciate the performance of health institutions/health workers.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	TR73	I am willing to obey the advice of health workers.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
Trust in security officer (TR8)	TR81	I trust the security officer to do their job well.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	TR82	I believe that household members appreciate the performance of security officers.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	TR83	I am willing to obey the appeals/advice from the security officer.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
Network (NE)			
Strength of Relationship with Family and Relatives (NE1)	NE11	I have a good relationship with my family and relatives.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	NE12	I enjoy spending my free time with my family and relatives.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	NE13	I am willing to help family and relatives who are having difficulties.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
Strength of Relationship with Neighbor (NE2)	NE21	I have a good relationship with my neighbors.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	NE22	I like to spend my free time with my neighbors.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	NE23	I am willing to help neighbors who are in difficulties.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)

Table A1. (*Continued*).

Latent Variables	Code	Items Description	Response
Strength of Relationship with Friends (NE3)	NE31	I have good relationships with friends.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	NE32	I enjoy spending my free time with friends.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	NE33	I am willing to help a friend with difficulties.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
Participation in community activities/ groups (NE4)	NE41	I am willing to participate in gotong royong or cooperation activities to benefit the community.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	NE42	I am willing to participate in religious group activities.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	NE43	I am willing to participate in community group activities.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
Norms (NO)			
Willingness to help neighbors/others (NO1)	NO11	I am willing to give moral support to others or neighbors in difficulties.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	NO12	I am willing to provide food assistance to others or neighbors in difficulties.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	NO13	I am willing to give financial support to others/neighbors under challenging times.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
Ease of getting help from neighbors or others (NO2)	NO21	I get moral help from others or neighbors when I have difficulties.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	NO22	I get food assistance from others or neighbors when I have difficulties.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	NO23	I get financial help from others or neighbors when I have difficulties.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
Traditional values that have existed for generations (NO3)	NO31	I adhere to the values and beliefs of my neighborhood.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	NO32	I believe in and am willing to participate in community cooperation/collaboration activities in my local neighborhood.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	NO33	I feel consuming traditional medicine or herbs can maintain health and prevent or treat illness.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
Religious values that are believed and embraced (NO4)	NO41	I feel grateful for all the favors from God Almighty.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	NO42	I believe that when we do good to others, our kindness will be rewarded with kindness.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	NO43	I am more obedient in worship and pray to God so that my family will avoid all calamities.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
Information and Communication (IC)			
Ease of Information (IC1)	IC11	I find it easy to obtain information from citizen activities or community meetings.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	IC12	I get information from village officials.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	IC13	I am willing to provide information to relatives/neighbors/friends.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)

Table A1. (*Continued*).

Latent Variables	Code	Items Description	Response
Ease of Communication (IC2)	IC21	I am willing to communicate well with relatives/neighbors/friends.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	IC22	I easily communicate with relatives/neighbors/friends.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	IC23	I am easily contacted or communicated with by relatives/neighbors/friends.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
Social Cohesion (SC)			
Social Engagement (SC1)	SC11	I try to interact well with my neighborhood.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	SC12	I feel the social unity in my neighborhood.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	SC13	I am willing to abide by the rules of society.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
Sense of belonging (SC2)	SC21	I feel comfortable living in the area where I live.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	SC22	I feel safe, peaceful, and serene living in the area where I currently live.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	SC23	I feel that my family is welcome in our neighborhood.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
Empowerment (EM)	EM1	I am willing to express my opinions or suggestions in community meetings.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	EM2	I feel that my opinions and suggestions are heard in community meetings.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	EM3	I am willing to participate in community empowerment activities or programs.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
Household Resilience (HR)			
Access to Basic Services (AB)	AB1	Health facilities that I and my household members usually visit.	(Hospital = 5, Health clinic = 4, Public primary health care or Puskesmas = 3, Community health activities or integrated health pos or Posyandu or Poskesdes or Polindes = 2, Traditional medicine or treatment = 1)
	AB2	Access to education for my household members.	(University/College = 5, Senior High School = 4, Junior High School = 3, Elementary School = 2, No access = 1)
	AB3	Road condition in my neighborhood.	(Very good = 5, Good = 4, Quite good = 3, Not Good = 2, Poor = 1)
Asset Ownership (AO)	AO1	The existence of productive assets helps me fulfill household needs.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	AO2	The ownership of non-productive assets provides convenience for my household.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	AO3	I feel that keeping livestock can help fulfill household needs.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
Income (IN)	IN1	Sources of income received by me as head of the household.	(More than 3 sources = 5, 3 sources = salaries/wages, transfers, profits = 4, 2 sources = salaries/wages and transfers = 3, 1 source = only salaries/wages = 2, No source = 1)
	IN2	Total income earned by me as head of household each month.	(More than 6 million rupiah = 5, More than 4 million rupiah to 6 million rupiah = 4, More than 2 million rupiah to 4 million rupiah = 3, Equal or Less than 2 million rupiah = 2, No income = 1)
	IN3	The intensity of other income received monthly from other household members/relatives.	(Always = 5, Often = 4, Sometimes = 3, Rarely = 2, Never = 1)

Table A1. (*Continued*).

Latent Variables	Code	Items Description	Response
Access to Food (AF)	AF1	The availability of food at home is sufficient to fulfill my household needs.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	AF2	My household can afford to buy groceries for daily needs.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	AF3	Average monthly household food consumption expenditure per capita.	(More than 500.000 rupiah = 5, More than 400.000 rupiah to 500.000 rupiah = 4, More than 300.000 rupiah to 400.000 rupiah = 3, More than 200.000 rupiah to 300.000 rupiah = 2, Equal or less than 200.000 rupiah = 1)
Adaptive Capacity (AC)	AC1	I have previous experience in dealing with difficult times.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	AC2	I feel capable with my knowledge/skills facing difficult times.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	AC3	I have a good connection with relatives, neighbors, and friends to help me adapt to difficult situations.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
Social Safety Net (SS)	SS1	I can easily get information about social safety net programs from the government.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	SS2	I feel that the government's social safety net is useful for helping my household's living needs.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	SS3	I believe that social safety nets are allocated to disadvantaged households.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
Livelihood Stability (LS)	LS1	I believe my abilities may generate a dependable source of income.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	LS2	I take additional work to ensure household needs.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)
	LS3	I have sufficient access or relations to increase my knowledge/skills to do my work.	(Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1)