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Original Article

The Mediating Role of Human Capital on the Effect of Social Assistance and Zakah on Poverty Reduction in Aceh Province, Indonesia

Mustafa Mustafa[1], Suriani Suriani[1*] and Sartiyah Sartiyah[1]

[1] Department of Economics, Faculty of Economics and Business, Universitas Syiah Kuala, Darussalam, Banda Aceh, Indonesia; mustafa4@mhs.usk.ac.id (M.M.), sartysabang@usk.ac.id (S.R.)

* Correspondence: suriani@usk.ac.id (S.S.)

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Abstract: This study analyzes the effect of social assistance programs and Zakah on poverty reduction, with human capital as a mediating variable. The study is motivated by the critical need for poverty alleviation strategies that move beyond direct aid to those that enhance individual capacity through human capital development. Primary data were collected in 2024 from 152 purposively selected poor households in Aceh Province who receive both Social Assistance and Zakah. A Structural Equation Modeling (SEM) approach was employed to test the causal relationships between the variables. The findings indicate that while social assistance has no direct significant impact on poverty reduction, it exerts a positive indirect effect by strengthening human capital. Conversely, Zakah was found to have a direct effect on reducing poverty. Human capital itself demonstrates a strong, negative, and statistically significant relationship with poverty. However, the specific indirect mediating effect of human capital in the relationship between the aid programs and poverty was not significant. These results suggest that social interventions explicitly designed to enhance human capital may be more effective for sustainable poverty alleviation. The study implies that policymakers should reformulate social and economic policies to create more targeted programs that build human capital, thereby fostering a more sustainable impact on poverty reduction.

Keywords: Human Capital; Social Assistance; Zakah; Poverty Alleviation; Aceh Province

1. Introduction

Poverty has historically been a pervasive global and national concern, including in Indonesia. As part of the Sustainable Development Goals (SDGs), the United Nations (UN) has set a target to eradicate poverty, defined as the absence of poverty, with approximately 10% of the global population still living below the poverty line (World Bank, 2018). Aceh Province, which has been identified as one of the regions with the highest poverty rate in Sumatra (14.45% in 2023), faces complex challenges in addressing this issue (BPS Provinsi Aceh, 2024a).

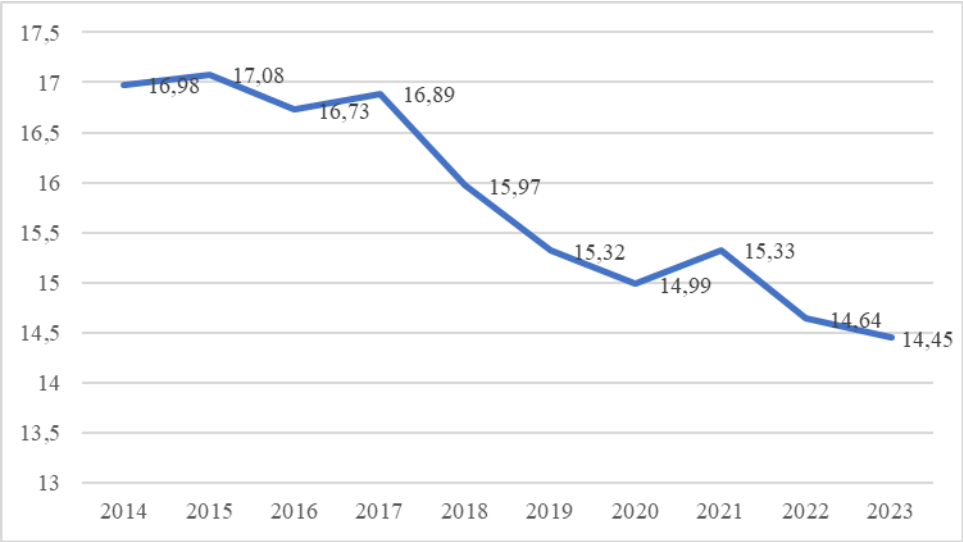

Figure 1. Head Count Index (P0) Poverty in Aceh Province, 2014-2023

Despite the downward trend, characterized by a 16.98% decrease in 2014, this decline is decelerating. This deterioration is further compounded by the repercussions of the ongoing pandemic, which has intensified economic vulnerability. (Aamir Shahzad et al., 2023). Poverty in Aceh is a multifaceted phenomenon, as evidenced by the elevated infant mortality rate (19.41/1,000) and maternal mortality rate (201/100,000), both of which exceed the national average. (BPS Provinsi Aceh, 2023) A significant contributing factor is the low level of human capital, such as education, reflected in Aceh's average years of schooling (9.55 years in 2023), which is still below the minimum required for junior high school (BPS Provinsi Aceh, 2024b) A substantial body of research has demonstrated that investment in human capital is an effective strategy for reducing poverty through increased productivity (Khan et al., 2016); Wau, 2022).

The government of Indonesia implements various programs, including social assistance (e.g., PKH, BPNT), and the Aceh Government implements regulations regarding Zakah through Baitul Mal Aceh (BMA). However, the realization of social assistance exhibited fluctuations (IDR 520.24-Rp 895.48 billion, 2014-2023) (Kementerian Keuangan RI, 2024), while the distribution of Zakah experienced a substantial increase (IDR 41.74 billion in 2018 to IDR 84.33 billion in 2023) (Baitul Mal Aceh, 2024). Baihaqi & Puspitasari, (2020), study demonstrated that Zakah, Infaq, and Shadaqa (ZIS) reduce poverty. However, its effectiveness is not optimal due to inclusion and exclusion errors, where inaccuracies and delays in data updates at the regional level have led to public reaction, especially among eligible citizens who have been neglected at the village level. As a result, even though the government has initiated technological solutions, limitations in data update optimization have the potential to erode public trust in the objectivity of policies (Sius et al., 2024)

Pidie Regency was selected as a case study due to its distinction as the region with the highest population of individuals experiencing extreme poverty in Aceh, with a total of 20,770 individuals as of 2023. This study examines the role of human capital as a mediator in the relationship between social assistance and Zakah, aiming to provide more targeted policy recommendations. The novelty of this study lies primarily in revealing the different mechanisms of influence (direct vs. indirect) and contrasting statistical significance between two major social interventions (social assistance & Zakat) on poverty reduction, with human capital as a critical mediator.

2. Literature Review

2.1. Poverty

The definition of poverty according to the UNDP United Nations Development Programme, (2015) emphasizes multidimensional conditions, in which individuals or households experience difficulties in meeting basic needs, accompanied by a lack of environmental support to create opportunities for sustainable welfare improvement or release from vulnerability. Operationally, the BPS-Indonesian Statistics (BPS Provinsi Aceh, 2024a) defines poverty more specifically from expenditure of household perspective, namely the inability to meet basic food and non-food needs as measured by expenditure. Consequently, individuals are categorized as poor if their average per capita monthly expenditure is below the Poverty

Line. The Poverty Line is methodologically the sum of the Food Poverty Line (FPL/GKM) and the Non-Food Poverty Line (NFPL/GKNM). Definitively, the FPL represents the minimum expenditure value for food needs equivalent to 2,100 kilocalories per capita per day, while the NFPL covers the minimum expenditure value for housing, clothing, education, and health needs. The BPS's measurement approach is monetary, based on expenditure, with the Poverty Line reflecting the minimum rupiah value per capita per month to meet these basic needs. In the context of this study, primary data was obtained through direct interviews with respondents who were recipients of government social assistance programs or zakah recipients.

2.2. Human Capital

Task Force on Measuring Human Capital, (2016) defines human capital as the productive capacity inherent in individuals, with a focus on their contribution to economic production. This definition refers to all intrinsic potential of individual's health status, intellectual capacity, and skill level as essential components of human capital. Furthermore, (Biddle, J., & Holden, 2014) emphasize that human capital investment conceptually represents the accumulation of a stock of capabilities. This stock includes competencies, knowledge, habits, social and personality attributes, and adds the dimensions of creativity and cognitive abilities manifested in work productivity capacity. Zulham et al., (2023) explained that an individual's human capital can be increased through improved education and health. Furthermore, he emphasized that an additional year of study is positively correlated with increased productivity and income. In this study, the concept of human capital is operationalized through concrete variables: knowledge, skills, abilities, and health possessed by respondents.

2.3. Social Assistance

Rawls, (1971), put forward a concept of social justice based on the principles of equality and distributive justice. He offered two main principles: first, every individual has the same rights to the widest possible basic freedoms, such as freedom of expression and political rights. Second, social and economic inequalities can only be justified if they provide the greatest benefit to the least advantaged group (difference principle) and are accompanied by fair opportunities for all. Rawls uses the original position and veil of ignorance as hypothetical tools to ensure that the principles of justice are formulated impartially, without being influenced by social position or personal interests.

Rawls' theory emphasizes that justice must be the foundation for the formation of social structures. He rejects utilitarianism, which sacrifices minorities for the sake of the majority, and instead asserts that public policy must prioritize marginalized groups. Justice, according to Rawls, is not merely a matter of material distribution, but also recognition of the moral equality of every individual. This concept has greatly influenced modern social policy, including government assistance programs aimed at reducing inequality through the redistribution of resources and providing fair access for vulnerable communities. Social assistance (Bansos) serves as one of the government's strategies to reduce the burden on the community in meeting their daily needs. Operationally, Minister of Social Affairs Regulation No. 1 of 2018 (Kementerian Sosial R.I, 2018) defines social assistance as "assistance in the form of money, goods, or services to individuals, families, groups, or communities that are poor, unable, and/or vulnerable to social risks."

2.4. Zakah

Islam guarantees the livelihood of the poor and disadvantaged groups in Muslim societies. This affirms that such assistance is a fundamental right for the poor, not merely an act of charity. Furthermore, zakah functions as an independent social assistance mechanism that morally obligates individuals of means (who have met the nisab) to support poor and marginalized members of society who are structurally disadvantaged. Through this instrument, poverty and destitution can be systematically eliminated within Muslim communities (Suprayitno, 2005). (Tarigan, (2006) zakah payments must meet several requirements. First, the muzakki (zakah payer) must be a Muslim who has reached puberty and is of sound mind. Second, regarding the wealth subject to zakah, several conditions must be met: the wealth must reach the nisab, the minimum threshold set by Islamic law; it must have been fully owned for one lunar year, or haul; and it must be perfect ownership, or al-malik al-tam, rather than joint ownership in the form of a partnership.

The types of assets subject to zakah include livestock, gold, silver, trade proceeds, mining products, agricultural products, and income from professions. The recipients of zakah (mustahiq) are also clearly defined in Islamic law and include the poor, zakah administrators, new converts to Islam, those who free

slaves, those in debt, those fighting in the way of Allah, and travelers who have run out of provisions. Thus, the payment of zakah is not merely a ritual, but also has significant social and economic dimensions in Islam.

3. Materials and Methods

This research employs a quantitative approach with a descriptive-analytic method to analyze the effect of social assistance and Zakah, mediated by human capital, on poverty. The data used is primary, obtained from interviews by trained officers who visited target households. The research data includes poverty indicators (basic needs, ownership of means of production, health, education, and savings), human capital (knowledge, expertise, ability, skills, and health), social assistance (PKH, JKN-PBI, PIP, BPNT), and Zakah (accuracy of targeting, timing, benefits, and value). As recommended by Hair et al., (2014), the minimum sample size for this study was calculated by multiplying the number of indicators by the number of dimensions. With 20 indicators and 4 dimensions, the minimum requirement was 80 respondents. In this research, the researchers use a sample of 152 households. This formula aims to ensure sufficient data for multivariate analysis PLS-SEM, while minimizing the risk of over fitting and estimation errors.

The analysis was conducted using multiple linear regressions with the Partial Least Squares (PLS) method to examine the effect of independent variables social assistance, human capital, and zakat on poverty. Furthermore, this study examines the mediating role of human capital in the relationship between social assistance and zakat with poverty. Given the cross-sectional nature of the study and the use of Likert scale measurements aimed at observing phenomena at specific times and locations, the constant was deliberately not included in the model. Cohen et al., (2003) shows that, under certain conditions, models without intercepts can be used appropriately. This finding has significant implications for model specification, especially in contexts where the absence of intercepts is theoretically or empirically justified. The authors' statement emphasizes the importance of carefully considering model assumptions to ensure analytical rigor. The model is formulated as:

$$\boldsymbol{POV_i} = \boldsymbol{\beta_1 SA_i} + \boldsymbol{\beta_2 ZKH_i} + \boldsymbol{\beta_3 HC_i} + \varepsilon_i \quad (1)$$

$$\boldsymbol{HC_i} = \boldsymbol{\beta_1 SA_i} + \boldsymbol{\beta_2 ZKH_i} + \varepsilon_i \quad (2)$$

Where the POV is poverty, SA is Social Assistance Program, ZKH is Zakah (Islamic Philanthropy), $\boldsymbol{HC_i}$ is human capital, ε_i is Error Term, I is the cross-section of *Pidie*. Statistical tests include the Significance Test (t-test and F-test) to measure partial and simultaneous effects. Classical Assumption Test (normality, multicollinearity, heteroscedasticity**)** Descriptive Analysis to describe the characteristics of respondents and the distribution of variables. Additionally, the effect of mediation is also determined using the Upsilon V formula.

4. Results

4.1. Validity and Reliability Test

4.1.1. Validity Test

According to Ghozali (2021), the minimum Average Variance Extracted (AVE) value recommended for confirmatory and exploratory research is 0.50. This value is a benchmark for convergent validity, where an AVE above this threshold indicates that the latent construct can explain more than half of the variance of its measurement indicators.

Table 1. Validity Test

Variables	Average Varian Extracted (AVE)	Decision
Social Assistance Program (SA)	0.652	Valid
Poverty (POV)	0.598	Valid
Human Capital (HC)	0.571	Valid
Zakah (ZKH)	0.541	Valid

Table 1 presents the results of the Average Variance Extracted (AVE) analysis, which indicate that all variables in this study meet the criteria for convergent validity (AVE > 0.50). This demonstrates that the

indicators used effectively represent their respective latent constructs. The Social Assistance Programme variable recorded the highest AVE value (0.652), followed by Poverty (0.598), Human Capital (0.571), and Zakah (0.541). These values indicate that more than 50% of the variance in the indicators is explained by their corresponding latent constructs, with the Social Assistance Programme exhibiting the strongest internal consistency. Although Zakah has the lowest AVE value, it still exceeds the minimum threshold, thereby satisfying the requirement for convergent validity. These findings reinforce the reliability and robustness of the measurement model, particularly for further analysis using Structural Equation Modelling (SEM). Future research could explore discriminant validity in greater depth to ensure that each construct is truly distinct and does not overlap conceptually or empirically with other constructs. Overall, these results support the validity of the measurement model; however, refinement of the Zakah construct could further enhance the overall quality and precision of the instrument.

4.1.2. Reliability Testing

Ghozali (2018) shows Cornbrash's Alpha values for each construct, all of which demonstrate good reliability, as their values exceed the commonly accepted threshold of 0.70. Here is a breakdown of the results:

Table 2. Result of Reliability Testing using Cronbach's Alpha and Composite Reliability

Construct	Cronbach's Alpha	Composite Reliability	Decision
Social Assistance program (SA)	0.804	0.878	Reliable
Poverty (POV)	0.831	0.880	Reliable
Human Capital (HC)	0.820	0.869	Reliable
Zakah (ZKH)	0.741	0.821	Reliable

Table 2 presents the Cronbach's Alpha values and Composite Reliability results for the four constructs, all of which demonstrate strong reliability, as each exceeds the conventional threshold of 0.70. The Social Assistance Programme records a value of 0.804, Poverty scores 0.831, Human Capital registers 0.820, and Zakah, while slightly lower, still maintains acceptable reliability at 0.741. These findings indicate that all constructs exhibit internal consistency and are reliable for further statistical analysis. Among these constructs, Poverty and Human Capital demonstrate the highest levels of reliability. In contrast, although Zakah meets the acceptable threshold, its consistency could be further enhanced by refining the measurement scale—such as revising inconsistent items or incorporating additional valid indicators. Overall, the results confirm that the measurement instruments employed for these constructs are robust and appropriate for subsequent research or future scale development.

4.2. Direct Effect of Social Assistance and Zakah on Poverty

Table 3. Result of Direct Effect of Social Assistance and Zakah on Poverty

Variable	Coefficients	STDEV	T Values	P Values
Social Assistance -> Poverty	-0.058	0.074	0.789	0.431
Zakah -> Poverty	-0.136	0.079	1.718	0.086
Human Capital -> Poverty	-0.536	0.057	9.361	0.000

Table 3 presents the results of regression analysis, which measures the effect of Social Assistance and Zakah variables on Poverty. The regression coefficient for social assistance is -0.058 with a standard deviation (STDEV) of 0.074, resulting in a T-value of 0.789 and a p-value of 0.431. This shows that although social assistance has a negative direction of association with poverty, indicating that an increase in social assistance tends to reduce poverty, the effect is not statistically significant because the P-value is greater than 0.05. Thus, it can be concluded that, in the context of this analysis, social assistance has no significant impact on poverty reduction. Banerjee et al., (2015) stated that direct cash transfers only have a short-term impact on poverty reduction. Their effects do not last long unless they are combined with training and empowerment programs.

The coefficient of -0.536 (p-value = 0.000) confirms that human capital has a significant and dominant effect in reducing poverty. The t-statistic (9.361) and maximum significance ($p < 0.01$) confirm that

improving the quality of human resources (education, health, skills) is the most effective strategy for poverty alleviation. The magnitude of the coefficient (-0.536) also indicates the most decisive influence among all variables. This is in line with Garcia-Fuentes et al. (2025), which shows that human capital can reduce poverty rates, depth, and severity. This supports the idea that developing countries should adopt policies that lower remittance costs and promote education to enhance the impact of remittances on poverty reduction.

Based on the analysis results, Zakah consistently shows a significant reduction in the dependency ratio and poverty rate. Similarly, the Human Development Index (HDI) contributes significantly to reducing both variables through a measurable negative influence (Suriani et al., 2021). Zulham et al. (2023) explain that highly skilled workers earn higher wages than low-skilled workers through two complementary mechanisms. First, their intrinsic skill characteristics directly increase productivity and income even when human capital accumulation is equal; second, their capacity to accumulate human capital more intensively creates a compounding effect on wage differentials.

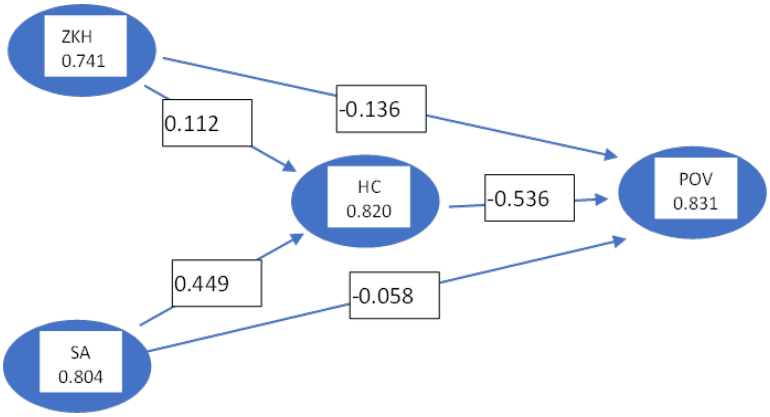

Figure 2. Loading Factor and Result of Direct Effect

Figure 2 presents the results of the direct effect, showing that social assistance and Zakah have a significant influence on poverty reduction in Aceh Province ($\beta = 0.112$; $p < 0.10$). Social assistance has been proven to significantly increase human capital ($\beta = 0.449$; $p < 0.01$), and Zakah also has a negative impact on poverty ($\beta = -0.136$; $p < 0.10$). However, social assistance does not have a significant impact on poverty ($\beta = -0.058$; $p > 0.10$). These findings suggest that increasing Zakah can enhance human capacity, thereby contributing to poverty alleviation. Meanwhile, the Zakah variable has a larger regression coefficient of -0.136, with a standard deviation of 0.079, resulting in a T-value of 1.718 and a P-value of 0.086. The P-value, which is close to 0.05 (although slightly above it), indicates that Zakah has a more substantial adverse effect on poverty than social assistance, with the significance level almost reaching the standard threshold ($\alpha = 0.05$). This result suggests that Zakah may be more effective in reducing poverty, although the effect is not fully statistically significant in this analysis. Overall, these findings suggest that Zakah-based interventions have greater potential for poverty reduction than social assistance; however, further research with larger samples or more comprehensive models is needed to strengthen the significance of these results. (Sartiyah & Suriani, 2019) demonstrated that food social assistance, rice consumption, and non-food social assistance had a positive impact on welfare.

Suriani et al. (2025) showed in multiple linear regression analysis, the significant positive influence of changes in household assets, employment conditions, family size, and government social assistance on increasing consumption expenditure among poor households was confirmed, although the education variable did not show statistical significance. Furthermore, government interventions during the pandemic have proven effective in mitigating the vulnerability of consumption among vulnerable groups, thereby fostering sustained expectations for the continuation of policy support both during the pandemic and in the post-pandemic recovery phase.

This finding aligns with research by Ahmed & Sohag (2015) and (Sartiyah & Suriani, 2019), which demonstrates that Zakah has a significant impact on long-term poverty alleviation; however, its effect on the ratio of poor people is statistically insignificant due to the fragmented distribution mechanisms and consumption-oriented use by beneficiaries. All constructs in the study demonstrate strong reliability, as their Cornbrash's Alpha values exceed the standard threshold of 0.70. Among them, Poverty (0.831) and Human Capital (0.820) exhibit the highest reliability, indicating excellent internal consistency. While Zakah (0.741)

also meets the acceptable reliability benchmark, it has the lowest value among the four constructs. If further refinement is desired, potential steps could include reviewing the scale for inconsistent items or expanding the number of valid indicators to enhance its reliability.

4.3. Mediating Effect of Human Capital on Social Assistance Program and Zakah on Poverty

Figure 4 below shows the relationship between the tested constructs, Social Assistance, Zakah, Human Capital, and Poverty. Human capital mediates the relationship between social assistance and Zakah on poverty (indirect effect). The mediation effect analysis in this study was examined using SmartPLS-4 software. This procedure entailed evaluating both the bootstrap direct effect and the bootstrap indirect effect outputs generated by the program. The statistical significance of these effects was determined through a bootstrap indirect two-tailed significance test using the bias-corrected (BC) method (Hair et al., 2022).

Table 4. Mediating Effect of Human Capital on Social Assistance and Zakah on Poverty

Variables	Specific Indirect Effects	P Value
Social Assistance-> Human Capital-> Poverty	-0.241	0.000
Zakah -> Human Capital-> Poverty	-0.060	0.084

The data in Table 4 shows that the indirect relationship between social assistance and poverty has a specific indirect effect score of -0.241 with a P-value of 0.000. The indirect effect of social assistance on poverty through human capital is -0.241, indicating that social assistance has a negative and statistically significant impact on poverty by enhancing human capital. The P-value of 0.000 indicates that this effect is highly significant. The indirect effect of zakah on poverty through human capital is -0.060, indicating that zakah has a negative impact on poverty by enhancing human capital, although this effect is more negligible compared to social assistance. The P-value of 0.084 indicates that this effect is not statistically significant at the 0.05 significance level but approaches significance at the 0.10 level.

In SEM mediation analysis, reporting the effect size is crucial because it not only relies on statistical significance (p-value) but also assesses the strength and practical relevance of the mediating effect. This study adopts Upsilon V as the mediation effect size metric because this formula provides a standard measure for comparing the relative contributions of indirect paths. Based on references from Lachowicz et al., (2018) and Ogbeibu et al., (2021), the Upsilon V (υ) value is used to measure the effect size of mediation in Structural Equation Modelling (SEM) analysis. The interpretation of the Upsilon V value is generally based on the following criteria: $\upsilon \geq 0.15 \rightarrow$ Large/Strong effect, $0.05 \leq \upsilon < 0.15 \rightarrow$ Moderate/Medium effect, $\upsilon < 0.05 \rightarrow$ Low/Weak effect.

A discussion of the study's results suggests that human capital serves as an important mediator in the relationship between social assistance and poverty, with complete mediation occurring. Consequently, the efficacy of social assistance in reducing poverty is contingent upon its ability to enhance educational attainment, health outcomes, and workforce skills. This finding aligns with the tenets of human capital theory (Caire & Becker, 1967a), which posits that strategic investment in human capital is pivotal for enhancing productivity and overall welfare. Concurrently, Zakah exhibits partial mediation, indicating that Zakah distribution reduces poverty not solely by enhancing human capital, but also through alternative mechanisms such as direct cash transfers or economic empowerment. (Choiriyah et al., 2020) Shown Zakah has proven effective in reducing the number of poor people through basic assistance (education/health), but it has not yet addressed the quality dimension of poverty. There is a need to transform the program from a consumptive approach to one of sustainable empowerment.

The policy implications of this research are manifold, but chief among them is the need to integrate social assistance programs and Zakah with a human capital strengthening approach. The government and Zakah institutions can enhance the program's impact by prioritizing interventions that improve education, skills training, and access to healthcare for impoverished households. Furthermore, it is imperative to establish a symbiotic relationship between social assistance and Zakah to ensure that assistance is not merely consumptive but also productive in the long term. This finding provides further support for the perspective presented by Khan et al. (2016), which posits that an increase in educational attainment has a substantial impact on poverty reduction. Consequently, the design of social assistance programs should prioritize the cultivation of human capital.

4.4. Effect Size of Mediation

Table 5. Effect Size Mediation/ Upsilon V Value

Path Analysis	Effect Size Mediation/ Upsilon V Value	P Value
Social Assistance -> Human Capital -> Poverty	0.0050	0.000
Zakah -> Human Capital -> Poverty	0.0036	0.084

As shown in Table 5, the Upsilon V (υ) values for both mediation paths indicate a low effect size (υ < 0.05), suggesting that the role of human capital as a mediator in the relationship between social assistance or zakah and poverty is very weak. In other words, although there is an indirect effect, its contribution is practically insignificant. This suggests that interventions relying solely on human capital are not sufficiently effective in reducing poverty in the context of this study. These findings imply the need to explore alternative mediators or other supporting variables that may have a greater effect. Although the mediation effect is small, it is important to examine the statistical significance (p-value) to ensure the validity of the results. If the research objective is policy formulation, these results suggest that poverty alleviation strategies may need to employ a multidimensional approach that extends beyond increasing human capital.

The findings suggest that social assistance, when mediated by human capital, exerts a more substantial effect on poverty reduction compared to zakah. Although the indirect effect of zakah through human capital is statistically insignificant, these results offer valuable insights into how both mechanisms influence welfare through human capital development. This observation aligns with Khan et al. (2016), who found that human capital indicators, such as education level, work experience, and gender—play a crucial role in poverty alleviation. Specifically, higher education levels correlate with a decline in poverty rates, reinforcing the importance of human capital enhancement in socioeconomic interventions. However, given the small effect sizes (Upsilon V < 0.05) for both mediation pathways, the practical implications remain limited. This underscores the need for additional mediators (e.g., access to credit, job opportunities) or direct policy measures to amplify poverty reduction efforts.

4.5. Coefficient Determination

Chin & Marcoulides, (1998) establish the predictive power hierarchy of the model based on the R-Square value: The strong category is achieved when the value exceeds 0.67. Next, values in the range greater than 0.33 to less than 0.67 are classified as moderate, while values between 0.19 and 0.33 fall into the weak category. Implicitly, values below the 0.19 threshold indicate inadequate predictive power according to this standard.

Table 6. The result of Coefficient Determination

Variables	R Square	R Square Adjusted
Poverty	0.369	0.357
Human Capital	0.233	0.223

Table 6 presents the results of the coefficient of determination (R-squared) and adjusted R-squared calculations for two latent variables in the model. Based on the data processing output, the Poverty variable has an R-squared value of 0.369 and an adjusted R-squared value of 0.357. Meanwhile, the Human Capital variable has an R-squared value of 0.233 and an adjusted R-squared value of 0.223. The slightly lower adjusted R-squared values compared to the R-squared values for both variables reflect adjustments made for the number of predictors in the model. The analysis reveals that the R^2 value for the direct effects of Social Assistance and Zakah on the Poverty variable is 0.369. This finding indicates that variations in Social Assistance and Zakah jointly explain 36.90% of the variance in Poverty. In other words, while the combined contribution of these two exogenous variables is statistically significant, it is not dominant, as 63.10% of the variance in Poverty remains attributable to factors outside the model. According to established criteria, an R^2 value of 0.369 is classified within the moderate category. In contrast, for the direct effects of Zakah and Social Assistance on Human Capital, the R^2 value is 0.233. This suggests that fluctuations in Zakah and Social Assistance account for only 23.30% of the variance in Human Capital, while the remaining 76.70% is

explained by other determinants not captured in the current research model. Therefore, using the same classification criteria, the R^2 value of 0.233 for Human Capital is categorised as weak.

5. Discussion

The present study corroborates the hypothesis that social assistance and Zakah exert a significant positive effect on the improvement of human capital in Aceh Province, while concurrently exerting an adverse effect on the poverty rate. The findings indicate that both forms of assistance are not only consumptive in nature but also possess the capacity to augment human capital capacity through education, health, and skills training. Furthermore, human capital functions as a mediator, thereby indirectly amplifying the effect of poverty reduction. This finding aligns with the tenets of human capital theory (Caire & Becker, 1967b), which posits that strategic investment in education and health is pivotal to achieving sustained economic growth.

Subsequent discourse has revealed that social assistance exerts a complete mediation effect, signifying that its impact on poverty is entirely attributable to the enhancement of human capital. Concurrently, Zakah exhibits a partial mediation effect, suggesting that, in addition to enhancing human capital, Zakah can also directly reduce poverty, for example, through cash transfers or productive programs. This finding corroborates prior research (Sholeh, 2020) and (Khan et al., 2016) that human capital is a pivotal factor in poverty reduction. Nevertheless, the efficacy of Zakah requires enhancement, as its impact is less pronounced than that of social assistance.

Suriani et al., (2020) suggest that optimization of zakah collection can be achieved through improved education, intensified outreach, and the provision of effective services. On the other hand, optimization of distribution requires prioritizing recipients (mustahik) from among the poor and needy as the primary focus of asnaf, supported by accurate supporting data. Furthermore, fund allocation must include both consumptive and productive forms of assistance and be designed in alignment with the Sustainable Development Goals (SDGs), particularly the "No Poverty" target. Thus, the integration of accurate targeting and the dualism of distribution forms is a fundamental prerequisite for the effectiveness of zakah-based poverty alleviation programs.

6. Conclusions

This study concludes that social assistance has no direct impact on poverty reduction in Aceh. However, human capital serves as a full mediator in this relationship, indicating that enhancing human capital is essential for social assistance to effectively accelerate poverty alleviation. By contrast, zakah has been found to have a direct and significant effect on reducing poverty, a result largely attributable to the accurate targeting of zakah distribution by zakah payers and Baitul Mal to the appropriate recipients. Nonetheless, human capital does not mediate the impact of zakah, as its allocation is predominantly used for short-term consumptive needs. Moreover, human capital demonstrates a negative and significant direct effect on poverty, confirming that investment in education, healthcare, and skills development plays a crucial role in accelerating poverty alleviation efforts in Aceh.

The policy implications of these findings are manifold. Chief among them is the need to integrate social assistance and zakah programmes within a framework that prioritises human capital empowerment. It is incumbent upon both the government and zakah regulatory institutions to ensure that assistance extends beyond short-term relief towards fostering sustainable empowerment. For example, a portion of zakah and social assistance funds could be allocated to skills training programmes, educational scholarships, and public health services. Furthermore, the potential of Baitul Mal as a zakah management institution should be maximised to ensure the efficient and impactful distribution of resources.

This study is subject to certain limitations, particularly its geographical focus, which is confined to Aceh Province. Therefore, caution is warranted when attempting to generalise these findings to other regions. Future research could broaden the sample to include other areas within Aceh or undertake comparative analyses of the effectiveness of different types of social assistance and zakah. In addition, adopting a qualitative approach could provide deeper insights into the mechanisms through which human capital influences poverty reduction. Thus, this study makes a significant contribution to the growing body of literature on Islamic social policy and finance, particularly in highlighting the central role of human capital in poverty alleviation strategies.

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