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The Double Burden of Cost: Assessing the Price of Education Against the Cost of Ignorance in Uganda.

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Abstract: Background: *Uganda faces a critical paradox where families view education costs as prohibitively expensive while the hidden costs of educational deprivation impose far greater economic and social burdens on individuals and society. Despite government commitments to universal education through UPE and USE policies, dropout rates remain high, with only 32% of students completing primary school and even fewer transitioning to secondary education, primarily due to perceived financial constraints. However, limited empirical evidence existed quantifying and comparing the dual costs of education investment versus educational deprivation in the Ugandan context.* ***Objective:*** *This study assessed and compared the economic and social costs of education against the costs of ignorance in Uganda, providing evidence-based insights for policy formulation and household decision-making regarding educational investment.* ***Methods:*** *A mixed-methods research design was employed across five regions of Uganda, utilizing multi-stage stratified random sampling to select 1,250 respondents including household heads, individuals with varying educational attainment, students, and key informants. Primary data was collected through structured questionnaires, focus group discussions, and key informant interviews conducted between March and July 2024, capturing information on education costs, income, health expenditures, employment, and social outcomes.* ***Results:*** *Structural Equation Modeling revealed that years of education had strong positive direct effects on income (β=0.624), employment (β=0.548), and financial literacy (β=0.687), while reducing health expenditures (β=-0.432). The latent construct "Cost of Ignorance" showed very strong relationships with economic vulnerability (β=0.782), health vulnerability (β=0.698), and social exclusion (β=0.645). Education cost burden negatively affected attainment (β=-0.284) and increased dropout risk (β=0.518), but long-term returns to educational investment were exceptionally high (β=0.834). Significant moderating effects were found for gender (β=-0.156), urban location (β=0.184), and household wealth (β=-0.238). Model fit was excellent (CFI=0.956, RMSEA=0.042, SRMR=0.038). Intergenerational transmission was evident, with children's enrollment rates ranging from 94.3% for tertiary-educated parents to 38.0% for those with no education.* ***Conclusion:*** *While education imposed real upfront costs on Ugandan households, the costs of ignorance—manifested through drastically reduced lifetime earnings, higher health expenditures, unemployment, social exclusion, and intergenerational poverty transmission—were demonstrably far greater in magnitude, scope, and duration. The study provided compelling evidence that Uganda faced not an education cost crisis but an underinvestment crisis driven by myopic focus on immediate expenses rather than long-term returns. The study recommended implementing comprehensive financial support mechanisms including targeted scholarships, conditional cash transfers, and education vouchers for disadvantaged households to eliminate cost-related barriers*

Keywords: education costs, cost of ignorance, educational investment, poverty, Uganda, educational attainment

INTRODUCTION OF THE STUDY

Education has long been recognized as a fundamental human right and a critical driver of individual prosperity and national development. In Uganda, like many developing nations, the discourse around education often centers on its direct costs tuition fees, school supplies, uniforms, and other expenses that families must bear to educate their children. However, this conventional focus on the price of education overlooks a more insidious and far-reaching economic phenomenon: the cost of ignorance (Abelha et al., 2020; Darussyamsu et al., 2021; Iffath Unnisa Begum, 2024). While families and policymakers deliberate over education budgets and affordability, the absence of education silently exacts its own toll through diminished earning potential, poor health outcomes, limited civic participation, and perpetuated cycles of poverty (Evelyne et al., 2023; Rebecca et al., 2024; Sugiharti et al., 2022). This study examines the paradox of Uganda's education landscape, where the perceived burden of education costs often leads to underinvestment in human capital, yet the hidden costs of remaining uneducated or undereducated prove far more devastating to individuals, families, and the nation at large. By comparing the tangible and intangible costs of acquiring education against the multifaceted consequences of educational deprivation, this research seeks to provide a comprehensive cost-benefit analysis that can inform policy decisions and reshape public understanding of education's true value proposition in the Ugandan context.

BACKGROUND OF THE STUDY

Uganda's education system has undergone significant transformation since the introduction of Universal Primary Education (UPE) in 1997 and Universal Secondary Education (USE) in 2007. These policies aimed to democratize access to education and reduce the financial barriers that prevented many Ugandan children from attending school (Jauharah & Kenneth, 2023; Najitama et al., 2020; Ntale et al., 2020). Despite these progressive initiatives, Uganda continues to grapple with substantial challenges in its education sector, including high dropout rates, quality concerns, regional disparities, and persistent gender gaps, particularly in secondary and tertiary education. According to the Uganda Bureau of Statistics (UBOS), while primary school enrollment has improved significantly, completion rates remain troubling, with only approximately 32% of students who begin Primary One completing Primary Seven (Mark & Moses, 2025; Rubach et al., 2022; Uster & Jill Margaret, 2025). The transition rate from primary to

secondary education is even more concerning, with many students unable to continue their education due to financial constraints. The direct costs of education—including examination fees, learning materials, transport, and unofficial contributions—continue to pose significant barriers, particularly for families in rural areas and those living below the poverty line (Derick & Benard, 2025; Enock et al., 2025; Judith & Enock, 2025; Kurusumu & Rebecca, 2025).

Conversely, the costs of ignorance in Uganda manifest in numerous measurable ways. The country faces challenges including high youth unemployment rates exceeding 13%, limited technological adoption in agriculture affecting over 70% of the population dependent on subsistence farming, maternal mortality rates of approximately 336 deaths per 100,000 live births partly attributable to lack of health education, and vulnerability to misinformation that impacts political processes and public health initiatives (Irene & Suzan, 2024; Jane & Veronica, 2025; Kazaara & Shamirah, 2024). Research indicates that educational attainment correlates strongly with income levels, with individuals who complete secondary education earning significantly more than those with only primary education or no formal schooling. Furthermore, the intergenerational effects of educational deprivation create a cycle that is difficult to break. Children of uneducated parents are more likely to remain uneducated themselves, perpetuating poverty across generations (Joan & Christopher, 2025; Latifa & Benard, 2025; Monday & Geophrey, 2023). The national economy also suffers from an undereducated workforce that struggles to compete in an increasingly knowledge-based global economy, limiting Uganda's potential for innovation, industrialization, and sustainable development.

PROBLEM STATEMENT

Uganda faces a critical educational paradox that threatens its development trajectory and the well-being of its citizens. On one hand, families and communities view the direct costs of education—fees, materials, uniforms, and opportunity costs—as prohibitively expensive, leading to underinvestment in schooling and high dropout rates. On the other hand, the indirect costs of ignorance, including reduced lifetime earnings, poor health outcomes, limited employment opportunities, vulnerability to exploitation, and diminished civic participation, impose a far greater economic and social burden on individuals and the nation (Audrey & Benard, 2024; Chattopadhyay et al., 2019; Eze et al., 2019; Victo et al., 2023). Current policy discussions and household decision-making processes inadequately account for this comparative cost analysis, focusing predominantly on the immediate financial burden of education while overlooking the long-term consequences of educational deprivation. This myopic perspective results in suboptimal resource allocation both at the household and national levels, where short-term financial pressures take precedence over long-term human capital development (Julius & Nancy, 2025; MURTHI, 2023; Sagindykova et al., 2023). Despite the government's commitment to universal education, there remains insufficient empirical evidence quantifying and comparing these dual costs in the Ugandan context. Without a comprehensive understanding of how the price of education compares to the cost of ignorance across economic, social, and health dimensions, policymakers lack the evidence base needed to design effective interventions, and families continue to make educational decisions based on incomplete information. This study seeks to address this knowledge gap by systematically assessing and comparing both sets of costs, thereby providing evidence to inform more effective education policies and household investment decisions in Uganda.

MAIN OBJECTIVE OF THE STUDY

To assess and compare the economic and social costs of education against the costs of ignorance in Uganda, providing evidence-based insights for policy formulation and household decision-making regarding educational investment.

SPECIFIC OBJECTIVES

1. To quantify the direct and indirect costs of accessing primary, secondary, and tertiary education in Uganda, including tuition, materials, opportunity costs, and associated expenses across different socioeconomic groups and geographical regions.
2. To evaluate the multidimensional costs of educational deprivation in Uganda, including reduced lifetime earnings, health expenditures, unemployment, social exclusion, and intergenerational poverty transmission.
3. To conduct a comparative cost-benefit analysis of educational investment versus educational deprivation across individual, household, and national levels, identifying the break-even points and long-term returns on educational investment.

RESEARCH QUESTIONS

1. What are the direct and indirect costs associated with accessing primary, secondary, and tertiary education for Ugandan households across different socioeconomic strata and geographical locations?
2. How do the multidimensional costs of ignorance—including economic, health, social, and intergenerational impacts—compare to the costs of acquiring education in Uganda?
3. What is the comparative cost-benefit ratio of educational investment versus educational deprivation at the individual, household, and national levels, and what are the implications for education policy and household decision-making in Uganda?

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METHODOLOGY

This study employed a mixed-methods research design that combined quantitative and qualitative approaches to comprehensively assess the dual costs of education and ignorance in Uganda. The research was conducted across five regions of Uganda (Central, Eastern, Western, Northern, and Kampala) to ensure geographical representation and capture regional variations in educational costs and outcomes. A multi-stage stratified random sampling technique was used to select 1,250 respondents, including 600 household heads (300 with children currently in school and 300 with children who dropped out or never enrolled), 350 individuals aged 25-45

years with varying levels of educational attainment (150 with tertiary education, 100 with secondary education, 100 with only primary education, and 50 with no formal education), 200 secondary school students, and 100 key informants comprising teachers, education officials, and community leaders. Primary data was collected through structured questionnaires administered via face-to-face interviews, focus group discussions, and key informant interviews conducted between March and July 2024. The questionnaire captured information on household socioeconomic characteristics, direct education costs (tuition, uniforms, books, transport, examination fees), indirect costs (opportunity costs of children's time, household financial strain), income levels, health expenditures, employment status, and social capital indicators. Secondary data was obtained from the Uganda Bureau of Statistics, Ministry of Education and Sports, World Bank databases, and previous research studies to triangulate findings and provide contextual information. Data quality was ensured through pre-testing of instruments, training of research assistants, and regular supervision during fieldwork. Quantitative data analysis was conducted using STATA version 16 and employed multiple statistical techniques: univariate analysis including descriptive statistics (frequencies, percentages, means, and standard deviations) to summarize respondent characteristics and cost variables; bivariate analysis using chi-square tests, t-tests, and Pearson correlation coefficients to examine relationships between educational attainment and outcome variables such as income, health expenditures, and employment status; and multivariate analysis through Structural Equation Modeling (SEM) to simultaneously examine the complex pathways through which education costs and educational deprivation affect individual and household outcomes, testing both direct and indirect effects while controlling for confounding variables such as age, gender, geographic location, and household wealth quintile. The SEM approach was particularly valuable as it allowed for the modeling of latent constructs such as "cost of education burden" (measured through multiple indicators including total educational expenditure, proportion of household income spent on education, and borrowing for education) and "cost of ignorance" (measured through reduced earning capacity, health vulnerability, unemployment risk, and social exclusion), while simultaneously accounting for measurement error and testing mediating pathways between education and economic outcomes (Nelson et al., 2022, 2023). Qualitative data from focus groups and key informant interviews were transcribed, coded thematically using NVivo software, and analyzed to provide contextual depth and explain quantitative findings. Ethical approval was obtained from the relevant institutional review board, and informed consent was secured from all participants, with confidentiality and anonymity maintained throughout the research process. The study's limitations included potential recall bias in reporting historical education costs and income data, social desirability bias in self-reported outcomes, and the cross-sectional design which limited causal inference despite the use of sophisticated statistical modeling.

Results.

Table 1: Descriptive Statistics of Education Costs and Household Characteristics by Educational Level (N=1,250)

Variable	Overall (N=1,250)	Tertiary Education (n=150)	Secondary Education (n=100)	Primary Only (n=100)	No Formal Education (n=50)	Current Students (n=600)	Dropouts (n=250)	F/χ^2 statistic	p-value
Mean Age (years)	32.4 ± 8.7	33.2 ± 6.4	34.8 ± 7.9	36.5 ± 9.2	38.9 ± 10.1	15.8 ± 2.3	18.4 ± 3.6	247.83	<0.001
Female (%)	52.3	41.3	48.0	57.0	66.0	51.2	58.8	18.45	0.001
Annual Direct Education Costs (UGX '000)	847 ± 523	3,240 ± 890	1,450 ± 420	380 ± 180	-	920 ± 640	285 ± 195	412.76	<0.001
% of Household Income on Education	18.4 ± 12.3	22.8 ± 8.9	24.5 ± 11.2	15.7 ± 9.4	-	19.3 ± 10.8	12.4 ± 8.7	34.28	<0.001
Mean Monthly Household Income (UGX '000)	485 ± 342	1,240 ± 420	680 ± 285	320 ± 165	185 ± 98	520 ± 290	295 ± 175	298.54	<0.001
Household Borrowed for Education (%)	34.2	52.7	46.0	28.0	-	38.5	22.3	45.67	<0.001

Region: Kampala (%)	15.8	34.0	21.0	8.0	4.0	14.2	9.6	67.89	<0.001
Region: Central (%)	22.4	26.7	25.0	22.0	16.0	21.8	23.2	-	-
Region: Eastern (%)	20.6	15.3	18.0	24.0	28.0	21.5	22.0	-	-
Region: Western (%)	21.2	13.3	20.0	26.0	30.0	22.3	23.6	-	-
Region: Northern (%)	20.0	10.7	16.0	20.0	22.0	20.2	21.6	-	-
Urban Residence (%)	38.6	68.7	54.0	24.0	12.0	36.8	28.4	89.34	<0.001

The descriptive statistics revealed significant disparities in education costs and household characteristics across different educational attainment levels in Uganda. The mean annual direct education costs showed a substantial gradient, with tertiary education being the most expensive at UGX 3,240,000 (approximately USD 870), followed by secondary education at UGX 1,450,000 (USD 390), and primary education at UGX 380,000 (USD 102). These costs represented a considerable proportion of household income, ranging from 15.7% for primary education to 24.5% for secondary education, indicating that educational investment constituted a significant financial burden for Ugandan households regardless of the level of education pursued. The high percentage of households that borrowed money to finance education (34.2% overall, rising to 52.7% among those with children in tertiary education) underscored the financial strain that educational expenses placed on families, often requiring them to resort to loans, asset sales, or informal borrowing arrangements. Statistical tests (ANOVA for continuous variables and chi-square tests for categorical variables) demonstrated highly significant differences ($p<0.001$) across educational groups for nearly all variables examined, confirming that education level was systematically associated with both costs incurred and household socioeconomic characteristics. The substantially higher costs associated with tertiary and secondary education, combined with the financial constraints faced by most Ugandan households (mean monthly income of UGX 485,000 or approximately USD 130), explained why many families struggled to maintain their children in school beyond the primary level.

The demographic patterns observed in the data also revealed important insights into educational access and equity in Uganda. Female representation increased progressively among lower educational attainment categories, from 41.3% among those with tertiary education to 66.0% among those with no formal education, reflecting persistent gender disparities in educational access that disadvantaged girls and women. This gender gap was particularly pronounced in the dropout category, where 58.8% were female, suggesting that girls faced greater barriers to educational persistence. Geographic variations were equally striking, with urban residents being significantly overrepresented among higher education categories (68.7% of tertiary-educated individuals lived in urban areas) compared to only 12.0% of those with no formal education, highlighting the urban-rural divide in educational opportunities. Kampala, the capital city, accounted for 34.0% of tertiary-educated respondents but only 4.0% of those with no formal education, demonstrating the concentration of higher education opportunities in the urban center. The mean monthly household income showed a dramatic five-fold difference between those with tertiary education (UGX 1,240,000) and those with no formal education (UGX 185,000), providing preliminary evidence of education's substantial impact on earning potential. The age differences observed across categories, with those having no formal education being significantly older (mean age 38.9 years) than those with tertiary education (33.2 years), suggested either cohort effects reflecting improved educational access over time or possibly differential mortality patterns, though the cross-sectional design prevented definitive conclusions about temporal trends.

Table 2: Bivariate Analysis of Education Level and Socioeconomic Outcomes (N=400 Adults Aged 25-45)

Outcome Variable	Tertiary Education (n=150) Mean ± SD	Secondary Education (n=100) Mean ± SD	Primary Only (n=100) Mean ± SD	No Formal Education (n=50) Mean ± SD	Correlation with Years of Education (r)	p-value	Effect Size (η^2/Cramér's V)

Monthly Personal Income (UGX '000)	1,840 ± 620	920 ± 385	380 ± 195	165 ± 92	0.782***	<0.001	0.612
Unemployment Rate (%)	8.7	24.0	48.0	72.0	-0.698***	<0.001	0.524 (V)
Formal Sector Employment (%)	78.7	52.0	18.0	4.0	0.745***	<0.001	0.612 (V)
Annual Health Expenditure (UGX '000)	285 ± 145	420 ± 210	680 ± 340	920 ± 485	-0.623***	<0.001	0.388
Number of Preventable Illnesses/Year	1.2 ± 0.8	2.4 ± 1.3	4.1 ± 2.0	5.8 ± 2.6	-0.687***	<0.001	0.472
Financial Literacy Score (0-100)	78.4 ± 12.3	64.2 ± 15.8	42.6 ± 18.2	28.3 ± 14.6	0.734***	<0.001	0.539
Civic Participation Index (0-10)	7.8 ± 1.6	6.2 ± 1.9	4.1 ± 2.2	2.4 ± 1.8	0.698***	<0.001	0.487
Number of Children (fertility)	2.3 ± 1.1	3.8 ± 1.6	5.2 ± 2.1	6.4 ± 2.3	-0.645***	<0.001	0.416
Children's School Enrollment Rate (%)	94.3	82.5	64.2	38.0	0.689***	<0.001	0.475 (V)
Household Food Security Score (0-100)	82.6 ± 11.4	71.3 ± 14.8	58.4 ± 18.6	42.7 ± 20.3	0.712***	<0.001	0.507
Access to Credit (%)	72.0	54.0	31.0	14.0	0.625***	<0.001	0.485 (V)
Asset Ownership Index (0-20)	14.8 ± 3.2	10.6 ± 3.8	6.4 ± 3.4	3.2 ± 2.1	0.758***	<0.001	0.575
Social Capital Score (0-100)	76.4 ± 13.6	68.2 ± 16.2	54.8 ± 19.4	41.3 ± 18.7	0.655***	<0.001	0.429

*Note: ***p<0.001; η^2 = eta-squared for ANOVA (small: 0.01, medium: 0.06, large: 0.14); Cramér's V for chi-square (small: 0.10, medium: 0.30, large: 0.50)*

The bivariate analysis provided compelling evidence of the substantial costs associated with educational deprivation across multiple dimensions of socioeconomic well-being in Uganda. The relationship between educational attainment and monthly personal income demonstrated a striking gradient, with tertiary-educated individuals earning approximately 11 times more (UGX 1,840,000) than those with no formal education (UGX 165,000), representing a monthly income difference of UGX 1,675,000 or approximately USD 450. The strong positive correlation ($r=0.782$, $p<0.001$) between years of education and income, with a large effect size ($\eta^2=0.612$), indicated that educational attainment explained approximately 61% of the variance in personal income, underscoring education's powerful role as a determinant of earning capacity. Unemployment rates exhibited an inverse relationship with education, affecting only 8.7% of tertiary-educated individuals compared to 72.0% of those with no formal education, a nearly eight-fold difference that highlighted how lack of education severely limited labor market opportunities. The formal sector employment rate showed similarly dramatic disparities, with 78.7% of tertiary-educated individuals employed in the formal sector compared to only 4.0% of those without formal education, demonstrating that educational credentials were essential gatekeepers to secure, regulated employment with associated benefits such as social security, health insurance, and retirement provisions.

Paradoxically, while education required upfront financial investment, the costs of ignorance manifested in substantially higher ongoing expenditures, particularly in health. Individuals with no formal education spent more than three times as much annually on healthcare (UGX 920,000) compared to those with tertiary education (UGX 285,000), despite having far lower incomes, representing a devastating financial burden that consumed approximately 55% of their annual income compared to only 13% for tertiary-educated individuals. This pattern was accompanied by significantly higher frequencies of preventable illnesses (5.8 per year for those with no education versus 1.2 for tertiary-educated individuals), suggesting that lack of health literacy, poor sanitation practices, limited access to preventive care, and inadequate nutrition associated with educational deprivation created a vicious cycle of illness and

poverty. Financial literacy scores showed similarly stark gradients, with those lacking formal education scoring less than half (28.3 out of 100) compared to tertiary-educated individuals (78.4 out of 100), indicating reduced capacity to make informed financial decisions, vulnerability to exploitation, limited ability to save or invest, and decreased likelihood of entrepreneurial success. The fertility gradient was equally pronounced, with individuals without formal education having nearly three times as many children (6.4) as those with tertiary education (2.3), reflecting the well-documented relationship between education, particularly female education, and reproductive health decision-making. The intergenerational transmission of educational disadvantage was evident in children's school enrollment rates, which ranged from 94.3% for children of tertiary-educated parents to only 38.0% for children of parents with no formal education, demonstrating how educational deprivation perpetuated itself across generations and multiplied its costs over time.

Table 3: Structural Equation Model Results - Pathways from Education Costs and Educational Attainment to Life Outcomes (N=1,250)

Pathway	Standardized Coefficient (β)	Standard Error	z-statistic	p-value	95% CI	Interpretation
Direct Effects						
Years of Education → Monthly Income	0.624***	0.042	14.86	<0.001	[0.542, 0.706]	Strong positive effect
Years of Education → Employment Status	0.548***	0.038	14.42	<0.001	[0.473, 0.623]	Strong positive effect
Years of Education → Health Expenditure	-0.432***	0.035	-12.34	<0.001	[-0.501, -0.363]	Strong negative effect
Years of Education → Financial Literacy	0.687***	0.031	22.16	<0.001	[0.626, 0.748]	Very strong positive effect
Education Cost Burden → Educational Attainment	-0.284***	0.046	-6.17	<0.001	[-0.374, -0.194]	Moderate negative effect
Education Cost Burden → Dropout Risk	0.518***	0.043	12.05	<0.001	[0.434, 0.602]	Strong positive effect
Indirect Effects (Mediated Paths)						
Education Cost → Income (via Attainment)	-0.177***	0.031	-5.71	<0.001	[-0.238, -0.116]	Significant mediation
Years of Education → Asset Ownership (via Income)	0.436***	0.038	11.47	<0.001	[0.362, 0.510]	Strong mediation
Years of Education → Children's Education (via Income & Literacy)	0.512***	0.041	12.49	<0.001	[0.432, 0.592]	Strong mediation
Latent Construct Relationships						
Cost of Ignorance (Latent) → Economic Vulnerability	0.782***	0.036	21.72	<0.001	[0.711, 0.853]	Very strong effect
Cost of Ignorance (Latent) → Health Vulnerability	0.698***	0.039	17.90	<0.001	[0.622, 0.774]	Strong effect
Cost of Ignorance (Latent) → Social Exclusion	0.645***	0.041	15.73	<0.001	[0.565, 0.725]	Strong effect
Educational Investment (Latent) → Long-term Returns	0.834***	0.028	29.79	<0.001	[0.779, 0.889]	Very strong effect
Moderating Effects						
Gender × Education → Income	-0.156**	0.052	-3.00	0.003	[-0.258, -0.054]	Negative moderation
Urban Location × Education → Income	0.184***	0.048	3.83	<0.001	[0.090, 0.278]	Positive moderation
Household Wealth × Education Cost → Dropout	-0.238***	0.044	-5.41	<0.001	[-0.324, -0.152]	Negative moderation
Model Fit Statistics						
χ^2(df)	423.67 (186)	-	-	<0.001	-	-
RMSEA [90% CI]	0.042 [0.037, 0.048]	-	-	-	-	Good fit

CFI	0.956	-	-	-	-	Excellent fit
TLI	0.948	-	-	-	-	Good fit
SRMR	0.038	-	-	-	-	Excellent fit

*Note: ***p<0.001, *p<0.01; RMSEA <0.05 = good fit; CFI/TLI >0.95 = excellent fit; SRMR <0.08 = good fit*

The Structural Equation Modeling analysis revealed complex, multidimensional pathways through which education and its costs influenced life outcomes in Uganda, providing robust evidence for the comparative burden of education costs versus ignorance costs. The direct effect of years of education on monthly income (β=0.624, p<0.001) was substantial and highly significant, indicating that each additional year of schooling was associated with a 0.624 standard deviation increase in monthly income when controlling for other variables in the model. This effect was among the strongest observed in the entire model, surpassed only by the relationship between educational investment and long-term returns (β=0.834, p<0.001), which demonstrated that despite the upfront costs, educational investment yielded exceptionally high returns over the life course. The negative relationship between years of education and health expenditure (β=-0.432, p<0.001) was particularly telling, as it revealed that more educated individuals not only earned more but also spent significantly less on health costs, representing a double economic advantage that compounded over time. The effect of education on financial literacy was the strongest among all direct pathways to intermediate outcomes (β=0.687, p<0.001), suggesting that education's benefits extended far beyond credential-based employment to include enhanced capacity for financial decision-making, resource management, and economic planning that further amplified income gains.

Critically, the model demonstrated that education cost burden had a significant negative direct effect on educational attainment (β=-0.284, p<0.001) and a strong positive effect on dropout risk (β=0.518, p<0.001), confirming that the immediate financial barriers to education prevented many Ugandans from acquiring the education that would ultimately benefit them economically. However, the indirect effect of education costs on income through reduced educational attainment (β=-0.177, p<0.001) was substantially smaller in absolute magnitude than the direct positive effect of education on income (β=0.624), indicating that while costs created barriers, the long-term income benefits of overcoming these barriers far exceeded the initial investment. The latent construct representing "Cost of Ignorance" showed very strong relationships with economic vulnerability (β=0.782, p<0.001), health vulnerability (β=0.698, p<0.001), and social exclusion (β=0.645, p<0.001), demonstrating that educational deprivation imposed a multifaceted burden that extended across all dimensions of human well-being. The mediating pathways were equally informative, with education influencing asset ownership primarily through increased income (β=0.436, p<0.001) and affecting children's educational enrollment through both income and parental literacy (β=0.512, p<0.001), revealing mechanisms of intergenerational advantage and disadvantage transmission. Model fit statistics indicated excellent overall fit (CFI=0.956, RMSEA=0.042, SRMR=0.038), providing confidence that the specified model accurately represented the underlying relationships in the data, though the significant chi-square statistic (χ^2=423.67, p<0.001) suggested some degree of model misspecification, likely due to the large sample size making the test overly sensitive to minor deviations.

The moderating effects uncovered important nuances in how education translated into economic outcomes for different population subgroups in Uganda. The negative moderation of gender on the education-income relationship (β=-0.156, p=0.003) revealed that women received lower income returns to education compared to men, indicating that gender discrimination in the labor market diminished but did not eliminate the economic benefits of female education. Conversely, urban location positively moderated the education-income relationship (β=0.184, p<0.001), meaning that educated individuals in urban areas experienced greater income gains from their education than their rural counterparts, likely due to more developed labor markets, greater availability of formal sector jobs, and better alignment between educational credentials and job opportunities in cities. Most encouragingly, household wealth negatively moderated the relationship between education costs and dropout risk (β=-0.238, p<0.001), indicating that wealthier households were more resilient to education costs and less likely to withdraw children from school despite expenses, while poorer households faced much higher dropout risk when confronted with the same absolute costs. This finding highlighted the importance of targeted financial support for disadvantaged households to ensure that education cost burden did not prevent their children from accessing the transformative benefits of education. Taken together, the SEM results provided compelling quantitative evidence that while education imposed real and substantial costs on Ugandan households, particularly poor households, the costs of ignorance—manifested through reduced income, higher health expenditures, unemployment, social exclusion, and intergenerational poverty transmission—were significantly greater in both magnitude and duration, supporting a strong economic case for increased investment in education at both household and policy levels.

CONCLUSION

This study comprehensively assessed the dual burden of education costs and ignorance costs in Uganda, providing robust empirical evidence that fundamentally challenged the conventional perception of education as prohibitively expensive. The findings revealed that while Ugandan households faced substantial direct costs in pursuing education—ranging from UGX 380,000 annually for primary education to UGX 3,240,000 for tertiary education, representing 15.7% to 24.5% of household income—the costs of educational deprivation were demonstrably far greater in both magnitude and duration. The bivariate analysis documented an eleven-fold income difference between tertiary-educated individuals (UGX 1,840,000 monthly) and those with no formal education (UGX 165,000 monthly), alongside dramatic disparities in unemployment rates (8.7% versus 72.0%), health expenditures (UGX 285,000

versus UGX 920,000 annually), and intergenerational educational transmission (94.3% versus 38.0% children's enrollment rates). The Structural Equation Modeling provided compelling evidence of education's transformative pathways, with years of schooling showing strong positive effects on income (β=0.624), employment (β=0.548), and financial literacy (β=0.687), while simultaneously reducing health expenditures (β=-0.432) and vulnerability. The latent construct of "Cost of Ignorance" demonstrated very strong relationships with economic vulnerability (β=0.782), health vulnerability (β=0.698), and social exclusion (β=0.645), confirming that educational deprivation imposed a comprehensive, multidimensional burden that compounded across the life course and transmitted across generations. Critically, while education cost burden negatively affected educational attainment (β=-0.284) and increased dropout risk (β=0.518), particularly among poor households, the long-term returns to educational investment (β=0.834) substantially exceeded these initial barriers, indicating that education represented a high-return investment despite upfront costs. The study identified important moderating effects, including gender-based discrimination that reduced women's income returns to education (β=-0.156), urban advantages that amplified education's economic benefits (β=0.184), and wealth-based disparities in dropout vulnerability that disadvantaged poor households (β=-0.238). These findings collectively demonstrated that Uganda faced not an education cost crisis but rather an underinvestment crisis, where myopic focus on immediate educational expenses obscured the far more devastating long-term costs of ignorance, resulting in suboptimal resource allocation at both household and national levels that perpetuated cycles of poverty, poor health, and limited opportunity across generations.

RECOMMENDATIONS

Implement Comprehensive Financial Support Mechanisms for Disadvantaged Households: The government of Uganda, in collaboration with development partners, should establish targeted scholarship programs, conditional cash transfers, and education voucher schemes specifically designed to eliminate cost-related barriers for children from poor households, particularly in rural areas and for female students. Given that household wealth significantly moderated the relationship between education costs and dropout risk (β=-0.238, $p<0.001$), and that 52.7% of households with children in tertiary education resorted to borrowing, these interventions should include not only tuition support but also provisions for indirect costs such as uniforms, textbooks, transportation, and examination fees.

Develop and Disseminate Evidence-Based Public Awareness Campaigns on Education's Return on Investment: The Ministry of Education and Sports, working with community leaders, local governments, and civil society organizations, should launch comprehensive public education campaigns that communicate the empirical evidence on the comparative costs of education versus ignorance, emphasizing the eleven-fold income differential, reduced health expenditures, lower unemployment rates, and intergenerational benefits documented in this study. These campaigns should utilize multiple channels including radio programs in local languages, community meetings, school parent-teacher associations, and visual materials that translate statistical findings into accessible narratives showing concrete examples of how education transforms life outcomes.

Strengthen Quality and Relevance of Education to Maximize Labor Market Returns: While the study confirmed education's substantial economic benefits, the moderating effects of gender (β=-0.156) and urban location (β=0.184) indicated that these returns were not equitably distributed, suggesting that educational quality, labor market alignment, and structural barriers influenced how effectively educational credentials translated into economic opportunities. The government should prioritize curriculum reforms that emphasize practical skills, critical thinking, and competencies aligned with Uganda's economic development priorities including agriculture modernization, industrialization, and service sector growth, while simultaneously implementing policies to combat gender-based wage discrimination, expand formal sector employment opportunities in rural areas, and strengthen the school-to-work transition through vocational training, apprenticeships, and entrepreneurship education.

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