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Household Education Expenditure in Afghanistan: The Role of Socioeconomic Factors

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Abstract: Educational development is central to the social, economic, and political sustainability of nations. In Afghanistan, the education sector has faced persistent challenges and interruptions over the past century, producing significant consequences for both the country and the wider region. Despite the importance of household education expenditure in shaping educational outcomes, limited research has examined the broader socioeconomic determinants of such spending in Afghanistan. Existing studies have largely emphasized financial and demographic characteristics, leaving social and geographic factors underexplored. This study aims to investigates the determinants of household education expenditure in Afghanistan, focusing on the role of socioeconomic, geographic, and social factors. Using high-frequency household survey data from all provinces and applying logistic regression, the research identifies key drivers of the likelihood of household spending on education. Results reveal a nonlinear relationship between income and the probability of education expenditure, with the likelihood rising with income up to a threshold, then declining among the highest-income households. Asset ownership generally increases the odds of spending on education. Among expenditure categories, food, personal, and internet-related spending increase the likelihood of education expenditure, while transport expenditure reduces it. Regional disparities in education spending are high, and the type of dwelling, whether single, shared, or temporary housing, emerges as an important factor in explaining variation in household decisions. The findings highlight the need for targeted policy interventions to reduce regional inequalities and strengthen household investment in education. By emphasizing the influence of social and geographic factors alongside economic ones, this study contributes to a more comprehensive understanding of education expenditure in Afghanistan's complex socioeconomic context.

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INTRODUCTION

Household education investment plays a crucial role in shaping a country's educational landscape, reflecting citizens' priorities, skills, and socioeconomic status. Education is widely recognized as essential for social, political, and economic development, and it improves

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families' living standards by enhancing productivity (Liu et al. 2021). At the national level, household education spending contributes to human capital formation, which underpins long-term sustainability (Bekele et al. 2024; Farčnik & Istenič 2020; Kim & Go 2020).

The importance of education for economic growth has been emphasized in seminal works on human capital (Lucas 1988; Romer 1986, 1990; Mankiw et al. 1992), with subsequent studies confirming that education expenditure is strongly linked to long-run development (Idrees 2013; Khalifa 2008; Yahya et al. 2012). While earlier research predominantly examined macroeconomic determinants of public education spending—such as GDP, employment, population, inflation, and fiscal conditions (Tilak 1989; Chevalier et al. 2013; Kurban et al. 2015)—recent studies highlight the importance of micro-level household factors. Evidence shows that income, household head's education, gender preferences, and school type significantly shape household education expenditure, though findings vary across contexts (Öznur et al. 2016; Rizk & Afriyie 2014; Bhushan 2019; Singh et al. 2023). Contradictions also exist: some studies report higher spending on tertiary education, while others find basic education absorbs the largest share of household budgets (Bhushan 2019; Addai 2024). These inconsistencies suggest that country-specific socioeconomic structures strongly influence household education decisions.

Afghanistan's education sector has faced persistent challenges over the past century, from early reforms under King Amanullah Khan to disruptions caused by conflict and political instability (Dupree 1998; Samady 2001; Arooje & Burridge 2021). The Soviet invasion in 1979, and subsequent civil wars severely weakened the education system and broader socioeconomic infrastructure. After 2001, enrollment expanded rapidly, supported by government initiatives to build schools and train teachers, as well as private-sector growth in schools and universities. Arooje & Burridge (2021) note that by 2018, student enrollment was nine times higher than in 2001, with significant increase in female participation. Government expenditure on education increased substantially, particularly in tertiary education, while private institutions proliferated, raising out-of-pocket household spending.

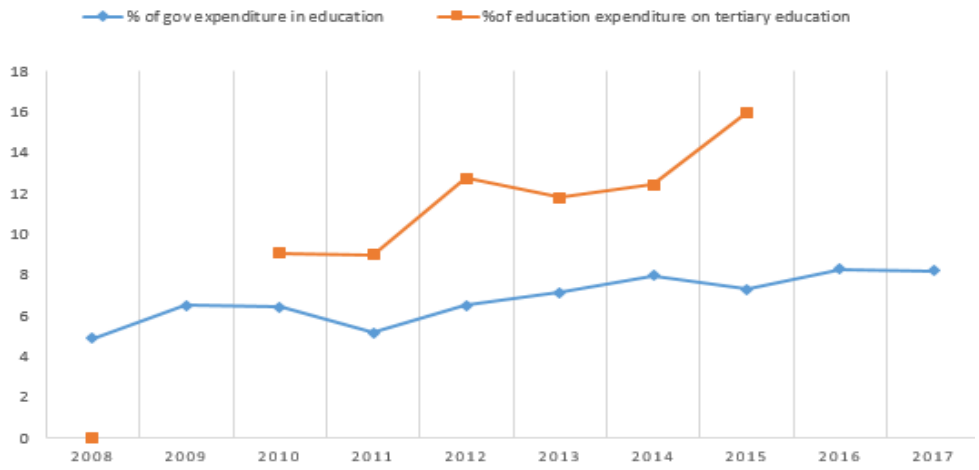

***Figure 1**: The trend of government education expenditure*
(Source: The figure is depicted based on the data obtained from the World Development Indicators.)

Figure (1) illustrates the trend of education expenditure, showing both government and household contributions over time. Despite these improvements, variability in household spending patterns persists: some families prioritize education and devote substantial resources, while others remain reluctant to invest. Regional disparities, differences in household assets, and variations in dwelling conditions further complicate the landscape.Two aspects of the research gap are evident. First, while global studies have examined both macroeconomic and microeconomic determinants of education expenditure, few have integrated social and geographic factors alongside economic ones. This study differs from past international research by incorporating asset ownership, dwelling type, and subcategories of household expenditure into the analysis. Second, in Afghanistan, empirical studies on household education expenditure are scarce or unavailable. Despite the country's unique socioeconomic challenges and regional disparities, the determinants of household spending on education remain largely overlooked.

This research aims to fill these gaps by analyzing household education expenditure in Afghanistan using high-frequency survey data from all provinces and logistic regression analysis. Specifically, it investigates how income, asset ownership, dwelling type, and expenditure categories (food, personal, internet, transport) influence the likelihood of household spending on education, while also analyzing regional disparities. The study contributes to the literature by integrating economic, social, and geographic dimensions, offering policymakers evidence-based insights to strengthen household investment in education and reduce inequalities across Afghanistan.

Table 1. *Summary of Key Literature on Determinants of Household Education Expenditure*

Author	Method/ Country	Findings	Comments
(Addai 2022)	Tobit / Ghana	Household Income, Head of Household's Education, Family Size, and Education Level are positive factors. In contrast, residence (rural), age of the Head of the family, and male Head are negative factors.	Tax reductions and reductions in inequality in access to education are proposed.
(Sarkar 2017)	OLS/ India	Parental Education, Income, and Social Cost are positive factors of education expenditure.	Education expenditure is lower for female children. Lower-caste families spend less than upper-caste families.
(Rizk and Afriyie 2014)	OLS/GMM/ Egypt	Family income is necessary, but the level of education of the family head plays a dominant role.	
(Mahjoub 2017)	Tobit/ Sudan	Family income, place of residence (urban), number of school years, and education of the family head are the most influential factors.	The low-income family is unlikely to catch up to the wealthy family's level of education. Income redistribution policy is essential.

(Öznur et al. 2016)	Tobit/ Turkey	Income, employment status, the family head's education, the number of students, and family size are the essential factors.	For middle-income families, education is a luxury good, with greater emphasis on the quality of their children's education.
(Ngoan et al. 2021)	Tobit/ Vietnam	Level of education, education of the head of household, income, and household location are essential determinants of education expenditure.	The highest share of education expenditure is devoted to higher education.
(Singh et al. 2023)	Tobit/ India	Socioeconomic factors, including income level and caste, are important determinants of educational expenditure in secondary education. Urban families spend more than rural families.	Families spend around 7% of their income on secondary education. In government schools, it is around 2%, while in private schools, it is around 10%
(Bhushan 2019)	India	Higher Education expenditure is higher in government colleges than in private colleges. The family's economic status and caste are essential determinants.	Households spend 30% of their income on higher education. University fees constitute only 5% of higher education expenditure.
(Askarov and Doucouliagos 2020)	OLS	Remittance is an essential determinant of education expenditure.	Household education expenditure increases by 35% through remittances
(Addai 2024)	OLS	Regional decomposition, family education, family size, income level, and overall consumption level are essential factors in education expenditure.	Tertiary education receives the lowest expenditure, while basic education receives the highest share of income.

RESEARCH METHOD

This study adopts a quantitative research design that relies on secondary data to investigate the determinants of household education expenditure in Afghanistan. The overall approach is empirical and explanatory, aiming to identify the socioeconomic, geographic, and household-level factors that influence the likelihood of education spending. By employing a structured econometric framework, the study ensures that relationships between variables are systematically tested and interpreted within Afghanistan's complex socioeconomic context. The design integrates statistical modeling with nationally representative household survey data, allowing for robust analysis across provinces and household types. Further details on the dataset, variable definitions, and econometric specification are presented in the following sub-sections.

Data and Description of Variables

Accurate data are essential for rigorous research. Considering this, this study uses high-frequency household-level data collected from the Afghanistan Living Conditions Survey 2016-17 (ALCS). The Survey was conducted by ALCS 2016–17 (Central Statistics Organization, 2018), funded by the EU. The Survey consists of 19838 households from all provinces of Afghanistan, covering a

wide range of socioeconomic indicators with a special focus on poverty and vulnerability. The inclusion of the nomadic Kuchi population, together with urban–rural coverage, distinguishes ALCS 2016–17 from other surveys. Another feature of this survey is its wide coverage, encompassing samples from all provinces of Afghanistan. This study uses the data with the permission of the National Statistics and Information Authority of Afghanistan (NSIA[1]).

In this study, we have assessed the impacts of several determinants of household education expenditure, including the level of income, which was also justified by literature (See Behrman & Knowles 1999; Chevalier et al. 2013), various subgroups of expenditure and assets with a focus on the role of place of residence (Rural, Urban, and Kuchi), including regional consideration of the household residence. We have divided the 34 provinces of Afghanistan into seven regions (Central, South, North, East, West, North-West, and South East) to examine whether the choice of living in different regions matters in explaining households' education expenditure decisions. Additionally, to investigate the role of the type of housing on the variation of educational expenditure, we have included the choice of a residential house (*residence*) (Single house, Shared house, Apartment, Temporary house, and Tent) in the analysis.

While the impact of education on asset ownership is emphasized in the literature (see DeVeney et al. 2007; Oladokun et al. 2018; Diawara 2012; Trimizey 2023) , we argue that asset ownership also plays a central role in household decisions regarding educational expenditure. Therefore, we have assessed the roles of three asset groups. Group A includes house appliances such as refrigerators, washing machines, vacuum cleaners, meat grinders, bread ovens (dash), and stoves. Group B consists of gas heaters, sewing machines, irons, electric fans, tape recorders, and televisions. Group C includes computers, mobile phones, bicycles, motorcycles, cars, and tractors. We assigned monetary values to assets using average market prices obtained from Afghan market surveys and the authors' field knowledge; this enabled the construction of comparable asset-group totals.

Table 1: *The Overall Summary Statistics of the Household (Afghani Currency/Year)*

Variable	No observation	Mean	Minimum	Maximum
Income	19832	112909	1000	4568000
Asset A	19832	3998.9	0	96800
Asset B	19832	4993.9	0	47600
Asset C	19832	52984.5	0	3130000
Total Asset	19832	61977.4	0	3164400
Education Expenditure	19832	2062.2	0	108900
Food Expenditure	19832	5368.6	0	99000
Personal Expenditure	19832	656.9	0	15500
Mobile and Internet Expenditure	19832	335.5	0	10000
Transport Expenditure	19832	935.3	0	98000
Clothes and Shoes Expenditure	19832	11223.2	0	290000
Total expenditure	19832	41713	0	8321360

Source: The Afghanistan Living Condition Survey 2016/17 (Author's Calculation)

[1] This organization previously worked under the name of "Central Statistic Organization".

Table 1 provides a descriptive summary of annual household economic indicators in Afghanistan for a sample of 19,832 observations. The dataset includes measures for annual income, a breakdown of three asset categories, and various expenditure types, including food, education, and transport, all denominated in Afghani currency. The table shows a mean annual household income of 112,909 Afghani and a mean total expenditure of 41,713 Afghani. The data also reflects a wide distribution of wealth and spending patterns, as indicated by the variance between the minimum and maximum values across all variables, particularly within total assets and total expenditures.

Table 2: *The Summary Statistics of Key Indicators by Region (Afghani Currency/Year)*

Region	Variable	No obs.	Mean	Minimum	Maximum
Central	Income	6019	124673.3	2000	999000
	Total Asset	6019	57604.4	0	2209100
	Education Expenditure	6019	3244.7	0	107000
	Total Expenditure	6019	50567	240	8321360
North	Income	2960	96429	3000	961500
	Total Asset	2960	46680	0	1926100
	Education Expenditure	2960	2299.7	0	89000
	Total Expenditure	2960	41377	0	7372250
South	Income	2400	117951	3000	999000
	Total Asset	2400	94970	0	3164400
	Education Expenditure	2400	866	0	61900
	Total Expenditure	2400	30318	1200	522000
East	Income	1459	108445	4800	980000
	Total Asset	1459	26065	0	1675800
	Education Expenditure	1459	1481.9	0	66700
	Total Expenditure	1459	29974.4	2310	3057220
West	Income	2648	76437.9	2000	4568000
	Total Asset	2648	56499	0	1003800
	Education Expenditure	2648	1205.6	0	83000
	Total Expenditure	2648	30232.5	730	4549750
North West	Income	1889	100410	5000	960000
	Total Asset	1889	33419.7	0	1489700
	Education Expenditure	1889	1486.7	0	94000
	Total Expenditure	1889	38591	2100	1043100
South East	Income	2007	167170.4	1000	2670000
	Total Asset	2007	127745.7	0	2134200
	Education Expenditure	2007	1816.4	0	108900
	Total Expenditure	2007	60102.7	1305	3878170

Source: The Afghanistan Living Condition Survey 2016/17 (Author's Calculation)

Table 2 provides a regional breakdown of key economic indicators, income, total assets, education expenditure, and total expenditure across seven geographic areas of Afghanistan. The statistics illustrate regional variations in household wealth and spending, with the South East region reporting the highest mean income (167,170.4 Afghani), mean total assets (127,745.7 Afghani), and mean total expenditure (60,102.7 Afghani). In contrast, the West region records the lowest mean income at 76,437.9 Afghani, while the Central region exhibits

the highest average investment in education at 3,244.7 Afghani. Similar to the national summary, each region displays a wide range between minimum and maximum values, indicating significant intra-regional diversity in economic status across the 19,832 total observations.

Table 3. *The Summary Statistics of Key Indicators by Place of Residence (Afghani Currency/Year)*

Region	Variable	No obs.	Mean	Minimum	Maximum
Urban	Income	3829	146113.9	6000	4568000
	Total Asset	3829	84876	0	2209100
	Education Expenditure	3829	5326.8	0	107000
	Total Expenditure	3829	64052.6	4000	7372250
Rural	Income	15453	102468.7	1000	2670000
	Total Asset	15453	56374.5	0	3164400
	Education Expenditure	15453	1323.9	0	108900
	Total Expenditure	15453	36649	0	8321360
Kuchi	Income	550	124347.5	12000	999000
	Total Asset	550	60002.91	0	3164400
	Education Expenditure	550	82.72	0	61900
	Total Expenditure	550	28531	1430	522000

Source: The Afghanistan Living Condition Survey 2016/17 (Author's Calculation)

Table 3 presents a comparative summary of household economic indicators categorized by place of residence: Urban, Rural, and Kuchi. The data reveal that Urban households maintain the highest mean levels of annual income (146,113.9 Afghani), total assets (84,876 Afghani), and total expenditure (64,052.6 Afghani), while also reporting significantly higher average education expenditures (5,326.8 Afghani) compared to other groups. Rural households, which comprise the largest portion of the sample with 15,453 observations, show more moderate economic averages, whereas Kuchi households report the lowest mean expenditure for both education (82.72 Afghani) and total household costs (28,531 Afghani). Across all residential types, the substantial gaps between minimum and maximum values indicate a high degree of internal economic variation within each population segment.

Variables' description

The dependent variable in this study is education expenditure, denoted as Edexp. It is a categorical variable that takes the value of 1 if the response to education expenditure is "yes" and 0 otherwise. The survey reports this variable in both categorical and continuous forms. However, the constant form exhibits substantial variability, as some households report zero expenditure when they do not have enrolled children. As a result, OLS is not appropriate. To address this limitation, the study uses the categorical form of the variable and therefore employs logistic regression.

The independent variables include both continuous and categorical measures.INC represents household income. Assets A to C show the household's different asset categories. PEX referred to personal expenses. FEX, NFEX, MOBEX, and TREX capture food, non-food, mobile & computer, and transportation expenses, respectively. The income, assets, and expenditure variables are contentious and are expressed in logarithmic form. Only in Table 5 is the income variable changed to a categorical variable (1 = upper, 2 = upper-middle, 3 =

lower-middle, and 4 = lower levels). The reason for converting this continuous variable to a categorical variable is its extreme variability across different households.

Furthermore, breaking a single variable into four variables results in missing data. In this case, two alternative approaches are available for proceeding with the analysis. First, to create dummy variables for each income group. To turn the continuous variable into a categorical variable. Both ways will have similar results.

In addition to continuous variables, the model includes several categorical variables to capture geographical and social factors that influence education expenditure. Region is a categorical variable taking the numbers 1, 2, 3, 4, 5, 6, and 7, representing seven regions. Residence is a categorical variable with three categories indicating the household's location (1 = Urban, 2 = Rural, and 3 = Kuchi). Finally, HT is a categorical variable with five categories (1=single house, 2=shared house, 3=tent, 4=apartment, and 5=temporary houses), capturing differences in living arrangements.

Econometric Specification: Regression analysis examines the relationship between an outcome variable and a set of explanatory variables. Linear regression is used when the dependent variable is continuous, whereas logistic regression is used for discrete outcomes (Connelly 2020; Hosmer and Lemeshow 2000; Pampel 2000; Srimaneekarn et al. 2022). Logistic regression specifications depend on the structure of the dependent variable: binary, multinomial, or ordinal. Binary logistic regression is the most widely used specification. It is adopted in this study because the dependent variable is dichotomous (education expenditure: yes/no), making it suitable for micro-level data analysis. For comparison, linear regression models a continuous response variable Y as a linear function of explanatory variables, as shown in equation (1)

$$Y = \beta_0 + \beta_1 X_{1+} \beta_2 X_2 \ + \cdots + \beta_k X_k \qquad (1)$$

The logistic regression model relates the probability of the event of interest, p=P(Y=1), to the explanatory variables through the logit link function. The logit is defined as the natural logarithm of the odds ratio, as shown in equation (2):(2) (Srimaneekarn et al. 2022):

$$logit(p) = ln\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1 X_{1+} \beta_2 X_2 \ + \cdots + \beta_k X_k \qquad (2)$$

where p denotes the conditional mean of Y given X. Owing to the nonlinear nature of the logit function, predicted probabilities follow an S-shaped curve, in contrast to the linear relationship implied by ordinary least squares models (Hilbe 2016; Montgomery, Peck, and Vining 2012). Parameters in logistic regression are typically estimated using the maximum likelihood method, and model fit is commonly assessed using the likelihood ratio (LR) test (Şamkar 2017). Based on this framework, the empirical specification of the model is presented in equation (3).$Edexp = \beta_0 + \beta_1 lnINC + \beta_2 lnassetA + \ \beta_3 lnassetB + \beta_4 lnassetC + \beta_5 lnPEX + \beta_6 lnFEX + \beta_7 lnNFEX + \beta_8 lnMOBEX + \ \beta_9 lnTREX + \ \beta_{10}\ Region + \beta_{11} Residence + \ \beta_{12} HT + e$…(3)

The statistical significance of individual coefficients in the logistic regression model is assessed using the Wald test (Hosmer and Lemeshow 2000; Pampel 2000). Effect sizes are interpreted as odds ratios, where values greater than 1 indicate an increase in the odds of the outcome, and values less than 1 indicate a decrease in the odds as the corresponding predictor increases (Boateng and Abaye 2019; Weisberg 2005). Unlike linear regression, where goodness-of-fit is commonly evaluated using the coefficient of determination (R^2), logistic regression relies on pseudo-R^2 measures. This study employs the Nagelkerke pseudo-R^2, which ranges from 0 to 1 and provides an overall indication of model fit (Nagelkerke 1991).

FINDINGS

The results of the logistic regression analysis are presented in Table 4. The odds ratios in Tables 4 and 5 are reported with robust standard errors. In this study, the overall model fit was assessed using the Likelihood Ratio (LR) test statistic. According to the LR test, the logistic regression model was found to be statistically significant at the 0.01 significance level.

The significance of the individual regression coefficients was tested using Wald statistics (Table 4). Based on the Wald statistics, all independent variables were significant except for income.

A descriptive measure of goodness-of-fit, the Nagelkerke R-square, is also presented in Table 4, indicating that 21.89% of the variation in the dependent variable (deduexp) is explained by the independent variables in the model. Favorable odds ratios suggest that the event is more likely to occur, while negative odds ratios indicate that the event is less likely to occur (Weisberg, 2005).

The Income Effect: Income is an important factor that determines overall expenditure. The results shown in Table 4 indicate that income has a positive effect on the education expenditure. If lnincome increases by 1 unit, the odds of having education expenditure increase by 1.018 times, with all other factors held constant. In other words, an increase in lnincome leads to a 1.8% multiplicative increase in having education expenditure. Since the coefficient on the income variable in Table 4 is not statistically significant, the actual effect of income is statistically zero. However, this may not be entirely accurate, as income is an essential factor influencing a household's expenditure decisions. As earlier literature confirms, the impact of income on education spending may vary across income levels. To investigate this further and conduct additional robustness analysis, we divided households into four income quintiles, with the first quintile serving as the reference group.

As shown in Table 5, the likelihood of spending on education increases with rising income up to a certain point, then decreases thereafter. In other words, households in the second and third income quintiles were 7% and 10% more likely to spend on education, respectively, than households in the reference group (first quintile). However, the probability of spending in the upper-income quintile was 8% and 4% lower compared to the third and second quintiles, respectively. This result indicates that acquiring education becomes less critical as

families' income increases beyond a certain level. The movement of education expenditure across different levels follows a U-shaped pattern, confirming that the Kuznets curve holds for education expenditure. Evidence on the Kuznets curve has been reported in several other disciplines. For example, the Kuznets curve has been reported between schooling enrollment and human capital (see Morrisson et al 2013), between income inequality and level of development (See Higgins 2002), between tourism and income inequality (see Raza & Shah 2017), and between income and carbon emission (See Borghesi). In Afghanistan, upper-income families may treat education as a luxury good for achieving social status rather than economic advancement. This argument is also supported by literature (See Oznur et al 2016).

Asset effects: The odds ratios in Tables 4 and 5 indicate that asset ownership is positively associated with education expenditure. The odds ratios for asset groups A, B, and C are 1.03, 1.07, and 1.02, respectively. This indicates that the odds of education expenditure increase by 3%, 7%, and 2% for a one-unit increase in the log of each asset group. The p-values of the asset coefficients are significant at the 1% level. The signs and magnitudes of the asset coefficients are consistent across Tables 4 and 5, confirming the stability of the estimations.

The expenditure Effects: The study also examined several sub-groups of expenditure to assess their impact on education spending. The odds ratio for non-food expenditure is 1.158, indicating that education expenditure increases by 1.158 for a one-unit increase in the log of non-food expenditure. The odds ratios of food, mobile, and transport expenditures are 1.472, 1.104, and 0.981, respectively. These results suggest that the odds of education expenditure increase by 47% and 10% when the log of food and mobile expenses increases by 1 unit, respectively. In contrast, the odds ratio for transport expenditure is less than 1, indicating that higher transport expenses are associated with lower education expenditure. More precisely, a one-unit increase in the log of transport expenditure decreases the odds of education expenditure by approximately 2%.

An essential concern in regression analysis is endogeneity, which can arise from various sources. One potential source of endogeneity is reverse causality, in which the regressors cause the dependent variable. In the context of this study, such causality can be evaluated for the expenditure variables. However, there is no valid theoretical basis for strong reverse causality from food, non-food, mobile, and transport expenditures to education expenditures. Moreover, the expenditure coefficients remain stable across Tables 4 and 5, supporting the robustness of the results. Beyond this sensitivity analysis, further investigation of endogeneity through formal testing is proposed for future research.

Regional Effects: The geographic location of households also played an essential role in determining families' education expenditure. The regression result indicates that households living in the central region have 3.662 times the odds of having education expenditure compared to those living in the south region, when all other factors are held constant. The odds ratios in the north, east, west, north-east, and south-west regions are 2.60, 3.69, 2.03, 3.34, and 1.42, respectively. This indicates that, compared to the south region, the odds of

education expenditure are 2.6 times higher in the north, 3.69 times higher in the east, 2.03 times higher in the west, 3.34 times higher in the north-east, and 1.42 times higher in the south-east. These results confirm substantial variability across regions, with the southern region exhibiting the lowest odds of education expenditure.

Rural and Urban Placement Effects: The choice of living in urban, rural, or Kuchi areas plays a key role in shaping households' education expenditure decisions in Afghanistan. The regression findings suggest that education expenditure is less likely among households living in a Kuchi (nomadic) lifestyle than among rural residents. Urban households exhibit an odds ratio of 1.48, indicating that their likelihood of incurring education expenditure is approximately 48 percent higher than that of rural households. Conversely, the odds of education spending among Kuchi households are substantially lower than those of the reference group. Specifically, Kuchi households have an odds ratio for education expenditure that is 0.167 times that of rural households, corresponding to an approximate 83 percent reduction in the odds of spending on education.

Table 4. *The result of Logistic Regression without consideration of income group*

Edu-expenditure	Odds Ratio	Std. Err	Z	P-Value
Lnincome	1.01779	0.02993	0.60	0.549
lnasseta	1.03099	0.00578	5.44	0.000
lnassetb	1.07765	0.00668	12.06	0.000
lnassetc	1.02069	0.00364	5.73	0.000
lnpersonelexp	1.15822	0.33415	5.09	0.000
lnfoodexp	1.47252	0.04422	12.89	0.000
lnmobexp	1.10479	0.00878	12.54	0.000
lntransportexp	0.98184	0.00567	-3.17	0.000
Region	**The South Region is Taken as a Reference**			
Central	3.66153	0.20453	23.23	0.000
North	2.60853	0.16120	15.52	0.000
East	3.69245	0.27317	17.66	0.000
West	2.03896	0.13181	11.02	0.000
Northeast	3.34663	0.23365	17.3	0.000
Southwest	1.42199	0.09489	5.28	0.000
Residence Choice	**The Urban is Taken as a Reference**			
Rural	1.48123	0.06960	8.36	0.000
Kuchi	0.16734	0.05313	-5.63	0.000
House Type	**The Single House Residing Type is Taken as a Reference**			

Shared House	0.59477	0.02365	-13.07	0.000
Tent	0.38893	0.13571	-2.71	0.007
Temporary house	0.59994	0.15633	-1.96	0.05
Apartment	0.73077	0.10347	-2.22	0.027
Constant	0.00229	0.0007289	-19.10	0.000
Log likelihood = -11830.269		**Number of obs = 19,807** **LR chi2(20) = 3535.45** **Prob > chi2 = 0.0000** **Pseudo R2 = 0.1300**		

The House Arrangement Effects: The analysis indicates that household housing arrangements constitute a significant determinant of variability in education expenditure among Afghan households. Five alternative housing types were identified in the sample. The regression results presented in Table 4 demonstrate that, relative to households residing in single houses, the odds of incurring education expenditure are substantially lower for households living in shared houses, tents, temporary houses, and apartments. Specifically, the odds ratios are estimated at 0.594, 0.388, 0.600, and 0.731, respectively. These values imply that, compared to single-household households, households in shared houses exhibit approximately 41 percent lower odds of education spending, households in tents exhibit 61 percent lower odds, households in temporary houses exhibit 40 percent lower odds, and households in apartments exhibit 27 percent lower odds. These findings underscore the importance of housing conditions as a socioeconomic factor influencing household investment in education.

The results in Table 5 are quite similar to those in Table 4. Apart from income, there is no significant change in the coefficients of the other variables. The signs and magnitudes of the coefficients remain consistent across both results, confirming the robustness of the estimation. Another key takeaway from this empirical result is that, while economic factors are important determinants of household education spending, the role of geographical location and type of residence is more dominant.

Table 5. *The result of Logistic Regression with consideration of income group*

Edu-expenditure	Odds Ratio	Std. Err	Z	P-Value
Income Group		**The First Quarter is Taken as a Reference**		
Second Q	1.07996	0.0491938	1.69	0.092
Third Q	1.10977	0.0542031	2.13	0.33
Fourth Q	1.03001	0.0584175	0.52	0.602
lnasseta	1.03059	0.0057903	5.36	0.000
lnassetb	1.07691	0.0066848	11.96	0.000
lnassetc	1.02080	0.0036416	5.77	0.000

lnpersonelexp	1.16102	0.334479	5.18	0.000
lnfoodexp	1.47502	0.0439758	13.03	0.000
lnmobexp	1.10437	0.0087757	12.49	0.000
lntransportexp	0.98187	0.0056759	-3.16	0.000
Region		**The South Region is Taken as a Reference**		
Central	3.72253	0.209442	23.36	0.000
North	2.62394	0.1625978	15.57	0.000
East	3.71361	0.2749597	17.72	0.000
West	2.06696	0.1341128	11.19	0.000
Northeast	3.37308	0.2357459	17.40	0.000
Southwest	1.43978	0.0961709	5.46	0.000
Residence Choice		**The Urban is Taken as a Reference**		
Rural	1.48143	0.0696385	8.36	0.000
Kuchi	0.16790	0.0533199	-5.62	0.000
House Type		**The Single House Residing Type is Taken as a Reference**		
Shared House	0.59337	0.0236162	-13.11	0.000
Tent	0.38522	0.1344847	-2.73	0.007
Temporary house	0.59684	0.1552737	-1.98	0.05
Apartment	0.73097	0.1036678	-2.21	0.027
Constant	0.00257	0.0006486	-23.65	0.000
Log likelihood = -11829.202		**Number of obs = 19,807** **LR chi2(20) = 3543.18** **Prob > chi2 = 0.0000** **Pseudo R2 = 0.1303**		

Discussion

The findings of this study provide a comprehensive understanding of the determinants of household education expenditure in Afghanistan, bridging a critical gap in the literature regarding how economic, social, and geographic factors intersect in a conflict-affected context. By utilizing high-frequency survey data and logistic regression, this research moves beyond macroeconomic aggregates to reveal the micro-level drivers of education investment.

The results indicate that while income levels show a positive trend, specifically for the second and third quartiles, the relationship is not as strictly linear as suggested by traditional human capital theories (Lucas 1988; Romer 1986). Interestingly, the fourth income quartile did not show a statistically significant difference from the first, suggesting that for the wealthiest households, the decision to invest in education may be influenced by factors other than marginal income increases.

In contrast, asset ownership and specific expenditure categories showed highly significant positive correlations with the likelihood of spending on education. The strong odds ratios for food and personal expenditure suggest that investment increases education when basic survival and personal needs are relatively well-secured. This aligns with the findings of Öznur et al. (2016), who noted that household resource allocation is a complex trade-off between competing necessities. Furthermore, the significant positive impact of mobile and internet expenditure (Odds Ratio = 1.104) reflects the growing role of digital connectivity in facilitating educational access, even in developing economies.

One of the most striking findings is the profound regional and residential variation. The regression analysis shows that households in the Central and East regions are over 3.7 times more likely to spend on education compared to the South. This highlights a geographic "education divide" that may be attributed to differences in culture, infrastructure, and the concentration of urban centers.

Furthermore, the results regarding residence type and dwelling provide a unique contribution to the literature. This confirms that lifestyles and traditional socioeconomic structures in Afghanistan present unique barriers to formal schooling that are not captured in broader international studies (Addai 2024; Singh et al. 2023). The negative odds ratios for shared houses, tents, and temporary dwellings further underscore that housing instability is a major deterrent to long-term human capital investment.

Consistent with the work of Rizk & Afriyie (2014) and Bhushan (2019), this study confirms that micro-level factors are more predictive of education spending than simple income measures in developing contexts. However, this study differs from the findings of Singh et al. (2023) by identifying transport expenditure as a negative predictor, suggesting that high costs of physical access may actually crowd out the budget available for tuition or school materials. This highlights a country-specific socioeconomic structure where physical distance to schools remains a primary barrier.

Despite the robustness of the 19,832 observations, this study faces certain limitations. The use of the 2016/17 ALCS data provides a high-quality baseline but may not reflect the rapid socioeconomic shifts occurring in more recent years. Additionally, the data does not distinguish between spending on primary, secondary, and tertiary education, which Bhushan (2019) suggests may follow different determinant patterns. Future research should aim to employ longitudinal data to track how household spending evolves during periods of political transition. There is also a significant need for qualitative inquiry into the Kuchi population to understand the cultural and structural reasons behind their low education expenditure, which could inform more inclusive mobile-education policies.

CONCLUSION

Given the dominant role of education in a country's socioeconomic development, this study aimed to identify the factors affecting household education expenditure in Afghanistan.

Several studies have confirmed that factors such as the household head's education level, the gender of children, and the household head's gender play key roles in a family's educational investment. This study set out to include several new influential factors in its analysis. To examine the determinants of household education investment, high-frequency household data from the Central Statistics Organization of Afghanistan were utilized.

Most covariates included in our models are significantly associated with the likelihood that a household reports any education expenditure. Except for transportation expenditure, all household expenditure categories are positively associated with education expenditure. The negative relationship with transportation expenses suggests that households spending more on transport tend to live in remote areas, where access to markets and other facilities, including schools and hospitals, is costly.

This study also highlights the significant role of asset ownership in education investment. Two main reasons explain why asset ownership influences education spending. First, assets are part of household wealth, and wealthier families tend to spend more on education than poorer ones. Second, owning a diverse set of assets is a sign of modernization. A modern family is likely to place greater importance on their children's education. While all three asset groups positively affect education expenditure, the coefficient for group B is about 2.5 times that of the other two groups.

In light of this study's findings, the following policy recommendations are suggested:

1. The odds ratio of education spending in Kuchi residences is 0.167, alarmingly lower than that of the rural and urban households. Providing online education opportunities can increase their active participation in education.
2. The study highlights that households living in tents have an odds ratio of 0.38, indicating a 62 percent lower likelihood of education expenditure compared to households residing in single houses. To promote educational attainment, the provision of affordable housing for families currently living in tents is strongly recommended.
3. A substantial gap in regional education spending is observed. The south and south-west regions exhibit the lowest odds of education expenditure, with the odds in the south region 3.6 times lower and in the south-east region 3.2 times lower than in the central area. Expanding educational institutions and promoting public awareness through community and religious establishments, such as mosques, could help narrow this disparity.
4. Asset ownership plays an essential role in increasing educational investment. In particular, group B assets exhibit the highest odds ratio (1.077). This group includes electronic equipment such as radios and televisions, which significantly enhance public awareness of the importance of education. Expanding electricity grids to rural areas would facilitate the accumulation of such electronic assets and, in turn, increase education spending. Specifically, a one-unit increase in the log of group B assets is associated with a 7.7 percent rise in the odds of education expenditure.

AUTHORS' CONTRIBUTION

Both authors have an equal role in the conceptualization, preparation of the first draft and final revision of the manuscript. The attempt to acquire and further process the data was made by the corresponding author.

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CONFLICT OF INTEREST STATEMENT

There is no conflict of interest among the authors to be declared.

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DATA AVAILABILITY STATEMENT

The data used in this study is available with the National Statistics and Information Authority (ASIA). Access to the data requires some procedures and it is shared based on the policy of the mentioned organization. The details about how to access the data are available on the official website of the organization (http://www.nsia.gov.af/home).

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