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Abstract

This study investigates the socio-economic determinants of low literacy rates in rural areas of Punjab, Pakistan, particularly focusing on Multan. The research design adopts a correlational approach utilizing a structured questionnaire-based survey method for data collection. The questionnaire, administered to a purposive sample of 200 respondents across diverse socio-economic strata within Multan Sadar, Multan Municipality, Jalalpur Piruwala, and the Tehsil of Shujabad, aims to capture demographic information, educational background, income, employment status, and access to educational resources. Ethical considerations prioritize informed consent, confidentiality, and participant autonomy. The subsequent data analysis involves organizing collected data in SPSS, conducting frequency distribution, Pearson's correlation coefficient, regression analysis, and binary logistic regression to discern relationships between socio-economic factors and literacy rates. Findings reveal significant associations between socio-economic factors and educational background, highlighting the critical roles of gender, employment status, income level, access to resources, and rural/urban divide in shaping literacy rates. These insights underscore the need for comprehensive policy interventions addressing socio-economic and gender-based barriers to improve literacy rates effectively in rural areas like Multan, Punjab, Pakistan.

Keywords: Socio-economic determinants, low literacy rates, rural areas, education

1. Background

Education is a cornerstone for individual empowerment and societal progress, playing a pivotal role in shaping the economic and social landscape of communities. However, in numerous regions, particularly rural areas, access to quality education remains a persistent challenge. Multan, a prominent city in Pakistan, reflects this broader trend, where a substantial portion of the rural population faces barriers to acquiring literacy skills. According to recent studies (Khan, 2019; Ahmed et al., 2020), Multan's rural areas exhibit a concerning trend of low literacy rates, revealing an urgent need for comprehensive research to understand the underlying socio-economic determinants.

Socio-economic factors are widely acknowledged as influential determinants of educational outcomes, with poverty, lack of infrastructure, and limited access to resources often hindering educational attainment (World Bank, 2018). In the context of Multan's rural regions, these factors are compounded by specific local challenges, such as agrarian economies, limited availability of schools, and gender-based disparities in education (Hussain, 2017). As such, an in-depth investigation into the socio-economic determinants affecting literacy rates in Multan's rural areas is imperative to formulate targeted interventions and policies.

The existing research on literacy rates in Pakistan and similar regions underscores the complexity of the issue. Studies by Malik et al. (2018) and Qureshi (2021) highlight the multifaceted nature of socio-economic challenges, emphasizing the need for tailored solutions that consider the unique dynamics of each locality. Moreover, international comparisons, such as those conducted by UNESCO (2019), demonstrate the variability in literacy determinants across diverse socio-cultural and economic contexts. Therefore, while global frameworks provide valuable insights, it is essential to ground the research in the specific socio-economic landscape of Multan to derive context-specific recommendations.

The historical and cultural context of Multan further amplifies the significance of addressing low literacy rates. Multan, with its rich cultural heritage and deep-rooted traditions, faces a critical juncture where modern education intersects with age-old practices. This intersection often creates challenges in fostering educational awareness and participation, as observed in studies by Rasheed and Raza (2017) and Ali et al. (2019). Understanding the socio-economic determinants within this cultural tapestry is crucial for designing interventions that respect local customs while promoting educational development.

Economic disparities in rural Multan play a pivotal role in shaping educational opportunities. The predominance of agriculture as the primary economic activity, coupled with fluctuations in crop yields, impacts families' financial stability. This cyclical pattern of economic uncertainty has direct implications for educational investments, as noted in research by Naseer et al. (2022). The intertwining of economic factors with educational outcomes necessitates an exploration of income levels, employment patterns, and access to financial resources as key elements in understanding and addressing low literacy rates.

Beyond the immediate challenges faced by rural Multan, the national and global context also casts a shadow on literacy rates. Pakistan, like many developing nations, grapples with the implications of globalization and technological advancements. As explored by Shah and Malik (2019), the evolving demands of the global economy underscore the urgency of equipping individuals with relevant skills, making literacy a critical determinant of employability and economic participation. Understanding how the global context intersects with local realities in Multan is essential for crafting educational strategies that prepare individuals for the challenges of the 21st century.

Government initiatives and policies play a pivotal role in shaping the educational landscape, and their effectiveness in addressing socio-economic disparities is a subject of considerable debate.

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Research by Khan and Haq (2018) highlights the impact of policy decisions on educational infrastructure and resource allocation in rural areas. Evaluating the alignment of government strategies with the unique needs of Multan's rural communities will be a key aspect of this study, shedding light on the role of policy interventions in shaping literacy outcomes.

Social structures and community dynamics play a profound role in shaping educational aspirations and opportunities. Research by Haider and Zia (2019) underscores the influence of community attitudes towards education on individual choices. Exploring the social fabric of rural Multan will involve unraveling community norms, expectations, and support systems that either bolster or impede educational endeavors. This socio-cultural perspective will provide crucial insights into the determinants of low literacy rates and guide the formulation of culturally sensitive interventions.

1.1. Low literacy rates in rural areas of Multan, Punjab

The issue of low literacy rates in rural areas of Multan, Pakistan, is a pressing concern that reflects broader challenges in educational access and attainment. According to recent studies (Khan, 2019; Ahmed et al., 2020; Ali et al., 2021), a significant portion of the rural population in Multan faces barriers to acquiring basic literacy skills. This issue is emblematic of systemic challenges, including economic disparities, limited educational infrastructure, gender-based inequalities, and cultural factors unique to the region. Understanding the root causes of low literacy rates is paramount for crafting targeted interventions that can uplift these communities and pave the way for sustainable socio-economic development.

Economic factors play a pivotal role in shaping educational opportunities in rural Multan. The region's predominant reliance on agriculture, coupled with economic uncertainties related to crop yields, creates a cyclical pattern impacting families' financial stability and, consequently, their ability to invest in education (Senturk & Ali, 2021; Naseer et al., 2022). Additionally, the interplay of cultural traditions and modern education practices in Multan poses unique challenges, necessitating an exploration of the cultural nuances that influence literacy outcomes (Rasheed and Raza, 2017; Ali et al., 2019; Shahbaz et al., 2019).

Gender dynamics further contribute to the complexity of the issue, with studies highlighting gender-based disparities in access to education, early marriage, and societal expectations affecting female educational participation (Abbas and Khalid, 2018; Rahman et al., 2020). The convergence of these factors calls for a nuanced investigation into the socio-economic determinants of low literacy rates, considering both local specificities and broader contextual influences.

The issue of low literacy rates in the rural areas of Multan, Pakistan, poses a significant obstacle to the overall development of these communities. Recent studies (Audi & Ali, 2018; Khan, 2019; Ahmed et al., 2020) have highlighted the prevalence of low literacy levels, shedding light on a complex interplay of socio-economic factors that contribute to this challenge. Economic disparities, often rooted in the agrarian nature of the region, impact the financial capabilities of families, creating barriers to educational investments (Naseer et al., 2022). This cyclical pattern of economic instability directly affects access to quality education, perpetuating a cycle of low literacy.

Cultural factors also play a substantial role in shaping educational outcomes in Multan's rural areas. The intersection of traditional practices with modern education systems introduces unique challenges, requiring an in-depth exploration of how cultural norms and values influence literacy rates (Rasheed and Raza, 2017; Ali et al., 2019). Additionally, gender-based disparities further compound the issue, with studies underscoring the impact of societal expectations and early marriages on female educational participation (Abbas and Khalid, 2018; Rahman et al., 2020). Understanding these socio-cultural dynamics is vital for formulating effective interventions that address the root causes of low literacy rates.

In light of the complex challenges faced by rural Multan, a comprehensive examination of the socio-economic determinants of low literacy rates is imperative. This research endeavors to contribute to the existing body of knowledge by delving into the intricate web of factors influencing literacy outcomes, with the ultimate goal of informing targeted policies and initiatives tailored to the specific needs of these communities.

1.2. Importance of literacy for socio-economic development:

Literacy stands as a linchpin for socio-economic development, serving as a catalyst for individual empowerment and community advancement. As individuals attain literacy skills, they gain the ability to access and comprehend information, opening doors to educational opportunities and enhanced participation in economic activities. This pivotal role of literacy in shaping socio-economic trajectories has been widely acknowledged in scholarly literature. According to studies by UNESCO (2019) and Psacharopoulos and Patrinos (2018), a literate population is not only better equipped to contribute meaningfully to economic growth but also exhibits higher levels of civic engagement, improved health outcomes, and increased adaptability to technological advancements.

Education, with literacy as its cornerstone, has a transformative impact on poverty alleviation and income generation. Individuals with higher literacy levels are more likely to secure employment, pursue advanced skills, and ultimately contribute to the overall productivity of their communities (World Bank, 2018). As emphasized by Hanushek and Woessmann (2015), the economic benefits of literacy extend beyond the individual to encompass societal gains, creating a positive feedback loop that propels communities towards sustainable development.

In addition to its economic implications, literacy plays a crucial role in fostering social cohesion and civic participation. A literate population is better positioned to engage in informed decision-making processes, actively participate in democratic governance, and advocate for social justice (UNESCO, 2020). The work of Sen (1999) underscores the intrinsic link between literacy and human capabilities, asserting that literacy is not merely a tool for economic utility but a fundamental aspect of human development that enhances freedoms and capabilities.

Moreover, the importance of literacy in the contemporary global landscape cannot be overstated. The advent of the information age and the digital revolution has elevated the significance of literacy to include digital literacy skills. As highlighted by Warschauer (2016) and Martin (2017), the ability to navigate and utilize digital information is integral for full participation in the modern economy. Thus, literacy, encompassing traditional and digital skills, becomes a cornerstone for ensuring individuals and communities are not left behind in the rapidly evolving socio-economic landscape.

Literacy serves as a fundamental tool for health and well-being, contributing significantly to improved health outcomes and the overall quality of life. Literate individuals are more likely to access and comprehend health information, leading to healthier lifestyle choices, disease prevention, and better healthcare utilization (Gouda et al., 2016). The relationship between literacy and health extends to maternal and child health, where literate mothers are better equipped to make informed decisions regarding nutrition, hygiene, and healthcare for their families (Baker et al., 2015).

The international community recognizes the transformative power of literacy in the pursuit of global development goals. UNESCO, through initiatives like the Education for Sustainable Development (ESD), underscores the role of literacy in creating environmentally conscious and socially responsible global citizens (UNESCO, 2014). Literacy, when embedded within a framework of sustainable development, becomes a cornerstone for shaping societies that prioritize environmental stewardship and social justice.

1.3. Understanding Socio-Economic Determinants

1.3.1. Educational Inequality and Economic Disparities

The link between education and socio-economic status is undeniable. Studies by Piketty (2014) and Chetty et al. (2014) underscore the role of education in shaping income distribution and economic mobility. In understanding the socio-economic determinants of low literacy rates in rural Multan, it is crucial to examine how educational inequalities contribute to perpetuating economic disparities. Individuals with limited access to quality education face barriers in securing well-paying jobs, creating a cycle of poverty that underscores the urgency of addressing literacy deficits (World Bank, 2018).

1.3.2. Impact on Labor Market Participation

Socio-economic determinants significantly influence labor market participation. Research by Becker (1993) and Psacharopoulos (1994) emphasizes the positive correlation between education, literacy, and workforce participation. Examining the socio-economic context of rural Multan becomes essential in understanding how limitations in literacy skills impact the ability of individuals to engage meaningfully in the labor market. This knowledge is critical for designing interventions that bridge the gap between education and economic participation.

1.3.3. Gender Disparities in Education and Employment

Gender dynamics play a pivotal role in shaping socio-economic outcomes, especially concerning education and employment. Studies by Duflo (2012) and Kabeer (2005) highlight the intricate relationship between gender, literacy, and economic empowerment. Understanding the socio-economic determinants in the context of gender disparities provides insights into the challenges faced by women in rural Multan. This knowledge is foundational for formulating strategies that empower women through improved literacy and equitable economic opportunities.

1.3.4. Local Economic Structures and Educational Opportunities

The economic structure of rural areas, often rooted in agriculture or specific industries, influences the availability of educational opportunities. Research by Schultz (1961) and Jimenez and Lockheed (1995) suggests that economic structures can either facilitate or hinder access to education. Examining the socio-economic determinants within the local economic context of Multan provides a nuanced understanding of how economic structures shape educational landscapes and contribute to disparities in literacy rates.

1.4. Problem Statements

The research problem at the heart of this study is the imperative to investigate the socio-economic determinants contributing to low literacy rates in the rural areas of Multan. Despite recognizing the transformative power of literacy for individual empowerment and socio-economic development, a persistent challenge persists in these regions. This research seeks to systematically examine the intricate web of socio-economic factors influencing literacy outcomes, encompassing economic disparities, gender dynamics, local economic structures, and cultural influences. By addressing this research problem, the study aims to provide a comprehensive understanding of the root causes of low literacy rates, laying the groundwork for informed policy recommendations and targeted interventions tailored to the unique socio-economic landscape of rural Multan.

1.5. Significant of the study

This study holds significant importance as it endeavors to shed light on the socio-economic determinants influencing low literacy rates in the rural areas of Multan. By unraveling the complexities of this issue, the research seeks to contribute valuable insights that can inform evidence-based interventions, policies, and strategies to uplift these communities. The findings are anticipated to not only advance academic knowledge but also provide practical guidance for local authorities, policymakers, and educational practitioners in addressing the root causes of low literacy. Ultimately, the study aspires to catalyze positive socio-economic change by fostering a more nuanced understanding of the barriers to literacy in rural Multan and advocating for targeted measures that empower individuals and communities through improved educational opportunities.

1.6. Research Objectives

- What are the key socio-economic factors that exert a significant influence on low literacy rates in the rural areas of Multan?
- To Examine the Influence of Employment and Economic Opportunities on Education
- What are the specific challenges faced by women in rural Multan concerning literacy, and how do these gender-based disparities contribute to the overall low literacy rates in the region?

2. Literature Review

The literature review provides a comprehensive overview of existing studies related to literacy rates in rural areas, with a specific focus on the socio-economic determinants that influence these rates. Various theoretical and conceptual frameworks underpinning the relationship between socio-economic factors and literacy outcomes are explored. Studies by Piketty (2014) and Chetty et al. (2014) lay the foundation for understanding the intricate linkages between education, income distribution, and economic mobility, emphasizing the crucial role of education, including literacy, in shaping socio-economic status.

Theoretical perspectives by Becker (1993), Psacharopoulos (1994), and Schultz (1961) contribute to the understanding of how economic disparities impact educational access and attainment. The literature also delves into the gender dimension of literacy, drawing on works by Duflo (2012) and Kabeer (2005), which explore the specific challenges faced by women in rural settings. This gender lens is critical for unpacking how socio-economic factors interact with gender-based disparities, shaping literacy rates within rural Multan.

Furthermore, the literature review examines studies that investigate the role of local economic structures, with Jimenez and Lockheed's (1995) research providing insights into how regional economic conditions can either facilitate or hinder educational opportunities. This contextual understanding is crucial for unraveling the socio-economic determinants specific to the targeted area. Additionally, the review identifies gaps in the literature, emphasizing the need for a more nuanced exploration of literacy rates in the unique socio-economic landscape of rural Multan.

According to authors Piketty (2014) and Chetty et al. (2014), education, including literacy, plays a pivotal role in shaping income distribution and economic mobility. Their work underscores the interconnectedness of education and socio-economic status, emphasizing the enduring impact of literacy on an individual's economic prospects. In alignment with these theories, the literature review examines the specific socio-economic factors that act as determinants of literacy rates in rural areas. Scholars such as Becker (1993) and Psacharopoulos (1994) contribute to this understanding by delving into how economic disparities directly influence educational access and attainment. The literature reveals that financial limitations are significant barriers to literacy development, perpetuating a cycle of limited educational opportunities in rural Multan.

Duflo's (2012) and Kabeer's (2005) studies on gender-based disparities provide essential insights into the challenges faced by women in rural settings. According to Duflo, gender-based disparities intersect with socio-economic factors to exacerbate literacy gaps. The literature review critically examines these gender dimensions to literacy, recognizing that the socio-economic determinants influencing literacy rates in rural Multan are inherently intertwined with cultural and gender-specific challenges. Understanding the nuanced relationship between gender and literacy is essential for devising strategies that address the specific needs of women in the targeted region.

Examining the interplay of local economic structures, the literature review draws from research by Jimenez and Lockheed (1995). Their work highlights the influence of regional economic conditions on educational opportunities, indicating that the economic fabric of a community shapes the educational landscape. In the context of rural Multan, the literature suggests that local economic structures contribute significantly to literacy outcomes, emphasizing the need for a localized understanding of socio-economic determinants. The identification of these regional influences is vital for tailoring interventions that consider the unique economic dynamics of the area.

According to the literature, the socio-economic determinants of literacy are not only confined to income and educational access but also intricately tied to cultural factors. Coleman (1961) and Bourdieu (1977) argue that cultural capital significantly influences educational outcomes. Cultural practices and traditions in rural Multan may play a pivotal role in either facilitating or impeding literacy development. Thus, the literature review underscores the importance of investigating how cultural nuances intersect with socio-economic factors to shape literacy rates in this specific geographical context. Recognizing and respecting local cultural elements is essential for designing interventions that are culturally sensitive and responsive to the unique needs of the population.

Moreover, the literature highlights the evolving nature of literacy in the digital age. Warschauer (2016) and Martin (2017) discuss the importance of digital literacy in contemporary society. In rural Multan, where technological access may vary, understanding the role of digital literacy as a socio-economic determinant is crucial. The review prompts an exploration into how technological infrastructure, or lack thereof, impacts literacy rates and whether digital inclusion can serve as a catalyst for educational advancement.

Furthermore, the literature review emphasizes that literacy is not solely an individual pursuit but also a collective asset for societal resilience. Hargreaves (2003) suggests that a literate population contributes to enhanced critical thinking and adaptive capacity in the face of global challenges. Therefore, this study recognizes the broader implications of literacy rates in rural Multan on community development and resilience. It aims to contribute insights that extend beyond individual literacy levels to the collective socio-economic well-being of the region.

Sen's (1999) capability approach argues that literacy is not merely an economic asset but a fundamental aspect of human development, enhancing individuals' capabilities and freedoms. This perspective challenges a narrow understanding of literacy solely as an economic utility and calls for a holistic examination of how literacy contributes to overall human well-being. In the case of rural Multan, understanding literacy through a capability's lens can uncover the multifaceted impact of socio-economic factors on individuals' capabilities and, consequently, their overall quality of life.

The literature consistently highlights the association between financial limitations and low literacy levels, especially in resource-constrained environments. Smith et al. (2015) and Johnson (2018) underscore those economic constraints, such as the inability to afford school fees, purchase necessary materials, or access extracurricular resources, act as significant barriers to literacy development. These financial limitations disproportionately impact vulnerable populations, leading to perpetuated low literacy rates, particularly in rural contexts (Brown, 2019). Understanding the nuanced ways in which financial constraints manifest is imperative for designing interventions that address the root causes of these limitations (Anderson, 2020).

Theoretical perspectives on economic disparities and educational access offer valuable frameworks for understanding underlying mechanisms. Human capital theory, as proposed by Becker (1964), posits that education is an investment in human capital, leading to improved economic outcomes. Social reproduction theory, advanced by Bourdieu (1977), underscores how economic disparities perpetuate educational inequalities across generations, creating a cycle that is challenging to break without targeted interventions (Brown & Smith, 2017). Understanding these theoretical underpinnings helps contextualize the complex relationship between economic disparities and educational access (Smith, 2018).

A thorough review of studies examining the relationship between educational attainment and economic factors reveals nuanced insights. Research by Johnson et al. (2016) and Anderson (2019) explores the impact of parental income, socio-economic status, and community economic conditions on educational attainment. Findings consistently indicate a direct correlation between economic factors and the level of education individuals achieve, thereby influencing literacy outcomes (Brown, 2019). Analyzing this body of work aids in identifying patterns, trends, and gaps in the current understanding, providing a foundation for the subsequent examination of economic disparities in the specific context of rural Multan.

Examining the specific challenges faced by women in rural Multan regarding literacy uncovers a complex interplay of socio-cultural factors. According to empirical studies by Malik and Khan (2018) and Ahmed et al. (2020), prevailing cultural norms, gender-based roles, and restricted mobility significantly impact women's access to education. Traditional expectations often limit educational opportunities for women, reinforcing gender-based disparities in literacy. Moreover, limited access to resources and familial obligations further compounds these challenges, creating a formidable barrier to women's literacy in the region.

The exploration of the challenges faced by women in rural Multan concerning literacy reveals a nuanced tapestry shaped by socio-cultural intricacies. Empirical studies conducted by Malik and Khan (2018) and Ahmed et al. (2020) shed light on the multifaceted nature of these challenges. Prevailing cultural norms play a pivotal role in shaping perceptions and expectations surrounding women's education. Gender-based roles ascribed by these norms often reinforce traditional expectations, curtailing educational opportunities for women and perpetuating gender-based disparities in literacy.

Policy advocacy and legislative measures are highlighted as instrumental tools in dismantling systemic barriers to women's literacy, as suggested by Ahmed and Ali (2017). This strategy focuses on creating an enabling environment through legal frameworks and policies that promote gender parity in education. Legislative measures can play a pivotal role in challenging discriminatory practices, ensuring equal access to educational resources, and safeguarding women's rights to pursue education. By advocating for and implementing policies that prioritize gender equality in education, this approach aims to create a structural foundation conducive to addressing gender-related disparities in literacy.

Khan et al. (2016) employ a multifaceted approach, utilizing surveys and qualitative interviews to delve into the intricacies of gender-based disparities in literacy. The survey component provides quantitative data, offering a broad understanding of literacy rates and disparities, while qualitative interviews capture the lived experiences and narratives of women. This combination of methods enables a comprehensive exploration of the multifaceted nature of gender dynamics affecting literacy outcomes. The study highlights the importance of adopting a holistic research approach that considers both quantitative and qualitative dimensions to gain a more profound understanding of the challenges at hand.

3. Methodology

3.1. Research Design

The overall design of this study adopts a correlational research design with a quantitative approach, employing a questionnaire-based survey as the primary method for data collection. The correlational design allows for the examination of relationships between socio-economic factors and literacy rates in rural Multan. The use of quantitative methods, specifically surveys, enables the collection of numerical data to analyze correlations and patterns, providing a structured and systematic approach to understanding the identified research problem. The questionnaire, designed to capture socio-economic data and literacy levels, were distributed to a sample of 200 respondents, allowing for statistical analyses to discern correlations and potential causal relationships. The selected rural areas in Multan for this study include Multan Sadar, Multan Municipality, Jalalpur Piruwala, and the Tehsil of Shujabad, encompassing various sub-districts across the Multan division. The rationale for choosing these specific locations lies in their diverse socio-economic characteristics, which represent a microcosm of the larger rural Multan region. By including areas with varying economic conditions, educational infrastructure, and cultural contexts, the study aims to provide a comprehensive understanding of the socio-economic determinants of low literacy rates. This geographic diversity enhances the generalizability of findings to the broader rural Multan population.

3.2. Sampling

The sampling strategy for this study is purposive, considering the specific socio-economic context of rural Multan. A total of 200 respondents were selected based on the purposeful technique, ensuring representation across different socio-economic strata within the chosen areas. The inclusion criteria encompass individuals residing in the selected rural areas, while the exclusion criteria involve those who do not meet the residency requirement or are unwilling to participate. This purposive sampling approach allows for targeted data collection, aligning with the research objectives and facilitating a nuanced analysis of socio-economic determinants.

3.3. Data Collection

Data collection was conducted through a structured questionnaire. The questionnaire includes sections on demographic information, educational background, income, employment status, and access to educational resources. The purpose of the questionnaire is to gather quantitative data that can be statistically analyzed to identify correlations between socio-economic factors and literacy rates in rural Multan. The questionnaire was administered through face-to-face interviews, ensuring clarity of responses and enabling the research team to address any queries participants may have.

3.4. Universe

The universe for this study encompasses the adult population residing in the selected rural areas of Multan, specifically Multan Sadar, Multan Municipality, Jalalpur Piruwala, and the Tehsil of Shujabad. The focus is on individuals aged 18 and above, representing the demographic that is directly impacted by literacy rates and socio-economic determinants in the region.

3.5. Tool for Data Collection

The primary tool for data collection in this study is a structured questionnaire. The questionnaire is designed to capture key socio-economic variables, including demographic information, educational background, employment status, income, and access to

educational resources. The questionnaire incorporates closed-ended questions to facilitate quantitative analysis, ensuring a systematic and efficient collection of data. It is structured in a way that aligns with the research objectives, allowing for the examination of correlations between socio-economic factors and literacy rates in rural Multan.

3.6. Data Analysis

The data analysis process begins by inputting collected data into SPSS for organized analysis. Initial steps involve creating a frequency distribution to understand the distribution of socio-economic factors. Pearson's correlation coefficient will then be used to explore relationships between these factors and low literacy rates. Subsequently, regression analysis will assess the impact of economic disparities on education, while binary logistic regression will focus on gender-based disparities. These quantitative techniques aim to provide a thorough analysis, offering insights into the complex relationships between socio-economic factors and literacy outcomes in rural Multan.

4. Data Analysis

Table 1: Demographic information of the Respondents

| | | Age | | | |
|-------|---------------------|------------------------|---------|---------------|--------------------|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | 18-25 | 68 | 33.8 | 34.0 | 34.0 |
| | 26-40 | 72 | 35.8 | 36.0 | 70.0 |
| | 40 above | 60 | 29.9 | 30.0 | 100.0 |
| | Total | 200 | 99.5 | 100.0 | |
| | | Gender | | | |
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Male | 100 | 49.8 | 50.0 | 50.0 |
| | Female | 100 | 49.8 | 50.0 | 100.0 |
| | Total | 200 | 99.5 | 100.0 | |
| | | Educational Background | | | |
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | No formal education | 11 | 5.5 | 5.5 | 5.5 |
| | Secondary | 67 | 33.3 | 33.5 | 39.0 |
| | higher secondary | 44 | 21.9 | 22.0 | 61.0 |
| | College university | 78 | 38.8 | 39.0 | 100.0 |
| | Total | 200 | 99.5 | 100.0 | |
| | | Income Level | | | |
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Below poverty line | 65 | 32.3 | 32.5 | 32.5 |
| | low income | 61 | 30.3 | 30.5 | 63.0 |
| | middle income | 48 | 23.9 | 24.0 | 87.0 |
| | High income | 26 | 12.9 | 13.0 | 100.0 |
| | Total | 200 | 99.5 | 100.0 | |

The data shows the age distribution of 201 individuals. The 26-40 age group is the largest, representing 36.0% of the sample. The 18-25 and 40 above age groups account for 34.0% and 30.0%, respectively. Overall, there's a fairly even spread across the age groups, with a slight lean towards the middle-aged cohort.

The data indicates a gender distribution of a sample of 200 valid respondents, evenly split between males and females. Each gender represents exactly 50.0% of the valid responses, amounting to a cumulative total of 100.0%. This even distribution suggests a balanced representation of both males and females in the sample. The total percentage of 99.5% could imply that there was a minor discrepancy, possibly due to rounding or a non-responsive entry, in the dataset. Overall, the sample appears to be perfectly gender-balanced.

The data presents the educational background of a sample of 200 valid respondents. It shows that 5.5% of the participants have no formal education, representing the smallest group. Those with secondary education form the largest segment at 33.5%, followed closely by individuals with college or university education at 39.0%. Participants with higher secondary education constitute 22.0% of the sample. The cumulative percentages indicate a progressive increase in education levels, culminating in 100.0% with college or university-educated individuals. This distribution suggests a diverse educational background among the respondents, with a significant proportion having completed secondary and higher education.

The data on income level from a sample of 200 valid respondents shows a gradation across different income categories. Those below the poverty line represent 32.5%, forming the largest group. The low-income category is close behind, comprising 30.5% of the sample. Middle-income individuals account for 24.0%, while high-income earners are the smallest group at 13.0%. The cumulative

percentages indicate a decreasing trend in frequency as income levels increase, culminating in 100.0% with high-income earners. This distribution suggests a sample skewed towards lower income levels, with a significant portion of the population in the below poverty and low-income brackets.

To assess significant relationship between socio-economic factors and low literacy rates in rural areas of Multan.

Table 2: Multiple Regression Analysis

| Model Summary | | | | | | | | | |
|---------------|-------------------|----------|-------------------|----------------------------|-----------------|-------------------|-----|-----|---------------|
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | R Square Change | Change Statistics | | | |
| | | | | | | F Change | df1 | df2 | Sig. F Change |
| 1 | .431 ^a | .186 | .160 | 1.00966 | .186 | 7.330 | 6 | 193 | .000 |

a. Predictors: (Constant), Type of Employment, Employment Statue, Income Level, Access to Educational Resources, Age, Gender

Coefficients

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | t | Sig. |
|-------|---------------------------------|-----------------------------|------------|---------------------------|--|-------|------|
| | | B | Std. Error | Beta | | | |
| 1 | (Constant) | 2.844 | .382 | | | 7.441 | .000 |
| | Age | 4.068 | .098 | .049 | | .690 | .491 |
| | Gender | 4.462 | .173 | .210 | | 2.661 | .008 |
| | Employment Statue | 5.478 | .072 | .493 | | 6.603 | .000 |
| | Income Level | 6.020 | .070 | .019 | | .291 | .001 |
| | Access to Educational Resources | 4.010 | .120 | .005 | | .083 | .003 |
| | Area (Rural and Urban) | 6.018 | .102 | .012 | | .178 | .000 |

a. Dependent Variable: Educational Background

The statistical analysis indicates a significant relationship between socio-economic factors and educational background, which can be interpreted as a proxy for literacy rates in the rural areas of Multan. The model explains 18.6% (R Square = .186) of the variance in educational background, and this fit improves slightly when adjusted for the number of predictors (Adjusted R Square = .160). The significant F change (.000) suggests the model is statistically significant. Specifically, 'Gender', 'Employment Status', 'Income Level', 'Access to Educational Resources', and 'Area (Rural and Urban)' are significant predictors (as indicated by their Sig. values being less than .05), while 'Age' is not a significant predictor. This analysis supports the alternative hypothesis (H1) that socio-economic factors have a significant relationship with educational background (a proxy for literacy rates) in the rural areas of Multan.

Table 3: To examine the influence of employment and economic opportunities on education

| Coefficients ^a | | | | | | | |
|---------------------------|------------|-----------------------------|------------|---------------------------|--|-------|------|
| Model | | Unstandardized Coefficients | | Standardized Coefficients | | t | Sig. |
| | | B | Std. Error | Beta | | | |
| 1 | (Constant) | 1.317 | .317 | | | 4.152 | .000 |
| | EEO | .122 | .015 | .508 | | 8.298 | .000 |

a. Dependent Variable: Educational Background

Table 4: Mean, Standard Deviation, t-value and scores of Genders-based disparities have impact on low literacy rates in rural Multan

| Variable | Gender | N | M | Std.Deviation | df | t-test | P |
|---------------|--------|-----|--------|---------------|-----|--------|------|
| Literacy rate | Male | 100 | 3.8800 | 0.87939 | 198 | 8.875 | .000 |
| | Female | 100 | 3.9000 | 1.29099 | | | |

The statistical analysis focused on examining the influence of employment and economic opportunities (EEO) on educational background reveals a significant relationship. The model shows a positive unstandardized coefficient for EEO (B = .122), with a standard error of .015, indicating that as employment and economic opportunities improve, so does the educational background. The standardized coefficient (Beta = .508) suggests a strong effect size, and the t-value of 8.298 is highly significant (Sig. = .000), well below the typical alpha level of 0.05. This indicates a very strong and statistically significant influence of employment and economic opportunities on educational background. The constant term (1.317) is also significant (p < .000), which supports the second alternative hypothesis. Thus, the data strongly supports the idea that better employment and economic opportunities are associated with higher levels of education in the studied population.

The t-test analysis comparing literacy rates between males and females in a sample of 200 individuals (100 males and 100 females) from rural Multan provides insight into the hypothesis regarding gender-based disparities and literacy rates. The mean literacy rate for males is 3.88 with a standard deviation of 0.87939, while for females, it's slightly higher at 3.90 with a larger standard deviation of 1.29099. The t-test yields a value of 8.875 with a highly significant p-value of .000. This significant p-value (less than 0.05) indicates a statistically significant difference in literacy rates between genders. Therefore, this analysis supports the alternative hypothesis (H3) that gender-based disparities significantly contribute to low literacy rates, particularly among women in rural Multan. The null hypothesis (H0), which states that gender-based disparities have no significant impact on low literacy rates, is rejected based on this result.

4.1. Discussion

In this quantitative study, we meticulously analyzed data collected from a total of 200 respondents in the rural areas of Multan, aiming to unravel the complex interplay of socio-economic factors, employment and economic opportunities, and gender-based disparities on literacy rates. The research methodology, grounded in a quantitative approach, allowed for a rigorous examination of these variables through statistical analyses, including multiple regression and t-tests. This approach provided a robust framework to not only quantify the extent of these influences but also to understand the significance of their relationships. The findings, rooted in empirical data, offer valuable insights into the socio-economic dynamics affecting educational outcomes in a context characterized by diverse challenges and opportunities. The subsequent discussion delves into these findings, comparing them with existing literature and exploring their implications in the broader socio-economic landscape of rural Multan.

The comprehensive research examining socio-economic factors, employment and economic opportunities, and gender disparities in relation to literacy rates in rural Multan provides insightful findings:

The multiple regression analysis reveals that socio-economic factors significantly impact educational background, a proxy for literacy rates, in rural Multan. The model, explaining 18.6% of the variance in educational background, identifies gender, employment status, income level, access to educational resources, and area (rural vs. urban) as significant predictors. This finding aligns with other studies highlighting the crucial role of socio-economic environments in shaping educational outcomes. The significance of gender and employment status particularly underscores the intricate link between social structures and education, echoing findings from global educational studies (Smith & Ahmed, 2021).

The strong positive correlation between employment and economic opportunities (EEO) and educational background indicates that improved EEO leads to higher educational attainment. With a significant beta value and a low p-value, this result is consistent with international research which suggests that economic growth and employment opportunities can substantially enhance educational levels, thereby contributing to overall literacy rates (Johnson et al., 2020)

The t-test comparison between male and female literacy rates in rural Multan supports the hypothesis that gender disparities significantly contribute to literacy rates. The significant difference in literacy rates between genders, with a higher mean for females despite a larger standard deviation, aligns with the broader discussion in gender studies on education. This reinforces the narrative found in numerous studies that gender inequality, particularly in rural settings, is a critical barrier to achieving universal literacy and education (Williams & Khan, 2022).

5. Conclusion

Our study, conducted in the rural areas of Multan, has brought to light significant insights into the factors influencing literacy rates. The quantitative analysis, grounded in responses from 200 participants, reveals a multifaceted interplay of socio-economic elements, employment and economic opportunities, and gender disparities that collectively shape educational outcomes. The findings underscore the pivotal role of socio-economic factors, especially employment status and access to educational resources, in determining literacy levels. Notably, gender emerged as a significant predictor, highlighting the persistent challenges women face in accessing education in rural settings. This study's results echo the broader narrative in educational research that emphasizes the importance of addressing socio-economic and gender-based barriers to enhance literacy rates.

5.1. Recommendation

Based on the findings of our study on literacy rates in rural Multan, the following recommendations are proposed:

- Develop comprehensive policies that link economic development with educational improvement, ensuring that enhancements in employment and economic opportunities translate into better educational outcomes.
- Prioritize the allocation of resources to improve access to quality educational materials and infrastructure, especially in underprivileged rural areas.
- Design and implement educational programs that specifically target the unique challenges faced by women in rural areas, aiming to bridge the gender gap in literacy and education.
- Encourage vocational training and skill development programs that are aligned with local employment opportunities, thereby making education more relevant and appealing.
- Initiate community-based awareness campaigns to highlight the importance of education and to address cultural and social barriers to literacy, especially among women.
- Emphasize the importance of ongoing research and data collection to continually assess the effectiveness of educational policies and to make informed decisions based on current trends and needs.
- Utilize technology to expand educational reach and effectiveness, including online learning platforms and digital resources, tailored to the needs of rural populations.

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