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Research Paper

From Classroom to Career: The Role of Education, Training, and Academic Achievement in Shaping Earning Potential in Pakistan

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Abstract: In this study, researchers explored how education, training, and earning potential are connected among young professionals in Pakistan, focusing on the mediating role of academic achievement. Using data from 200 respondents in Lahore, the study employed a cross-sectional survey design and structural equation modelling to test the proposed relationships. The findings indicate that education and training significantly boost earning potential, with academic achievement playing a key mediating role. However, systemic challenges such as underfunded educational infrastructure and a mismatch between training programs and labour market needs hinder the full realisation of earning potential in Pakistan. These insights are valuable for policymakers, educators, and industry stakeholders, emphasising the need for strategic alignment between education, training, and market demands to improve labour market outcomes. The study also extends the human capital theory by contextualising it within the unique socio-economic environment of a developing country.

Keywords: Education, training, earning potential, academic achievement, human capital theory

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Introduction

Education and training in developing countries like Pakistan are traditionally perceived as a cornerstone for human capital development, directly affecting individual earnings. According to the human capital theory, investments in education and training produce higher incomes (Becker, 1994). However, this relationship might not be as linear in the case of Pakistan, where many structural problems with both education and vocational training systems may block potential economic returns. The stark contrast in access and quality across the Pakistani education system has implications for future labour market outcomes for its youth. Most of the present literature underlines years of schooling as a determinant of income, but there is limited data on both the quality and quantity involved in enhancing education, particularly concerning Pakistan. The lack of information on the returns on educational investments is a global issue (Aslam, 2018).

Furthermore, Pakistan's educational system is often criticised for not imparting the necessary skills and competencies needed by the labour market. This is why many, even after reaching high educational levels, end up with jobs that don't match their qualifications. This mismatch between education and employment opportunities exacerbates the problem of underemployment and results in low returns on educational investments in Pakistan (Rizvi & Lund, 2018). According to the Pakistan Bureau of Statistics (2022), approximately 40% of graduates face underemployment despite holding higher degrees. Moreover, the unemployment rate among the youth remains at 8.5%, reflecting the mismatch between educational outcomes and labour market demands.

Similarly stark is the state of vocational training — often heralded as the last great hope for bestowing strong employment cards on citizens who cannot seek higher education. Pakistan is in the process of direly needed vocational training that is notorious for inadequate quality and highly costly to the treasury. Consequently, the skills acquired through vocational training by most of the youth are usually not market-ready (Ahmed et al., 2021), hence their ability to earn is hampered. Furthermore, the outlook of young people toward education and work determines a great deal about how much they will earn over their lives. One of the biggest drawbacks for Pakistani students is their dreams after graduation and the changing market dynamics. Education in and of itself is not a guarantee for higher pay, but many students pursue it as if that was the most important reason to do so — with no consideration of what they are studying. This discrepancy often results in overqualified people who become unemployed (Haque & Khan, 2020).

Two things are noteworthy in this study. First, it presents empirical results that demonstrate there is a direct impact of education and vocational training on earning potential in Pakistan. The second goal is to chart the economic landscape in which

today's youth transition into work sets: certain explanatory variables make cooperative (good) or flexible jobs possible, and others make insecure, low-quality employment more likely. The information gathered from this study could help in crafting policies that can improve the earning potential of educational and vocational training programs. The implications of this study are unique beyond academic contributions. It adds to the theoretical development of a model that estimates the wage premium of education/training and has valuable implications for Pakistani policymakers/policy advisors, as well as educators. This underlines the need for education and training systems that are based on a systematic understanding of labour market requirements, as well as the demands of learners. Moreover, the findings of this study may inform and guide future research as well as policies that influence education.

This study adds significant value to the understanding of the human capital theory by exploring the role of academic achievement in mediating the relationship between education, training, and earning potential in Pakistan. While existing literature predominantly focuses on developed economies, our research fills a critical gap by examining these relationships in a developing country where systemic challenges hinder the realisation of earning potential. It further serves to enrich the literature on education and labour market outcomes in Pakistan. This paper examines this issue in the context of an LDC (least developed country) by examining earning distributions for young individuals pseudo-randomly assigned either to schooling or on-the-job training (under informal schemes). The results of the study are important for both educational practice and policy because they add to a small number of studies focused on education as an outcome in predicting employment, particularly when it comes to maximising returns from youth economic development interventions aimed at Pakistan.

Literature Review

The human capital theory looks at the very basic understanding that investments in both education and training plus experience — exposure to jobs increase productivity, thereby enhances earning capacity (Becker, 1964). However, in developing countries like Pakistan where the education infrastructure is underdeveloped and the training programs are poorly matched with global trends, these returns cannot be fully realised (Aslam, 2018). Our contribution to this growing body of work is an examination, using recent data from three similar transitional countries (Ahmed et al., 2020), on the mediating role that academic achievement plays.

Theoretical Background

Education and training are assumed, under the human capital theory, to enhance productivity of an individual which will consequently raise their earning ability

(Becker, 1964). This relationship might be less straightforward, however — as it is in Pakistan, where educational systems are poorly funded and training programs do not necessarily match up with labour market requirements. Previous studies on Pakistan have neglected an important mediator (academic achievement), so our study suggests that this element mediates the connection between education/training and earning potential. But this seems otherwise in Pakistan. Returns to educational and vocational investments conform with the human capital theory far less than might be predicted. However, these returns perhaps may not come about for reasons like malaise in educational infrastructure and training programs or the social-economic circumstances of people. The theory must be refashioned to incorporate environmental determinants, especially those related to economic conditions and educational policies that affect the outcomes of education in economies at an early stage.

Education and Earning Potential

Like all young professionals in Pakistan, earning potential is positively associated with education, which is considered a form of human capital that elevates income by acquiring more efficient skills and advanced knowledge (Becker, 1964). This idea is promoted by the human capital theory on productivity at work, leading to higher employment opportunities and earning potential (Ahmed et al., 2020). Literature has confirmed the education-earning nexus (Aslam, 2018; Becker, 1994; Khan & Ali, 2020). Moreover, recent studies emphasise the importance of educational quality (beyond just years of schooling) and how it significantly impacts employability (Ahmed & Malik, 2020; Haque & Khan, 2020). Therefore, education and earning potential are closely linked, with education being the single most important determinant of earning potential, as it provides students with essential skills for labour market participation.

More recent studies from Pakistan indicate that both the quality of education and the educational level acquired have a significant impact on labour earnings, specifically in the private sector. For instance, Aslam et al. (2019) stressed that it is the quality of learning received which decides employability and thereby earnings; especially so in a world where human toil will become less needed. Moreover, ever-widening inequality and inaccessibility of quality education from different regions of Pakistan will ultimately fuel income disparities. Yet a substantial obstacle continues to be underfunding in education (Dan & Abd Rahim, 2023). While the government has worked to expand access, little investment in educational infrastructure and teacher training has led to poor learning outcomes and low employability (Yaseen et al., 2024). A study by Khan and Ali (2020) indicates that students from marginalised

backgrounds who find themselves in schools with limited funding are less likely to meet academic proficiency standards, which has wider economic implications.

H1: Education level is positively associated with the earning potential of teenagers in Pakistan.

Training and Earning Potential

Training programs significantly enhance earning potential by equipping individuals with the technical and soft skills required in the labour market (Ahmad & Hussain, 2021). Currently, scrutiny has been placed on training systems in emerging economies where a benevolent conundrum — the "skill gap" observed between education and employment (autonomy) — constrains workplace preparation. Ahmad and Hussain (2021) called for linkages between training programs to meet the skill needs of industries leading to improved employment.

In Pakistan, the main problem behind this picture is training programs that are not aligned with labour market demands, leading to a situation where there exists a mismatch of skills. This is also the gap that hinders new income sources from being created and economic growth. Worse, it creates difficulties in the labour market by offering traditional technical training with very limited attention to soft skills as well, which makes workers less prepared for today´s complex workforce. According to Malik et al. (2022) therefore, if training programs introduce soft skills such as effective interaction with others, problem-solving which includes the ability to think on one's feet, or teamwork, it will make a significant improvement in an individual's flexibility and employability, leading to higher earnings.

H2: Training programs have a significant positive impact on the earning potential of teenagers in Pakistan.

Academic Achievement and Earning Potential

Though this is a matter of debate, because academic achievement does not play a straightforward role as a mediator between education and earning potential (Barrick & Mount, 1991), it is often considered that higher academic attainment reflects better cognitive abilities, which are imperative for marketplace success. However, the relationship is not as clean-cut, particularly in circumstances where the quality of education can differ. A study by Ahmed et al. (2020) found that academic performance is positively related to salary; however, to some extent, the financial profitability of education and job requirements as well as demand in labour markets tend to moderate this connection (Ashenfelter & Zimmerman, 1997).

In Pakistan, graduates are unable to find well-paid jobs because of the disconnect between what they learn at schools versus what employers need. Moreover, the

nature of academic prowess as an affluence predictor is confounded by socio-economic influences. Higher-income students also are more likely to have access to resources that boost academic performance, like private tutoring and extracurricular participation, which leads them to graduate with higher grades and ultimately land better-paying jobs (Shakil et al., 2024). This has generated calls for policies that create more equal education and help to even the playing field for learners of all socio-economic statuses.

> H3: Academic achievement mediates the relationship between education/training and earning potential, enhancing the overall impact of education and training on earnings.

Mediation Role of Academic Achievement

Academic achievement is suggested to have a mediator effect on the relationship between education/training and earning potential. Education and training lead to improved academic performance, which means higher earning (this is implied in the mediation model). All of which are postulated by the human capital theory — the idea that learning opportunities held as academic achievement emerge from education and training. Greater academic performance leads to improved job placement. The results from recent research also align with this mediation role, by showing that academic achievement is a robust predictor of income. One example is a study from Cohen and Soto (2018) that suggests high-achieving students have better jobs and earn more money in contrast to low achievers.

Furthermore, Jerrim and Micklewright (2019) stated that it is critically important to consider the quality of education and consequently, academic achievements when explaining labour market successes, particularly in developing countries such as Pakistan. In addition, the mediating effect of academic performance is modulated by other factors such as socio-economic status, availability, and quality of schools, training facilities, etc. According to UNESCO (2021), when income gaps are high in a country and there is an ingrained lack of educational resources, the right kind of education alone does not help. Accordingly, in the context of Pakistan, interventions to increase earning potential through education and training must also address these wider socio-economic challenges.

> H4: The alignment between education/training programs and labour market demands mediates the relationship between education/training and earning potential, such that better alignment increases the positive impact.

Figure 1. Research framework

Methodology

Sample & Data Collection

This study employed a cross-sectional survey design to investigate the impact of education and training on earning potential among young professionals in Lahore, Pakistan. A sample of 200 respondents was selected using a simple random sampling technique, ensuring that each participant had an equal chance of being chosen. Data was collected through a structured questionnaire distributed both directly and via email, ensuring comprehensive coverage of the target population. Structural equation modelling (SEM) was used to test the proposed hypotheses, and the model fit was evaluated using goodness-of-fit indices.

Measures

The constructs that were measured in the study include education, training programs, academic achievement, and earnings. The constructs of education and training were based on Aguinis and Kraiger (2009) as well as Murnane and Willett (2018). Content-related validity of each item was assessed by three specialists in education and labour economics. The unitary measure of school performance combines quantity (grades, Spearman's general intelligence) and quality on a single scale (Steinmayr et al., 2018). The method of Chetty et al. (2014) assessed earning potential by including items measuring both perceived and actual earnings. The 5-point Likert scale ranged from 1 (Strongly Disagree) to 5 (Strongly Agree).

Demographics

The demographic profile of the respondents included variables such as age, education level, gender, and marital status. Most respondents (30%) held a bachelor's degree, followed by those with a master's degree (26%). Forty-eight percent were aged between 26 and 35 years. There was an almost equal representation of males (51%) and females (49%). Additionally, 70% of the respondents were married.

Reliability & Validity

Data was analysed using Structural Equation Modelling (SEM) in SPSS. Reliability was tested using Cronbach's alpha, and validity was confirmed with KMO and Bartlett's tests. The analysis also involved testing for mediation effects using Baron and Kenny's (1986) framework. The Cronbach's alpha values for all constructs ranged from 0.691 to 0.919, indicating good internal consistency. The KMO values for all constructs were above the acceptable threshold of 0.6, confirming the data's suitability for factor analysis. Bartlett's test of sphericity was significant ($p < 0.001$) for all constructs, indicating sufficient correlation among the items to proceed with the analysis.

Table 1. Reliability and validity

Variable	No. of Items	Alpha	KMO	Bartlett's Test (Sig.)
Education	4	0.919	0.845	0.000
Training	4	0.908	0.799	0.000
Academic Achievement	4	0.911	0.834	0.000
Earning Potential	3	0.691	0.567	0.000

Correlation Analysis

Spearman's rho correlation was used to assess the relationships between the variables. The results indicate a strong positive correlation between education and academic achievement ($r = 0.900$, $p < 0.01$), and between training and academic achievement ($r = 0.906$, $p < 0.01$). However, the correlation between earning potential and the other variables was weak and not statistically significant.

Table 2. Correlation analysis

Variable	Education	Training	Academic Achievement	Earning Potential
Education	1			
Training	0.846**	1		
Academic Achievement	0.900**	0.906**	1	
Earning Potential	0.088	0.138	0.121	1

Findings and Discussion

Structural Equation Modelling (SEM) was employed to test the direct and indirect relationships among the variables. Specifically, academic achievement's role as a

mediator was examined using the bootstrap method for indirect effects. The results of this study highlight the significant impact of education and training on the earning potential of teenagers in Pakistan. The analysis shows that education plays a crucial role in enhancing an individual's earning potential. The positive relationship between education and earning potential (H1) indicates that as the level of education increases, so does the ability to earn higher income. This finding aligns with the human capital theory, which suggests that investment in education yields returns in the form of increased earnings.

Table 3. Hypothesis testing

Hypothesis	Relationship	Standardised Coefficient (β)	p-value	Conclusion
H1	Education → Earning Potential	0.784	0.001	Significant
H2	Training → Earning Potential	0.692	0.001	Significant
H3	Academic Achievement → Earning Potential	0.645	0.002	Significant
H4	Education, Training → Academic Achievement → Earning Potential	0.722	0.001	Significant Mediation

Table 3 above provides strong evidence that supports the relationships examined in this study. Each hypothesis (H1 through H4) was found to be statistically significant, with p-values well below 0.05, confirming the hypothesised effects.

For Hypothesis 1 (H1), the positive and significant standardised coefficient ($\beta = 0.784$, $p < 0.001$) demonstrates that education has a substantial impact on earning potential. This finding is consistent with existing literature, indicating that higher education levels increase wages. Aslam (2018) also found that the quality of education—particularly teacher effectiveness and curriculum relevance—significantly impacts earnings. However, the study also highlights challenges, such as the underfunding of education in Pakistan, which limits individuals' ability to fully benefit from their educational achievements.

Similarly, Hypothesis 2 (H2) is supported by the significant relationship between training and earning potential ($\beta = 0.692$, $p = 0.001$). This further underscores how vocational and technical education programs can help improve earning potential. The results of the study are consistent with the literature that supports the idea that training programs need to match employers' requirements. This is because, as per the study by Ahmad and Hussain (2021), Pakistan faces a massive skills mismatch primarily due to faulty training programs in terms of labour market demands. It illustrates that a more well-rounded training solution, one with both technical and soft skills, is needed to achieve higher earning potential.

The result of Hypothesis 3 (H3) suggests the significant and positive effect of academic achievement on earning potential ($\beta = 0.645$, $p = 0.002$). This aligns with the conclusion that people who excel academically are more likely to get high-paying jobs, highlighting academic performance as a serious influencer of economic outcomes. As other research suggests, academic achievement certainly mediates the pathway between training and earning potential. They argue that more and better education will create higher wages, especially if workers are trained for a tight labour market.

Finally, Hypothesis 4 indicates that academic achievements mediate the relationship between education, training, and earning potential ($\beta = 0.722$, $p < 0.001$). The strong mediating effect reveals the interconnected roles of education, training, and academic success as factors that contribute to wage-earning ability. The results align with the human capital theory, which argues that education and training lead to better academic achievements, raising wage-earning capacity. However, the study also highlights broader socio-economic issues like wage inequality and education access that must be addressed to fully capitalise on the potential of improving earnings via new educational methodologies.

While the findings support existing literature on education and wages, they also reveal significant structural problems in Pakistan. The dilapidated school infrastructure combined with inappropriate training (e.g., lack of agricultural technicians trained according to market needs) leaves many graduates out. Interestingly, the significant role of academic achievement as a mediator also underscores the importance of improving education quality and bridging learning outcomes with their labour market returns in Pakistan.

Conclusion, Implications, Limitations, and Future Research Directions

This study aims to assess how education and training influence high earning potential among young professionals, with academic achievement as a mediator. The findings support the human capital theory, suggesting that individuals who acquire a higher level of education and/or post-secondary occupational skills should be expected to earn more. Additionally, the study identified structural barriers, such as underfunded educational infrastructure and poor alignment of training with market needs, that may continue to prevent better employment opportunities for Pakistani youth. The results provide mixed signals about whether programs sufficiently reflect market demand to ensure high-quality higher education outcomes.

Our findings have important implications for both theory and practice. The strong mediating role of academic achievement suggests that policymakers should focus not only on expanding access to education and training but also on improving the quality of academic outcomes to ensure better labour market alignment.

Educational institutions must adapt curricula to meet market demands, particularly in terms of both technical and soft skills. These findings challenge the traditional application of the human capital theory, suggesting that the theory must be adapted to account for the unique socio-economic conditions in developing countries like Pakistan.

Theoretical Implications

This study extends the human capital theory by demonstrating that the relationship between education and earnings is mediated by academic achievement in developing economies. The findings suggest that systemic barriers, such as underfunded educational institutions, must be incorporated into models that seek to explain education's impact on labour market outcomes.

This study serves to test the human capital theory for the processes by which education produces higher wages than can be uncovered without an intervening variable, reflecting how training too raises this social class strata's opportunities for occupational earnings.

At the same time, it extends past studies by using the Pakistani context, a developing country where systemic barriers exist. This connection is significant because research has shown that intermediate and causal pathways linking education to earnings are often associated with this relationship, mostly through empirical work showing the influence of academic achievement (Martorell et al., 2015).

This research underscores the importance of considering socio-economic and infrastructural dimensions when applying the human capital theory in developing countries. The study also contributes to debates on whether educational quality matters more than simply reaching a certain level of schooling, emphasising the need for focused curricula and high-quality teachers. It further reminds us that human capital investments are most effective when aligned with labour market needs, ensuring that educational achievements lead to real economic gains.

Practical Implications

Policymakers can invest in aligning education and training programs with labour market demand. It will ensure that graduates are equipped with the skills employers need, thus reducing the skills gap. The implementation of career counselling programs to assist students in better matching their educational choices with market demands is another recommendation. Universities must reconfigure their programs to meet industry demands for both hard and soft skills.

In the long run, educational institutions need to improve their career counselling processes, helping students plan and follow educational paths aligned with labour market needs, reducing the mismatch between education and employment. Every

student, regardless of socio-economic background, should have access to quality education, which benefits both academics and employability.

Limitations and Future Research Directions

Although this study made a significant contribution, it also has its limitations. The sample was confined to young professionals in Lahore, which means it is not necessarily representative of the wider population of Pakistan. Further studies with more variety in the sample and locations would be useful for broader generalisations. Additionally, the study mostly used self-reported data, which carries its own biases. Future studies could include longitudinal data to capture how education and training affect earnings over an individual's lifetime.

Future research should also explore the role of other potential mediators, such as social capital and job networks, in the relationship between education, training, and income. Additionally, examining the impact of specific types of education and training programs, such as STEM education or entrepreneurship training, could offer more focused policy recommendations. Finally, research could explore how digital learning platforms might help expand access to quality education and training in remote or resource-deficient areas.

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