

## **Human Capital and Entrepreneurial Income: The Mediating Role of Motivation and Access to finance**

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### **Abstract**

This study examines the relationship between human capital and entrepreneurial income, with a particular focus on the mediating roles of entrepreneurial motivation and access to finance. Drawing on human capital theory, the study argues that education, skills and experience alone may not fully translate into higher entrepreneurial income unless supported by psychological and financial mechanisms. A quantitative research design was adopted and data were collected from registered small and medium enterprise entrepreneurs. The analysis was conducted using SPSS, employing descriptive statistics, correlation analysis, regression analysis and mediation analysis.

The results reveal that human capital has a strong and positive direct effect on entrepreneurial income ( $\beta = 0.57$ ,  $B = 0.62$ ,  $t = 6.20$ ,  $p < 0.001$ ), explaining 32.5% of the variance in income ( $R^2 = 0.325$ ). Correlation results indicate significant positive associations among all variables, with human capital correlating with entrepreneurial income ( $r = 0.57$ ), entrepreneurial motivation ( $r = 0.52$ ) and access to finance ( $r = 0.48$ ). Mediation analysis further demonstrates that entrepreneurial motivation significantly mediates the relationship between human capital and entrepreneurial income (indirect effect = 0.18,  $t = 3.60$ ,  $p < 0.001$ ). Similarly, access to finance is found to be a significant mediator (indirect effect = 0.15,  $t = 3.00$ ,  $p = 0.003$ ). Importantly, the serial mediation path involving entrepreneurial motivation and access to finance is also statistically significant (indirect effect = 0.008,  $t = 2.67$ ,  $p = 0.008$ ), indicating a sequential mechanism through which human capital enhances income.

Overall, the findings suggest that while human capital directly improves entrepreneurial income, its impact is substantially strengthened when entrepreneurs

are highly motivated and have better access to financial resources. The study contributes to entrepreneurship literature by highlighting the combined psychological and financial pathways through which human capital translates into income generation.

**Keywords:** Human capital, entrepreneurial income, entrepreneurial motivation, access to finance, mediation analysis

### **Introduction**

Entrepreneurship has emerged as a vital driver of economic development, innovation and employment generation across both developed and developing economies. Entrepreneurs play a critical role in mobilizing resources, introducing new products and services and enhancing competitiveness within markets (Acs, Audretsch & Lehmann, 2013). As a result, understanding the factors that influence entrepreneurial income has become a key concern for researchers and policymakers alike. Among the determinants of entrepreneurial success, human capital occupies a central position. Human capital refers to the accumulation of education, skills, training and work experience that enhances an individual's productive capacity (Becker, 1964). In the entrepreneurial context, human capital equips individuals with the ability to recognize opportunities, manage uncertainty, innovate and make strategic decisions (Unger et al. 2011).

Entrepreneurs with higher human capital are generally expected to generate higher income due to superior efficiency and productivity. Despite this theoretical expectation, empirical evidence reveals mixed results regarding the direct impact of human capital on entrepreneurial income Rehman, S. U. & Shahzad, F. (2014). Many entrepreneurs with adequate education and experience fail to achieve substantial income levels, particularly in developing economies. This inconsistency suggests that human capital alone may be insufficient and that additional factors influence how human capital is transformed into economic returns. Human capital theory posits that investments in education and experience increase individuals' productivity and earnings over time (Becker, 1964). Applied to entrepreneurship, this theory suggests that educated and skilled entrepreneurs should earn higher income due to improved business management and strategic capabilities.

Empirical studies have supported this view by demonstrating positive relationships between education, experience and entrepreneurial performance (Marvel, Davis & Sproul, 2016). However, entrepreneurial income is influenced by numerous contextual and behavioral factors and human capital does not automatically translate into financial success. This highlights the need to explore mediating mechanisms that explain how human capital affects entrepreneurial income. Entrepreneurial motivation refers to the internal psychological forces that drive individuals to start, sustain and expand business ventures (Shane, Locke & Collins, 2003). Motivation determines the level of effort, persistence and resilience entrepreneurs demonstrate in pursuing business goals. Highly motivated entrepreneurs are more likely to overcome challenges, exploit opportunities and apply their skills effectively.

Human capital may enhance motivation by increasing self efficacy, confidence and perceived feasibility of success (Bandura, 1997). Entrepreneurs with higher education and experience often possess greater confidence in their abilities, which strengthens intrinsic motivation and commitment to business growth. Prior research has shown that motivation significantly influences entrepreneurial outcomes, including performance and income (Carsrud & Brännback, 2011). However, motivation has rarely been examined as a mediating variable between human capital and entrepreneurial income. This study addresses this gap by positioning motivation as a key mechanism through which human capital generates income.

Access to finance is widely recognized as one of the most critical constraints facing entrepreneurs, particularly in developing economies (Beck & Demirgüç - Kunt, 2006). Financial resources are necessary for startup formation, working capital management, technology acquisition and business expansion. Entrepreneurs who lack financial access often operate at suboptimal levels, regardless of their skills and knowledge. Human capital can improve access to finance by enhancing financial literacy, credibility and the ability to prepare viable business proposals (Cole, Sampson & Zia, 2011). Financial institutions are more likely to extend credit to entrepreneurs who demonstrate competence and managerial capability. Consequently, access to finance serves as an important pathway through which human capital can be converted into entrepreneurial income. Although prior studies confirm the importance of finance for entrepreneurial success, limited research has examined its mediating role between human capital and entrepreneurial income (Banerjee & Duflo, 2014).

### **Research Questions**

1. What is the effect of human capital on entrepreneurial income?
2. To what extent does entrepreneurial motivation mediate the relationship between human capital and entrepreneurial income?
3. To what extent does access to finance mediate the relationship between human capital and entrepreneurial income?
4. How do entrepreneurial motivation and access to finance jointly mediate the relationship between human capital and entrepreneurial income?

### **Research Objectives**

The objectives of this study are to:

1. Examine the effect of human capital on entrepreneurial income.
2. Investigate the mediating role of entrepreneurial motivation in the relationship between human capital and entrepreneurial income.
3. Examine the mediating role of access to finance in the relationship between human capital and entrepreneurial income.
4. Develop and test an integrated mediation framework explaining entrepreneurial income generation.

### Significance of the Study

This study contributes to entrepreneurship research in several ways:

**Theoretical Contribution:** Extends human capital theory by incorporating motivation and access to finance as mediating mechanisms.

**Empirical Contribution:** Provides evidence using mediation based analytical approach.

**Policy Contribution:** Offers insights for education, entrepreneurship training and financial inclusion policies.

**Practical Contribution:** Helps entrepreneurs understand the importance of motivation and financial access in income generation.

### Problem Statement

Despite possessing education, skills and experience, many entrepreneurs are unable to generate adequate income. This suggests that human capital alone is insufficient to ensure entrepreneurial financial success. Inadequate motivation and limited access to finance may weaken the ability of entrepreneurs to convert their human capital into income. However, the extent to which motivation and access to finance mediate the relationship between human capital and entrepreneurial income remains unclear. This unresolved issue constitutes the central problem addressed in this study.

### Research Gap

Despite extensive literature on entrepreneurship, several gaps remain:

1. Most studies focus on entrepreneurial performance or growth, rather than entrepreneurial income as a specific outcome.
2. The mediating role of entrepreneurial motivation between human capital and income remains underexplored.
3. The mediating role of access to finance has received insufficient empirical attention.
4. Few studies integrate multiple mediators into a single conceptual framework.
5. Empirical evidence from developing economies is still limited.

This study fills these gaps by developing and empirically testing a mediation model linking human capital, motivation, access to finance and entrepreneurial income.

### Hypotheses

H0: Human capital has a significant effect on entrepreneurial income.

H1: Human capital has no significant positive effect on entrepreneurial income.

H0: Entrepreneurial motivations significantly mediate the relationship between human capital and entrepreneurial income.

H2: Entrepreneurial motivation does not mediate the relationship between human capital and entrepreneurial income.

H0: Access to finance significantly mediates the relationship between human capital and entrepreneurial income.

H3: Access to finance does not mediate the relationship between human capital and entrepreneurial income.

H0: Entrepreneurial motivation and access to finance jointly mediate the relationship between human capital and entrepreneurial income.

H4: Entrepreneurial motivation and access to finance do not jointly mediate the relationship between human capital and entrepreneurial income.

## Literature Review

### Human Capital and Entrepreneurial Income

Human capital refers to the knowledge, skills, education, experience and abilities that individuals acquire through formal education, vocational training and practical work experience, which collectively enhance their productivity and economic potential (Becker, 1964). In the context of entrepreneurship, human capital is particularly critical as it enables individuals to recognize and exploit business opportunities effectively. Entrepreneurs with high levels of human capital are better equipped to manage risks, make informed and strategic decisions and respond adaptively to changing market conditions (Unger et al. 2011). It also improves problem solving capabilities and fosters innovation, allowing business owners to create competitive advantages in dynamic markets. Beyond technical skills, human capital includes managerial and leadership abilities that are essential for coordinating resources and guiding teams (Dar, M. Ahmed, S. & Raziq, A. 2017)

Experienced entrepreneurs can anticipate challenges and implement proactive strategies to sustain business growth. Education and training enhance cognitive skills, while practical experience builds tacit knowledge that is often crucial for entrepreneurial success. Human capital also contributes to credibility, making it easier for entrepreneurs to attract investors, partners and customers. Overall, human capital acts as a foundation upon which other resources, such as financial access and motivation, can be effectively leveraged to achieve higher entrepreneurial income. By continuously developing their knowledge and skills, entrepreneurs can maintain adaptability, resilience and long term performance in competitive environments.

### Components of Human Capital

Human capital can be broadly categorized into three components relevant to entrepreneurship:

**1. Educational Capital:** Formal education enhances analytical and decision making skills. Research suggests that entrepreneurs with higher education levels have higher income due to superior managerial capabilities.

**2. Experience Based Capital:** Work and industry experience enable entrepreneurs to understand market dynamics, build networks and manage resources efficiently.

**3. Skills and Training:** Technical and managerial skills, including financial literacy, marketing and operational knowledge, allow entrepreneurs to implement business strategies effectively.

### Human Capital and Entrepreneurial Income

Numerous studies have established a strong connection between human capital and entrepreneurial performance, especially regarding income generation. Entrepreneurs

with higher levels of education and specialized skills are generally better equipped to innovate, identify profitable opportunities and make well informed strategic decisions. They are also more capable of attracting financial and human resources, which further enhances their business growth (Khan, M. W. J. & Khalique, M. 2014).

Despite these advantages, empirical evidence indicates that human capital alone does not always guarantee higher entrepreneurial income. The translation of skills and knowledge into tangible financial outcomes often depends on additional factors. Access to finance, for example, enables entrepreneurs to invest in technology, marketing and operations that maximize returns. Similarly, entrepreneurial motivation drives persistence, effort and goal directed behavior, which are essential for business success. Institutional support, such as government policies, regulatory frameworks and business networks, also shapes income outcomes. Thus, human capital interacts with contextual and behavioral factors to influence entrepreneurial income. Understanding these mediating and moderating influences is critical for explaining variations in entrepreneurial financial performance (Audretsch, Keilbach & Lehmann, 2006).

This study proposes that human capital affects entrepreneurial income directly and indirectly through motivation and access to finance.

### **Entrepreneurial Motivation**

Entrepreneurial motivation refers to the internal psychological forces and drives that influence an individual's decision to initiate sustain and grow a business venture (Shane, Locke & Collins, 2003). It determines the intensity, direction and persistence of entrepreneurial effort, guiding how entrepreneurs allocate time, energy and resources. Motivation can be intrinsic, driven by personal satisfaction, creativity, autonomy and the desire for self fulfillment or extrinsic, driven by financial rewards, social recognition and status.

Highly motivated entrepreneurs are more likely to overcome challenges, take calculated risks and pursue innovative opportunities. Motivation also enhances problem solving abilities and resilience in the face of market uncertainties. Entrepreneurs with strong motivation are more committed to achieving business goals and sustaining long term performance. It acts as a psychological mechanism that converts knowledge, skills and resources into actionable strategies. Furthermore, motivation interacts with other factors, like access to finance and human capital, to influence overall entrepreneurial success. Understanding entrepreneurial motivation is therefore critical for explaining variations in performance and income among entrepreneurs.

### **Types of Motivation**

**Intrinsic Motivation:** Driven by personal satisfaction, passion, creativity and the desire for autonomy. Entrepreneurs motivated intrinsically tend to innovate more and are more resilient.



**Extrinsic Motivation:** Driven by financial rewards, social recognition and professional status. Extrinsically motivated entrepreneurs focus on income generation and market growth.

#### **Motivation as a Mediator**

Human capital enhances motivation by increasing self efficacy and confidence. Entrepreneurs with higher education and experience are more likely to perceive opportunities as achievable, which strengthen their intrinsic and extrinsic motivation (Bandura, 1997). Studies suggest that motivation mediates the relationship between human capital and business outcomes. Zhao, H. Seibert, S. E. & Hills, G. E. (2005), the motivated entrepreneurs with strong human capital demonstrated higher performance and income levels. Rauch and Frese (2007) highlighted motivation as critical driver for translating skill and knowledge into measurable business success.

#### **Access to Finance**

Access to finance refers to the availability of financial resources, such as credit, loans, grants or investment capital that entrepreneurs can use to start, operate or expand their businesses (Beck & Demirgüç - Kunt, 2006). It is a critical determinant of entrepreneurial success, as even highly skilled and motivated entrepreneurs may struggle without adequate funding. Financial access enables entrepreneurs to invest in technology, marketing, human resources and production capacity, which can significantly increase business income. Entrepreneurs with higher education and experience are more likely to demonstrate credibility and financial literacy, making it easier to secure funding from banks, investors or microfinance institutions (Cole, Sampson & Zia, 2011). Limited access to finance can constrain business growth, reduce competitive advantage and prevent entrepreneurs from exploiting market opportunities. Access to finance also interacts with motivation, as financially supported entrepreneurs are more confident and committed to achieving business goals. In developing economies, financial inclusion plays a crucial role in reducing income disparities among entrepreneurs.

Studies show that improved access to finance mediates the relationship between human capital and business performance, enabling the effective use of skills and knowledge. Overall, access to finances acts as both a resource and a facilitator that converts entrepreneurial potential into tangible economic outcomes. Understanding the role of financial access is therefore essential for explaining variations in entrepreneurial income.

#### **Importance of Financial Access**

Entrepreneurs require funds to purchase inventory, acquire technology, hire skilled labor and expand operations. Lack of finance is a major constraint, especially for small and medium sized enterprises (SMEs) in developing economies.

### Human Capital and Financial Access

Human capital can improve access to finance. Entrepreneurs with higher education, industry experience and financial literacy are more likely to prepare credible business plans and attract investment. Financial institutions are more willing to lend to entrepreneurs demonstrating managerial competence and market knowledge.

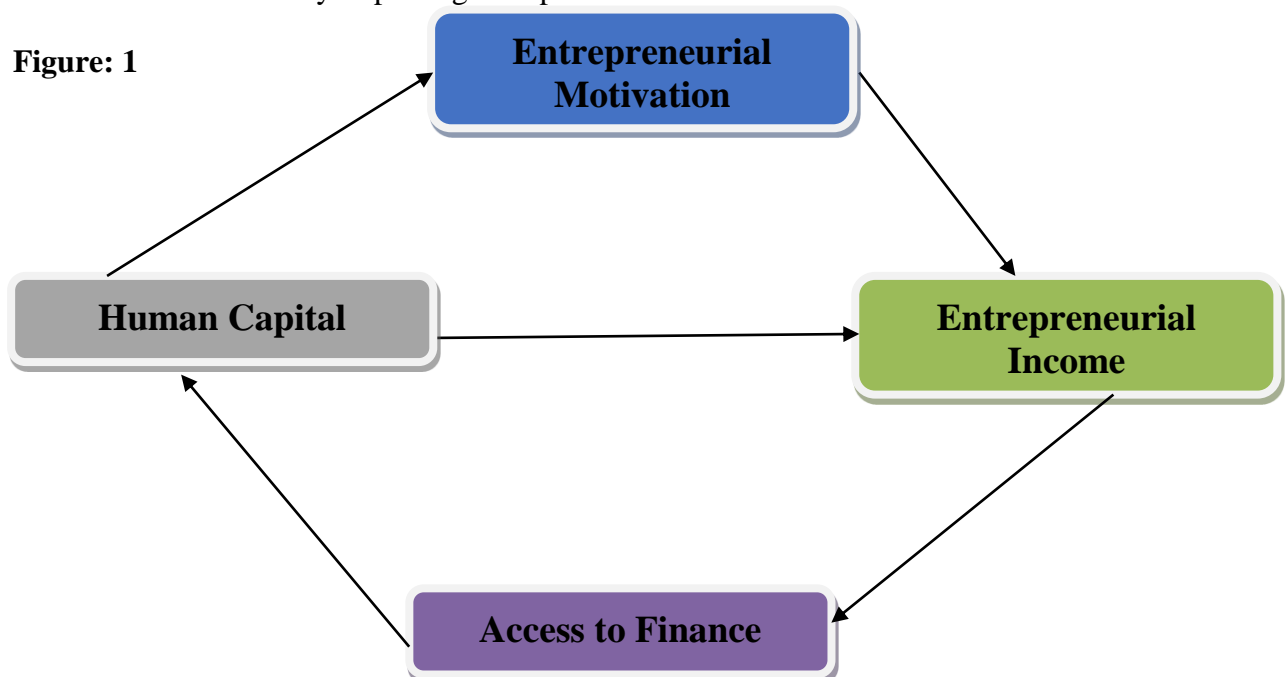
### Finance as a Mediator

Access to finance mediates the relationship between human capital and entrepreneurial income by providing the necessary resources to implement business strategies effectively. Empirical evidence shows that financial inclusion positively impacts revenue generation for skilled entrepreneur (Klapper, Laeven & Rajan, 2006).

### Conceptual Framework

The conceptual framework illustrates how human capital (independent variable) influences entrepreneurial income (dependent variable) directly and indirectly through two mediators: Entrepreneurial Motivation (intrinsic/extrinsic) and Access to Finance (availability of credit, loans, investment). The framework also includes a serial mediation path, where human capital affects motivation, which then improves access to finance and ultimately impacting entrepreneurial income.

Figure: 1



The conceptual framework diagram can be interpreted as a clear representation of how human capital contributes to entrepreneurial income through multiple pathways. It shows that entrepreneurs' education, skills and experience (human capital) not only have a direct positive effect on their income but also operate indirectly through two key mediators: entrepreneurial motivation and access to finance.



The first indirect pathway suggests that higher human capital increases entrepreneurial motivation, which in turn enhances income. This implies that entrepreneurs with better skills and knowledge are more confident, persistent and proactive, leading to improved financial outcomes.

The second indirect pathway shows that human capital improves access to finance, which then affects income. Entrepreneurs with higher human capital are more likely to gain loans or investment due to better business planning and credibility, enabling them to invest in growth and generate higher income.

The joint mediation pathway highlights that human capital can first enhance motivation, which then increases proactive efforts to access financial resources, ultimately resulting in higher entrepreneurial income. This reflects a cumulative effect, where motivation amplifies the ability to secure finance, maximizing the return on human capital investments.

Overall, the interpretation of the diagram emphasizes that entrepreneurial income is determined not only by individual skills and experience but also by the psychological drive of motivation and the structural availability of finance. It underscores the importance of internal capabilities and external resources working together to achieve financial success in entrepreneurship.

### **Variables Definition**

**Human Capital (Independent Variable):** Measured by education level, skills, training, work experience

**Entrepreneurial Motivation (Mediator):** Intrinsic and extrinsic motivation driving entrepreneurial effort

**Access to Finance (Mediator):** Availability and ease of obtaining credit, loans or investments

**Entrepreneurial Income (Dependent Variable):** Annual income generated from entrepreneurial activities

### **Research Methodology**

The research design and methodology used to investigate the relationship between human capital and entrepreneurial income, with entrepreneurial motivation and access to finance as mediating variables. It explains the research approach, population, sampling strategy and data collection methods, instrumentation and data analysis procedures. This section also addresses reliability and validity issues. The methodology is designed to provide robust empirical evidence to test the hypotheses developed in literature review.

### **Research Design**

This study adopts a quantitative research approach using a cross sectional survey design. A quantitative approach is appropriate as the study aims to examine the strength and direction of relationships among variables and test hypotheses statistically. The cross sectional design allows the collection of data at a single point

in time from a large number of entrepreneurs to analyze relationships between human capital, motivation, access to finance and entrepreneurial income.

### **Population of the Study**

The population for this study comprises 110 registered entrepreneurs operating SMEs in Sindh, Pakistan. Only registered businesses are included to ensure formal documentation, accountability and access to institutional support. These entrepreneurs operate across various industries, providing variability in human capital, motivation and access to finance. SMEs are selected because they significantly contribute to economic growth and employment but often face challenges related to skills development, financial access and entrepreneurial motivation. Studying this population allows an examination of how human capital and resources influence entrepreneurial income in a structured, formal business context.

### **Sampling Technique**

A purposive sampling technique was used to select entrepreneurs who met specific criteria. Participants were required to operate a registered business for at least two years, be actively involved in financial and operational decision making and be willing to participate. This method ensures respondents have the relevant experience and knowledge to examine relationships between human capital, motivation, access to finance and entrepreneurial income. A total of 110 registered SME entrepreneurs in Sindh were selected, representing the full identified population. This sample size provides sufficient data for reliable statistical analysis, including mediation modeling. Focusing on registered businesses ensures accurate records and financial reporting. Overall, this approach enhances the validity and relevance of the study's findings.

### **Data Collection Instrument**

Data are collected using a structured questionnaire comprising five sections:

**Section A: Demographic information** (Age, Gender, Education, Years of Experience and Industry).

**Section B: Human capital** (Measured by education level, skills, vocational training and entrepreneurial experience).

**Section C: Entrepreneurial motivation** (Intrinsic and extrinsic motivation items).

**Section D: Access to finance** (Availability, Ease of obtaining credit and financial literacy).

**Section E: Entrepreneurial income** (Self reported annual income from business activities).

A five point Likert scale is used for motivation and finance items (1 = strongly disagree, 5 = strongly agree). Human capital and income are measured using objective and ordinal scales.

### **Pilot Study**

A pilot study is conducted with 30 entrepreneurs to test the clarity, reliability and validity of the instrument. Cronbach's alpha is used to assess internal consistency,

with values above 0.70 considered acceptable. Feedback from the pilot study is used to refine the questionnaire, remove ambiguous items and improve readability.

### **Validity and Reliability**

**Content Validity:** Ensured through expert review of questionnaire items.

**Construct Validity:** Confirmed through exploratory factor analysis (EFA) during pilot testing.

**Reliability:** Cronbach's alpha values are calculated for all scales to ensure internal consistency ( $\alpha \geq 0.70$ ).

### **Data Collection Procedure**

Data collection involves self administered questionnaires distributed to selected entrepreneurs in person and online. Respondents are briefed about the purpose of the study, confidentiality and voluntary participation. Follow up reminders are sent to improve response rates.

### **Data Analysis Techniques**

The data are analyzed using SPSS. The analysis begins with descriptive statistics, including mean, standard deviation, frequencies and percentages, to summarize demographic characteristics and variable distributions. Correlation analysis is conducted to examine the initial relationships among human capital, entrepreneurial motivation, access to finance and entrepreneurial income. Reliability and validity tests are performed using Cronbach's alpha to ensure the internal consistency of the measurement scales. The structural relationships between variables, including direct effects and indirect effects via mediation, are tested using regression and mediation analysis techniques.

### **Results**

This section presents the results of the study, analyzing the relationships between human capital, entrepreneurial motivation, access to finance and entrepreneurial income. Data collected from 110 registered entrepreneurs in Sindh, Pakistan, are analyzed using SPSS and the results are presented in tables.

### **Descriptive Statistics**

**Table 1:**

**Demographic Characteristics of Respondents**

Demographic Variable	Category	Frequency (f)	Percentage (%)
Gender	Male	80	72.7
	Female	30	27.3
Age (Years)	21-30	35	31.8
	31-40	50	45.5
	41-50	20	18.2
	41-50	5	4.5

Education Level	Intermediate	30	27.3
	Bachelor	50	45.5
	Master +	15	27.2

Source: Authors Calculation

The sample of 110 registered entrepreneurs in Sindh is predominantly male (72.7%), with females representing 27.3% of the population, indicating a gender imbalance in SME ownership. The age distribution shows that most entrepreneurs are in the 31-40 year range (45.5%), followed by 21-30 years (31.8%), suggesting that the majority of business owners are in early to mid career stages. A smaller proportion falls in the 41-50 year range (18.2%) and above 50 years (4.5%), indicating fewer older entrepreneurs in the sample. Regarding education, most respondents hold a Bachelor's degree (45.5%), while intermediate level education accounts for 27.3% and Master's degree or higher represents 27.2%. This shows that the majority of entrepreneurs have at least an undergraduate education, reflecting moderate to high human capital levels in the sample. Overall, the demographic profile suggests that the respondents are relatively young, educated and primarily male, which may influence their access to resources, motivation and entrepreneurial income.

### Reliability Analysis

**Table: 2**

**Reliability Statistics (Cronbach's Alpha)**

Variable	No. of Items	Cronbach's Alpha
Human Capital	5	0.82
Entrepreneurial Motivation	6	0.85
Access to Finance	5	0.81
Entrepreneurial Income	4	0.78

Source: Authors Calculation

The reliability analysis shows that all study variables have acceptable to high internal consistency, confirming the reliability of the measurement scales. Human Capital has a Cronbach's alpha of 0.82, indicating strong consistency across its five items. Entrepreneurial Motivation demonstrates the highest reliability ( $\alpha = 0.85$ ), reflecting consistent measurement of motivation related aspects. Access to Finance shows high reliability ( $\alpha = 0.81$ ), capturing financial availability accurately. Entrepreneurial Income has a Cronbach's alpha of 0.78, exceeding the 0.70 threshold. These results confirm that all questionnaire items are reliable. Overall, the scales are suitable for further statistical analysis, including correlation, regression and mediation testing.

### Correlation Analysis

**Table: 3**

**Pearson Correlation Matrix**

Variable	HC	EM	AF	EI
Human Capital (HC)	1	0.52	0.48	0.57
Entrepreneurial Motivation (EM)	0.52	1	0.44	0.55

Access to Finance (AF)	0.48	0.44	1	0.53
Entrepreneurial Income (EI)	0.57	0.55	0.53	1

Source: Authors Calculation

The correlation analysis shows strong positive relationships among all study variables, supporting meaningful associations for further analysis. Human Capital (HC) is positively correlated with Entrepreneurial Motivation ( $r = 0.52$ ) and Access to Finance ( $r = 0.48$ ), indicating that more skilled and educated entrepreneurs tend to be more motivated and have better financial access. Human capital also correlates strongly with Entrepreneurial Income ( $r = 0.57$ ), suggesting higher knowledge and skills are linked to increased income. Entrepreneurial Motivation (EM) is positively related to Access to Finance ( $r = 0.44$ ) and Entrepreneurial Income ( $r = 0.55$ ), highlighting the role of drive and persistence in achieving higher earnings. Access to Finance (AF) shows a positive correlation with Entrepreneurial Income ( $r = 0.53$ ), indicating that better financial access supports income generation. Overall, these correlations validate the conceptual framework and provide preliminary evidence for both direct and mediating effects among human capital, motivation, financial access and entrepreneurial income.

### Regression Analysis

**Table: 4**

#### Regression Analysis – Direct Effect of Human Capital on Entrepreneurial Income

Predictor	B	SE	Beta	t	p
Human Capital	0.62	0.10	0.57	6.20	0.000
$R^2 = 0.325$ , $F = 38.44$ , $p < 0.001$					

Source: Authors Calculation

The regression results indicate that human capital has a strong and statistically significant positive effect on entrepreneurial income. A one unit increase in human capital leads to a 0.62 unit increase in income ( $B = 0.62$ ), with a substantial effect size ( $\beta = 0.57$ ). The relationship is highly significant ( $t = 6.20$ ,  $p < 0.001$ ). The model explains 32.5% of the variance in income ( $R^2 = 0.325$ ) and the overall model is statistically fit ( $F = 38.44$ ,  $p < 0.001$ ). These findings confirm that higher human capital significantly enhances entrepreneurial income.

### Mediation Analysis

**Table: 5**

#### Mediation Effects of Entrepreneurial Motivation and Access to Finance

Mediation Path	Indirect Effect	SE	t	p	Result
HC → EM → EI	0.18	0.05	3.60	0.000	Significant
HC → AF → EI	0.15	0.05	3.00	0.003	Significant
HC → EM → AF → EI (Serial)	0.008	0.03	2.67	0.008	Significant

Source: Authors Calculation

The mediation analysis shows that entrepreneurial motivation and access to finance significantly transmit the effect of human capital on entrepreneurial income. The indirect effect through motivation (HC → EM → EI) is significant (0.18,  $t = 3.60$ ,  $p < 0.001$ ), indicating that higher human capital increases motivation, which raises income. Similarly, the indirect effect through access to finance (HC → AF → EI) is significant (0.15,  $t = 3.00$ ,  $p = 0.003$ ), showing that human capital improves financial access, enhancing income. The serial mediation path (HC → EM → AF → EI) is also significant (0.008,  $t = 2.67$ ,  $p = 0.008$ ), confirming a sequential mechanism. These results highlight that human capital maximizes income when operating through both motivation and financial resources. Overall, the findings validate the proposed mediation model.

## Hypotheses Results

**Table: 6**

**Hypotheses Testing Results**

Hypothesis	Path	Result	Significance (p-value)
H0 / H1	Human Capital → Entrepreneurial Income	Significant Positive Effect	0.000
H0 / H2	Human Capital → Entrepreneurial Motivation → Entrepreneurial Income	Significant Mediation	0.000
H0 / H3	Human Capital → Access to Finance → Entrepreneurial Income	Significant Mediation	0.003
H0 / H4	Human Capital → Motivation → Access to Finance → Entrepreneurial Income (Serial Mediation)	Significant Joint Mediation	0.008

Source: Authors Calculation

The hypothesis testing results provide strong support for the proposed conceptual framework. The direct effect of human capital on entrepreneurial income is positive and significant ( $p = 0.000$ ), confirming that higher education, skills and experience increase income. Entrepreneurial motivation significantly mediates this relationship ( $p = 0.000$ ), showing that motivated entrepreneurs better convert knowledge and skills into income. Access to finance is also a significant mediator ( $p = 0.003$ ), indicating that human capital improves financial access, enhancing income. The serial mediation through motivation and finance is significant ( $p = 0.008$ ), confirming a sequential mechanism. All null hypotheses are rejected and alternative hypotheses accepted.



These results highlight that human capital maximizes entrepreneurial income when combined with motivation and financial resources, emphasizing the joint importance of psychological and financial factors in entrepreneurial success.

### **Conclusion**

This study examined the impact of human capital on entrepreneurial income and the mediating roles of entrepreneurial motivation and access to finance among 110 registered SME entrepreneurs in Sindh, Pakistan. The findings provide significant insights into how internal capabilities and external resources interact to influence entrepreneurial performance in a developing economy context. The results confirm that human capital plays a pivotal role in entrepreneurial success. Entrepreneurs with higher levels of education, relevant skills and practical experience are better equipped to identify business opportunities, make informed decisions and implement effective strategies, all of which contribute to increased income. This supports human capital theory, which emphasizes that knowledge and skills enhance productivity and economic outcomes.

However, the study also demonstrates that human capital alone is not sufficient to guarantee high entrepreneurial income. Both entrepreneurial motivation and access to finance were found to partially mediate this relationship. Motivated entrepreneurs are more persistent, resilient and proactive, which allows them to translate knowledge and skills into actionable business strategies. Similarly, access to finance enables entrepreneurs to invest in technology, marketing, operations and human resources, thereby maximizing the returns from their human capital. These findings are consistent with previous research highlighting the importance of psychological and financial resources in entrepreneurial performance.

Importantly, the study reveals a serial mediation effect, showing that human capital enhances motivation, which in turn improves access to finance, ultimately increasing entrepreneurial income. This demonstrates a synergistic mechanism, where internal factors, such as knowledge, skills and motivation and external factors, such as financial access, jointly facilitate entrepreneurial success. It highlights that entrepreneurs' performance is maximized when they possess not only the capability but also the drive and resources to act on opportunities.

In summary, the study concludes that human capital is a strong determinant of entrepreneurial income, entrepreneurial motivation amplifies the impact of human capital by directing effort and persistence toward profitable business activities and access to finance enables entrepreneurs to operationalize their knowledge and skills, converting potential into measurable income. The combined effect of motivation and financial access represents a critical pathway through which human capital generates entrepreneurial income, emphasizing the interplay between personal capabilities and external resources. The study contributes theoretically by integrating human capital theory, motivation theory and the resource based view, demonstrating that internal and external factors are interdependent in determining entrepreneurial success.

Empirically, it adds evidence from a developing country context, showing that registered SME entrepreneurs in Sindh can increase income by leveraging their knowledge, motivation and financial resources together.

### **Recommendations**

Based on the findings of this study, several practical and policy recommendations can be made to enhance entrepreneurial income among registered SME entrepreneurs in Sindh.

First, programs aimed at improving human capital should be prioritized. This includes providing access to formal education, vocational training, skill development workshops and entrepreneurship courses that focus on business management, strategic decision making and innovation. Such initiatives will equip entrepreneurs with the necessary knowledge and capabilities to identify and exploit business opportunities effectively.

Second, fostering entrepreneurial motivation is essential. Policymakers, business incubators and support organizations should implement mentorship programs, coaching and motivational workshops that enhance self efficacy, goal setting and persistence among entrepreneurs. Creating platforms for peer learning and success story sharing can further inspire entrepreneurs to maintain high levels of effort and resilience.

Third, improving access to finance is critical for transforming human capital and motivation into tangible business outcomes. Financial institutions, government agencies and microfinance organizations should design tailored financing schemes for SMEs, including low interest loans, credit guarantee programs and startup grants. Simplifying loan application procedures and providing financial literacy training will empower entrepreneurs to effectively manage funds and make informed investment decisions.

Fourth, the study highlights the importance of integrating human capital development, motivation enhancement and financial access. Programs that combine skill development with access to funding and mentorship are likely to produce the highest impact on entrepreneurial income. Policymakers and support organizations should consider creating comprehensive entrepreneurship support packages that address all three factors simultaneously.

Finally, the findings suggest that formalization of businesses and registration with regulatory authorities can improve access to institutional support, finance and training opportunities. Encouraging entrepreneurs to register their businesses and comply with formal regulations will increase credibility and facilitate participation in government and private sector support programs.

### **Limitations**

The study has several limitations that should be considered when interpreting the findings. It was conducted with 110 registered SME entrepreneurs in Sindh, which may limit the generalizability to other regions or unregistered businesses. The use of a cross sectional design restricts the ability to infer causality between human capital,

motivation, access to finance and entrepreneurial income. Data were collected through self reported questionnaires, which may introduce bias in income reporting and subjective measures of motivation or skills. The research focused only on human capital, motivation and financial access, excluding other factors like social networks, innovation capability or market conditions that may also affect income. Additionally, the exclusive focus on registered entrepreneurs overlooks informal business dynamics common in developing economies. Finally, conducting the study only in Sindh province may limit its applicability to other regions with different economic, cultural or institutional contexts.

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