Remittances Review
July 2024,
Volume: 9, No: S 3, pp.778-793
ISSN: 2059-6588(Print) | ISSN 2059-6596(Online)
Received: 10 June 2024, Accepted: 22 July 2024
DOI: https://doi.org/10.33282/rr.vx9i2.38

# The Impact of Training and Development on Corporate Investment: The Moderating Role of Market Competition in Pakistani Firms

**Dr. Farhan Ali Soomro[1], Dr. Hyder Ali[2], Dr. Iram Rani[3], Dr. Kiran Jameel[4]**

[1] Assistant Professor, Department of Public Administration, Shah Abdul Latif University, Khairpur Mir's, Pakistan

[2] Assistant Professor, Faculty of Management Sciences, Sukkur IBA University, Sukkur, Pakistan (hyderali@iba-suk.edu.pk)

[3] Professor, Institute of Business Administration, Shah Abdul Latif University, Khairpur Mir's, Pakistan (iram.shaikh@salu.edu.pk)

[4] Assistant Professor, Institute of Business Management, Karachi, Pakistan (kiran.jameel@iobm.edu.pk)

**Corresponding Author:* Farhan Ali Soomro, *Email:* farhan.soomro@salu.edu.pk

**Abstract**

This study examines the impact of training and development (T&D) costs on corporate investment in Pakistani firms, with market competition considered as a moderating factor. Utilizing a panel regression model with fixed effects, we analyze data from 5,124 firm-year observations. The results reveal a significant positive relationship between T&D expenditures and corporate investment, with coefficients of 0.052 and 0.057 across the two regression models, indicating that a 1% increase in T&D costs leads to a 0.052% and 0.057% increase in corporate investment, respectively. Furthermore, the interaction term between T&D costs and the Sales-based Herfindahl-Hirschman Index (SHHI) is significant and positive (0.031), suggesting that the beneficial effects of T&D on investment are amplified in highly competitive markets. Our findings align with the human capital theory and resource-based view, which emphasize the strategic importance of investing in employee skills and knowledge. Control variables such as return on assets (ROA), leverage (LEVERG), and Tobin's Q (TOBQ) also demonstrate significant relationships with corporate investment, consistent with existing literature. This study contributes to the literature by providing empirical evidence from a developing country context, highlighting the role of market competition in enhancing the positive effects of human capital investment on corporate growth, and validating key theoretical perspectives in the Pakistani corporate sector.

**JEL Classification**: C23, D22, G31, J24, M53

**Keywords:** Training and Development Costs, Corporate Investment, Market Competition, Pakistan, Panel Regression, Fixed Effects, Herfindahl-Hirschman Index (HHI), Human Capital Theory, Resource-Based View.

## 1 Introduction

Investment in training and development (T&D) has gained considerable attention in recent literature due to its potential to influence corporate investment decisions. Training and development costs are integral to building human capital, which is increasingly recognized as a critical driver of competitive advantage and long-term corporate success. Prior studies have highlighted the positive impact of human capital investment on various organizational outcomes, including enhanced productivity, innovation, and overall firm performance (Becker, 2009; Wright

et al., 1994). This study aims to explore the specific impact of T&D costs on corporate investment within the context of Pakistani firms, incorporating the role of market competition as a moderating factor.

Drawing from human capital theory (Becker, 2009), we acknowledge that companies typically view investments in employee training and development as essential for fostering growth and competitiveness. We hypothesize that a key element influencing corporate investment is the extent of investment in T&D, as it enhances the skills and capabilities of the workforce, leading to improved firm performance and greater investment capacity (Barney, 1991; Huselid, 1995). The role of competition in the product market is central to our analysis. According to earlier studies (e.g., Porter, 1985; Barney, 1991), firms may be compelled to increase investments in human capital to gain a competitive edge. Conversely, in highly competitive markets, firms might need to strategically manage their resources, balancing T&D investments against other capital expenditures to optimize returns (Huselid, 1995; Lepak and Snell, 1999). We aim to investigate these dynamics in the Pakistani setting, where businesses are especially focused on human capital development in response to market demands.

To assess the influence of T&D costs on business investment choices, our study utilizes a comprehensive panel dataset of 298 firms from 2010 to 2022, including 5,124 firm-year observations, to analyze the investment patterns of enterprises in Pakistan. Corporate investment is calculated as the amount of money spent on long-term assets, including fixed and intangible assets, as a percentage of total assets from the prior year. This methodology is consistent with studies that examine the relationship between human capital investments and broader corporate strategies (Huselid, 1995; Wright et al., 1994). We use the Herfindahl-Hirschman Index (HHI), a commonly employed metric in market competition studies, to evaluate market competition. Sales and asset-based HHI are the two primary forms utilized, as stated by Jiang et al. (2015); Gupta and Krishnamurti (2018).

Our study's findings contribute to a better understanding of the interactions between corporate investment, market rivalry, and T&D costs in Pakistan's financial markets. We observed a substantial positive correlation between higher T&D expenditures and corporate investment, suggesting that firms with significant investments in human capital are more likely to engage in further capital investments. This is consistent with the resource-based view (RBV), which posits that unique and valuable resources, such as skilled employees, lead to sustainable competitive advantages and influence investment behavior (Barney, 1991). Furthermore, our research suggests that market rivalry enhances the beneficial effects of T&D on investment, as firms in highly competitive markets are likely to capitalize on their human capital to outperform competitors. This finding is consistent with the theoretical viewpoints put forth by Porter (1985), who contended that in competitive environments, firms must leverage all available resources, including human capital, to maintain or improve their market position.
This study makes several significant contributions to the literature on corporate investment and human capital, each of which enhances our understanding of how these factors interplay in the context of Pakistani firms. First, by presenting empirical data from Pakistan—a developing nation whose corporate sector dynamics have not received much attention in the literature—this study closes a significant gap in the field. Prior research on the relationship between business investment and human capital has predominantly focused on industrialized nations (Wright et al., 1994; Becker, 2009). Recent studies have also emphasized the importance of human capital

investment in developing economies, highlighting its role in enhancing firm performance and economic growth (Shaw, 2021; Fedyk and Hodson, 2023). This study offers fresh perspectives on the impact of T&D costs on corporate investment decisions in developing economies by analyzing Pakistani companies. The results show a strong positive link between corporate investment and T&D expenditures, underscoring the importance of human capital investments in driving business growth in developing nations. This is especially important for company executives and policymakers in similar emerging economies, where strategic investments in human capital can be pivotal in attracting and sustaining corporate investment (Vithana et al., 2023; Aytun et al., 2024).

Second, this study provides a deeper view of how competitive forces affect the link between T&D costs and corporate investment by taking market competitiveness into account as a moderating factor. The substantial interaction term between T&D expenditures and SHHI indicates that the positive effect of T&D on corporate investment is particularly pronounced in highly competitive marketplaces, according to the data. This result aligns with theoretical viewpoints that contend businesses in competitive settings are more likely to invest in human capital as a means of sustaining long-term growth and gaining a strategic advantage (Porter, 1985). This contribution is consistent with recent empirical research, which also emphasizes the role that competition plays in amplifying the positive effects of human capital investment on corporate outcomes (Chen et al., 2024).

In conclusion, our study fills the gap in the literature on human capital and competition by providing fresh empirical data on how market rivalry affects Pakistani enterprises' investment decisions in the context of T&D expenditures.

The remainder of the paper is structured as follows: An overview of important literature is given in Section 2. A description of the dataset and the techniques we used is provided in Section 3. The principal findings are discussed in Section 4. In the end, the research is concluded in Section 5.

## 2 Review of the Literature and Formulation of Hypotheses

### 2.1 Investment Strategies Under Human Capital Development

Human capital theory suggests that investments in employee training and development (T&D) can significantly enhance a firm's productive capabilities, leading to improved performance and higher returns on investment. By building a more skilled and capable workforce, firms are better positioned to exploit growth opportunities and respond to competitive pressures. However, like other forms of investment, the benefits of T&D are not immediate and may involve substantial upfront costs. Therefore, firms must carefully consider the trade-offs between current T&D expenditures and future expected returns. Studies such as Barney (1991) and Huselid (1995) provide empirical evidence that supports the positive relationship between T&D investments and corporate performance across various industries.

Strategic human capital investment analysis tends to focus on how industry dynamics and market competition influence decisions regarding T&D expenditures, especially in highly competitive and rapidly evolving environments. Firms without exclusive access to skilled labor or innovative processes may face risks of being outcompeted by rivals who make greater investments in human capital. According to Porter (1985), the value of investing in human capital is amplified in competitive markets, where maintaining a skilled workforce can provide a significant advantage.

Studies such as Lepak and Snell (1999) emphasize the importance of human capital investments in sustaining competitive advantage, particularly in dynamic markets where the ability to innovate and adapt is crucial.

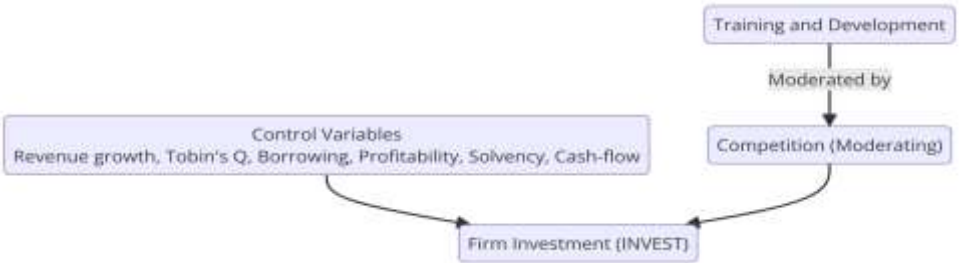
Recent research further explores the complex relationship between T&D investments, competitiveness, and corporate outcomes. For example, Fedyk and Hodson (2023) highlight how human capital can drive firm performance, showing that investments in talent lead to measurable financial returns. Additionally, Shaw (2021) discuss the resource-based view's application in strategic human resource management, noting that human capital is a critical resource that can sustain competitive advantage. This dual nature suggests that the overall impact of competition on T&D expenditures and corporate investment may vary depending on specific market conditions. Similarly, Chen et al. (2024) find that diverse human resource slack can foster innovation, especially in politically connected firms, demonstrating the strategic value of human capital investments in complex environments.

Moreover, investments in T&D can lead firms to adopt more aggressive strategies in response to competitive pressures, as a well-trained workforce enables the firm to capitalize on new opportunities more effectively. Depending on the type and intensity of competition, these impacts may be enhanced or diminished. For example, in highly competitive environments, firms may be more cautious in their T&D investments to avoid overcommitting resources, while in less competitive markets, firms might be more willing to invest in human capital as a means of differentiating themselves. Research by Vithana et al. (2023) indicates that human capital resources can be viewed as either a cost or an investment, depending on market conditions, influencing how firms manage their T&D budgets. In a broader context, Aytun et al. (2024) discuss how human capital development interacts with financial and technological innovation, particularly in middle-income countries, highlighting the broader implications of T&D investments on corporate strategy and economic growth.

## 2.2 Theoretical Model and Hypothesis Development

The model presented in Figure 1 offers a comprehensive framework for understanding how corporate investment decisions are influenced by training and development (T&D) expenditures and the competitive environment, specifically within the context of Pakistan. Grounded in human capital theory Becker (2009), the model posits that investments in T&D are pivotal for enhancing firm performance and securing a competitive advantage. This is particularly relevant in emerging markets, where access to skilled labor and the capacity for innovation are essential for sustainable growth.

Figure 1: Theoretical Model



**Note:** This figure depicts the study's theoretical framework, which is based on works that have previously been published.

According to the model, T&D expenditures directly impact firm investment (INVEST). Empirical studies by Wright et al. (1994) and Huselid (1995) support this relationship, demonstrating that effective human resource practices, including T&D, are linked to improved corporate financial performance. By investing in their workforce, firms enhance their productivity and are better positioned to undertake further investments in productive assets, thereby fostering long-term growth.

Competition is incorporated into the model as a moderating factor, reflecting the insights of Porter Porter (1985) on competitive dynamics. In highly competitive markets, the impetus to invest in T&D is intensified, as firms strive to maintain or enhance their market position through a more skilled and adaptable workforce. This aligns with the findings of Lepak and Snell (1999), who emphasize that the strategic value of human capital investments is contingent upon the competitive landscape. In such environments, the benefits of T&D are amplified, as a well-trained workforce can provide a significant edge over rivals.

Conversely, in less competitive markets, the pressure to invest heavily in T&D may be reduced, potentially leading to more conservative investment strategies. The moderation effect of competition implies that the relationship between T&D expenditures and firm investment varies depending on the intensity of market competition. This nuanced interaction is supported by Fedyk and Hodson (2023), who highlight that the impact of human capital on firm performance is contingent upon external competitive pressures.

The model also accounts for various control variables, including revenue growth, Tobin's Q, borrowing, profitability, solvency, and cash flow. These factors are crucial as they independently influence investment decisions. For instance, Aytun et al. (2024) discuss how financial health indicators like profitability and cash flow are critical determinants of a firm's capacity to invest. Similarly, Vithana et al. (2023) highlight the role of market-based factors such as Tobin's Q in shaping investment behaviors, underscoring the importance of considering these variables to isolate the effects of T&D and competition on firm investment. Based on this model, we propose the following hypothesis:

*Hypothesis 1: Corporate investment (INVEST) will be significantly impacted by how T&D costs and market competition interact.*

This hypothesis aims to investigate the conditional impacts of competition on investment in the face of varying levels of T&D expenditures. By exploring this interaction, the research seeks to enhance our understanding of how firms navigate complex and competitive environments to make strategic investment decisions. This approach addresses existing knowledge gaps regarding the dynamic and sometimes conflicting effects of competition and human capital investments on corporate investment patterns, thereby contributing to the broader empirical literature.

# 3 Sample and Methodology

## 3.1 Data

This study utilizes an annual unbalanced panel dataset sourced from the State Bank of Pakistan's publication, "Balance Sheet Analysis of Non-financial Firms (BSANFFs) of Pakistan." The sample consists of 298 non-financial companies listed on the Pakistan Stock Exchange (PSE) from 2010 to 2022. To ensure data accuracy and reliability, several exclusion criteria were applied. Specifically, companies within the financial sector were excluded due to their distinct regulatory environment and financial structure. Additionally, observations with incomplete data or missing total assets, enterprises listed for less than a year, and firms involved in special treatments or transactions were also excluded.

An unbalanced panel dataset was chosen to account for the dynamic nature of business status over time, allowing the analysis to reflect real-world variations such as firms entering or exiting the market. To minimize the impact of statistical outliers, continuous variables were adjusted at the 1% and 99% levels. The final dataset comprises 5,124 firm-year observations from 298 distinct firms, providing a robust basis for analyzing the effects of training and development costs on corporate investment within the Pakistani context.

## 3.2 Main Variables

### 3.2.1 Training and Development Costs (T&D)

The primary independent variable in this study is training and development (T&D) costs, which represent a firm's investment in human capital. Drawing on the theoretical framework provided by Becker (2009), T&D costs are conceptualized as expenditures that enhance the skills and capabilities of the workforce, thereby improving overall firm performance and competitive advantage. The data on T&D costs is sourced directly from the financial statements of the firms, where these expenditures are reported as part of the operating expenses. For analytical purposes, T&D costs are normalized by the total assets of the firm, ensuring comparability across companies of different sizes. This measure will be referred to as T&D in the subsequent analysis.

### 3.2.2 Corporate Investment

Corporate investment, the dependent variable in this analysis, is defined as the total amount spent on developing and acquiring tangible and intangible assets, as well as other long-term investments. This definition aligns with prior research (e.g., Chen et al., 2020b), which similarly defines corporate investment based on cash flow statements. To allow for comparison across firms of different sizes, corporate investment is divided by the total assets of the firm, resulting in a standardized measure that will be referred to as INVEST. This approach enables a clear assessment of how variations in T&D costs influence corporate investment behavior.

### 3.2.3 Competition

Competition within the market is measured using the Herfindahl-Hirschman Index (HHI), a widely recognized metric for assessing market concentration and competitiveness. The Sales Herfindahl-Hirschman Index (SHHI) is employed to capture the level of competition in the product market, following the methodology used in contemporary research (e.g., Chen et al., 2020b). The SHHI is

calculated by squaring the market share of each firm within an industry and summing these squared values. The SHHI is represented mathematically as:

$$SHHI_{j,t} = \sum_{i=1}^{N_j} S_{i,j,t}^2 \quad (1)$$

$S_{i,j,t}$ denotes the market share of company $i$ in terms of sales in industry $j$ for year $t$ in Equation (1). A higher HHI index indicates a more concentrated sector and indicates that businesses operate in a less competitive product market. The HHI metric has a range of zero to one.[1]

### 3.2.4 Control Variables

In our analysis, we incorporate a range of firm-level control variables, following established methodologies in the literature (e.g., Jiang et al., 2018). These controls are critical to isolating the effects of training and development (T&D) costs and competition on corporate investment by accounting for other factors that may influence investment decisions. The control variables included are:

- **Revenue Growth (RGR):** Reflects the annual growth in revenue, calculated as the percentage change in revenue from the previous year. This measure captures the firm's market performance and its capacity for generating income.
- **Growth Opportunities (TOBQ):** Measured by Tobin's Q, this variable is the ratio of the market value of a firm's assets to their replacement cost. Tobin's Q is a widely used indicator of growth opportunities, with higher values suggesting greater potential for future investment.
- **Borrowing Capability (BCAP):** Represents the firm's ability to raise capital through borrowing, calculated as the ratio of fixed assets to total assets. This variable indicates the extent to which a firm can leverage its fixed assets to secure financing.
- **Return on Assets (ROA):** Calculated as the net profit divided by the average total assets. ROA is an indicator of how efficiently a firm is using its assets to generate earnings.
- **Actual Borrowing (LEVERG):** Defined as the total debt divided by total assets, this variable measures the firm's financial leverage, reflecting its reliance on debt to finance its operations.
- **Short-term Solvency (STSOL):** This variable measures the firm's ability to meet shortterm obligations, calculated as the sum of cash holdings and tradable financial assets divided by the total asset value. It serves as an indicator of liquidity.
- **Operating Cash Flows (OCFlow):** Determined by dividing net cash flow from operating activities by total assets. This ratio reflects the firm's cash-generating efficiency relative to its size.
- **Company Size (COMSIZE):** Measured as the natural logarithm of the company's total assets for a specific year, this variable accounts for size-related effects on corporate investment behavior.

[1] We also employ the alternative metric, the Asset Herfindahl–Hirschman Index (AHHI), in accordance with Chen et al. (2020b), and obtain consistent findings.

- **Administration-related Expenses (ADMINEX):** Calculated as the ratio of administrative expenses to gross sales, this variable captures the efficiency and cost management related to the firm's administrative functions.

These control variables are summarized in the table below:

Table 1: Description of Variables

| Type of Variable | Symbol | Description |
|---|---|---|
| *Dependent Variable* | | |
| Company Investment | INVEST | The cash flow statement's recorded expenditures for building and acquiring fixed assets, intangible assets, and other long-term assets, adjusted according to the total assets at the end of the previous year. |
| *Independent (Main) Variable* | | |
| Training and Development Costs | T&D | Training and development costs, normalized by the total assets of the firm, representing the investment in human capital aimed at improving workforce skills and capabilities. |
| *Market Competitiveness* | | |
| Sales-based competition | SHHI | Calculated by summing the squared values of each publicly traded company's market share within the industry. A higher SHHI indicates a more concentrated sector, reflecting less competitive market conditions. |
| *Independent (Control)* | | |
| Financial Leverage | LEVERG | Defined as the total debt divided by total assets. |
| Operating Cash-flows | OCFlow | Determined by dividing net cash flow from operating activities by total assets. |
| Return-on-assets | ROA | Calculated as the net profit divided by the average total assets. |
| Administration-related expenses | ADMINEX | Calculated as the ratio of administrative expenses to gross sales. |
| Growth Opportunities | TOBQ | Measured by Tobin's Q, the ratio of market value to total assets. |
| Growth in Revenue | RGR | Calculated as the percentage change in revenue from the previous year. |
| Short-term Solvency | STSOL | Measured by the sum of cash holdings and tradable financial assets divided by total assets. |
| Borrowing capability | BCAP | Calculated by the ratio of fixed asset value to total asset value. |
| Company Size | COMSIZE | Measured as the natural logarithm of the company's total assets for a specific year. |

### 3.3 Descriptive Statistics

The summary statistics presented in Table 2 provide an overview of the key variables used in this study. The table includes mean values, standard deviations, and quartile information (25%, 50%, and 75%) for each variable, along with the number of observations (Obs.).

Table 2: Summary Statistics of Variables

This table summarizes the variables used in the study. "Variable" names each variable. "Mean" is the average value, "St.dev" is the standard deviation, and the 25%, 50%, and 75% values represent the quartiles. "Obsv." is the number of observations. INVEST is corporate investment, T&D is the training and development costs, R&D represents research and development expenditures, SHHI is the squared and summed sales shares of firms used to measure market competition, and the control variables include financial and operational metrics. Refer to Table 1 for more detailed descriptions of these variables.

| Variable | Mean | St. dev | 25% | 50% | 75% | Obs. |
|---|---|---|---|---|---|---|
| INVEST | 0.075 | 0.081 | 0.020 | 0.048 | 0.100 | 5,124 |
| T&D | 0.023 | 0.015 | 0.011 | 0.019 | 0.029 | 5,124 |
| R&D | 0.013 | 0.009 | 0.005 | 0.010 | 0.018 | 5,124 |
| SHHI | 0.045 | 0.020 | 0.025 | 0.047 | 0.062 | 5,124 |
| ROA | 0.056 | 0.068 | 0.021 | 0.051 | 0.091 | 5,124 |
| ADMINEX | 0.116 | 0.095 | 0.056 | 0.094 | 0.141 | 5,124 |
| RGR | 0.198 | 0.396 | -0.010 | 0.143 | 0.329 | 5,124 |
| LEVERG | 0.493 | 0.250 | 0.292 | 0.483 | 0.682 | 5,124 |
| TOBQ | 2.834 | 2.421 | 1.195 | 2.124 | 3.666 | 5,124 |
| OCFLOW | 0.051 | 0.087 | 0.003 | 0.049 | 0.101 | 5,124 |
| STSOL | 0.237 | 0.175 | 0.113 | 0.183 | 0.309 | 5,124 |
| BCAP | 0.263 | 0.194 | 0.112 | 0.224 | 0.377 | 5,124 |
| COMSIZE | 11.999 | 0.610 | 10.554 | 11.937 | 12.672 | 5,124 |

Corporate investment (INVEST) has a mean value of 0.075, with a standard deviation of 0.081, indicating variability in investment levels across firms. The quartiles show that 25% of firms have an investment level below 0.020, while 75% invest below 0.100. Training and Development (T&D) costs show a mean value of 0.023, reflecting a modest investment in human capital development across firms. The standard deviation of 0.015 suggests that while there is some variation, most firms allocate a similar proportion of their resources to T&D. Research and Development (R&D) expenditures have a mean value of 0.013, slightly lower than T&D costs, indicating that firms might prioritize human capital investment over R&D. The standard deviation is 0.009, indicating a relatively consistent investment in R&D across firms. Market competition, measured by the Sales-based Herfindahl-Hirschman Index (SHHI), has a mean of 0.045 with a standard deviation of 0.020. The quartiles indicate that a significant portion of firms operate in moderately competitive markets, with the median SHHI value at 0.047. Other control variables, including ROA, ADMINEX, RGR, LEVERG, TOBQ, OCFLOW, STSOL, BCAP, and COMSIZE, display varying degrees of dispersion, reflecting the diversity of the firms' financial and operational characteristics.

These summary statistics provide a foundational understanding of the data used in this analysis, allowing for a detailed examination of the relationships between T&D, R&D, market competition, and corporate investment. The inclusion of both T&D and R&D highlights the study's

comprehensive approach to evaluating the impact of human capital and innovationrelated expenditures on firm behavior in a competitive environment.

### 3.4 Regression Model

Building on prior research that explores the links between firm investment and strategic expenditures, we utilize the following regression model to analyze the impact of Training and Development (T&D) costs, along with market competition, on corporate investment:

$$\boldsymbol{INVEST_{i,t} = \beta_0 + \beta_1 \log(T\&D_{t-1}) + \beta_2 \log(T\&D_{t-1}) \times SHHI_{j,t} + \beta CVAR_{i,t-1} + \xi_t + u_i + \varepsilon_{i,t}} \quad \textbf{(2)}$$

In Equation (2), $INVEST_{i,t}$ represents the corporate investment made by firm $i$ in year $t$. The main independent variable, $\log(T\&D_{i,t-1})$, is the logarithm of the firm's training and development expenditures, lagged by one period to capture the delayed effects of T&D on investment decisions. The interaction term $\log(T\&D_{i,t-1})\times SHHI_{j,t}$ is included to assess how market competition, as measured by the Sales-based Herfindahl-Hirschman Index (SHHI), moderates the relationship between T&D and corporate investment. The SHHI index, $SHHI_{j,t}$, quantifies the level of competition in industry $j$ in year $t$, with higher values indicating less competitive markets (e.g., Gupta and Krishnamurti, 2018). The vector $CV\ AR_{i,t-1}$ includes control variables that account for other factors influencing investment decisions, such as firm size, profitability, leverage, and growth opportunities, all lagged by one period to ensure causality. Year fixed effects, $\xi_t$, control for time-specific influences common to all firms, while firm fixed effects, $u_i$, capture time-invariant characteristics specific to each firm. The error term, $\varepsilon_{i,t}$, represents unobserved factors that might influence investment.

We employ robust standard errors to mitigate heteroscedasticity, ensuring the consistency and reliability of our estimates even when there is non-constant variance across observations. Furthermore, we cluster standard errors at the firm level to address potential within-firm correlations, recognizing that the investment decisions of a firm may be correlated across time. This methodological approach enhances the robustness of our findings, providing more accurate inferences about the impact of T&D and competition on corporate investment.

## 4 Results and Discussion

### 4.1 The Influence of EPU on Firm Investment Strategies

We employ a panel regression model for our empirical research in this paper, focusing on the relationship between Training and Development (T&D) expenditures and corporate investment. To ensure the appropriateness of our panel regression model with fixed effects, we conducted the Hausman (1978) test, confirming its suitability. Although detailed results of the test are not displayed here, they are available upon request. The regression results, presented in Table 3, are shown across two specifications. Model (1) examines the direct relationship between T&D and corporate investment, including control variables but without considering the role of market competition. Model (2) extends this analysis by incorporating the interaction between T&D and competition, measured by the Sales-based Herfindahl-Hirschman Index (SHHI).

Table 3: Regression analysis: T&D, Competition, and Investment

This table presents the estimated impact of training and development (T&D) expenditures on corporate investment in Pakistani firms. Each column refers to a specific regression model, and each row reflects a distinct variable. Model (1)

evaluates the T&D-Investment relationship without accounting for competition. Model (2) includes T&D expenditures, control variables, and competition measured by the Sales-based Herfindahl-Hirschman Index (SHHI). The p-values, shown in square brackets below the coefficients, indicate the statistical significance of each variable. The presence of firm and time fixed effects is indicated by "Yes" under the 'Firm FE' and 'Time FE' columns. The number of observations (No. of obs.) represents the sample size for each regression model. The adjusted $R^2$ shows the proportion of variance in corporate investment accounted for by the independent variables. Significance levels are denoted as *** for 1%, ** for 5%, and * for 10%.

| Variable | (1) | (2) |
|---|---|---|
| **T&D** | 0.052*** | 0.057*** |
| | [0.000] | [0.000] |
| **T&D × SHHI** | | 0.031** |
| | | [0.018] |
| **SHHI** | −0.003 | −0.004 |
| | [0.512] | [0.487] |
| **ROA** | 0.105*** | 0.107*** |
| | [0.000] | [0.000] |
| **ADMINEX** | 0.037* | 0.036* |
| | [0.038] | [0.041] |
| **RGR** | 0.002 | 0.002 |
| | [0.631] | [0.597] |
| **LEVERG** | −0.049*** | −0.048*** |
| | [0.000] | [0.000] |
| **TOBQ** | 0.007*** | 0.008*** |
| | [0.001] | [0.001] |
| **OCFLOW** | 0.046*** | 0.047*** |
| | [0.000] | [0.000] |
| **STSOL** | 0.011** | 0.012** |
| | [0.027] | [0.030] |
| **BCAP** | −0.138*** | −0.136*** |
| | [0.000] | [0.000] |
| **COMSIZE** | 0.006* | 0.007* |
| | [0.078] | [0.081] |
| **Constant** | −0.093*** | −0.095*** |
| | [0.000] | [0.000] |
| **Firm FE/Time FE** | Yes/Yes | Yes/Yes |
| **No. of obs.** | 5,124 | 5,124 |
| **Adjusted $R^2$** | 0.204 | 0.221 |

The results indicate a significant positive relationship between T&D expenditures and corporate investment. In Model (1), the coefficient for T&D is 0.052, while in Model (2), it is 0.057, both highly significant at the 1% level. This suggests that a 1% increase in T&D expenditures is associated with

a 0.052% to 0.057% increase in corporate investment among Pakistani firms, controlling for other variables. These findings are consistent with the existing literature, which emphasizes the importance of human capital investments in enhancing firm performance and competitiveness. For instance, Becker (2009) and Huselid (1995) demonstrate that firms investing in employee development tend to achieve higher productivity and financial performance, which in turn fosters greater investment capacity.

Model (2) of Table 3 particularly highlights the interaction between T&D, corporate investment (INVEST), and market competition (as gauged by SHHI). The positive and significant interaction term (0.031) suggests that the beneficial effects of T&D on investment are amplified in more competitive markets. This aligns with the theoretical perspectives presented by Porter (1985) and Lepak and Snell (1999), who argue that in highly competitive environments, firms are more likely to invest in human capital to maintain a competitive edge. Our findings are further supported by past studies, which shows that investments in diverse human resources can enhance innovation and firm performance, particularly in challenging market conditions.

Interestingly, the coefficient for SHHI alone is not significant, indicating that market competition does not directly influence business investment in the absence of T&D. This result suggests that the direct effect of competition on investment may be contingent on other factors, such as the firm's human capital strategy. The literature provides mixed evidence on the direct effects of competition on investment, with some studies, like Aghion et al. (2005), suggesting that the relationship is non-linear and dependent on sector-specific dynamics or the level of uncertainty.

Regarding the control variables, the coefficient for Return on Assets (ROA) is positive and significant at the 1% level in both models, indicating that more profitable firms are likely to invest more. This is consistent with the pecking order theory, which posits that firms prefer to use internally generated funds for investment, as suggested by Myers and Majluf (1984). On the other hand, Revenue Growth (RGR) did not show a statistically significant impact on investment, which could imply that immediate financial indicators or cash flow are more influential in driving investment decisions, rather than revenue growth alone (Chen et al., 2020b).

The positive and significant coefficient for Administrative Expenses (ADMINEX) indicates that higher administrative expenses are associated with higher levels of investment. This could reflect the role of administrative capacity in supporting investment activities, as noted by Barney (1991). Conversely, the negative coefficient for Leverage (LEVERG) supports the trade-off theory of capital structure, suggesting that higher debt levels can constrain a firm's ability to invest, due to increased financial risk and borrowing costs (Modigliani and Miller, 1958).

Borrowing Capability (BCAP) also shows a negative coefficient, implying that firms with a higher proportion of fixed assets may have reduced borrowing capacity, possibly because lenders perceive these firms as higher risk. This is consistent with economic theory, which suggests that heavy reliance on fixed assets can limit financial flexibility.

The positive coefficient for Tobin's Q (TOBQ) indicates that firms are more inclined to invest when their market valuation exceeds the cost of replacing their assets, aligning with the Q-theory of investment (Tobin, 1969). Similarly, the positive coefficient for Operating Cash Flow (OCFLOW)

supports the pecking order theory, as firms with strong internal cash flow are better positioned to fund investments without resorting to external finance (Myers and Majluf, 1984).

Finally, the positive coefficients for Company Size (COMSIZE) and Short-term Solvency (STSOL) suggest that larger firms and those with greater liquidity are more likely to invest. Larger firms benefit from economies of scale and better access to capital markets, which reduces the cost and risk associated with investment (Rajan and Zingales, 1995). The positive impact of liquidity on investment is well-documented in the literature, as it provides firms with the flexibility to seize investment opportunities without the constraints of external financing (Opler et al., 1999).

Overall, these findings provide robust evidence that T&D significantly enhances corporate investment in Pakistani firms, with the effect being more pronounced in competitive markets.
The results align with established economic theories and contribute to a deeper understanding of how competition and human capital investments interact to influence corporate investment decisions.

# 5 Conclusion

In conclusion, our study provides significant insights into the complex dynamics between Training and Development (T&D) expenditures, market competition, and corporate investment in Pakistani firms. Through rigorous panel regression analysis, we have demonstrated that T&D plays a crucial role in driving corporate investment, particularly in competitive markets. Our findings suggest that firms investing in T&D are better positioned to enhance their investment activities, and this positive relationship is amplified in more competitive environments. This underscores the importance of human capital investment as a strategic tool for firms operating under competitive pressures.

Furthermore, our research identifies several other critical factors that influence corporate investment in Pakistani enterprises, including operating cash flow, leverage, return on assets, and Tobin's Q. These variables, alongside T&D expenditures, form a comprehensive framework for understanding investment decisions. The inclusion of firm and time fixed effects in our methodology strengthens the robustness of our results, ensuring that unobserved heterogeneity and temporal fluctuations are appropriately accounted for. Our findings offer valuable implications for policymakers, corporate executives, and investors who seek to navigate the intricate landscape of corporate investment in Pakistan.

## 5.1 Practical Significance

The practical significance of this study lies in its implications for both corporate strategy and policy formulation. For corporate leaders, the positive impact of T&D on investment highlights the necessity of prioritizing human capital development as a means to foster growth and maintain competitive advantage. Firms that actively invest in their workforce are more likely to realize higher returns on their investments, particularly in dynamic and competitive markets. For policymakers, the study suggests that encouraging T&D initiatives through supportive policies and incentives could stimulate corporate investment and, by extension, economic growth. Recognizing the moderating role of market competition on T&D's effectiveness can help in designing targeted policies that consider the competitive environment in which firms operate.

## 5.2 Limitations

Despite the valuable contributions of this study, there are certain limitations that should be acknowledged. First, the analysis is based on data from Pakistani firms, which may limit the generalizability of the findings to other contexts or regions with different economic structures or

levels of market competition. Second, the study focuses on T&D as a key determinant of corporate investment, but other forms of intangible assets, such as research and development (R&D), were not included in the primary analysis. This could provide a more comprehensive understanding of how various forms of intellectual capital contribute to investment decisions. Finally, while the panel data approach helps control for unobserved heterogeneity, it does not fully account for all possible endogeneity issues, such as reverse causality or omitted variable bias.

### 5.3 Future Directions

Future research could build on this study by exploring the impact of other forms of intangible assets, such as R&D, on corporate investment decisions. Additionally, expanding the analysis to include firms from other developing economies would help determine whether the findings from Pakistan are applicable in broader contexts. Another potential avenue for future research is to examine the role of external economic shocks, such as global financial crises or pandemics, in shaping the relationship between T&D, market competition, and corporate investment. Finally, employing advanced econometric techniques, such as instrumental variable approaches or structural equation modeling, could further address potential endogeneity concerns and provide deeper insights into the causal mechanisms at play.

## References

Abdoh, H. and Maghyereh, A. (2020). Product market competition, oil uncertainty and corporate investment. *International Journal of Managerial Finance*, 16(5):645–671.

Aghion, P., Bloom, N., Blundell, R., Griffith, R., and Howitt, P. (2005). Competition and innovation: An inverted-u relationship. *The Quarterly Journal of Economics*, 120(2):701– 728.

Aytun, C., Erdogan, S., Pata, U. K., and Cengiz, O. (2024). Associating environmental quality, human capital, financial development and technological innovation in 19 middle-income countries: A disaggregated ecological footprint approach. *Technology in Society*, 76:102445.

Baker, S. R., Bloom, N., and Davis, S. J. (2016). Measuring economic policy uncertainty. *The Quarterly Journal of Economics*, 131(4):1593–1636.

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1):99–120.

Becker, G. S. (2009). *Human capital: A theoretical and empirical analysis, with special reference to education*. University of Chicago press.

Bloom, N., Bond, S., and Van Reenen, J. (2007). Uncertainty and investment dynamics. *The Review of Economic Studies*, 74(2):391–415.

Caballero, R. J. and Pindyck, R. S. (1996). Uncertainty, investment, and industry evolution. *International Economic Review*, pages 641–662.

Campbell, J. A. (2002). Real options analysis of the timing of is investment decisions. *Information & Management*, 39(5):337–344.

Chen, T., Park, H., and Rajwani, T. (2024). Diverse human resource slack and firm innovation: Evidence from politically connected firms. *International Business Review*, 33(2):102244.

Chen, X., Le, C. H. A., Shan, Y., and Taylor, S. (2020a). Australian policy uncertainty and corporate investment. *Pacific-Basin Finance Journal*, 61:101341.

Chen, X., Li, Y., Xiao, J., and Wen, F. (2020b). Oil shocks, competition, and corporate investment: evidence from china. *Energy Economics*, 89:104819.

Choudhary, M. A., Pasha, F., and Waheed, M. (2020). Measuring economic policy uncertainty in pakistan.

Dechow, P. M., Kothari, S. P., and Watts, R. L. (1998). The relation between earnings and cash flows. *Journal of Accounting and Economics*, 25(2):133–168.

Dixit, A. K. and Pindyck, R. S. (1994). *Investment under uncertainty*. Princeton University Press.

Fedyk, A. and Hodson, J. (2023). Trading on talent: Human capital and firm performance. *Review of Finance*, 27(5):1659–1698.

Fr´esard, L. and Valta, P. (2012). Competitive pressure and corporate policies. *SSRN Working Paper*.

Ghosal, V. and Loungani, P. (2000). The differential impact of uncertainty on investment in small and large businesses. *Review of Economics and Statistics*, 82(2):338–343.

Grenadier, S. R. (2002). Option exercise games: An application to the equilibrium investment strategies of firms. *The Review of Financial Studies*, 15(3):691–721.

Gulen, H. and Ion, M. (2016). Policy uncertainty and corporate investment. *The Review of Financial Studies*, 29(3):523–564.

Gupta, K. and Krishnamurti, C. (2018). Do macroeconomic conditions and oil prices influence corporate risk-taking? *Journal of Corporate Finance*, 53:65–86.

Hartman, R. (1972). The effects of price and cost uncertainty on investment. *Journal of economic theory*, 5(2):258–266.

Hausman, J. A. (1978). Specification tests in econometrics. *Econometrica: Journal of the Econometric Society*, pages 1251–1271.

Huselid, M. A. (1995). The impact of human resource management practices on turnover, productivity, and corporate financial performance. *Academy of Management Journal*, 38(3):635–672.

Jian, J. and Zhao, S. (2012). Product competitive market and investment efficiency. *Technology for Education and Learning*, pages 13–18.

Jiang, F., Cai, W., Wang, X., and Zhu, B. (2018). Multiple large shareholders and corporate investment: Evidence from china. *Journal of Corporate Finance*, 50:66–83.

Jiang, F., Kim, K. A., Nofsinger, J. R., and Zhu, B. (2015). Product market competition and corporate investment: Evidence from china. *Journal of Corporate Finance*, 35:196–210.

Jing, Z., Lu, S., Zhao, Y., and Zhou, J. (2023). Economic policy uncertainty, corporate investment decisions and stock price crash risk: Evidence from china. *Accounting & Finance*, 63:1477–1502.

Khan, M. A., Qin, X., Jebran, K., and Ullah, I. (2020). Uncertainty and r&d investment: Does product market competition matter? *Research in International Business and Finance*, 52:101167.

Lambrecht, B. and Perraudin, W. (2003). Real options and preemption under incomplete information. *Journal of Economic Dynamics and Control*, 27(4):619–643.

Lepak, D. P. and Snell, S. A. (1999). The human resource architecture: Toward a theory of human capital allocation and development. *Academy of Management Review*, 24(1):31–48.

Meng, X., Guo, H., and Li, J. (2023). Economic policy uncertainty and corporate investment: evidence from china. *Economic Change and Restructuring*, 56(6):4491–4529.

Modigliani, F. and Miller, M. H. (1958). The cost of capital, corporation finance and the theory of investment. *The American Economic Review*, 48(3):261–297.

Myers, S. C. and Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*, 13(2):187–221.

Olalere, O. E. and Mukuddem-Petersen, J. (2023). Product market competition, corporate investment, and firm value: Scrutinizing the role of economic policy uncertainty. *Economies*, 11(6):167.

Opler, T., Pinkowitz, L., Stulz, R., and Williamson, R. (1999). The determinants and implications of corporate cash holdings. *Journal of Financial Economics*, 52(1):3–46.

Pindyck, R. S. (1986). Irreversible investment, capacity choice, and the value of the firm.

Porter, M. E. (1985). Creating and sustaining superior performance. *Competitive Advantage*, 167:167–206.

Rajan, R. G. and Zingales, L. (1995). What do we know about capital structure? some evidence from international data. *The Journal of Finance*, 50(5):1421–1460.

Shaw, J. D. (2021). The resource-based view and its use in strategic human resource management research: The elegant and inglorious. *Journal of Management*, 47(7):1787–1795.

Tobin, J. (1969). A general equilibrium approach to monetary theory. *Journal of Money, Credit and Banking*, 1(1):15–29.

Tong, T. W. and Li, Y. (2011). Real options and investment mode: Evidence from corporate venture capital and acquisition. *Organization Science*, 22(3):659–674.

Vithana, K., Jayasekera, R., Choudhry, T., and Baruch, Y. (2023). Human capital resource as cost or investment: A market-based analysis. *The International Journal of Human Resource Management*, 34(6):1213–1245.

Vives, X. (2008). Innovation and competitive pressure. *The Journal of Industrial Economics*, 56(3):419–469.

Wright, P. M., McMahan, G. C., and McWilliams, A. (1994). Human resources and sustained competitive advantage: a resource-based perspective. *International Journal of Human Resource Management*, 5(2):301–326.