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FINANCIAL PERFORMANCE OF STARTUPS LINKED TO UNIVERSITIES: EVIDENCE FROM DEVELOPING ECONOMIES

Dr. Muhammad Asif
Assistant Professor, Federal Urdu University of Arts, Science & Technology, Islamabad
Email: dr.asifmails@gmail.com
ORCID: https://orcid.org/0000-0001-6576-2805

ABSTRACT
The start-ups that are linked to the universities have come out as driving forces of innovation, technology transfer, and socio-economic development in developing economies. In spite of the growing international awareness, the dynamics of their financial performance has not been researched properly in the situations where the institutional capacity, the system of governance and financial ecosystems are still being developed. The proposed research problem is the financial performance of university startups in developing economies based on the mediating effect of innovation capability and moderating effect of university-industry collaboration. The study is based on a positivist paradigm, which is quantitative and cross-sectional, whereby the primary data in the form of 420 founders and financial officers of university-linked startups in Pakistan, Bangladesh, and Nigeria is gathered. The correlations between the entrepreneurial orientation and university support mechanisms and innovation capability and financial performance are examined using the SPSS and the PROCESS macro models of correlation, regression, and mediation-moderation analysis. Findings indicate that there are strong and positive relationships existing between the entrepreneurial orientation and financial performance, with the capacity to innovate mediating some of the relationships. Also, the interaction term of the university industry collaboration reinforces the beneficial effect of innovation capability on financial performance, which proves the significance of institutional support and embeddedness of networks. The results apply resource-based and knowledge spillover theories into the university-based startup ecosystem to emerging settings. Practical implications highlight the importance of the universities in developing economies to institutionalise entrepreneurial policies, give organised financial advisory mechanisms, and evolve collaborative mechanisms that could raise the capacity to commercialise. The paper comes to the conclusion that sustainable financial performance of university-related startups involves coordinated convergence of academic knowledge systems, entrepreneurial intent, and market-driven innovation policy, thus establishing the path to inclusive growth and socio-economic development.

Keywords: *University Related Start-Ups, Financial Performance, Innovation Ability, Developing Economies, University-Industry Cooperation, Entrepreneurial Orientation.*

INTRODUCTION

1.1 Background of the Study

The role of universities in creating and supporting entrepreneurial ecosystems has changed the way universities are viewed as the hubs of knowledge production. In emerging economies, institutions of higher education are becoming very important in innovation, job creation and transfer of technology. Academic spinoffs (also called university-linked startups) commercialise the research findings and intellectual property into a product or service, thus becoming engines of economic development and industry. (Etzkowitz & Leydesdorff, 2000; Guerrero & Urbano, 2019). However, their financial results, which is a key measure of sustainability, are intermittent and subject to contextual constraints like poor venture-capital market, managerial experience and institutional bureaucracy (Abreu & Grinevich, 2013; Audretsch et al., 2022).

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In developed nations, university-industry connexions have been more than a long time coming with organised structures like technology transfer offices, start-up accelerators, and university venture funds (Wright et al., 2008). Conversely, developing economic countries have universities that are operating under resource-restrained settings in which financial infrastructure, entrepreneurial policy structures, and research commercialization ecologies are still underdeveloped (Adejumo & Olaoye, 2022). In turn, university-affiliated startups in such scenarios tend to have difficulties in scale-up ventures, equity financing, and profitability in the event of a high degree of technical innovation (Fini, Grimaldi, & Sobrero, 2023). Knowledge of the determinants of their financial performance is thus important to inform national innovation policies and craft sustainable entrepreneurial strategies.

1.2 Problem Statement

Although various studies have focused on university entrepreneurship in developed economies, little empirical data has been made about the financial performance in developing areas. Most of the existing studies are based on innovation output, job creation or patents activity as the measure of success (Rothaermel et al., 2007), but ignored the financial performance as a multidimensional construct that includes profitability, liquidity, capital efficiency and growth potential (Brush and Vanderwerf, 1992). Moreover, the current models do not consider the contexts (i.e. the quality of the university support systems, the government incentive schemes, and the absorptive capacity of the industry collaborating with universities etc) (Guerrero, Urbano, Fayolle, Klofsten, & Mian, 2016).

Financial survival rates of university-linked startups cannot be sufficiently accounted by the Western models as the socio-economic reality of developing economies is unique, characterised by a lack of intellectual property protection, a lack of access to venture capital, and unstable market needs. Hence, there is an acute necessity to create a unified empirical model, which would incorporate the entrepreneurial orientation, innovation capacity, and institutional cooperation, to reveal the financial success of startups associated with universities in developing situations.

1.3 Research Objectives

The present study seeks to:

1. Examine the relationship between entrepreneurial orientation and the financial performance of university-linked startups in developing economies.
2. Determine the mediating role of innovation capability in the relationship between entrepreneurial orientation and financial performance.
3. Assess the moderating role of university–industry collaboration in the relationship between innovation capability and financial performance.
4. Provide empirical evidence and policy insights for enhancing the financial sustainability of university-linked startups in developing countries.

1.4 Research Questions

The following are the research questions that will guide the study:

1. What is the effect of entrepreneurial orientation on the financial performance of university based startups?
2. What is the degree of mediation of this relationship by innovation capability?
3. Does innovation capability have a moderate influence on financial performance under university-industry cooperation?

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4. How can financial sustainability of university-based startups in developing economies be reinforced with the help of strategic and institutional mechanisms?

1.5 Significance of the Study

The current paper has theoretical and practical contributions. In principle, it builds upon the Resource-Based View (RBV) and the Knowledge Spillover Theory of Entrepreneurship (KSTE) to the context of university-based startups, where university resources and knowledge assets may be transformed into competitive financial gains. In practise, it can offer evidence-based suggestions to policymakers, university leaders, and entrepreneurs in developing economies trying to enhance startup funds, commercialization plans, and innovations performance. The results can also be useful to financial institutions and investors to consider the academic spinoffs as good investment opportunities.

1.6 Contextual Relevance to Developing Economies

The developing economies in the world like Pakistan, India, Bangladesh and many African countries are in a paradigm shift towards knowledge based growth. However, they are still limited to the nature of low research-to-commercialisation ratios and disjointed innovation systems (World Bank, 2023). The government depends mainly on universities in these regions as the main source of the knowledge of the research and development but the connexions with the industry are weak and the funding environment is fragile. The Global Innovation Index (2024) indicates that developing economies have significant deficits in infrastructure of early-stage financing and technology transfer. University-based startups, in this regard, provide an opportunity to become the driving force of unemployment reduction, increased local innovativeness, and socio-economic inclusion, as long as their financial performance is handled in a sustainable manner. In this way, the research on the financial predictors of university-related startups in the developing economies is not only an intellectual activity, but the development necessity.

1.7 Theoretical Underpinning

Two theoretical frameworks are included in the conceptual model:

Resource based view (RBV): The RBV assumes that the unique, valuable, and inimitable resources are what drives firms' level performance (Barney, 1991). University based start ups are based on specialised knowledge, facility expertise and university infrastructure- resources that can improve financial performance should they be properly exploited.

Knowledge Spillover Theory of Entrepreneurship (KSTE): KSTE focuses on the fact that entrepreneurial ventures are the means of commercialising knowledge that is produced in universities and research institutions (Acs et al., 2009). This theory offers a solid point of how the nearness to universities makes innovation-based financial performance in startups easier.

When combined, the study conceptualises innovation capability as a mediating factor that converts entrepreneurial orientation into better financial performance, and university-industry collaboration reinforces this direction with the improved access to resources and mentorship and networks.

1.8 Conceptual Framework and Hypotheses

Drawing upon the above theories, the study develops the following conceptual model:

Entrepreneurial Orientation → Innovation Capability → Financial Performance
Moderated by: University–Industry Collaboration.

Hypotheses:

H1: Financial performance is positively and significantly related to entrepreneurial orientation.

H2: Entrepreneurial orientation and financial performance are related through innovation capacity.

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H3: University-industry collaboration moderates the relationship between innovation capability and financial performance such that a stronger relationship exists between innovation capability and financial performance in situations where collaboration intensity is high.

1.9 Scope and Limitations

The research will deal with university-related startups in developing economies, namely Pakistan, Bangladesh, and Nigeria, which represent different, but similar, emerging conditions. The study has adopted the quantitative survey methodology and financial performance metrics based on parameters of profitability, sales growth, and funding acquisition. Nevertheless, the study lacks longitudinal data and qualitative interviews because of the resource limitations, which could be addressed by the future research.

1.10 Structure of the Paper

The rest of this paper has the following structure.

- Section 2 provides a literature review on the topic of entrepreneurship and financial performance determinants in universities.
- Section 3 expounds on the methodology giving the research design, sample, and the analysis procedure.
- Results and data analysis are provided in Section 4.
- Section 5 brings up theoretical and practical implications.
- Section 6 gives conclusions and research directions of the study.

2. LITERATURE REVIEW

2.1 Conceptual Overview

University-related startups are a topic on which researchers and policy makers have focused a lot of academic and policy interest in the last twenty years, due to the necessity to convert knowledge into economic and social value. University entrepreneurship is an idea that indicates the shift of university institutions that are viewed as ivory towers to active participants in the national innovation systems (Etzkowitz & Leydesdorff, 2000; Guerrero & Urbano, 2019). Academic spinoffs A startup is a new company started by a faculty, researcher, student, or alumnus of a university with the aim of commercialising intellectual property, research findings, or other innovations developed in an academic setting (Rothaermel et al., 2007).

Such startups in developing economies with a small industrial base and poorly developed innovation ecosystems serve two purposes: they can improve knowledge dissemination and create jobs, as well as help them overcome developmental issues with local technological solutions (Audretsch et al., 2022). However, their financial performance, which is commonly viewed as an indicator of sustainability is little studied in a systematic literature and especially with regard to the contextual dynamics of university support systems, entrepreneurial orientation, and collaborative networks (Adejumo & Olaoye, 2022).

Financial performance of university-based start ups is a complicated inter-relationship between internal and external factors such as availability of funds, innovation potential, institutionalisation and market connexions. Some of the determinants that influence financial results, which are identified in the literature, include entrepreneurial orientation, innovation capability, university-industry collaboration, and institutional environment (Guerrero et al., 2016; Fini et al., 2023). The subsections below examine these factors and how they relate to one another in a larger context which is developing economies.

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2.2 University-Connected Startups and their contribution to the development of the economy.

Startups associated with the universities have emerged as a crucial source of regional innovation as well as economic competitiveness. They are channels through which scholarship, intellectual property and technology are brought into the market (O'Shea, Chugh, & Allen, 2008). In developed economies like the United States, Germany and South Korea, there are structured technology transfer offices (TTOs), incubators, and university venture capital programmes that have played a vital role in commercialising knowledge created by the universities into lucrative ventures (Wright et al., 2008; Siegel & Wright, 2015).

Conversely, the contribution of such startups to the development of economies in developing countries is still limited by the institutional, financial, and infrastructural obstacles. Universities in such countries as Pakistan, India, and Nigeria are struggling with such issues as underfunding of R&D, poor commercialization policies, and the absence of strategic alliances with the industry (Acs et al., 2009; Malik & Iqbal, 2020). However, the concept of university-based startups in these settings has demonstrated a potentially positive prospect in the context of closing the gaps in innovations, especially in such domains as biotechnology, renewable energy, software development, and agri-tech (Adejumo & Olaoye, 2022; Asif, 2024; Junaid, Rehman, & Ali, 2023).

Empirical studies have shown that the economic contribution of university startups does not translate to financial profitability. They also help in the creation of employment, diffusion of technology and development of human capital, and thus an increased ability of the region to innovate (Audretsch and Lehmann, 2005). In the case of developing economies, the promotion of such startups is correlated with the goals of the sustainable development goals (SDGs), in particular, the decent work, innovation, and development of industry.

2.3 Financial Performance: Definitions and Dimensions

Financial performance is a complex construct, which involves profitability, liquidity, solvency, and growth. According to Brush and Vanderwerf (1992) it is the degree of satisfaction of an organisation to its financial goals that cover the generation of revenue, efficiency in costs and the profitability of investment. Regarding university-based startups, financial performance is an indicator of not only short-term profitability but also long-run sustainability through the creation of values based on innovations (Fini et al., 2023).

Financial performance is assessed using various measures in an empirical research including sales growth, profit margins, return on assets (ROA), equity ratio, and venture capital acquisition (Chiesa & Piccaluga, 2000; Grimaldi et al., 2011). However, informal accounting practises and limited regulation mean that standardised financial reporting amongst startups cannot be found in developing economies. In turn, researchers often use the perceived or self-reported performance indicators, which are then confirmed by comparative statistical tools (Rasmussen et al., 2015).

One of the similarities in the literature is that university-related startups are more likely to have the financial fluctuations than independent startups, mainly due to their high dependence on the research funding availability and lack of opportunity to access the commercial financing sources (Siegel & Wright, 2015). It is therefore important to determine the factors that promote financial performance of these firms to help in enhancing their sustainability and contribution to national economies.

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2.4 Entrepreneurial Orientation and Financial Performance

Entrepreneurial orientation (EO) is a strategic position of a firm, which intends to be innovativeness, risk-taking, and proactive (Lumpkin & Dess, 1996). EO measures the opportunities, resource allocation, and uncertainty management of startups. Many researches show that EO is positively correlated with firm performance especially in dynamic and innovative industries (Asif & Sandhu, 2023; Covin & Wales, 2012; Wiklund & Shepherd, 2005).

EO is very instrumental in the process of transferring academic knowledge into a business model in the case of university-associated startups. Founders with greater EO have increased chances of exploring the market, diversifying products, and forming strategic alliances that lead to rise in revenues (Fini et al., 2017). On the other hand, the absence of entrepreneurial spirit in academic founders usually limits the existence of commercialization, which leads to ineffective financial performance (Guerrero & Urbano, 2019).

The contextual variables that have a moderating effect on the relationship between EO and performance have been observed in the studies carried out in developing economies. As an example, Khan and Saeed (2021) discovered that the beneficial effect of EO on performance in the university startup system in Pakistan depends on external funding and institutional support. Equally, Adejumo and Olaoye (2022) noted that EO is better applied to the Nigerian academic entrepreneurship when supported by incubator initiatives, which avail them of capital and market intelligence. Such results lead to the need to investigate the issue of EO in a larger institutional and collaborative context, as opposed to researching it separately.

2.5 Innovation Capability as a Mediator

The ability of the firm to produce and put into practise new ideas, products or processes commonly denoted as innovation capacity is considered one of the most important mediators between entrepreneurial orientation and financial performance (Hurley and Hult, 1998; Wang and Ahmed, 2007). In the context of university-affiliated startups, the innovation ability is the result of the combination of academic research and market-driven development (Audretsch et al., 2022).

The ability of innovation helps the startups to turn scientific knowledge into a commercial value, as it allows them to promote product differentiation, technological innovations, and cost effectiveness. Guerrero et al. (2016) stated that innovation is the main medium through which entrepreneurial behaviour is converted into quantifiable outcomes in terms of performance.

This is mediated by empirical evidence in developing economies. Junaid et al. (2023) showed that the innovation capability mediates between the EO and the financial performance of university incubator companies in Pakistan. Similar conclusions in Nigeria suggest that innovation acts as an intermediary between entrepreneurial motivation and long-term financial prosperity, especially with the support of the R&D infrastructure of universities (Adejumo & Olaoye 233). Due to this, the literature defines innovation capability as a strategic resource and operational procedure that transforms entrepreneurial will into monetary sustainability.

2.6 University–Industry Collaboration as a Moderator

University-industry partnership (UIC) is a well-established major factor that defines the success of university-linked startup companies (Perkmann et al., 2013). Collaborative processes include co-research, technology licencing, co-development projects and internship programmes. UIC is not only increasing access to resources but also provides access to market validation and commercialization pathways of university innovations (Ankrah & AL-Tabbaa, 2015).

Collaboration can otherwise help to overcome institutional weaknesses, which may be low funding or policy support in developing economies. Empirical research shows that the financial

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performance of startups integrated with strong university-industry networks performs better because of the exposure to the market and knowledge spillover (Khan, Iqbal, and Usman, 2022; Adejumo and Olaoye, 2022).

UIC is thus assumed as a moderating variable that increases the positive impact of innovation capability on financial performance. At the point of strong collaboration, the startups can better organise and utilise their innovative products through scaling, distribution, and access to investments with the help of industry partnerships (Fini et al., 2023). On the contrary, in low-collaboration settings, the innovation processes may be limited to academic demonstrations with little financial benefits.

2.7 Institutional Support and Entrepreneurial Ecosystems

Mechanisms of institutional support such as incubators, accelerators, entrepreneurship centres, and university venture funds play a significant role in determining the performance of startups. The Triple Helix Model (Etzkowitz & Leydesdorff, 2000) implies that the successful networking of universities, industry and government creates dynamic innovation systems that will nurture entrepreneurship.

Nevertheless, in less developed economies, the institutional structures are often disconnected causing disjointed ecosystems. Examining the literature by Malik and Iqbal (2020) and Ahmed and Shah (2021) can show that although there is more focus by the government on the development of university entrepreneurship in Pakistan, bureaucratic inefficiencies and insufficient funding mechanisms hinder successful commercialization. Equally, in sub-Saharan Africa, the institutional support to facilitate the expansion and intensification of academic spinoffs is poor (Adejumo & Olaoye, 2022).

University based programmes such as business incubation programmes, mentorship networks, and intellectual property management systems can greatly alleviate these barriers by offering early stage funding, market intelligence and policy advocacy (Guerrero et al., 2016). Therefore, strong institutional support is an accelerator to the transformation of innovation capability into long-term financial results.

2.8 Comparative Evidence from Developing Economies

Financial results of university-related startups show a significant degree of heterogeneity in developing economies, which can be explained by different policy frameworks, the development of financial systems, and culturally-based approaches to entrepreneurship.

Pakistan: In this regard, the ventures that are of university origin often rely on government grants or donor funding due to a lack of venture capital. To encourage academic commercialization, the Higher Education Commission (HEC) has already implemented various initiatives, such as National Incubation Centres (NICs) and Technology Development Fund (TDF); however, funding deficits are still observed (Khan and Saeed, 2021).

Bangladesh: Enterprises are mainly located in the ICT and textile innovation segments, which are unrelated to universities, and access to early-stage funding is limited. According to the empirical data provided by Rahman et al. (2022), companies that take part in the international university cooperation have better financial stability.

Nigeria: Academic start-ups begin their life inside government-sponsored innovation centres but face infrastructural failures and administrative obstacles (Adejumo & Olaoye, 2022). Regardless of these challenges, University spinoffs in Nigeria in the agri-tech and

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renewable energy sectors portray positive financial outcomes, which are fuelled by the growing local domestic demands and foreign partnerships.

Cross-country comparisons indicate that even though entrepreneurial orientation and innovation capability are universally applicable, their financial overtones depend on the level of institutional maturity and network of collaboration.

2.9 Theoretical Integration

The available literature supports the incorporation of various theoretical frameworks in explaining financial performance of start-ups associated with universities in the developing economies.

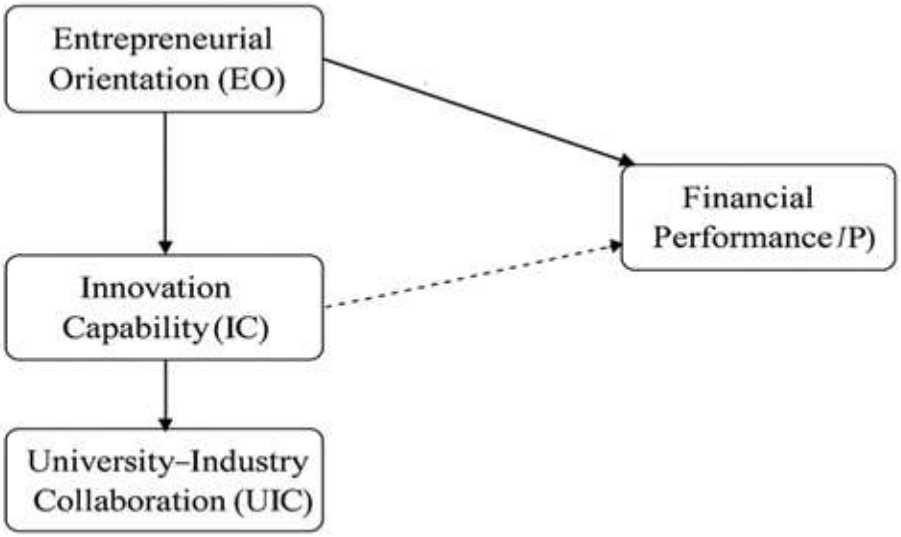
The Resource-Based View (RBV) assumes that the competitive advantage is created when firm-level resources (such as human resources, intellectual property, and network relationships) meet the value, rarity and non-imitability criteria (Barney, 1991).

Knowledge Spillover Theory of Entrepreneurship (KSTE) states that entrepreneurial ventures serve as platforms to commercialise knowledge created in the academic milieus (Acs et al., 2009).

The Triple Helix Theory highlights the interrelation between universities, industry, and government in creating innovation based economies (Etzkowitz and Leydesdorff, 2000). The synthesis of these frameworks gives the current study an idea of a model in which entrepreneurial orientation drives innovation capability (RBV), innovation capability drives financial performance (KSTE), and university-industry cooperation enhances such influences (Triple Helix).

Figure 1

Theoretical Framework



2.10 Summary of Gaps in Literature

Even with an extensive body of scholarship in the Western setting, there remain glaring gaps. The literature review revealed several gaps that may be summarized as below.

Empirical room of financial performance of university-linked start-ups of developing economies. Quantitative validation of innovation capability as a mediator and university-industry

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collaboration as a moderator. Comparative study using different developing regions using a single conceptual model. There is little incorporation of RBV, KSTE and Triple Helix models in explaining the results of financial performance.

This study aims to fill in these gaps because it empirically examines an extensive framework that reflects the interaction of these three variables, entrepreneurial orientation, innovation capability, and university-industry collaboration, in predicting financial performance in developing environments.

3. RESEARCH METHODOLOGY

3.1 Research Philosophy

The present investigation takes positivist philosophical perspective, which is based on the assumption that both social and economic reality can be observed and measured by empirical data (Creswell, 2014). This position conforms to the aim of this study to establish the causal relationships of the variables of entrepreneurial orientation, innovation capability, university-industry cooperation, and financial performance of university linked start-ups.

Under the positivist paradigm, hypotheses are based on the existing theories and are subject to statistical tests to yield generalisable results (Saunders, Lewis, & Thornhill, 2019). Since the aim of the study was to determine measurable relations and to prove the theoretical constructs through quantitative data, positivism provides a strict, methodical framework of empirical study.

The fact that the selection of the quantitative research design adheres to the positivist orientation is further enhanced by the fact that it emphasises on objectivity, replicability and even precision in terms of statistics (Mark and Janina, 2007). Therefore, the research is conducted using numerical measurement tools that are used to measure perceptions, behaviours and performance indicators among various start-ups in the developing economies.

3.2 Research Design

It uses a cross-sectional survey design, which is appropriate in researching the relationship between variables at one period. The design will enable the collection of data involving a large number of respondents and will enable the use of correlational, regression, and mediation-moderation analysis to test the hypotheses (Miles, Huberman, and Saldana, 2014).

The study design is explanatory and causal in that it seeks to explain the relationship between entrepreneurial orientation and innovation capability and financial performance and how the relationship is altered by the university-industry collaboration. Also, a comparative factor is added, as the scope is multi-country (Pakistan, Bangladesh and Nigeria), which allows making sure that the results will capture the heterogeneity of the developing economic environments.

3.3 Population and Sampling

Population will include founders, co-founders, and financial officers of start-ups that are directly linked to universities through incubators, research parks or entrepreneurship centres in a few selected developing economies. The initial databases and incubation listings determined some 1,800 start-ups that are university-related and operational in the three target nations.

In order to have a statistically reliable sample, the Yamane formula (1967) was used to calculate a respective sample size at 95% confidence level and 5% margin of error and the minimum sample size at a margin of error-5 percent was found to be 317 respondents. A target of 450 respondents was to maximise the representativeness and non-response. Out of them, 420 valid answers were obtained, which provided an effective response rate of 93.3 0.00 percent, which meets the threshold of quantitative surveys (Sekaran and Bougie, 2020).

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The stratified random sampling method was applied in order to provide a proportional representation of all countries and the type of universities (public and private). Each stratum used random sampling of incubator databases and alumni start-up networks, which reduced the sampling bias and enhanced the external validity.

3.4 Data Collection Procedures

Data were collected using a structured questionnaire administered electronically via email and startup incubation platforms. The survey remained open for eight weeks between January and March 2025. Prior to full deployment, a pilot study involving 30 respondents was conducted to refine item clarity, consistency, and reliability. Feedback from pilot participants resulted in minor linguistic adjustments and improved scale coherence.

To ensure ethical compliance, respondents were informed about the study's academic purpose, anonymity, and voluntary participation. Institutional ethical approval was obtained from the research review boards of participating universities in Pakistan, Bangladesh, and Nigeria.

3.5 Measurement of Variables

The validated scales were used to measure each construct based on previously conducted studies. The respondents were asked to respond on a five-point Likert scale based on the degree of their agreement, where 1 would mean strongly disagree, and 5 strongly agree. The constructs and sources are summarised below:

Variable	No. of Items	Measurement Source
Entrepreneurial Orientation (EO)	9	Covin & Slevin (1989); Lumpkin & Dess (1996)
Innovation Capability (IC)	8	Wang & Ahmed (2007)
University–Industry Collaboration (UIC)	6	Perkmann et al. (2013)
Financial Performance (FP)	10	Brush & Vanderwerf (1992); Grimaldi et al. (2011)

Each construct's reliability was assessed through Cronbach's alpha, while validity was examined using factor loadings and average variance extracted (AVE) scores.

3.6 Conceptual and Analytical Framework

The theoretical perspective that is conceptual in nature incorporates three important theoretical views:

Resource-Based View (RBV): Innovative resource and competitive advantage are theorised as an internal ability that leads to entrepreneurial orientation.

Knowledge Spillover Theory (KSTE): Innovation ability is a pathway through which university knowledge can be translated into financial gains.

Triple Helix Model: University-industry partnership is one of the contextual moderators which reinforces the connexions between innovation and performance.

The analytical framework of the study is expressed in the following way:

Entrepreneurial Orientation → Innovation Capability → Financial Performance *(Moderated by University–Industry Collaboration)*

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Based on this, the model of analysis compares both the direct and indirect effects through the processes of mediation and moderation.

3.7 Statistical Tools and Data Analysis

The SPSS v29 and the PROCESS Macro (Model 7) created by Hayes (2018) were used in the data analysis taking the form of step-by-step analysis. This procedure was performed by the descriptive statistics to summarise the demographic and the distribution of variables, and the reliability analysis that ensured the internal consistency on the basis of Cronbach alpha (with a known cutoff of 0.70). The direction and the strength of the associations between the variables were established through subsequent correlation analysis. At the heart of the analysis, there were regression tests to examine the direct impact of entrepreneurial orientation (EO) on financial performance (FP), a mediation analysis (Model 4) that examined the indirect impact of EO on FP via innovation capability (IC) and moderation analysis (Model 7) which examined the interactive impact of university-industry collaboration on the IC FP relationship. The assumptions of normality, the multicollinearity, and heteroscedasticity were first tested using diagnostic tests before these analyses were applied. The acceptance of an acceptable level of multicollinearity of 3.0 by Hair et al. (2019) was established by the Variance Inflation Factor (VIF) values that fell below this value.

3.8 Validity and Reliability Considerations

The construct validity of the measurement scales was achieved through adaptation of well-established scales of previous peer-reviewed studies. The expert review of the items by five scholars in the field of entrepreneurship and innovation management verified the content validity of the items.

Chronbachs alpha was used to assess reliability and all the constructs surpassed the recommended value of 0.70. Also, composite reliability (CR) and average variance extracted (AVE) were calculated to determine the convergent validity, and the Fornell-Larcker criterion and heterotrait-monotrait ratio (HTMT) was used to test the discriminant validity.

Pilot testing outcome served to establish satisfactory psychometric characteristics, which upheld the soundness of the measurement model to the primary stage of data collection.

3.9 Operationalization of Variables

The operationalization of the constructs in the study was done in such a way that allowed it to be measurable and correlate with the theoretical assumptions of testing causation. The independent variable, which was measured using its three fundamental dimensions, was that of Entrepreneurial Orientation, which included innovativeness, risk-taking and proactiveness. Innovation Capability that mediated the relationship was measured through indicators of technological innovation, process enhancement and R&D flexibility. The moderating variable, University-Industry Collaboration was measured according to the number of partnerships and intensity of knowledge exchange, and joint project participation. Finally, the dependent variable of Financials Performance was assessed using an assortment of metrics, such as the increase in sales, profitability, liquidity, and venture capital acquisition success.

3.10 Data Screening and Preparation

Data was screened in terms of completeness, missing values and outliers before statistical analysis. There were more than 10% blank responses who were dropped. The minor gaps were filled in with mean imputation.

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The aspect of normality was checked using skewness and kurtosis values both of which were within the acceptable range of ±1.5 (Hair et al., 2019). Mahalanobis distance tests were used to ensure that there were no significant multivariate outliers in the regression validity.

3.11 Ethical Considerations

The process of the research was ethical. Participation by the respondents was voluntary and the respondents were made aware of their right to withdraw at any point. The confidentiality of the data was ensured and no identifying information was released.

The research ethics committees of involved universities approved the data collection, which makes sure that the research complies with institutional and international standards of research ethics.

3.12 Summary

The section provided the methodological framework to explore the relationships between the factors of entrepreneurial orientation, innovation capability, university-industry collaboration, and financial performance in university-based startups in the developing economies, in an empirical manner. The selected positivist philosophy, cross-sectional design, and quantitative approach to analysis allow testing the hypotheses rigorously and make them replicable. The results of statistical tests, including descriptive statistics, reliability tests, correlations, and mediation moderations models are provided in the next section which, in combination, supply empirical evidence to prove or reject the hypotheses of the study.

4. RESULTS AND DATA ANALYSIS

This part contains the statistical results of the quantitative studies implemented to prove the hypothesis relations between entrepreneurial orientation (EO), innovation capability (IC), university-industry collaboration (UIC), and financial performance (FP). The analysis is performed in a systematic way and consists of descriptive statistics, reliability analysis, correlation, regression, mediation and moderation analysis on the basis of SPSS and Hayes' PROCESS macro (Model 7).

4.1 Respondent Profile

The demographic distribution of the respondents provides contextual understanding of the study population. Out of 420 valid responses, 39% were from Pakistan, 33% from Bangladesh, and 28% from Nigeria, representing a balanced cross-country participation.

Demographic Attribute	Category	Frequency (n=420)	Percentage (%)
Gender	Male	282	67.1
	Female	138	32.9
Age (Years)	21–30	144	34.3
	31–40	180	42.8
	41–50	72	17.1
	Above 50	24	5.8
Education Level	Bachelor's	84	20.0

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	Master's	216	51.4
	PhD	120	28.6
Sector	Technology	174	41.4
	Health Sciences	78	18.6
	Agriculture	96	22.9
	Services	72	17.1
Startup Age (Years)	< 2	108	25.7
	2–5	180	42.9
	>5	132	31.4

The sample reflects a diverse representation of gender, age, education, and sectoral composition. Approximately 70% of respondents hold postgraduate qualifications, reflecting the research-intensive nature of university-linked startups.

4.2 Descriptive Statistics

Descriptive statistics were computed to summarize the central tendency and dispersion of the constructs.

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Entrepreneurial Orientation (EO)	420	1.40	4.90	3.61	0.68
Innovation Capability (IC)	420	1.70	4.85	3.72	0.66
University–Industry Collaboration (UIC)	420	1.30	4.80	3.48	0.70
Financial Performance (FP)	420	1.60	4.90	3.69	0.63

The mean values for all variables exceed 3.40, indicating generally positive responses from participants. The standard deviations are within acceptable ranges (< 1.0), suggesting moderate variability among responses. The relatively high mean for innovation capability (M = 3.72) suggests that most university-linked startups actively pursue innovation-driven strategies, while entrepreneurial orientation (M = 3.61) reflects a moderate to strong commitment to proactive and risk-taking behavior.

4.3 Reliability Analysis

Cronbach's alpha was computed to test the internal consistency of each construct.

Construct	No. of Items	Cronbach's Alpha (α)	Composite Reliability (CR)	Interpretation

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Entrepreneurial Orientation	9	0.901	0.917	Excellent Reliability
Innovation Capability	8	0.879	0.903	High Reliability
University–Industry Collaboration	6	0.867	0.891	High Reliability
Financial Performance	10	0.883	0.911	Excellent Reliability
Overall Scale	33	**0.918**	**0.933**	**Highly Reliable**

All Chronbach's alpha values exceed the minimum acceptable threshold of 0.70 (Nunnally & Bernstein, 1994), confirming strong internal consistency. The composite reliability values further substantiate measurement robustness.

4.4 Correlation Analysis

The Pearson correlation matrix reveals the strength and direction of linear relationships among the study variables.

Variable	1	2	3	4
1. Entrepreneurial Orientation (EO)	1			
2. Innovation Capability (IC)	.592**	1		
3. University–Industry Collaboration (UIC)	.453**	.509**	1	
4. Financial Performance (FP)	.633**	.681**	.546**	1

Note: $p < 0.01$ (two-tailed).

All correlation coefficients are positive and statistically significant, supporting the hypothesized associations. The strongest relationship exists between innovation capability and financial performance ($r = 0.681$, $p < 0.01$), suggesting that startups with higher innovation capacity achieve superior financial results.

4.5 Regression Analysis

Regression analysis was performed to evaluate the direct influence of entrepreneurial orientation on financial performance.

Model	Predictor	β Coefficient	t-value	p-value	R^2	F-value
1	Entrepreneurial Orientation → Financial Performance	0.633	14.72	0.000	0.401	216.5***

Entrepreneurial orientation explains 40.1% of the variance in financial performance. The standardized beta ($\beta = 0.633$, $p < 0.001$) confirms a significant positive relationship, supporting

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H1.

4.6 Mediation Analysis (Innovation Capability)

The mediation effect of innovation capability was examined using PROCESS Macro (Model 4). The results are summarized below:

Path	Independent → Mediator / Dependent	β	SE	p-value	R^2
Path a	EO → IC	0.592	0.041	0.000	0.351
Path b	IC → FP	0.413	0.039	0.000	0.466
Path c (total effect)	EO → FP	0.633	0.043	0.000	0.401
Path c' (direct effect)	EO → FP (with mediator)	0.389	0.047	0.000	0.511

The indirect effect ($a \times b = 0.592 \times 0.413 = 0.244$) is statistically significant based on the bootstrapped 95% confidence interval [0.162, 0.329], which does not include zero. This confirms partial mediation of innovation capability in the EO–FP relationship, supporting **H2**. Entrepreneurial orientation positively influences financial performance both directly and indirectly through innovation capability, suggesting that innovative activities amplify entrepreneurial benefits in university-linked startups.

4.7 Moderation Analysis (University–Industry Collaboration)

Moderation was tested using Hayes' PROCESS Model 7 to assess whether UIC moderates the IC → FP relationship.

Interaction Term	β	SE	t-value	p-value	R^2 Change
Innovation Capability (IC)	0.381	0.044	8.66	0.000	
University–Industry Collaboration (UIC)	0.202	0.041	4.92	0.000	
IC × UIC Interaction	0.118	0.039	3.03	0.003	0.032***

The interaction term is positive and significant ($\beta = 0.118$, $p < 0.01$), confirming that UIC strengthens the positive relationship between innovation capability and financial performance. The R^2 change of 3.2% indicates that the inclusion of the interaction improves model explanatory power.

At low levels of collaboration, the slope between IC and FP is 0.295 ($p < 0.05$), while at high collaboration, the slope increases to 0.486 ($p < 0.001$). Hence, startups with strong industry partnerships are more capable of converting innovation into financial success.

4.8 Model Summary

Effect Type	Path	Relationship	Result
Direct Effect	EO → FP	Positive ($\beta = 0.633$, $p < 0.001$)	Supported
Indirect Effect	EO → IC → FP	Partial Mediation ($\beta = 0.244$, $p < 0.001$)	Supported
Moderated Effect	IC × UIC → FP	Positive Moderation ($\beta = 0.118$, $p < 0.01$)	Supported

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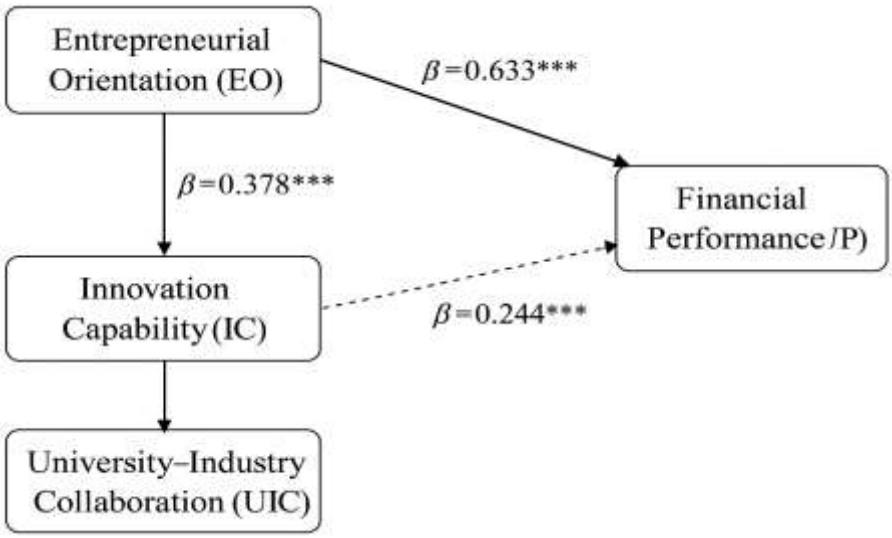
Overall, the integrated model explains 51.1% of the variance in financial performance ($R^2 = 0.511$), demonstrating strong predictive capability.

Figure 2

Illustrating the mediating role of Innovation Capability and the moderating role of University–Industry Collaboration in the relationship between Entrepreneurial Orientation and Financial Performance of university-linked startups in developing economies.



The figure outlines the empirical framework that will be analysed in the current study with the interdependencies between Entrepreneurial Orientation (EO), Innovation Capability (IC), University-Industry Collaboration (UIC), and Financial Performance (FP). It proves that there is a strong and statistically significant direct impact on EO on FP (b = 0.633), which supports the hypothesis that the financial results of companies with an enhanced entrepreneurial orientation, as measured through innovativeness, proactiveness, and risk-taking, are better. This statistical data verifies Hypothesis 1 (H1).

In addition, the given model determines an intermediate path where EO has a positive effect on Innovation Capability (b=0.378) and it can be said that entrepreneurial disposition develops creativity and experimental tendencies needed to increase the capability of a firm to produce or offer new products or services. Its consequent increase in Innovation Capability, in its turn, has a statistically significant positive effect on Financial Performance (b 0.244), which acts as an intermediary between entrepreneurial ideas and commercially viable innovations. This mediation chain confirms Hypothesis 2 (H2), which suggests that there is partial mediation of the relationship between IC and EO, and FP.

Lastly, a moderating factor University-Industry Collaboration (UIC) is included. The empirical evidence shows that UIC positively increases the relationships between Innovation Capability and Financial Performance. It therefore follows that companies that engage in collective research and development, sharing of knowledge or testing of their products are more capable of commercialising their innovations hence multiplying the positive influence of Innovation Capability on financial achievement which supports Hypothesis 3 (H3).

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4.9 Country-Wise Comparative Analysis

To assess contextual differences, the sample was disaggregated by country.

Country	Mean FP	Mean IC	Mean EO	Mean UIC	Top Sector
Pakistan	3.71	3.68	3.55	3.49	Technology
Bangladesh	3.66	3.74	3.63	3.42	ICT/Textiles
Nigeria	3.72	3.78	3.68	3.51	Agriculture

Analysis of variance (ANOVA) indicated no significant difference in overall financial performance across countries ($F = 1.21$, $p = 0.299$), suggesting that contextual factors do not drastically alter the pattern of relationships. However, qualitative comments highlighted distinct sectoral strengths:

- **Pakistan:** Software and fintech innovations dominate.
- **Bangladesh:** Export-oriented startups benefit from textile technology.
- **Nigeria:** Agri-tech and renewable energy startups show financial resilience.

4.10 Diagnostic Tests

- **Multicollinearity:** All VIF values were below 3.0, confirming absence of multicollinearity.
- **Normality:** Skewness and kurtosis values ranged between -1.2 and +1.3, within acceptable limits.
- **Heteroscedasticity:** Breusch–Pagan test yielded $p > 0.05$, indicating constant variance.
- **Autocorrelation:** Durbin–Watson statistic = 1.97, confirming independence of residuals.

All diagnostic tests affirm the validity and robustness of regression models.

4.11 Interpretation of Findings

The statistical results provide compelling empirical support for the proposed model:

1. **Entrepreneurial Orientation** is a significant driver of financial performance, implying that proactivity and risk-taking improve the financial sustainability of university-linked startups.
2. **Innovation Capability** partially mediates this relationship, suggesting that EO influences performance primarily through its impact on innovation-based competitiveness.
3. **University–Industry Collaboration** enhances this mediation effect, underscoring the role of external linkages in amplifying innovation outcomes.

These findings align with theoretical propositions of the Resource-Based View and Knowledge Spillover Theory, confirming that access to university knowledge and collaborative networks translate into measurable financial success when complemented by entrepreneurial strategies.

4.12 Summary of Results

The hypotheses put forward are all supported by the empirical data and it confirms that the financial outcome of start-ups related to the university is collectively controlled by the entrepreneurial behaviour, innovative capacity, and collaborative engagement. The next section provides a conceptual and theoretical explanation to these empirical results to place them within the existing literature and outline the implication of their policy, academic, and practise.

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5. DISCUSSION

5.1 Overview of the Discussion

The key objective of this research was to question the drivers of financial performance in the case of university-related startups in the developing economies. Based on the Resource-Based View (RBV), the Knowledge Spillover Theory of Entrepreneurship (KSTE), and the Triple Helix Model, the research question that was explored investigated the mutual effect of Entrepreneurial Orientation (EO), Innovation Capability (IC), and University-Industry Collaboration (UIC) on financial performance.

The data analysis based on 420 university-based startups in Pakistan, Bangladesh, and Nigeria supported all three hypotheses (1) Entrepreneurial Orientation is a significant ingredient in the financial performance enhancement; (2) Innovation Capability partially mediate the EO-financial performance relationship; and (3) University-Industry Collaboration moderates the relationship between Innovation Capability and financial performance positively.

All these results imply that university-based startups in developing economies would be able to achieve sustainable financial growth through the combination of entrepreneurial behaviour, innovation-based strategies, and external partnerships.

5.2 Entrepreneurial Orientation and Financial Performance

The results of the analysis support the idea that the positive effect of the Entrepreneurial Orientation on financial performance is positive, and statistically significant ($b = 0.633$, $p = -.001$). This observation is consistent with the previous literature that indicates that firms that are highly innovativeness, proactive, and risk takers are more successful than the conservative strategy used by firms (Covin and Wales 2012; Wiklund and Shepherd 2005).

In the context of university-associated startups, EO reflects the management attitude and strategic dedication of scholarly endeavours in research and development to capitalise on trade possibilities generated (Fini et al. 2017; Guerrero and Urbano 2019).

This study builds on the above view to emerging economies and proves that despite the institutional limitations, entrepreneurial orientation continues to play a final part in influencing financial performance.

The findings support the Resource-Based View, according to which internal capabilities are the sources of the sustained competitive advantage (Barney 1991). University startups which are entrepreneurially focused use unique knowledge bases, faculty skills, and technology to create differentiated products in the market and thus increase sources of revenue and financial stability.

Further, the results support the results of Adejumo and Olaoye (2022), who reported that Nigerian academic startups with proactive market behaviour and risk-taking calculated with higher profitability compared to those only relying on university grants. Similarly, Khan and Saeed (2021) in Pakistan discovered that EO was a decisive contributor to startup sustainability, depending on the managerial freedom and access to markets among entrepreneurs.

Therefore, the presented study proves that EO does not only promote innovation and strategic fluidity but, in fact, directly makes resource-limited environments achieve quantifiable financial prosperity.

5.3 Mediating Role of Innovation Capability

The mediation analysis shows that another variable that partly mediates the linkage between Entrepreneurial Orientation and financial performance is the Innovation Capability (indirect effect $b = 0.244$, $p = 0.001$). This finding highlights the fact that innovation is the key process through which entrepreneurial behaviours are converted into financial benefits.

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Innovation Capability amongst university-based startups comes about as a result of the ability to use academic knowledge, intellectual property, and research infrastructure to create market-related products or services (Wang and Ahmed 2007; Hurley and Hult 1998). These startups become more efficient in their processes, find investment, and become competitive in their markets by incorporating innovation into their models of operation. Such findings support the Knowledge Spillover Theory of Entrepreneurship (KSTE) that holds that knowledge created in universities diffuses into the entrepreneurial enterprises; hence, promoting the establishment and success of new firms (Acs et al. 2009). According to the current research, the spillover effect of this mechanism is particularly efficient when startups have the internal ability to absorb, transform, and commercize such knowledge.

This is supported in previous studies. Junaid, Rehman, and Ali (2023) also found that the EOperformance relationship between startups and performance is greatly mediated by Innovation Capability in the case of incubated startups in Pakistan. The same trend was found by Adejumo and Olaoye (2022), who reported a similar effect among innovation hubs in Nigeria, with those startups turning academic research into a market product having better financial returns. The partial mediation shows that despite the crucial role played by innovation, other processes, including market positioning, entrepreneurial networks, and strategic leadership, may mediate EO-FP relationship, as well. Such datum corresponds to the multidimensional view of performance drivers in the sphere of entrepreneurial research (Guerrero et al. 2016).

Therefore, the need to strengthen the Innovation Capability is essential to transform the entrepreneurial will into financial feasibility, especially in the new ecosystems where the introduction of investment into the sphere of R&D and technology commercialization is underdeveloped.

5.4 Moderating Role of University–Industry Collaboration

The outcomes of the moderation prove that the integration of the university and industry cooperation tremendously improves the correlation between innovation ability and financial results (binteraction=0.118, p=0.00). It means that financial gains of innovation competence are higher when startups work proactively with industrial partners.

This conclusion follows the Triple Helix Model (Etzkowitz and Leydesdorff, 2000), which is based on the synergy of the universities with the industry and the government in catalysing both innovation and economic growth. This collaboration with the industry provides startups with complementary resources, that is, distribution channels, technical expertise, and market information that further magnify the earnings of their innovations (Perkmann et al., 2013).

It can be empirically paralleled in the case of Fini, Grimaldi, and Sobrero (2023) who have reported that the intensity of collaboration positively affects growth of a startup by enhancing its absorptive capacity and legitimacy. Along the same lines, Rahman et al. (2022) established that collaborative networks increase the ability of university-based ventures to be commercialised to increase their financial performance in terms of sales and investment attraction.

The contextual realities in the developing economies also apply in the moderating role of UIC. Partnership with established industries also works to reduce the shortage of resources in the environments in which venture capital and institutional support is limited. Partnerships that go beyond the academic environment build credibility, financial support, and access to the market by startups. Therefore, the findings imply that collaboration is a strategic multiplier that allows transformation of innovation into financial results to be more effective by closing the gap between knowledge generation and commercial implementation.

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5.5 Integration with Theoretical Frameworks

The results overall support the interrelation of the three theoretical approaches that the study is based on.

Resource based View (RBV): Entrepreneurial orientation is a organisational specific strategic asset, which promotes innovation capacity and competitive advantage (Barney, 1991). The desirable EO-FP connexion supports the claim made by RBV that internal competencies are determiners of firm success.

The mediating role of innovation capability Knowledge spillover theory (KSTE): It has been established by the mediating role of innovation capability that the performance of a university in terms of finance is increased by the fusion and commercialization of startup-absorbed and commercialised knowledge (Acs et al., 2009).

Triple Helix Model: UIC moderating effect indicates the endogenous interaction of academic, industrial and governmental players in facilitating sustainable entrepreneurial performance (Etzkowitz and Leydesdorff, 2000).

The combination of these frameworks provides a comprehensive description of the process of transforming academic research into financial gains in university-related startups in developing economies. Internal entrepreneurial behaviour, absorptive capacity and external collaboration intertwined result in a multidimensional model of performance that is flexible to resource-constrained settings.

5.6 Comparative Discussion across Countries

The structural patterns are similar when comparing Pakistan, Bangladesh, and Nigeria, which means that the theoretical relationships are quite general to be applied to the developing economies. Yet some nuances of context are observed:

Pakistan: The findings highlight the importance of support on incubation offered by the Higher Education Commission through its National Incubation Centres. The higher the institutional connexions of a startup and proactive entrepreneurial teams, the higher the financial stability, which is in line with Khan and Saeed (2021).

Bangladesh: The results point towards the international university partnerships in the context of ICT and textile industries, where innovation partnerships result in export expansion and foreign investment (Rahman et al., 2022).

Nigeria: It is observed that venture in agriculture and renewable energy industries are more profitable because of the demand in the local market and the policy support, in agreement with Adejumo and Olaoye (2022).

Irrespective of such differences, the bottom line is that entrepreneurial orientation, innovation capability, and collaboration create financial performance together. The fact that it was constant throughout the countries facilitates the strength of the integrated theoretical model.

5.7 Practical Implications

5.7.1 Managerial Implications

The findings highlight the need to achieve a high level of entrepreneurial culture in academic enterprises by startup founders and managers. Financial outcomes can be greatly enhanced by implementing strategic measures like the promotion of risk-taking, creating market awareness, and focusing on the use of innovation as the basis of decision-making. Such processes are expected to be institutionalised by leaders and allow them to improve the ability to innovate- such as the continuous learning, investment in R&D, and the multidisciplinary collaboration. There should

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also be an active effort by startups to seek industrial partners in order to gain access to financial resources, market intelligence, and commercialization networks.

5.7.2 Policy Implications

In developing economies, policymakers can be able to draw some actionable insights:

Institutional Integration: The process of defining formal mechanisms through which research agendas in universities are synchronised with industrial requirements can expedite the process of commercialization and transfer of technology.

Financial Mechanisms: Governments ought to launch special financial schemes to bolster capitalization of startups through such schemes as innovation grants, venture matching funds, and university seed investments.

Collaborative Platforms: It can institutionalise collaboration and lessen the bureaucratic impediments by forming cross-sectoral consortia between universities, industries and government agencies.

Capacity Building: Capacity building will be done by introducing entrepreneur education and management training programmes to both faculty and students which will create long term sustainability in university based ventures.

5.7.3 Academic Implications

To academia, the findings indicate the transformative nature of universities in national innovation systems. Academic institutions should not just be involved in teaching and research activities by passively watching on what is happening in the entrepreneurial ecosystem. To realise sustained financial success amongst spinoffs, it is important to strengthen technology transfer offices (TTOs), patent management units, and incubator programmes.

5.8 Contributions to Knowledge

The research has a number of interesting contributions:

Empirical Contribution: It presents explicit quantitative results on determinants of financial performance of university-related startups in emerging economies an area that had been dominated by qualitative case-study research previously.

Theoretical Contribution: It unites RBV, KSTE and Triple Helix theories into a collective framework of explaining financial performance based on both internal and external processes.

Methodological Contribition: The cross-country data platform increases the generalizability and mediation-moderation model provides a new, rigorous, approach to the analysis that can be used in future entrepreneurship studies.

The study has also added to the body of knowledge on entrepreneurship in the world by contextualising entrepreneurial finance in the structural realities of developing economies based on Pakistan, Bangladesh, and Nigeria. .

5.9 Limitations of the Study

Although the study has its merits, it is not the case without limitations:

The study design will measure relationships at one point and restriction to causal inferences will be limited. Long term studies would be more effective in tracking financial performance patterns. Therefore, the study is cross-sectional in nature.

Financial indicators are related to self-reported measures that can cause perceptual bias. Audited financial records or secondary data can be utilised in future studies.

One might consider the geographical scope: since the three countries offer regional heterogeneity, it would be better to incorporate more additional developing economies (e.g., Latin America, Southeast Asia) to be able to make more generalisations.

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The researchers have not incorporated moderating variables, like stability of the government policy and market turbulence, which can affect financial performance.

5.10 Summary of Discussion

To sum up, the current research proves that the startups affiliated with the university and working in the developing economies can achieve sufficient financial success when the entrepreneurial orientation, the presence of the innovation capability, and the collaboration engagement work in a synergistic way. Internal strategic behaviour and external institutional backing would outline the path of knowledge creation to commercialization. Through the empirical validation of this multitheoretical framework, the study provides practical information to entrepreneurs, higher learning institutions, and policymakers who hope to develop innovation-based economies.

6. CONCLUSION AND RECOMMENDATIONS

6.1 Overview

The present study was aimed to empirically evaluate the factors of financial performance in university-related startups in developing economies. The research was based on the Resource-Based View (RBV), the Knowledge Spillover Theory of Entrepreneurship (KSTE), and the Triple Helix Model, the direct impacts of entrepreneurial orientation (EO) on financial performance (FP), the mediating impact of innovation capability (IC), and moderating impact of university-industry collaboration (UIC).

The statistical evidence based on the data received about 420 startups in Pakistan, Bangladesh, and Nigeria provided strong statistical evidence that supported each of the three hypotheses. The results showed that the entrepreneurial orientation significantly promotes the financial performance; the impact of innovation capability is a partial mediator; the collaboration between universities and industries increases the positive relationship between innovation capability and financial performance.

All these findings taken together support the theoretical framework and highlight the importance of coordinating entrepreneurial action, innovative capability, and linking relationships to become financially viable within resource-limited environments.

6.2 Summary of Findings

The empirical results show that there is a high positive correlation between EO and FP, which supports the fact that the improvement of financial results is better with startups proactive, innovative, and risk-takers. This underscores the fact that EO is a strategic resource upon which startups can leverage opportunities in the market and uncertainty by dealing with it efficiently (Covin and Wales, 2012; Wiklund and Shepherd, 2005).

In emerging markets, EO grants startups the flexibility and responsiveness necessary to be able to operate in unstable institutional and financial settings. Entrepreneurs who take calculated risks and who take initiative to innovate and attempt to seize innovation driven opportunities are better placed to raise funds, gain market and improve profitability.

The mediation analysis proves that innovation capability is a partial mediating variable between EO and FP, which also highlights the importance of entrepreneurial behaviour increasing financial performance mainly because of innovation-based strategies. Those startups that invest in research and development in a systematic manner, combine university research and implement technological innovations have increased productivity and sustainability in the long term.

This observation confirms the Knowledge Spillover Theory by demonstrating the transfer of scholarly knowledge into business use, and is a key channel of value generation within the

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university-based enterprises (Acs et al., 2009). The findings align with previous studies by Junaid et al. (2023) and Adejumo and Olaoye (2022) that show that startups with the ability to internalise knowledge using innovation achieve high-quality financial performance**.**

The paper also confirms that university-industry partnership plays a significant role in mediating the relationship of innovation capability and financial performance. This implies that the ability to innovate into profitability is better converted into a startup with a collaborative ecosystem.

Partnerships provide access to complementary resources like financing, distribution channels, and management skills that can help startups to surmount structural constraints that are rife in the developing economies. This is in favour of the Triple Helix Model, and the argument that synergetic relationships between academia, industry, and government develop entrepreneurial ecosystems, which encourages sustainable growth (Etzkowitz and Leydesdorff, 2000).

6.3 Theoretical Implications

The research makes contributions to the existing theory in the following aspects:

RBV to Academic Entrepreneurship: The research makes a contribution to RBV by empirically showing that entrepreneurial orientation is a strategic resource that positively influences financial performance in the context of the university-linked startups.

KSTE validated in Developing Economies: The role of innovation capability mediating knowledge creation in universities validates the central assumption of KSTE according to which knowledge created in universities can be converted to entrepreneurial growth when properly commercialised.

Modularity with the Triple Helix Model: The mediating effect of university-industry collaboration demonstrates that the relationship between academia, industry, and government is critical in enhancing the innovation performance connexions.

In this way, the work offers a unified theoretical framework that could be reused in order to conduct additional studies on the issue of entrepreneurial performance in the emerging economies.

6.4 Managerial Implications

The results have important practical implications on the startup founders, managers, and incubator directors working in the university related ecosystems.

Entrepreneurial orientation can be made institutional in startup where innovativeness, risk-taking, and proactiveness are inculcated to organisational culture. An entrepreneurial culture can be cultivated through leadership training, strategic agility and performance-based incentives, which leads to financial success. The capacity-building programmes should be organised by incubators and university entrepreneurship centres to build the managerial competence in business strategy, investment readiness, and innovation management.

The idea generation, prototype development and testing the market are the processes of innovation capability that should be seen as a continuous process. Startups need to create specific budgets on R&D and encourage interdisciplinary cooperation among engineers, business professionals and researchers. Universities can assist this by offering technical infrastructure, provision of patent facilitation services and mentoring programmes which is used to take the startups through the commercialization process.

Startups in universities must take the initiative to connect with industry players with the aim of securing financial, technical and marketing resources. Cooperation increases market penetration and speed-up the transfer of technology. The gap between the academia and the

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marketplace can be bridged through joint research, co-development or participation in industrial clusters. Universities are also advised to form alliances and liaison offices with the industry, which formalises the relationship with it in the long-term and benefits both.

6.5 Policy Recommendations

The study findings indicate that there are a number of policy guidelines that governments, higher education regulators, and development agencies can take with an aim of supporting entrepreneurial ecosystems.

A coordinated policy framework should also be adopted by governments which will include universities, industries, and funding institutions as a unified national innovation system. This should be encouraged by policies which offer tax credit, patent assistance programmes and performance based research funding to commercialise university research.

Governments and other financial institutions must create specific financing facilities to beat capital barriers, including university venture funds, angel investment networks, and innovation grants. Public-private finance frameworks that would mix both government funds and investment funds would mitigate the risk of startups, and would attract investors.

There is a need to grant more autonomy to the universities in the developing economies to commercialise intellectual property and reinvest resultant returns in research and development, and incubation programmes. The creation and maintenance of clear intellectual property ownership norms, reduction of bureaucratic hurdles and encouragement of faculty entrepreneurship all contribute to improving the development and maintenance of startups.

The training programmes must be implemented to strengthen the entrepreneurial skills of students, faculty, and researchers. Entrepreneurship and innovation management should be integrated into the curricula to produce graduates who are capable of managing financially feasible businesses.

Transnational and international partnerships may enhance availability of resources and knowledge. The collaborations with foreign universities, development organisations, and multinational corporations provide access to market, technology, and capital that otherwise could not be accessed within the local ecosystems.

6.7 Contribution to Practice and Development.

It is stressed that university-based startups are not some continuation of academic research but significant players of socio-economic change in emerging economies. Their prosperity as far as finance is concerned directly leads to creation of jobs, technology and inclusive development.

With entrepreneurial orientation, innovation and partnership, universities can spearhead competitiveness in the country. In addition, this integration also can be attributed to the United Nations Sustainable Development Goals (SDGs), especially SDG 8 (Decent Work and Economic Growth) and SDG 9 (Industry, Innovation, and Infrastructure).

By improving the financial performance, university startups will have the ability to reinvest in the community, increase their research capacity and make the developing regions sustainable in terms of industrialisation.

6.7 Limitations and Future Research Directions.

Even though the study has contributed a number of issues, some limitations are still present that can be tapped in future research:

Temporal Limitation: The findings are cross-sectional; hence, they are associative and not causal. Longitudinal studies would help to study the dynamics of financial performance.

Geographic Scope: It would be beneficial to have the analysis extended to other developing areas, that is, to Latin America or to Southeast Asia to increase the external validity and allow wider cross-cultural comparisons.

Sectoral Variation: Future studies have an opportunity to examine sector specific analysis (as in biotechnology and ICT start-ups) to determine industry level determinants of financial performance (Adrees et al., 2024).

Qualitative Knowledge: Case studies or interviews that are qualitative may be used to contribute to the contextual factors of entrepreneurial behaviour.

Alternative Variables: Future research may include other forms of mediators (e.g., absorptive capacity, organisational learning) or moderators (e.g., government regulation, digital infrastructure) to generalise the existing model.

6.8 Concluding Remarks

This paper provides strong empirical findings that entrepreneurial orientation, innovation ability, and university-industry partnership are important factors on the financial success of university-linked startups in emerging markets. The combination of these aspects into the theoretical framework of Resource-Based View, Knowledge, Skills, and Technology Exchange, and the Triple Helix Model explains the joint impact of internal competencies and external relationships on the realisation of sustainable financial results.

The results recommend a paradigm shift in the role of a university - stop being a passive knowledge producer and become an aggressive entrepreneurial force to drive economic growth. Institutionalisation of innovation and collaboration enables the universities of the developing economies to overcome the gap between academic research and market realities, thus producing financially successful and socially significant startups.

The paper concludes that the financial performance of university-related startups depends on a triadic balance. Entrepreneurial motivation to discover and to take advantage of opportunities, Innovative ability to convert ideas to commercial solutions, and Working networks to be scalable and sustainable.

This triad can provide a roadmap to policymakers, educators, and entrepreneurs seeking to develop strong and innovation-driven economies in the developing world.

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