



Innovation Capability as a Mediator of Financial Resources, Digital Marketing Capability, Entrepreneurial Orientation, and Start-Up Growth

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ABSTRACT

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This study examines how entrepreneurial orientation, digital marketing capability, and financial resource accessibility influence start-up growth, with innovation capability acting as a mediating mechanism. A quantitative research design was used, and data were collected from founders and managers of active start-ups. After screening for completeness, the final dataset was analyzed using structural equation modelling to assess direct effects and the mediating role of innovation capability. The results show that entrepreneurial orientation, digital marketing capability, and financial resource accessibility significantly enhance innovation capability. Innovation capability positively influences start-up growth and partially mediates the relationship between the independent variables and growth. The capability of digital marketing appeared to be the most predictive factor, and the accessibility of financial resources offered necessary support to the results of innovations. The results highlight that start-ups must integrate entrepreneurial behaviour, effective digital marketing procedures, and availability of financial assets to enhance innovation and growth. This paper incorporates entrepreneurship, marketing, and finance into one explanatory framework and how the availability of financial resources can strengthen entrepreneurial and marketing abilities to achieve innovation and sustainable start-up expansion.

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1.0 Introduction

The start-up ecosystems that are currently present across the globe keep evolving as drivers of innovation and creation of new jobs, but the sustainability and scalability of new venture remain a persistent issue, particularly in emerging markets with stronger competitive pressures, technological dynamism, and institutional constraints (Al Koliby, Mehat et al. 2024). Although there are more and more business starters in the market now, the majority of start-ups fail to move at the stage of surviving to the stage of maintaining and growing as there are not enough strategic capabilities, underdeveloped internal processes, and cannot take advantage of technology and resources effectively (Anjum, Idrees et al. 2025). The strategic orientation of founders, the possibility to use digital technologies, and availability of sufficient financial resources in such turbulent and resource-scarce environments become the key factors that determine whether a start-up will be able to innovate, differentiate, and react to uncertainties in the market (Hanaysha and Al-Shaikh 2024). Entrepreneurial orientation is a known key factor of dynamism in firms and its nature as an entrepreneurial posture of a venture by being more innovative, pro-active and risk-taking is inherent in the dynamics of uncertain market conditions. Nevertheless, in modern digital markets the importance of basing competitiveness on entrepreneurial behaviour is no longer enough as more and more customer acquisition, engagement and retention become dependable on digital technologies and data-centered insights, which makes the digital marketing capability the most influential element of competitive start-up strategies (Vrontis, Chaudhuri et al. 2022, Yaqub, Yaqub et al. 2024).

The blistering proliferation of digital platforms, social media, analytics technologies, and automation solutions has altered the functioning of start-ups, their competition, and growth, providing cost-efficient opportunities to access more audiences, collect real-time customer feedback, and develop customized value propositions (Yaqub, Yaqub et al. 2024). The ability of digital marketing enables new business to incorporate the use of digital resources, innovative content, and analytical understanding in improving the visibility, customer awareness, and strategic placement, thus making improved business growth opportunities that would be impossible to achieve with traditional marketing tools (Hanaysha and Al-Shaikh 2024). Digital capability, however, cannot offset the structural difficulties that start-ups experience entirely especially when they are restricted by financial impossibility to invest in technology, experimentation, talent, and market expansion. The availability of financial resources hence comes out as a supporting enabler which enables start-ups to engage in innovative activities, acquire digital capabilities, prototype development, test new ideas and venture in more competitive markets. Even the most entrepreneurial founders and digitally proficient teams cannot achieve their potential to grow unless financing limits their potential to do so due to their inability to innovate or adapt to new technologies. Since entrepreneurship, digital marketing and financial resources are synergistic, there is a need to determine how these three factors precondition start-up performance and how they interrelate via innovation ability which acts as a process by which strategic orientations and resources are converted into actual growth performances (Al Koliby, Mehat et al. 2024).

Irrespective of the increased appreciation of the significance of entrepreneurial orientation, digital marketing capability, and financial resources, there are some major gaps in scholarly literature. To begin with, the majority of the research considers these variables individually and does not investigate their mutual impact as a part of an integrated system. Research in entrepreneurship has long paid attention to the use of entrepreneurial orientation as an indicator of firm performance, but mediating variables especially innovation capability have not been fully explored in the context of young ventures (Xu, Chen et al. 2022). On the same note, although the concept of digital marketing capability is receiving focus in recent years, the available literature tends to focus on large companies, established SMEs, or online enterprises, and little is known about how start-ups use digital tools due to resource-strained circumstances (Apasrawirote, Yawised et al. 2022). Studies have focused on availability of financial resources have mainly focused on access to credit or investment as a factor in financial performance but have not given a lot of focus on its role in facilitating innovation and expansion in new ventures. Second, research work seldom encompasses strategic orientations, marketing capabilities, and the financial aspects of a particular company within the same model, even though theoretical literature indicates that the start-up development is contingent on a combination of various abilities than standalone variables. Third, the mediating effect of innovation capability is not well theorized and little empirical evidence exists how and why innovation is the process of converting entrepreneurial orientation, digital marketing capability and financial resources accessibility to start-up growth.

These loopholes highlight the importance of gaining a deeper insight into how the strategic behaviour, technological abilities, and financial resources interact to result in start-up growth. The research problem that this study is based on is that growth of start-ups is a challenging task to accomplish, even more so to maintain since the current literature does not provide a complete understanding of how entrepreneurial orientation, digital marketing capability, and access to financial resources converge to produce innovation capability, which in turn leads to growth. In the absence of this knowledge, theoretical insights on start-up performance are still rather fragmented, and the practical advice to nascent venture founders is yet to be developed. In addition, the emerging businesses in a competitive and digital world experience a pace of market pressures, quicker technology changes as well as growing customer demands and expectations, making conventional approaches of growth inadequate. That is why, there is a burning necessity to analyze the role of dynamic capabilities like innovation that may serve as the mediator between the entrepreneurial strategies and growth outcomes in those situations when the environment is full of uncertainties and limited resources.

2.0 Literature Review

The conceptual bases that support the current research can be well grounded in the Resource-Based View (RBV) and Dynamic Capabilities Theory, which provide sufficient reasons as to how entrepreneurial orientation is intertwined with digital marketing capability and the availability of financial resources to the start-up venture, thereby affecting the innovation capacity, and finally the start-up growth. According to RBV, competitive advantage can be sustained by organizations that have valuable, rare, inimitable, and non-substitutable resources that cannot be

easily duplicated by other organizations (Ahn et al., 2022). Entrepreneurial orientation, digital marketing capability, and accessibility to financial resources are strategic assets in the context of start-ups that determine the capacity of this firm to sense opportunities, differentiate offerings, and be competitive. Nevertheless, the processes of converting resources into performance outcomes cannot be explained solely with the help of RBV and this is where the Dynamic Capabilities Theory comes into play. Dynamic capabilities refer to the capability of a firm to combine, create and re-design internal and external competencies in response to the changing environments on a very fast scale (Taleb et al., 2023). The capability of innovation goes well with this view because it enables the conversion of the entrepreneurial behaviour, digital skills and funds to new products, procedures or ways of competing in the market. Combined, these theories imply that the strategic orientations and resource endowments are only able to affect growth through firms having the innovation capacity to the mobilization and deployment (Wei et al., 2023).

Entrepreneurial orientation (EO) has been one of the central constructs of the study of entrepreneurship and has always been identified with innovation, awareness, and performance at opportunity of firms in any given environment. EO is defined by three dimensions, such as innovativeness, proactiveness and risk-taking, which are cumulative characteristics of the strategic position of a firm in terms of experimentation and aggressiveness in the form of competitive advantage (Wang et al., 2020). Several empirical evidence may be used to concur with the stance of EO in enhancing innovation capability. To give an example, data on the technological-based start-ups shows that businesses with higher EO develop more innovative ideas and react more effectively to market changes as the internal culture provides a creative and independent mentality and direction to seek out opportunities (Zarrouk et al., 2020). It has also been reported that EO improves the ability of a firm to scan the environment and develop a proactive response that leads to the high-quality innovation outputs and that EO primarily is effective in turbulent industries when timing and responsiveness are critical factors (Rosita et al., 2023). EO plays a crucial strategic role that establishes resiliency and flexiveness within the climate of the new market where the threat of regulatory instability is a significant issue and the problem of limited resources is a significant challenge. The South Asian SMEs experience shows that the EO positively influences the innovation and growth of a company by enabling firms to find unconventional solutions and fill institutional voids more effectively (Arabiun et al., 2024). Put collectively, these empirical results support the notion that EO can be regarded as one of the principal sources of innovation capacity within start-ups that identifies their willingness and ability to pursue transformational initiatives.

Besides the entrepreneurial orientation, there is the digital marketing capability (DMC), which has also come into the limelight following the redefinition of the global competitive landscape that has been brought about by the digital transformation. DMC is the ability of the company to use digital resources, platforms, analytics and the online channels to understand the needs of customers, reach audience and formulate data-based strategies (Apasrawirote et al., 2022). The empirical data reveal that DMC positively affects the innovation capability and provides companies with real-time insights, customer analytics, as well as an opportunity to create

an experiment in a short period of time. Recently, it has been evidenced that firms with high DMC are better suited to develop new marketing initiatives, tailor value propositions and utilize digital ecosystems to develop new solutions (Homburg & Wielgos, 2022).

The other very important predictors of innovation potential and start-up growth are financial resource accessibility (FRA). There is the availability of internal capital, bank credit, investor capital, grants, and other sources of financial resources that are available to FRA to assist new entrepreneurs to invest, grow and innovate. Empirical studies have often pointed to the fact that start-ups with limited financial resources have fewer chances of investing in innovation as well as recruiting talented employees and adopting new technologies (Khuan et al., 2023). To illustrate, research in the area of start-ups shows that access to capital is a critical factor that deteriorates the results of innovations since companies have no resources to experiment, develop products, and adopt technologies (Pugliese et al., 2022). Despite all these efforts made in studying entrepreneurial orientation, digital marketing capability, financial resource accessibility, and innovation capability, the literature is still scattered, thus, not many studies have combined these variables into a complex explanatory model.

3.0 Methodology

The current research paper follows a quantitative research paradigm that is based on the positivist philosophy, which presupposes that social phenomena can be objectively measured, generalized, and explained in terms of the empirical research. Such a philosophical position leads to the application of structured tools, statistical modelling and hypothesis testing, to identify the causal effects of the entrepreneurial orientation and digital marketing capability, as well as the availability of the financial resources, on the start-up growth, and the moderating effect of the innovation capability. Positivism allows the researcher to be value-neutral in the research process whereby results are obtained through observable patterns, and not the subjective interpretation. Such an ontological and epistemological stance corresponds to the aim of the study to test the theoretically based relationships on the basis of numerical data and offer accuracy and reproducibility of conclusions. The proposed study is, therefore, deductive in nature whereby hypotheses that have been developed based on the existing theories are developed and thereafter data is collected and analyzed to either prove or disprove the hypotheses.

The study is a cross-sectional and explanatory research design involving the process of measuring constructs in one time period among a relatively diverse group of Pakistan based start-up ecosystem respondents. A cross-sectional design will suit the purpose since it is not needed to measure change, but to find out structural relationships between variables. Furthermore, the explanatory nature indicates the purpose of the study to assess the direction and strength of causal paths which are postulated by theory with, in particular, the mediation effect of innovation capability. The target market segment includes founders, co-founders, and employees of managerial level who are employed in active start-ups in the major Pakistani regions such as Punjab, Sindh, Khyber Pakhtunkhwa and Islamabad Capital Territory. These are the individuals who have the necessary knowledge to legitimately review the strategic orientations, capabilities and resource position of their ventures. As the startups usually have limited comprehensive

sampling frames because of their fluid and informal practices of registration, the research uses the non-probability sampling methods that are applicable to the hard to access populations.

Purposive sampling was carried out through the first step which involves identifying start-ups that fit the inclusion criteria i.e. the start-up must be in operation at least one year and must have a minimum number of people who can respond well on the entrepreneurial behavior, marketing procedures and innovation processes. In this pool, convenience sampling is then used to sample convenient respondents who are available and willing to respond. The advantage of combining these two strategies is that the sample will be representative of those with sufficient contextual knowledge and at the same time not too difficult to access data. Since structural equation modeling demands that the sample size suffices, the research study will target a minimum of 300 respondents as a representative sample since this is the minimum requirement in complex PLS-SEM models. This is a sufficient sample size to have a statistical power and to increase the reliability of the parameter estimates.

Data is collected via a structured survey questionnaire that will be administered physically and online whereby it is accessible in a wider geographical area and geographic representation. The tool will include closed-ended questions which will be rated using the five-point Likert scale and this will allow the respondents to respond to the statements with regard to their level of agreement regarding the elements of entrepreneurial orientation, digital marketing capability, availability of financial resources, innovation capabilities, and start-up development. The validated scales that are used in the previous studies are adapted into questionnaire to guarantee the content validity and the relevance of the questionnaire to the context. A pilot test is done using a small group of start-up managers in order to test the clarity, reliability, and cultural appropriateness of the items and make necessary changes before full-scale implementation. The last survey will be conducted in eight weeks to ensure that maximum participation and reduction of non-response bias is achieved.

After data collection, the responses were filtered according to data completeness, consistency, and outliers to eliminate data contamination. The work is analyzed with the help of the Partial Least Squares Structural Equation Modeling (PLS-SEM) as the complex statistical tool that perfectly suits predictive studies, complicated constructs and measurements that are multiple. The reason why PLS-SEM is selected is that it can well work with non-normal data, has minimized sample sizes in comparison with covariance-based SEM, and best suited to test the mediation effects, which is the foundation of the research framework. The analysis will be conducted in two phases; the measurement model analysis assesses the reliability of indicators, internal consistency, convergent validity and the discriminant validity; the structural model analysis determines the path coefficients, the magnitude of the effects, the predictive relevance and the significance of the mediation effect through bootstrapping procedures. PLS-SEM will allow the research to test the theoretical assumptions in the rigorous manner and will produce the strong inferences concerning the forces behind the development of start-ups.

Ethical considerations are incorporated all through the research process as a way of maintaining academic honesty as well as protecting the rights of respondents. All the respondents

will be informed about the study aim, privacy measures, and be given informed consent before filling the survey so that they will be aware of the purpose of the study, confidentiality measures, and their right to drop out without any penalty at any point of time. None of the personal identifiers are gathered, and all the responses are stored in a secure place to protect anonymity. The researcher will also make sure that the data will only be utilized in the academic sense without any manipulations or bias. The institutions review board concerned approves the study ethically and the study is conducted according to the international ethical standards of conducting research that brings about trust and transparency. With such systematic and ethically based methodology approach, the study has provided plausible evidence on the interaction of strategic, digital, and financial capabilities to promote innovation and growth in the changing start-up environment in Pakistan.

4.0 Findings and Results

4.1 Reliability Analysis

Table 4.1 Reliability Analysis

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Innovation Capability	0.825979	0.832125	0.86294	0.412942
Digital Marketing Capability	0.775139	0.791554	0.838021	0.429512
Entrepreneurial Orientation	0.877744	0.887052	0.901851	0.484441
Financial Resource Accessibility	0.586859	0.623172	0.738226	0.304845
Start-Up Growth	0.872742	0.896536	0.902086	0.573132

The findings of reliability and convergent validity show that the internal consistency and measurement quality of most constructs in the model are satisfactory, although some directions need to be improved. The Cronbach Alpha and Composite Reliability of the Innovation Capability, Digital Marketing Capability, Entrepreneurial Orientation and Start-Up Growth have values greater than the generally accepted values of 0.70 raising the question of a high level of internal consistency in the measurement items of the variables. Financial Resource Accessibility, in its turn, does not demonstrate so strong reliability, as Cronbachs Alpha equals 0.58, and Composite Reliability equals 0.73, which provides marginal adequacy and presupposes that some of the items might not be addressing the construct entirely. Regarding convergent validity, AVE values indicate that Start-Up Growth is in the recommended range of 0.50, whereas the AVE values of other constructs in the model, including Inno Capability (0.41), Digital Marketing Capability (0.43), Entrepreneurial Orientation (0.48), and most importantly Financial Resource Accessibility (0.30) are below the desired range. The fact that values of CR above 0.70 partially outweigh the low AVE does not refute the fact that indicators of these constructs account for less than half the variance, suggesting that measurement items can be improved to enhance convergent validity. On the whole, the reliability test can be regarded as generally satisfactory, and further research can take into account the revision or the enhancement of the measurement scales, especially when speaking about the financial resource accessibility.

4.2 Validity Analysis HTMT

Table 4.2 Validity Analysis (HTMT)

	Innovation Capability	Digital Marketing Capability	Entrepreneurial Orientation	Financial Resource Accessibility	Start-Up Growth
Innovation Capability					
Digital Marketing Capability	0.379622				
Entrepreneurial Orientation	0.396462	0.575968			
Financial Resource Accessibility	0.394601	0.43684	0.389884		
Start-Up Growth	0.768226	0.3725	0.39888	0.54079	

The HTMT table reveals significant and theoretically plausible connections between the study variables, which confirm the structure assumptions of the model. Overall, the validity analysis demonstrate that the conceptual model is valid as the marketing and resource-based capabilities are coupled with the innovation capability that in its turn plays a significant role in the start-up growth.

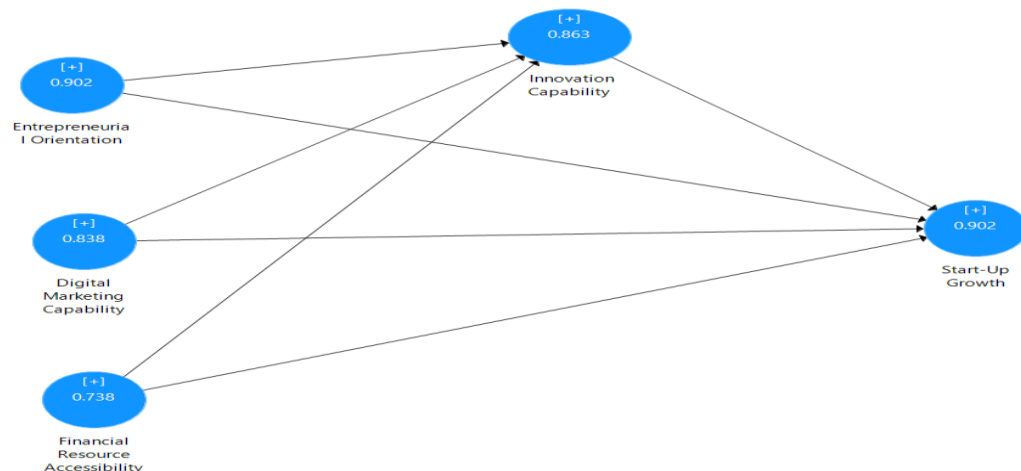


Figure 4.1: Measurement Model

4.3 Structural Equational Model

Table 4.4 Direct Effect

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Innovation Capability -> Start-Up Growth	0.604163	0.585158	0.025231	23.94541	0
Digital Marketing Capability-> Innovation Capability	0.130332	0.120486	0.038212	3.41079	0.00665
Digital Marketing Capability -> Start-Up Growth	0.067322	0.072978	0.026595	2.531399	0.029799
Entrepreneurial Orientation -> Innovation Capability	0.224362	0.202642	0.046395	4.835891	0.000686
Entrepreneurial Orientation -> Start-Up Growth	0.118695	0.129292	0.027841	4.26325	0.001655

Growth						
Financial Resource Accessibility ->						
Innovation Capability	0.211487	0.207768	0.032556	6.496064	0.000069	
Financial Resource Accessibility -> Start-Up						
Growth	0.18168	0.184632	0.023351	7.780418	0.000015	

According to the structural model results, there are strong and statistically significant relationships between the core variables, which proves the framework suggested in the study between entrepreneurial, marketing, and financial capabilities and innovation capability and start-up growth. There is significant positive influence of innovation capability on the growth of start-ups ($b = 0.604$, $t = 23.94$, $p < 0.001$), which validates its position as the key determinant of growth in the model. Digital marketing capability positively and significantly impacts innovation capability ($b = 0.130$, $t = 3.41$, $p < 0.01$) and a direct and small positive effect on start-up growth ($b = 0.067$, $t = 2.53$, $p < 0.05$), meaning that digital marketing is a driver of growth indirect through innovation and a direct, albeit, the small impact on start-up growth. The positive impact of entrepreneurial orientation on innovation capability ($b = 0.224$, $t = 4.83$, $p < 0.001$) is also significant, and it has the direct positive professional impact on start-up growth ($b = 0.118$, $t = 4.26$, $p < 0.01$), which shows the significance of entrepreneurial behaviours in enhancing the performance results and innovation capacity. The access to financial resources exhibits significant positive associations on both innovation ability ($b = 0.211$, $t = 6.49$, $p < 0.001$) and start-up growth ($b = 0.181$, $t = 7.78$, $p < 0.001$), which prove that the industry can invest in innovation and expand the operations through the access to financial resources. All in all, the importance and power of all the paths justify the hypothesized model, showing that entrepreneurial orientation, digital marketing capability, and access to financial resources are all effective in increasing innovation capability, which subsequently becomes an effective predictor of start-up growth.

Table 4.4 Mediation Analysis

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Digital Marketing Capability -> Innovation Capability -> Start-Up Growth	0.078742	0.070034	0.021082	3.735087	0.003878
Entrepreneurial Orientation -> Innovation Capability -> Start-Up Growth	0.135551	0.118391	0.026552	5.10513	0.000461
Financial Resource Accessibility -> Innovation Capability -> Start-Up Growth	0.127773	0.121553	0.019545	6.537234	0.000066

The outcomes of the mediation process indicate that innovation capability is an important and substantial process where digital marketing capability, entrepreneurial orientation, and financial resources accessibility affect start-up development. The indirect impact of digital marketing capability on start-up growth in innovation capability is positive and statistically significant ($t = 3.73$, $p < 0.01$) implying that some of the contribution of digital marketing to its growth is through enhancement of innovation capability in the firm. The indirect effect of entrepreneurial orientation on growth through innovation capability $t = 5.10$, $p < 0.001$) is also significant and strong, which implies that the entrepreneurial behaviours of proactiveness, innovativeness, and risk-taking have a direct positive impact on growth through innovation

competence. The accessibility of financial resources also has the same strong and highly significant indirect impact ($t = 6.53$, $p = 0.001$) and proves that innovation is supported by the availability of financial resource, and this innovation results in growth. Overall, the outcomes of these mediation processes support the primary function of innovation capability as a major channel that enables the start-ups to transform their strategic inclinations, digital capabilities as well as financial assets into better growth performances.

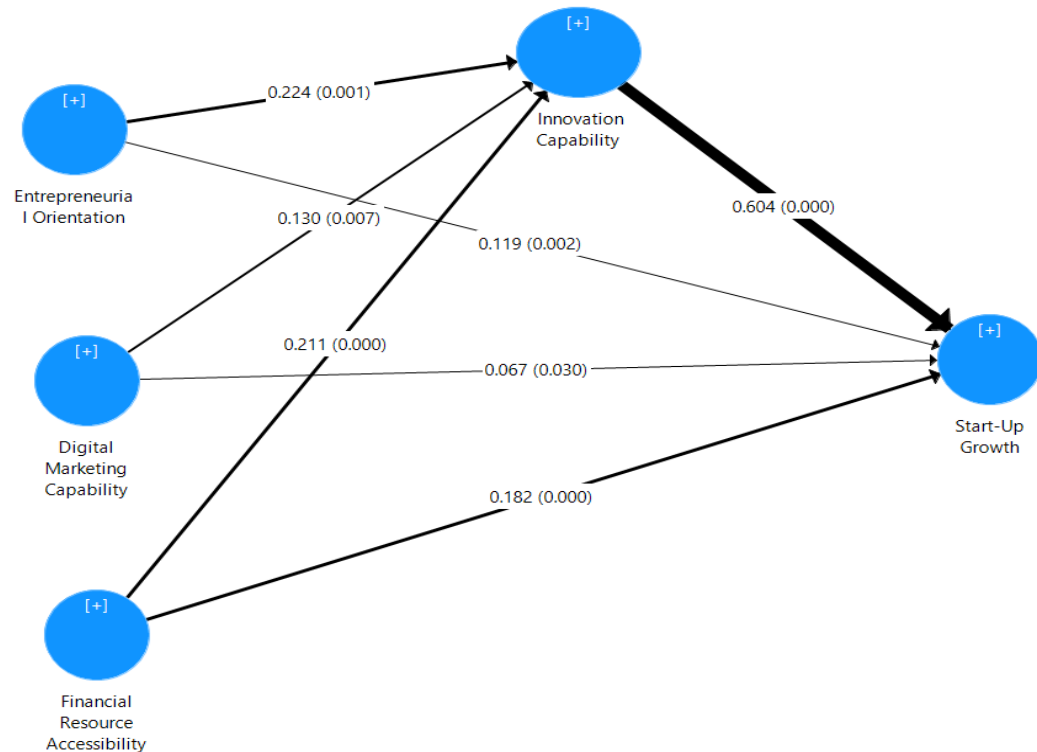


Figure 4.2: Structural Equational Model

5.0 Discussion and Conclusion

The overall results obtained indicate that the entrepreneurship orientation, the digital marketing capacity and access to financial resources are complementary capacities, which combined with each other contribute to increasing the innovation capacity, which subsequently results in the development of start-ups. The partial mediation that prevails in all the three associations means that these capabilities although directly influence growth produce their full effects by enhancing the innovation capability. This empirically substantiates the presence of an integrated capability-based approach to start-up performance in addition to highlighting innovation capability as the focal capability that relates different strategic and resource-based antecedents to growth performance.

Overall, the study provides decent empirical evidence that innovation capability is the driver that causes the entrepreneurial behaviour, digital strength, and financial access to the entrepreneurial business to become a start-up growth. The findings contribute to the theory as they combine the RBV with the entrepreneurship and digitalization lenses, which can offer a full picture of the interaction of different capabilities to impact the business outcomes. Practically, the results indicate that start-ups should establish the innovation capability not at the individual level but rather

on the systematic improvement of the entrepreneurial orientation, the digital marketing potential, and the access to the financial resources. This holistic way would ensure that the start-ups would be in a position to advance their resilience, competitiveness and long-term sustainability.

Muhammad Mubushar: Problem Identification and Theoretical Framework

Fahmeed Idrees: Data Analysis, Supervision and Drafting

Muhammad Ali Mufti: Methodology and Revision

Conflict of Interests/Disclosures

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