

# **An empirical examination of the Impact of Initial Capital, Prior Experience, and R&D on SMEs' Survival and Economic Performance: Moderating Role of Innovation Culture**

## **Abstract**

SMEs' survival and performance continue to be a central concern for strategy experts. There are numerous factors that affect the SMEs' survival for new entrants in the industry. This study incorporates research on the survival and performance of new entrant SMEs in a relationship with initial capital investment, experience, R&D, and innovation culture. We examined the influence of the SMEs' initial investment, experience, R&D, and innovation culture on its survival and performance guided by the evolutionary model of entry and exit to conclude whether these are positively related to each other. Further, we investigated moderated role of innovation culture between initial capital, experience, R&D, and firm performance. The outcomes of this study established on a large size sample of 337 SMEs suggest that firms with a large initial investment, prior experience, and R&D have higher probabilities of survival and economic performance and innovation culture strengthens the relationship between predictor and outcome constructs.

**Keywords:** Initial capital investment, Expertise, R&D, Innovation culture, SMEs' survival, Economic performance

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## **1. Introduction**

Attaining a firm's higher economic performance in international markets has remained an important component of international business strategy. Studies have been undertaken to comprehend how to reduce the liability of strangeness while maintaining competitive advantages in overseas markets (Bell et al., 2012; Peng, 2003; Prahalad, 1976). Despite various attempts, obstacles remain, as evidenced by the deviation of responses. Multinational corporations typically make numerous entries into a discrete foreign market through a consecutive entry process (Kogut & Kulatilaka, 1994). According to the organizational learning perspective, multinational businesses benefit from different entry experiences and make an international investments not only to exploit existing significant benefits but also to cultivate new innovative ideas (Nielsen et al., 2017).

Automobile manufacturers, tires, semiconductors, and television all experienced a surge at the beginning of their commercialization periods but then experienced a dramatic decrease and shakeout after a certain time step. It is advantageous to research the entry barriers and the potential dangers to firm profitability in industry segments that have experienced high levels of oligopoly emergence aftermarket entry (Klepper & Simons, 1997). At the beginning of the industry, a substantial number of manufacturers debuted, however with the passing years, there was a drastic decline or selloff in the number of businesses, leading the market to an oligopoly (Nariu et al., 2021). For new entrants in the industry, some numerous elements and resources influence firm performance (Agyei-Boapeah, 2019). With the help of a powerful dataset, this multidimensional

study attempted to shed light on how new entrant firms' initial capital, expertise, and R&D affect firm performance and how innovation culture moderates these associations.

Prior literature reveals that the primary amount of financial invested capital is highly positively associated with firm performance and growth (Cooper et al., 1994; O'Neill & Duker, 1986). That, if an organization has higher financial capital before starting an SME, it can spend more on R&D, product design, production, branding & promotion, and publicity. Besides, greater financial capital serves to protect against slow start-ups, industry downturns, or inadequate decision-making. Firms with financial constraints are frequently the contributing factor to firm breakdown and depart from the industry (Crook et al., 2011; Rujoub et al., 1995; Shaw et al., 2009). Divergent industry groups necessitate a different operating amount of initial investment to establish a venture (Porter, 1980). Manufacturing companies, for instance, require a huge amount of investment to start a business because they necessitate more capital for manufacturing equipment, inventories, production, and to safeguard start-up losses. Instead, the cost of starting a business in services and retail is relatively low than in other industries. Consequently, the initial capital requirements for various types of industries vary considerably (Chandler & Hanks, 1998; Linder et al., 2020).

Previous experience of the SME is beneficial in developing capabilities that are pertinent for its successful planning and innovation. When an organization has prior experience with joint ventures, it can address the questions of how to deal with other competitors in the industry (Barkema et al., 1997; Park, 2011). In this case, we anticipate that the founder of the new venture has previous experience in the same industry, which can be beneficial to the firm's performance and sustainability. At the initiation phase, the risk rate for inexperienced companies is higher than for experienced firms (Fritsch, 2013). According to previous research, multinational companies learn

from the experience they acquire from the host country's innovative culture (Figueira-de-Lemos et al., 2011; Vahlne & Nordström, 1993).

Resource-based theory (RBV) explains that firms have a variety of resource and competency packages (Barney, 2001; Peteraf, 1993). The firms can achieve a competitive advantage against competitors in the industry by deploying these inimitable, rare, heterogeneous, unique and valuable sources. (Kotabe et al., 2002) argued that research and development (R&D) can be a crucial component that contributes to firm survival, performance, and growth. Numerous prior literature (Artz et al., 2010; Mansfield, 1981; Revilla & Fernández, 2012) have also discovered a positive relationship between R&D intensity and firm progression. Firms can improve product quality compared to the competitors, reduce costs, and streamline business processes through R&D. SMEs with large initial capital can invest more in R&D to maximize profits, ensure their survival and growth in the industry, and invest more in R&D before entering the market to reduce their production costs. Large size ventures can make huge investments in R&D and earn greater revenues in return, but competitors can imitate this R&D without cost after some period (Klepper, 2002). Low-capital firms, in contrast, can make small investments in R&D, resulting in small returns, and such SMEs experience a greater rate of hazard in the industry. R&D, like experience, was unable to attract much attention from the previous researchers.

Available literature suggests that organizations achieve innovation through their infrastructure and R&D, which facilitates the development and execution of innovative activities (Valencia et al., 2010; Vey et al., 2017). Thus, the innovation culture generates a setup in which organization members can seek new opportunities to develop and enforce innovative business models to increase profitability (Halim et al., 2015). The intensity with which opportunities to communicate change in business products and processes are explored in an innovation culture (Ghasemaghahi

& Calic, 2020). Multinational enterprises can obtain innovation efficiency and productivity by searching for and using knowledge and information in enhancing SMEs' performance (Aksoy, 2017). According to (Chen et al., 2018), an organization's culture that encourages innovative actions is more likely to contribute to the advancement of its IP markets.

The objective of this study is to investigate how initial capital investment, SME experience, R&D, and innovation culture affect the SMEs' performance. Further, how innovation culture moderates the relationship between initial capital investment, SME experience, R&D, and SME performance. Although several previous studies explicate that huge initial capital investment affects firm survival and performance positively (Cooper et al., 1994), previous experience helps the firm in its survival in the industry, and firms learn from their own experience and the experience of other firms (Park, 2011), R&D density is positively associated with firm performance (Artz et al., 2010), and international firm achieves innovation and efficiency through seeking and implementing knowledge, information, and R&D in improving performance (Aksoy, 2017), more concentration is given mostly to multinational firms and its subsidiaries and very less concentration is given to domestic or small size SME in this regard. Our study will contribute to the existing literature by examining our research questions using a survey questionnaire from 337 respondents of small and medium enterprises (SMEs) from Pakistan.

The paper is structured as follows: In section 2, the literature background is discussed, and hypotheses are developed. Section 3 provides an overview of the research design and methodology. Section 4 elaborates the results and findings of the analysis and in section 5, discussions and conclusions are explained. Implications are given in section 6.

## **2. Literature Background and Hypothesis**

### **2.1 Literature about SMEs' Survival and Economic Performance**

The distance of firm survival, which necessitates only the period of entry and exit to calculate the duration, is one of the most extensively used measures of firm performance, and it can be conveniently dispersed to a product and institution level (Klepper, 2002). When a new SME enters the market, its survival chances are influenced by a multitude of factors like economic capital, human capital, geographic area, technology, and, of course, strategic planning. If the new entrant SME is unable to acquire any of these resources, the survival rate will be reduced, and the firm would most probably exit the market. According to (Stearns et al., 1995), new SMEs entering urban or metropolitan zones have a greater chance of survival than new SMEs entering rural regions. The location has a significant impact on the firm's survival and performance. In contrast, (Audretsch & Mahmood, 1995) contended that firm size and age are unquestionably related to firm survival rate. Larger firms will be more likely to survive, while smaller SMEs will be more likely to fail. Similarly, SMEs with a longer lifespan will outlive SMEs with a shorter lifespan.

A further theoretical approach contends that new diversifying companies outperform de novo companies in terms of performance and can persist longer in the industry. Numerous studies on firm performance exhibit that new entrants are often outperformed by diversification firms in both new and established industries (Dunne et al., 1988; Klepper, 2002). Diversifying organizations are mostly experienced and well-equipped with structural assets like capital, technology, distribution channels, and R&D maneuvers that can affect new SMEs in the industry. These organizations are also equipped with implicit knowledge and experience, which allows them to make better decisions than new entrants (Klepper, 2002; Nelson & Winter, 1982), resulting in higher profitability. Organizations use various approaches to grow in the industry, and diversification is one of those approaches that a firm can use to expand its main business into other diverse product markets (Chang & Wang, 2007; Lang & Stulz, 1994; Miller, 2006). Occasionally firms introduce new products with diversification at the cost of other products that they use to earn market revenue, but mostly diversification results in a firm's higher subsistence and profitability. Diversification in product

markets can boost an organization's revenue and profitability, enabling it to generate revenue and reduce its possibility of going bankrupt (Bhatia & Thakur, 2018; Herring & Carmassi, 2009; Pandya & Rao, 1998).

It is critical to ascertain the evidence of the firms' survival ability after they enter the industry. In attempting to examine the rationality of Gibrat's Law, (Santarelli et al., 2006) and (Storey, 1990) discovered that smaller firms dominate larger firms in terms of performance and growth rates, and they have a greater tendency to exit the industry than their larger competitors. Smaller firms invest limited resources to analyze their ability to survive in the industry, and they have a greater possibility of survival being specialists. Such firms introduce a small number of products with little R&D, and they introduce new products that are exceptional but only with incremental upgrades to existing technologies (Sorenson et al., 2006). Larger firms, in contrast, face exit barriers due to their huge investments in overheads such as R&D, product design, and marketing distribution, which are irreversible, making it virtually impossible for them to exit the industry, hence directing to survival and productivity.

The true competencies of the entrepreneur also have an impact on the firm's survival and growth after it enters the industry. Entrepreneurs who perceive themselves as sophisticated and have a high degree of confidence can expand their company's growth following their expectations, whereas those with a low level of confidence discover their post-entry performance lower than expected and continue to operate unvarying and high probability to exit the industry (Agarwal & Audretsch, 2001). The main objective of the new entrant organization is to enter and occupy a space in the market to acquire a platform to learn new experiences and various types of competencies for its survival and growth. It is found evidently that most new entrants in the industry are exceptionally small size firms (Dunne et al., 1988; Gatti et al., 2003; Jarmin et al., 2004; Malerba & Orsenigo, 1999), so they tend to exit largely due to small capital investment, either no or small prior experience, and no investments in R&D.

## **2.2 Initial Capital Investment and SME Performance**

New ventures must have a wide range of resources, including financial investment, human resources, market, customers, and strategy, when they enter the industry (Cooper et al., 1994; Robb & Coleman, 2009). Initial capital investment is considered a backbone when a new SME enters the industry. The initial investment resource may provide subsistence for the new entrant firm against the liabilities of newness and smallness. The availability of financial capital to make extensive financial strategies and R&D that cannot be imitated by competitors can have an impact on firm performance (Chandler & Hanks, 1998; Linder et al., 2020).

The financial investments made at the beginning of an SME can also affect its survivability and performance. The initial capital invested in a business has a positive influence on the firm survival and economic growth (Désiage et al., 2010; O'Neill & Duker, 1986). The amount of capital is also affiliated with the entrepreneur's immediate financial strategies to pursue the firm's objective of survival and growth. A small retailer, for instance, with enormous economic means, can initiate a business with a large variety of diverse products in its product line (Ganesan et al., 2006). A large initial financial capital assists the SME in understanding the market and overcoming the complications encountered in the industry over time (Cooper et al., 1994). (Cooper et al., 1992) asserted that six out of eight studies discovered a significant positive relationship between larger initial capital and higher firm performance.

*Hypothesis 1: Larger the initial capital investment of a new entrant SME, the higher the likelihood of viability and economic performance*



### **2.3 Prior Experience and SME Performance**

Since new entrants must conduct some experiments to survive while being inexperienced, they encounter obstacles in the early stages because they are blissfully ignorant of market momentum, routines of work and administration procedures, and legitimacy with vendors and clients (Çalışkan, 2010; Cooper et al., 1994; Mubarik, 2015). This phase of exploration is extremely crucial and difficult for the firm's survival because it is characterized by test repetitions and failures. The experience of the firm's entrepreneur is also essential for its survival (Huggins et al., 2017). Certain firms do not need a capital structure because they can always find financing thanks to their experience with multiple good projects (Lang et al., 1996; Macpherson & Holt, 2007). An experienced founder can discover better opportunities to obtain the necessary capital (Timmons, 1989). The founder of a new SME gains experience from his previous organization where he worked as general manager, years of work expertise running his own some other related business, years operational with technical or any specialized area, and his education in the related field (Chandler & Hanks, 1998; Geroski et al., 2010; Kor & Sundaramurthy, 2009). A founder with extensive experience is more likely to make his SME survive and grow successfully. There, we propose the following hypothesis:

*Hypothesis 2: Higher the prior experience of a new entrant SME founder has, the higher the likelihood of viability and economic performance*

### **2.4 R&D and SME Performance**

Previous literature suggests that innovation and creation have an impact on SME economic performance as well as increase the economic growth rate (Lucas Jr, 1988; Romer, 1986). When an SME makes higher investments in R&D before entering in industry, it gains a competitive advantage. (Schumpeter, 2010) contends that SMEs invest more in R&D and earn higher returns

in the early stages, achieve competitive advantage from inimitable R&D, charge monopoly and oligopoly revenues, survive in the industry always, and get higher economic benefits. Besides, (Mukhopadhyay, 1985) suggests that the entry barrier can be reduced through quick imitation and a new firm can survive if it can imitate the R&D of other successful firms. The advancement of new technologies mitigates production costs and increases SME profitability which further impacts its survival positively (Greenhalgh & Rogers, 2006; Montégu et al., 2019; Peneder & Wörter, 2014). Small ventures can enter small markets and compete with other small firms. They cannot compete with larger and more established firms in the industry. These SMEs have insufficient capital to invest in R&D and generate innovation. They are expected to acquire more innovation, for example, in more competitive markets (Kocoglu et al., 2012; Thornhill, 2006).

A further argument advanced is that since firms in the same industry are perfectly homogeneous, no firm can gain a sustainable competitive advantage because all firms' resources are imitable, resulting in the existence of "barriers to entry" (Fee et al., 2004) or "mobility barriers" (Barney, 2001). According to (Kotabe, 1990), R&D is not required for all technological industries, but it is essential for concentrated technological industries where SMEs can attain long-term competitive advantage. It is suggested that companies engage in R&D to reduce costs to get a reprieve from price competition, and it may also provide an opportunity for the organization to strengthen its technology to survive in a dynamic environment (Cellini & Lambertini, 2009; Lei, 2003). Previous research has focused on identifying the innovation contributing factors to firm growth (Hölzl, 2009) and their contribution over time (Kafouros et al., 2008). Firm size is predicted to be impacted by the effect of R&D activities (Klepper & Simons, 1997), and it varies across industry sectors. When compared to smaller ventures, larger firms are superior to capitalize on the benefits of R&D

investment, and higher technology firms focus primarily on R&D activities than lower technology firms in the industry (Artz et al., 2010; Sampson, 2007). Therefore, it is hypothesized that:

*Hypothesis 3: Higher the prior R&D of new entrant SME, higher the likelihood of viability and economic performance*

## **2.5 Moderating Role of Innovation Culture**

Findings from previous literature suggest a significant relationship between culture and performance (Kotter, 2008; Sackmann, 2011; Shahzad et al., 2012). In the corporate environment, innovation is a critical precondition to competition and creates wealth (Cefis & Marsili, 2006; Zhang et al., 2018). However, without a culture that encourages the firm to progress, it is challenging to adopt the implementation of innovation (Halim et al., 2015). When companies encourage their workers to share their expertise with the entire organization, they promote innovation (Valencia et al., 2010). Consequently, members of the organization share values, ideologies, and attitudes in a way that promotes an innovative culture (Ali & Park, 2016). This facilitates economic growth and the acquisition of new knowledge, which enhances SME performance (Škerlavaj et al., 2007).

Prior research has explored the critical importance of an innovative culture in SMEs' innovative performance (Halim et al., 2015). Immensely entrepreneurial interests and low endurance to change characterize a flexible innovative culture (Saleh & Wang, 1993). An innovation culture enables a firm to generate novel methods for building new channels while integrating new techniques for marketing a valuable product to consumers (Gupta et al., 1986). Because of the dominance of their innovation culture, SMEs can attain a competitive advantage when it comes to enhancing product efficiency, marketing techniques, and achieving the required output. The literature establishes a strong link between innovation culture and firm performance (Gupta &

Gupta, 2019; Kotter, 2008; Sackmann, 2011; Shahzad et al., 2012; Uzokurt et al., 2013). Consequently, one might say that SMEs use innovation more effectively in an innovative cultural context to enhance SME profitability since culture is an important factor that impacts performance (Bokhari & Aftab, 2022). It is assumed that there will be a significantly positive correlation between innovative culture and SME performance; thus

*Hypothesis 4: Higher the innovation culture of a new entrant SME, the higher the likelihood of economic performances*

Whereas earlier hypotheses demonstrated a fundamental relationship between innovation culture and economic performance, a better comprehension of this complicated relationship might provide insights into these phenomena. Various research believes organizational culture to be a moderator variable in achieving enhanced firm performance (Hsu & Fang, 2009; Hynes, 2009). Innovation refers to an organization's propensity and adaptability to implement ideas that deviate from the conventional pattern of business (Menguc & Auh, 2006). Compliance to abandon prior practices and attempting experimental ideas is required for innovation (Tsai & Yang, 2014). Innovation has such a significant impact on organizational performance (Zaefarian et al., 2017).

Previous literature revealed that initial capital investment has a positive impact on firm performance and growth (Cooper et al., 1994; Désiège et al., 2010; O'Neill & Duker, 1986), firm survival, economic performance, and growth are influenced significantly by entrepreneurs' prior experience gained from the industry (Geroski et al., 2010; Macpherson & Holt, 2007), and higher R&D in the firm has a substantial impact on its economic survival and performance (Artz et al., 2010; Cellini & Lambertini, 2009; Hölzl, 2009). There are inconsistent findings between initial capital investment, prior experience of the entrepreneur, R&D, and firm performance, and an additional contextual variable that moderates the correlation between these variables is required.

The innovation concept is characterized as a creative, dynamic work atmosphere that is result-oriented and is portrayed as industrially aspirational, risk-taking, and motivating (Wallach, 1983). Innovation culture is adopted as a moderating variable in this study which means that the organization's culture is dynamic, innovative, ambitious, exciting, stimulating, exploratory, result-oriented, and compress. When analyzing a firm economic performance, innovation is essential (Quy, 2017). Hence, the following hypotheses are formulated based on previous literature and theories:

*Hypothesis 5: Innovation culture moderates the relationship between initial capital investment and SME economic performance positively*

*Hypothesis 6: Innovation culture moderates the relationship between the prior experience of entrepreneur and SME economic performance significantly*

*Hypothesis 7: Innovation culture moderates the relationship between Research & Development and SME economic performance substantially*

### **3. Research Methodology**

#### **3.1 Data Sampling**

The sample includes SMEs' entrepreneurs, senior executives, and marketing and R&D directors, all of whom were responsible for the company's adoption of innovative initiatives. An online survey was administered via e-mail to registered members of the Chamber of Commerce in Lahore, Faisalabad, and Karachi to collect data. Personnel from 1641 SMEs were requested to respond to the questionnaire, and 337 respondents finished the complete survey, yielding a response rate of 20.53%.

There are numerous sufficient grounds to concentrate on small and medium-sized firms. Small and medium-sized enterprises (SMEs) play a critical part in economic progress and income growth around the world. Moreover, SMEs promote job creation, resulting in the most challenging environment in emerging nations (Bokhari et al., 2021; Saleh & Wang, 1993). Ultimately, innovative activities provide SMEs with the skills they require to reduce product life cycles, boost survival rates, and compete and expand in a challenging environment (Rosenbusch et al., 2011). This is particularly important for small businesses in developing countries with limited resources, as innovation is an expensive process (Vrgovic et al., 2012). Table 3 provides summary statistics for our data collected for the overall sample.

\*\*\*\*\* Place Table 1 here please \*\*\*\*\*

### **3.2 Reliability and Validity**

Hierarchical Multiple Regression is a data analysis method that can be used to test hypotheses. Table 4 provides the derived loadings, Cronbach alphas, composite reliabilities, and average variances extracted (AVE). The minimal loading should preferably be 0.70 or higher, however, the maximum permissible loading number is 0.50 (Le Bas & Sierra, 2002). For all components in the framework, composite reliability and AVE were examined. In respect of measuring reliability, composite reliability scores of more than 0.60 are satisfactory (Wynne, 1998). All composite reliability values were more than 0.60 (.886, .941, .948 and .918 respectively). The AVE range was adequate in reaching the desired range of 0.50 (Miron et al., 2004). The AVE values for initial capital, experience, R&D, innovation culture, and firm economic performance all achieved an adequate standard of 0.50. Cronbach's alphas for the five constructs surpassed the 0.70 threshold mark (Fornell & Larcker, 1981). Therefore, the measurement model is both valid and reliable.

\*\*\*\*\* Place Table 2 here please \*\*\*\*\*

Figure 1 depicts the correlations between the variables used in this study. The following are the five variables: The independent components are initial capital investment, experience, and R&D; the moderating variable is innovation culture, and the dependent variable is firm economic performance.

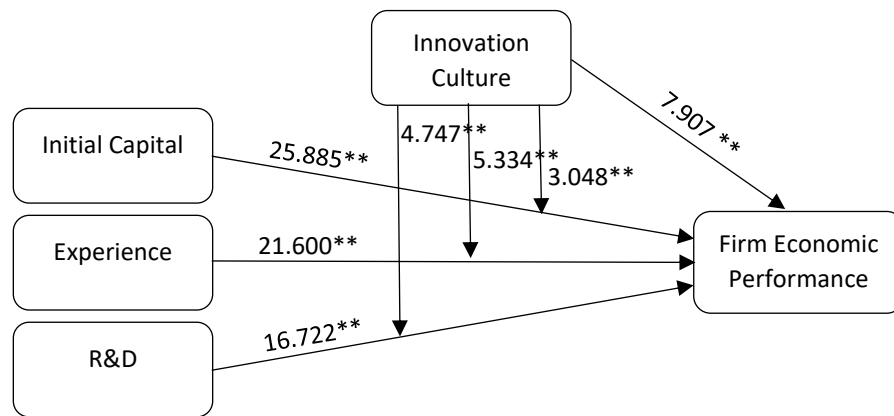


Figure 1: Research Framework

## 4. Results

### 4.1 Model Testing

The study's five components include initial capital investment, experience, research and development, innovation culture, and business economic performance in SMEs. Most of the indicators were adapted from prior research. The innovation variable was adopted from (Khattak, 2022). We examined 6 components such as “culture rewards behaviors that relate to creativity, organization’s culture encourages informal meetings and interactions, the culture encourages employees to monitor their performance, Employees take risks by continuously experimenting with new ways of doing things, the culture encourages employees to share knowledge, and culture focuses on teamwork long term performance to evaluate innovation culture” in SMEs. The term

experience variable was derived from (Alliger & Williams, 1993). The initial capital investment, the amount spent on R&D, and business economic performance were derived from the annual report of SMEs, as well as the survey questionnaire. The resultant range of factors was subjected to confirmatory factor analysis in SPSS 26 using multiple regression. The goodness of fit index (GFI) 2.149, the incremental fit index (IFI) 0.921, the root mean square error of approximation (RMSEA) 0.065, the root mean square residual (RMR) 0.38, the comparative fit index (CFI) 0.97, and the adjusted goodness of fit index (AGFI) 0.92, all suggested a good fit for the samples. These indices confirmed the key values for good data-model fit.

Table 3 displays the correlation values between all variables. The descriptive statistics and correlations, for the major portion, indicate in the appropriate direction and are as predicted. Firm economic performance is positively and significantly correlated with initial capital investment, experience, and R&D ( $r = 0.656$ ,  $p < 0.01$ ;  $r = 0.573$ ,  $p < 0.01$ ; and  $r = 0.628$ ,  $p < 0.01$ ). Firm economic performance has a favourable and considerably stronger correlation with innovation culture ( $r = 0.586$ ,  $p < 0.01$ ).

\*\*\*\*\* Place Table 3 here please \*\*\*\*\*

Table 4 explicates the findings of regression analyses to test the influences of initial capital investment, experience, and RED on SMEs' economic performance, the effect of innovation culture on financial performance, as well as the moderating impact of innovation culture on the relationship of initial capital investment, experience, and RED and economic performance. The outcomes in Model 1 of Table 4 show that SME size has a constantly negative effect on the economic performance of SMEs at a substantial level throughout all Models. It suggests that small-size firms can perform better and can have higher effectiveness as compared to large-size firms. Prior literature produced varying findings regarding the effect of firm age on economic



performance, however, firms with younger ages are more likely to grow quicker and produce better results than large organizations (Stella et al., 2014). According to the sampling data in Table 1, the proportion of small and medium-size entities is substantially larger than that of large size firms and discovered on economic performance across all Models. These conclusions may suggest that organizations with fewer than 100 employees behave better than those with more than 100 employees and that firms with fewer than 500 employees behave better than those with more than 500 employees.

\*\*\*\*\* Place Table 4 here please \*\*\*\*\*

The outcomes for the SMEs in Table 4 provide support for all our hypotheses. According to H1, initial capital investment has a beneficial impact on SMEs' economic performance ( $t = 25.885$ ;  $p < 0.001$ ). Consistent with H2, the association between prior experience and SMEs' financial performance is significantly positive ( $t = 21.600$ ;  $p < 0.001$ ). We proposed in H3 that investment made in R&D has a relationship with SMEs' economic performance and finding scores indicate that our anticipation is correct, and R&D has a substantial positive impact on SMEs' economic performance ( $t = 16.722$ ;  $p < 0.001$ ). Moreover, SMEs' economic performance is affected by innovation culture as anticipated in H4, and the results in Table 4 supported our anticipation strongly ( $t = 7.907$ ;  $p < 0.001$ ). These findings suggest that Hypotheses H1, H2, H3, and H4 are strongly supported.

We investigated our moderating hypotheses further, and the results displayed in Table 6 provide significant support for our predictions. According to H5, when innovation culture is included as a moderator, the association between initial capital investment and SMEs' economic performance is enhanced, and the results indicated significant support ( $t = 4.747$ ;  $p < 0.001$ ). We hypothesized in H6 that when innovation culture is incorporated as a moderator, the relationship between the prior

experience of entrepreneurs and SMEs' economic performance is strengthened, and we found substantial evidence for our hypothesis ( $t = 5.334$ ;  $p < 0.001$ ). Finally, R&D has a significant positive impact on SMEs' economic performance, and this relationship is moderated by innovation culture, which strengthens this correlation ( $t = 3.048$ ;  $p < 0.001$ ), as shown in Table 6. Hence, these findings suggest that H5, H6, and H7 are strongly supported.

## **5. Discussion and Conclusion**

The current study suggests an approach for enhancing the survival and economic performance of Pakistani SMEs. In this framework, innovation culture moderates the relationship between initial capital investment, entrepreneur prior experience, R&D, and economic performance. The framework indicates that SMEs do not require large capital and have a high probability of survival. After all, they do not need to invest heavily in R&D before entering the industry because they are not highly technologically oriented firms, can broaden their product line without R&D, and can acquire dynamic resources to gain a competitive advantage (Barney, 2001). This framework specifically suggests that the innovation culture of SMEs increases the likelihood of the firm's survival, and the relationship between initial capital investment, prior experience, and R&D is enhanced with the economic performance of SMEs. Having such a framework or resources could ultimately help SMEs accept innovation and find new opportunities to optimize their business processes. Consequently, SMEs can benefit from innovation in a robust economy. The capability to cultivate an innovation culture enables SMEs to respond in a way that safeguards their competitiveness in a volatile market. Small and medium-sized enterprises (SMEs) can leverage the advantages of an innovation culture to operate their business effectively, efficiently, and with expected outcomes. People that live in an innovative culture can share their expertise with each other. The frequency of creating new ideas will be increased massively in information exchange,

therefore SMEs will not need to invest a lot in R&D. Nevertheless, the acquired information should be interpreted in such a method that people can quickly absorb it and enhance their experience and expertise.

Beyond confusion, cognitive and behavioral factors have a significant influence in creating an environment conducive to innovation, which can lead to improved financial performance. The present study conducted an initial preliminary investigation by surveying ten SME entrepreneurs from diverse industries in gaining support for the conceptual framework of innovation culture across SMEs in Pakistan. The survey findings proved that the principle of innovation culture integral part of innovation. It is in what entrepreneurs are motivated enough to explore different things regularly. For that purpose, an entrepreneur would have the required finance, experience, skills, and capabilities to effectively develop and execute new ideas. Nonetheless, the economic performance of SMEs will only prosper in the future years because nurturing profitability necessitates the absolute dedication of entrepreneurs to overcome employee resistance to transition to an innovation culture. Governing innovation is about promoting a culture in which innovative concepts are developed, acknowledged, and promoted, and obtaining such an innovation performance status is not a straightforward process without a comprehensive road map or strategies that are articulated and implemented.

To progress beyond a holistic approach to innovation culture, the component of experience sharing is very essential, as previous research demonstrated that the introduction of innovative knowledge is difficult to achieve, but it could revolutionize employee attitudes. Indeed, SMEs with a significant experience sharing culture is effective at producing, gaining, and transmitting skills and experience, as well as adapting behavior to incorporate new abilities and ideas without overspending on R&D. Above all, SMEs ought to be responsible for translating knowledge into

action. Based on the early findings, it is possible to conclude that innovation culture has an impact on R&D and can make it prevalent or unique in multiple aspects of firms (Duygulu et al., 2015). If maintained properly, an innovation culture may boost creativity and profitability. A critical component of innovative behavior is cultural openness to innovation, as demonstrated by the relationship between organizational culture and organizational learning and innovation. The innovation culture relates to the cultural awareness required to realize the necessity for SMEs' economic performance. Future research should include both qualitative and quantitative methodologies, as well as a broader range of research methods, to increase the conceptual and practical significance of the research. Consequently, providing the exploratory research outcome to SME owners will include a unique perspective on why they need to understand the essence of an innovation culture to transition from conventional methods of doing business to innovative ways of conducting business.

## **6. Implications**

It is recommended that the entrepreneur reconsider the industry's necessity for initial financial capital. Previous research indicated that the amount of capital decided to invest by the firm's founder is not influenced heavily by sector differences, but rather by the amount of first invested capital. There were disparities between companies based on industry categories, experienced versus inexperienced, and R&D engagement organizations. It is discovered that manufacturers demand more start-up capital, higher prior experience, and higher R&D initiatives to thrive in the industry's highly dynamic technological environment. It is also discovered that in certain specific industries, initial capital investment can be substituted for human capital (experience of the entrepreneur) since if the owner has the previous industry knowledge, he would be capable of sustaining the firm efficiently. The retail and service industries require less initial capital, but the

entrepreneur must have a high level of education and experience. Such firms do not need to engage in R&D operations, as manufacturing enterprises must. Those with a low level of initial capital investment and lower prior experience had low chance of firm survival. Nevertheless, the survivability of firms with a high rate of former experience of the entrepreneur and a low level of investment was virtually comparable to that of firms with a minimal concentration of prior founder expertise and a greater level of investment capital. Those with a limited amount of initial capital investment and a lack of relevant experience had a lesser probability of surviving.

## References

- Agarwal, R., & Audretsch, D. B. (2001). Does entry size matter? The impact of the life cycle and technology on firm survival. *The Journal of Industrial Economics*, 49(1), 21-43.
- Agyei-Boapeah, H. (2019). Foreign acquisitions and firm performance: The moderating role of prior foreign experience. *Global Finance Journal*, 42, 100415.
- Aksoy, H. (2017). How do innovation culture, marketing innovation and product innovation affect the market performance of small and medium-sized enterprises (SMEs). *Technology in Society*, 51(4), 133-141.
- Ali, M., & Park, K. (2016). The mediating role of an innovative culture in the relationship between absorptive capacity and technical and non-technical innovation. *Journal of business research*, 69(5), 1669-1675.
- Alliger, G. M., & Williams, K. J. (1993). Using signal-contingent experience sampling methodology to study work in the field: A discussion and illustration examining task perceptions and mood. *Personnel Psychology*, 46(3), 525-549.
- Artz, K. W., Norman, P. M., Hatfield, D. E., & Cardinal, L. B. (2010). A longitudinal study of the impact of R&D, patents, and product innovation on firm performance. *Journal of product innovation management*, 27(5), 725-740.
- Audretsch, D. B., & Mahmood, T. (1995). New firm survival: new results using a hazard function. *The review of economics and statistics*, 97-103.
- Barkema, H. G., Shenkar, O., Vermeulen, F., & Bell, J. H. (1997). Working abroad, working with others: How firms learn to operate international joint ventures. *Academy of Management journal*, 40(2), 426-442.
- Barney, J. B. (2001). Resource-based theories of competitive advantage: A ten-year retrospective on the resource-based view. *Journal of management*, 27(6), 643-650.
- Bell, R. G., Filatotchev, I., & Rasheed, A. A. (2012). The liability of foreignness in capital markets: Sources and remedies. *Journal of International Business Studies*, 43(2), 107-122.
- Bhatia, A., & Thakur, A. (2018). Corporate diversification and firm performance: an empirical investigation of causality. *International Journal of Organizational Analysis*.
- Bokhari, S. A. A., & Aftab, M. (2022). Personality traits and social loafing among employees working in teams at small and medium enterprises: A cultural perspective data from emerging economies. *Data in brief*, 42, 108085.
- Bokhari, S. A. A., Aftab, M., & Shahid, M. (2021). Political Instability and Inward Foreign Direct Investment: The Perspective of Government Corruption from an Emerging Economy. *Industry Promotion Research*, 6(4), 69-81.
- Çalışkan, E. N. (2010). The impact of strategic human resource management on organizational performance. *Journal of Naval Sciences and Engineering*, 6(2), 100-116.
- Cefis, E., & Marsili, O. (2006). Survivor: The role of innovation in firms' survival. *Research policy*, 35(5), 626-641.
- Cellini, R., & Lambertini, L. (2009). Dynamic R&D with spillovers: Competition vs cooperation. *Journal of Economic Dynamics and Control*, 33(3), 568-582.
- Chandler, G. N., & Hanks, S. H. (1998). An examination of the substitutability of founders human and financial capital in emerging business ventures. *Journal of business venturing*, 13(5), 353-369.
- Chang, S.-C., & Wang, C.-F. (2007). The effect of product diversification strategies on the relationship between international diversification and firm performance. *Journal of world business*, 42(1), 61-79.
- Chen, Z., Huang, S., Liu, C., Min, M., & Zhou, L. (2018). Fit between organizational culture and innovation strategy: Implications for innovation performance. *Sustainability*, 10(10), 3378.

- Cooper, A., Folta, F., Gimeno-Gascon, F., & Woo, C. (1992). Entrepreneurs, Process of Founding and New Firm Performance. In: Sexton D., Kassandra J.[ur.] The State of the Art in Entrepreneurship. In: Boston, MA: PWS Kent Publishing Co.
- Cooper, A. C., Gimeno-Gascon, F. J., & Woo, C. Y. (1994). Initial human and financial capital as predictors of new venture performance. *Journal of business venturing*, 9(5), 371-395.
- Crook, T. R., Todd, S. Y., Combs, J. G., Woehr, D. J., & Ketchen Jr, D. J. (2011). Does human capital matter? A meta-analysis of the relationship between human capital and firm performance. *Journal of applied psychology*, 96(3), 443.
- Désiège, L. J., Duhautois, R., & Redor, D. (2010). Do public subsidies have an impact on new firm survival? An empirical study with French data. *An Empirical Study with French Data (March 26, 2010)*.
- Dunne, T., Roberts, M. J., & Samuelson, L. (1988). Patterns of firm entry and exit in US manufacturing industries. *The RAND journal of Economics*, 495-515.
- Duygulu, E., Ozeren, E., Bagiran, D., Appolloni, A., & Mavisu, M. (2015). Gaining insight into innovation culture within the context of R&D centres in Turkey. *International Journal of Entrepreneurship and Innovation Management*, 19(1-2), 117-146.
- Fee, P. R., Mialon, H. M., & Williams, M. A. (2004). What is a Barrier to Entry? *American Economic Review*, 94(2), 461-465.
- Figueira-de-Lemos, F., Johanson, J., & Vahlne, J.-E. (2011). Risk management in the internationalization process of the firm: A note on the Uppsala model. *Journal of World Business*, 46(2), 143-153.
- Fornell, C., & Larcker, D. F. (1981). Structural equation models with unobservable variables and measurement error: Algebra and statistics. In: Sage Publications Sage CA: Los Angeles, CA.
- Fritsch, M. (2013). New business formation and regional development: a survey and assessment of the evidence. *Foundations and Trends® in Entrepreneurship*, 9(3), 249-364.
- Ganesan, D., Muthig, D., & Yoshimura, K. (2006). Predicting return-on-investment for product line generations. 10th International Software Product Line Conference (SPLC'06),
- Gatti, D. D., Gallegati, M., Giulioni, G., & Palestini, A. (2003). Financial fragility, patterns of firms' entry and exit and aggregate dynamics. *Journal of economic behavior & organization*, 51(1), 79-97.
- Geroski, P. A., Mata, J., & Portugal, P. (2010). Founding conditions and the survival of new firms. *Strategic Management Journal*, 31(5), 510-529.
- Ghasemaghaei, M., & Calic, G. (2020). Assessing the impact of big data on firm innovation performance: Big data is not always better data. *Journal of Business Research*, 108, 147-162.
- Greenhalgh, C., & Rogers, M. (2006). The value of innovation: The interaction of competition, R&D and IP. *Research Policy*, 35(4), 562-580.
- Gupta, A. K., & Gupta, N. (2019). Innovation and culture as a dynamic capability for firm performance: A study from emerging markets. *Global Journal of Flexible Systems Management*, 20(4), 323-336.
- Gupta, A. K., Raj, S., & Wilemon, D. (1986). A model for studying R&D–marketing interface in the product innovation process. *Journal of marketing*, 50(2), 7-17.
- Halim, H. A., Ahmad, N. H., Ramayah, T., Hanifah, H., Taghizadeh, S. K., & Mohamad, M. N. (2015). Towards an innovation culture: Enhancing innovative performance of Malaysian SMEs. *Academic Journal of Interdisciplinary Studies*, 4(2), 85.
- Herring, R., & Carmassi, J. (2009). The corporate structure of international financial conglomerates. A. Berger.
- Hölzl, W. (2009). Is the R&D behaviour of fast-growing SMEs different? Evidence from CIS III data for 16 countries. *Small Business Economics*, 33(1), 59-75.
- Hsu, Y.-H., & Fang, W. (2009). Intellectual capital and new product development performance: The mediating role of organizational learning capability. *Technological Forecasting and Social Change*, 76(5), 664-677.

- Huggins, R., Prokop, D., & Thompson, P. (2017). Entrepreneurship and the determinants of firm survival within regions: human capital, growth motivation and locational conditions. *Entrepreneurship & Regional Development*, 29(3-4), 357-389.
- Hynes, N. (2009). Corporate culture, strategic orientation, and business performance: New approaches to modeling complex relationships. *Technological Forecasting and Social Change*, 76(5), 644-651.
- Jarmin, R. S., Klimek, S. D., & Miranda, J. (2004). *Firm Entry and Exit in the US Retail Sector, 1977-1997*. US Census Bureau.
- Kafourous, M. I., Buckley, P. J., Sharp, J. A., & Wang, C. (2008). The role of internationalization in explaining innovation performance. *Technovation*, 28(1-2), 63-74.
- Khattak, A. (2022). Hegemony of Digital Platforms, Innovation Culture, and E-Commerce Marketing Capabilities: The Innovation Performance Perspective. *Sustainability*, 14(1), 463.
- Klepper, S. (2002). The capabilities of new firms and the evolution of the US automobile industry. *Industrial and corporate change*, 11(4), 645-666.
- Klepper, S., & Simons, K. L. (1997). Technological extinctions of industrial firms: an inquiry into their nature and causes. *Industrial and Corporate change*, 6(2), 379-460.
- Kocoglu, I., Imamoglu, S. Z., Ince, H., & Keskin, H. (2012). Learning, R&D and manufacturing capabilities as determinants of technological learning: enhancing innovation and firm performance. *Procedia-social and behavioral sciences*, 58, 842-852.
- Kogut, B., & Kulatilaka, N. (1994). Operating flexibility, global manufacturing, and the option value of a multinational network. *Management science*, 40(1), 123-139.
- Kor, Y. Y., & Sundaramurthy, C. (2009). Experience-based human capital and social capital of outside directors. *Journal of management*, 35(4), 981-1006.
- Kotabe, M. (1990). The relationship between offshore sourcing and innovativeness of US multinational firms: An empirical investigation. *Journal of International Business Studies*, 21(4), 623-638.
- Kotabe, M., Srinivasan, S. S., & Aulakh, P. S. (2002). Multinationality and firm performance: The moderating role of R&D and marketing capabilities. *Journal of international business studies*, 33(1), 79-97.
- Kotter, J. P. (2008). *Corporate culture and performance*. Simon and Schuster.
- Lang, L., Ofek, E., & Stulz, R. (1996). Leverage, investment, and firm growth. *Journal of financial Economics*, 40(1), 3-29.
- Lang, L. H., & Stulz, R. M. (1994). Tobin's q, corporate diversification, and firm performance. *Journal of political economy*, 102(6), 1248-1280.
- Le Bas, C., & Sierra, C. (2002). 'Location versus home country advantages' in R&D activities: some further results on multinationals' locational strategies. *Research policy*, 31(4), 589-609.
- Lei, D. (2003). Competition, cooperation and learning: the new dynamics of strategy and organisation design for the innovation net. *International Journal of Technology Management*, 26(7), 694-716.
- Linder, C., Lechner, C., & Pelzel, F. (2020). Many roads lead to Rome: How human, social, and financial capital are related to new venture survival. *Entrepreneurship Theory and Practice*, 44(5), 909-932.
- Lucas Jr, R. E. (1988). On the mechanics of economic development. *Journal of monetary economics*, 22(1), 3-42.
- Macpherson, A., & Holt, R. (2007). Knowledge, learning and small firm growth: A systematic review of the evidence. *Research policy*, 36(2), 172-192.
- Malerba, F., & Orsenigo, L. (1999). Technological entry, exit and survival: an empirical analysis of patent data. *Research Policy*, 28(6), 643-660.
- Mansfield, E. (1981). Composition of R and D expenditures: Relationship to size of firm, concentration, and innovative output. *The Review of Economics and Statistics*, 610-615.
- Menguc, B., & Auh, S. (2006). Creating a firm-level dynamic capability through capitalizing on market orientation and innovativeness. *Journal of the academy of marketing science*, 34(1), 63-73.
- Miller, D. J. (2006). Technological diversity, related diversification, and firm performance. *Strategic Management Journal*, 27(7), 601-619.



- Miron, E., Erez, M., & Naveh, E. (2004). Do personal characteristics and cultural values that promote innovation, quality, and efficiency compete or complement each other? *Journal of organizational behavior*, 25(2), 175-199.
- Montégu, J. P., Calvo, C., & Pertuze, J. A. (2019). Competition, R&D and innovation in Chilean firms. *Management Research: Journal of the Iberoamerican Academy of Management*.
- Mubarik, M. S. (2015). *Human capital and performance of small & medium manufacturing enterprises: a study of Pakistan* University of Malaya].
- Mukhopadhyay, A. K. (1985). Technological progress and change in market concentration in the US, 1963-77. *Southern Economic Journal*, 141-149.
- Nariu, T., Flath, D., & Okamura, M. (2021). A vertical oligopoly in which entry increases every firm's profit. *Journal of Economics & Management Strategy*, 30(3), 684-694.
- Nelson, R. R., & Winter, S. G. (1982). The Schumpeterian tradeoff revisited. *The American Economic Review*, 72(1), 114-132.
- Nielsen, B. B., Asmussen, C. G., & Weatherall, C. D. (2017). The location choice of foreign direct investments: Empirical evidence and methodological challenges. *Journal of World Business*, 52(1), 62-82.
- O'Neill, H. M., & Duker, J. (1986). Survival and failure in small business. *Journal of Small Business Management*, 24(1), 30-37.
- Pandya, A. M., & Rao, N. V. (1998). Diversification and firm performance: An empirical evaluation. *Journal of financial and strategic decisions*, 11(2), 67-81.
- Park, B. I. (2011). Knowledge transfer capacity of multinational enterprises and technology acquisition in international joint ventures. *International Business Review*, 20(1), 75-87.
- Peneder, M., & Wörter, M. (2014). Competition, R&D and innovation: testing the inverted-U in a simultaneous system. *Journal of Evolutionary Economics*, 24(3), 653-687.
- Peng, M. W. (2003). Institutional transitions and strategic choices. *Academy of management review*, 28(2), 275-296.
- Peteraf, M. A. (1993). The cornerstones of competitive advantage: a resource-based view. *Strategic management journal*, 14(3), 179-191.
- Porter, M. E. (1980). Industry structure and competitive strategy: Keys to profitability. *Financial analysts journal*, 36(4), 30-41.
- Prahalad, C. (1976). Strategic choices in diversified MNCs. *Matrix Organization & Project Management*, 73.
- Quy, V. T. (2017). organizational culture and firm performance—A comparative study between local and foreign companies located in Ho Chi Minh City. Proceedings of NIDA International Business Conference 2017—Innovative Management: Bridging,
- Revilla, A. J., & Fernández, Z. (2012). The relation between firm size and R&D productivity in different technological regimes. *Technovation*, 32(11), 609-623.
- Robb, A., & Coleman, S. (2009). The impact of financial capital on business performance: A comparison of women-and men-owned firms. Available at SSRN 1400742.
- Romer, P. M. (1986). Increasing returns and long-run growth. *Journal of political economy*, 94(5), 1002-1037.
- Rosenbusch, N., Brinckmann, J., & Bausch, A. (2011). Is innovation always beneficial? A meta-analysis of the relationship between innovation and performance in SMEs. *Journal of business Venturing*, 26(4), 441-457.
- Rujoub, M. A., Cook, D. M., & Hay, L. E. (1995). Using cash flow ratios to predict business failures. *Journal of Managerial Issues*, 75-90.
- Sackmann, S. A. (2011). Culture and performance. *The handbook of organizational culture and climate*, 2, 188-224.
- Saleh, S. D., & Wang, C. K. (1993). The management of innovation: strategy, structure, and organizational climate. *IEEE transactions on engineering management*, 40(1), 14-21.

- Sampson, R. C. (2007). R&D alliances and firm performance: The impact of technological diversity and alliance organization on innovation. *Academy of management journal*, 50(2), 364-386.
- Santarelli, E., Klomp, L., & Thurik, A. R. (2006). Gibrat's law: An overview of the empirical literature. *Entrepreneurship, growth, and innovation*, 41-73.
- Schumpeter, J. A. (2010). *Capitalism, socialism and democracy*. routledge.
- Shahzad, F., Luqman, R. A., Khan, A. R., & Shabbir, L. (2012). Impact of organizational culture on organizational performance: An overview. *Interdisciplinary journal of contemporary research in business*.
- Shaw, E., Marlow, S., Lam, W., & Carter, S. (2009). Gender and entrepreneurial capital: implications for firm performance. *International Journal of Gender and Entrepreneurship*.
- Škerlavaj, M., Štemberger, M. I., & Dimovski, V. (2007). Organizational learning culture—the missing link between business process change and organizational performance. *International journal of production economics*, 106(2), 346-367.
- Sorenson, O., McEvily, S., Ren, C. R., & Roy, R. (2006). Niche width revisited: Organizational scope, behavior and performance. *Strategic Management Journal*, 27(10), 915-936.
- Stearns, T. M., Carter, N. M., Reynolds, P. D., & Williams, M. L. (1995). New firm survival: industry, strategy, and location. *Journal of business venturing*, 10(1), 23-42.
- Stella, B., Aggrey, N., & Eseza, K. (2014). Firm size and rate of growth of Ugandan manufacturing firms. *Journal of Applied Economics & Business Research*, 4(3), 178-188.
- Storey, D. J. (1990). Firm performance and size. In *The Economics of Small Firms* (pp. 43-52). Springer.
- Thornhill, S. (2006). Knowledge, innovation and firm performance in high-and low-technology regimes. *Journal of business venturing*, 21(5), 687-703.
- Timmons, J. A. (1989). *The Entrepreneurial Mind*. ERIC.
- Tsai, K.-H., & Yang, S.-Y. (2014). The contingent value of firm innovativeness for business performance under environmental turbulence. *International Entrepreneurship and Management Journal*, 10(2), 343-366.
- Uzkurt, C., Kumar, R., Kimzan, H. S., & Eminoğlu, G. (2013). Role of innovation in the relationship between organizational culture and firm performance: A study of the banking sector in Turkey. *European journal of innovation management*.
- Vahlne, J.-E., & Nordström, K. A. (1993). The internationalization process: impact of competition and experience. *The international trade journal*, 7(5), 529-548.
- Valencia, J. C. N., Valle, R. S., & Jiménez, D. J. (2010). Organizational culture as determinant of product innovation. *European journal of innovation management*.
- Vey, K., Fandel-Meyer, T., Zipp, J. S., & Schneider, C. (2017). Learning & Development in Times of Digital Transformation: Facilitating a Culture of Change and Innovation. *International Journal of Advanced Corporate Learning*, 10(1).
- Vrgovic, P., Vidicki, P., Glassman, B., & Walton, A. (2012). Open innovation for SMEs in developing countries—An intermediated communication network model for collaboration beyond obstacles. *Innovation*, 14(3), 290-302.
- Wallach, E. J. (1983). Organizations: The cultural match. *Training and development journal*, 37(2), 29-36.
- Wynne, C. W. (1998). Issues and opinion on structural equation modelling. *Management Information Systems quarterly*, 22(1), 1-8.
- Zaefarian, G., Forkmann, S., Mitreğa, M., & Henneberg, S. C. (2017). A capability perspective on relationship ending and its impact on product innovation success and firm performance. *Long Range Planning*, 50(2), 184-199.
- Zhang, D., Zheng, W., & Ning, L. (2018). Does innovation facilitate firm survival? Evidence from Chinese high-tech firms. *Economic Modelling*, 75, 458-468.

**Table 1 Sample characteristics**

Sample	N	%
<i>Category</i>		
Entrepreneurs	217	64
Senior Executives	80	24
Marketing and R&D Directors	40	12
<i>Age</i>		
1 to 5 years	192	57
6 to 10 years	116	34
11 to 20 years	29	09
<i>Size</i>		
1 to 100 employees	204	61
101 to 500 employees	115	34
More than 500	18	05

**Table 2: Construct Reliability and Validity**

Item	Standardized Factor Loadings	rho_A	Composite Reliability	Average Variance Extracted (AVE)	Cronbach Alpha
Cronbach Alpha = 0.953					
ICI1	0.655	0.709	0.886	0.585	0.767
ICI2	0.809				
ICI3	0.789				
ICI4	0.642				
ICI5	0.798				
ICI6	0.806				
Exp1	0.841	0.943	0.941	0.702	0.914
Exp2	0.778				
Exp3	0.957				
Exp4	0.890				
Exp5	0.748				
Exp6	0.883				
R&D1	0.804	0.961	0.948	0.754	0.934
R&D2	0.947				
R&D3	0.923				
R&D4	0.921				
R&D5	0.857				
R&D6	0.740				
IC1	0.767	0.871	0.918	0.630	0.787
IC2	0.662				
IC3	0.886				
IC4	0.905				
IC5	0.714				
IC6	0.888				

**Table 3: Correlation and Descriptive Statistics**

N	Mean	SD	Age	Size	FP	ICI	Exp	R&D	IC
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Age	337	1.45	0.498	1						
Size	337	1.34	0.476	0.264**	1					
FP	337	12.54	3.537	0.235**	-.180**	1				
ICI	337	4.15	0.375	-.047	-.422**	.656**	1			
Exp	337	3.76	0.766	-.018	-.179**	.573**	.435**	1		
R&D	337	3.98	0.866	.046	-.056	.628**	.481**	.914**	1	
IC	337	3.91	0.700	-.121*	-.196**	.586**	.693**	.875**	.909**	1

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

Table 4: Multiple Regression: Effect of Initial Capital, Experience, and R&D on Firm Performance

<b>Independent Variables</b>	<b>Dependent Variable: Firm Performance (FP)</b>			
	Model 1	Model 2	Model 3	Model 4
(Constant)	12.024 **	-15.046 **	-22.939 **	-65.082**
Age	2.156 **	1.759 **	0.521 *	0.053*
Size	-1.937 **	-0.087	-0.562 *	-0.043
ICI		4.496 **	8.694 **	25.885 **
Exp		0.394 **	2.002 **	21.600 **
R&D		1.261 **	3.766 **	16.722 **
IC			6.297 **	7.907 **
<b>Interaction Effects</b>				
ICI x IC				4.747 **
Exp x IC				5.334 **
R&D x IC				3.048 **
Obs	337	337	337	337
R	0.344 <sup>a</sup>	0.785 <sup>a</sup>	0.840 <sup>a</sup>	0.889 <sup>a</sup>
R <sup>2</sup>	0.118	0.616	0.706	0.790
Adjusted R <sup>2</sup>	0.113	0.610	0.701	0.784
Std. Error of the Estimate	3.331	2.208	1.935	1.645
F Models	22.406	106.223	132.081	136.319

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).