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EXAMINING THE IMPACT OF ENTREPRENEURIAL LEADERSHIP, EMPLOYEE AMBIDEXTERITY, AND ERROR MANAGEMENT CULTURE ON INNOVATION IN PAKISTAN'S SME'S

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Abstract

Small and medium-sized enterprises (SMEs) are pivotal to sustainable economic growth, contributing significantly to Pakistan's GDP and employment. This study explores the impact of entrepreneurial leadership on the innovation capabilities of SMEs in the manufacturing sector, addressing five key research questions: the influence of entrepreneurial leadership on innovation, employee ambidexterity, error management culture, and how these elements interplay to enhance SME innovation. Employing a deductive methodology within a post-positivist framework, the study collected quantitative cross-sectional data from 380 registered SMEs in major industrial cities of Pakistan. A structured questionnaire, derived from established scales, assessed factors such as innovation levels, entrepreneurial leadership, employee ambidexterity, and error management culture. With a response rate of 45%, the data were analyzed using SPSS software, employing descriptive and inferential statistics. The findings reveal that entrepreneurial leadership significantly enhances innovation in SMEs both directly and indirectly by promoting employee ambidexterity and fostering a culture of error management. Specifically, entrepreneurial leadership positively influences employee ambidexterity and error management culture, which in turn boost innovation. This study is original in its comprehensive examination of the interrelationships between entrepreneurial leadership, employee ambidexterity, and error management culture within the context of Pakistani SMEs. The study supports the hypotheses that entrepreneurial leadership, employee ambidexterity, and error management culture are crucial drivers of innovation in SMEs.

Keywords: Entrepreneurial Leadership, Employee Ambidexterity, Error Management Culture, Innovation and Export Performance

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Vol.7 No.3, 2024

1.0 Introduction

Small and medium-sized enterprises (SMEs) are recognized as the main drivers of sustainable economic growth (Martins et al., 2022). In Pakistan, SMEs contribute significantly to the economy, representing 40% of the Gross Domestic Product (GDP), 99% of all company establishments, generating 78% of new nonagricultural employment, and contributing 20% to the manufacturing sector. The National SME Policy 2021 by SMEDA defines a Small Enterprise (SE) as a business with an annual sales turnover of PKR 150 million, and a Medium Enterprise (ME) with annual sales turnover from PKR 150 million to PKR 800 million. Despite their modest size, SMEs are often recognized as catalysts for economic development and a crucial driver of innovation (Abdul-Azeez et al., 2024).

According to the International Finance Corporation (IFC), in 2012 Pakistan had over 3.2 million companies, with over 90% being SMEs. These SMEs employ more than 70% of Pakistan's workforce and are considered a key means to revive the economy rapidly. However, the sector faces several challenges, including the need to foster innovation (Nazir & Khan, 2024). SMEs in Pakistan often rely on higher education and technical training colleges to fulfill their human resource needs. However, these institutions lack an understanding of the requirements of SMEs and the necessary resources to bridge this gap. These constraints limit the innovative prospects of SMEs, hindering their technological advancement (Arshad et al., 2024).

The SME sector faces significant competition from low-cost labor in nations like China and India (Sarmah & Saikia, 2023; Zreik, 2024). Additionally, many SMEs depend on loans from friends and family, self-funding, and credit provided by suppliers. They express dissatisfaction with increased taxes, elevated energy expenses, and heightened corruption. Innovation is acknowledged as a primary catalyst for the country's global competitiveness index (Zreik, 2024), where Pakistan scores 82 out of 134 countries. This score indicates a lower level of innovation compared to other nations (Ejibe et al., 2024). Therefore, it is crucial to foster innovation among SMEs and develop strategies that enable this sector to compete globally (Escoz Barragan et al., 2024).

Despite government adjustments, the SME sector still needs significant support to innovate and compete globally. This paper aims to provide recommendations to Pakistani SMEs on effectively implementing innovation to stimulate economic development, focusing on insights

from entrepreneurial leadership. The SME sector, though engaged in low-value manufacturing, has substantial prospects for innovation. Researchers have established a clear and direct link between innovation and economic advancement (Gherghina et al., 2020). Unfortunately, the lack of innovation in SMEs can be attributed to the leadership style of entrepreneurs, which often fails to cultivate an environment conducive to innovation (Berdar, 2024).

Recent studies suggest that entrepreneurial leadership fosters new opportunities (Razzaque et al., 2024). However, these studies often overlook the importance of a well-rounded approach by workers engaging in both exploitative and explorative activities and a culture of mistake management (Razzaque et al., 2024). This study investigates the effectiveness of entrepreneurial leadership and the critical importance of error management culture and employee ambidexterity in SMEs in the manufacturing industry, ultimately resulting in innovation.

Globalization has dramatically increased economic competition, and Pakistani SMEs have struggled to compete successfully in global markets. To compete internationally, they must embrace and implement innovative practices. Therefore, examining the factors contributing to innovation in SMEs is crucial (Galvão et al., 2020). Developing countries have shown significant interest in SMEs, striving to enhance their capacities to support economic growth (Hussain et al., 2024). Analyzing the innovative capabilities of SMEs is essential for export success. Prioritizing innovation in manufacturing SMEs is vital for fostering a favorable business climate and achieving local production and industry self-sufficiency. This study evaluates the extent to which Pakistani manufacturing SMEs benefit from entrepreneurial leadership and investigates the impact of entrepreneurship on innovation in these organizations.

2.0 Literature Review

Contingency theory has been extensively used to assess organizations' performance and efficiency. It asserts that no universally optimal approach exists to categorizing a corporation or determining its organizational structure (Fiedler, 1964). Contingency theory suggests that the most appropriate organizational structure is the one that aligns with certain operational factors, such as technology (Woodward, 1965; Perrow, 1970) or environment (Burns & Stalker, 1961; Lawrence & Lorsch, 1967). In summary, the contingency theory emphasizes that organizations must be able to adapt to many unanticipated difficulties, such as changes in population, environmental factors, and organizational size, to succeed. Therefore, it may be concluded that

there is no definitive method for organization. Maintaining equilibrium between the dimensions, organization, work environment, and technology needs is essential. Fiedler refers to this concept as contingency theory (Fiedler, 1964), which focuses on identifying the most effective organizational and leadership style considering various internal and external limitations.

Entrepreneurial leadership is an essential factor in the growth and success of any business (Joel & Oguanobi, 2024). Entrepreneurial leader suggested as a pioneer and a generator of groundbreaking ideas and methods crucial to any economy. These individuals possess the aptitude and ability to predict and prepare for future obstacles. They generate innovative concepts for the economic market (Ravet-Brown et al., 2024). Entrepreneurship often involves the development of a comprehensive business strategy and effectively using all available resources, including the workforce. They provide guidance and expertise in leadership and management for the firm (Harjono et al., 2024). Entrepreneurial leadership is the act of influencing a group's performance to accomplish an organization's objectives. This may require identifying and capitalizing on business possibilities" (Harjono et al., 2024). Organizations that aim for innovation and creativity require the presence of entrepreneurial executives. These leaders assist their colleagues in innovatively identifying and capitalizing on new chances for the business. Entrepreneurial leadership motivates and empowers colleagues to enhance their creative abilities (Islam et al., 2024).

Employee ambidexterity is the concept of persons engaging in a balanced pursuit of exploitative and explorative tasks (Joensuu-Salo & Viljamaa, 2024). Exploitative activities priorities using existing opportunities, while exploratory activities include actively searching for new opportunities. Ambidexterity is not acknowledged at the individual level (Gasda & Fueglistaller, 2016). Moreover, there is a lack of understanding of how an individual's ability to be ambidextrous affects the overall ambidexterity of the organization. Ambidexterity is a developing field of study in the realm of management sciences (Wenke et al., 2021). According to Lee et al. (2021), organizational ambidexterity refers to effectively combining exploitative and explorative tasks. Exploitation enhances existing information and incorporates it to achieve higher efficiency and creativity. Conversely, exploration promotes experimentation and discovering new knowledge to boost innovation. Organizations need exploitation and exploration to avoid falling into the success or failure trap (Tian et al., 2021). The critical aspect of

ambidexterity is placing equal importance on exploitation and exploration, as highlighted. Nevertheless, balancing these two characteristics has proven challenging, as shown by the obstacles encountered in their simultaneous management (Bai et al., 2024).

Error management culture primarily encompasses the organizational procedures and strategies for addressing mistakes. For instance, organizations must priorities learning from mistakes. Thus, it is essential to effectively communicate these findings to facilitate the leadership's understanding and ability to address these issues in the future (Kruse & Wegge, 2024). The objective of organizational mistake management should be to facilitate learning and implement remedial actions (Van Dyck et al., 2005). Cultivating a culture of mistake management is essential for minimizing bad outcomes and fostering sound effects from errors. According to van Van Dyck et al. (2005), this is expected to improve economic performance. Organizations with error management systems tend to be more inventive and action-oriented. Mistakes are inevitable in every company. Rybowiak et al. (1999) argue that businesses that priorities learning from errors are likelier to exhibit creativity and innovation. To effectively fix mistakes, open communication and teamwork among members are essential. Organizations that embrace mistakes as a cultural norm are more likely to achieve higher productivity levels.

According to research by Ali et al. (2024) Pakistan's economy has been undermined due to a contemporary technology and innovation shortage. Khana et al. (2020), focused on examining the relationship between entrepreneurship posture and new-venture performance in Pakistan. The individual evaluated the impact of two key factors, namely entrepreneurial predisposition (including its characteristics of innovativeness, proactivity, and risk-taking) and entrepreneurial drive, on the success of recently founded ventures. The findings demonstrated that proactivity and risk-taking significantly impacted the success of new ventures, particularly in terms of innovativeness. The research also revealed that managers of new companies with a creative mentality experience more excellent result (Ukpabio et al., 2019). Mokhber et al. (2016) conducted a study to examine the correlation between entrepreneurial leadership and an organization’s need for innovation. The study also examined the influence of workers' self-efficacy as a moderator. This study provided impartial data to enable entrepreneurial leaders and their enterprises to identify and create additional possibilities for their organizations and foster

innovation. Organizations must confront the difficulties of external competitiveness and survival in the current age of innovation.

The research hypotheses were created after a thorough investigation of the relevant areas of entrepreneurial literature. The purpose is to examine the possible connections between entrepreneurship and innovation, as outlined in this study's theoretical framework.

Entrepreneur Leadership has a positive impact on manufacturing Small and Medium Enterprises Innovation

Entrepreneurial activities are very crucial for a multitude of reasons. These habits facilitate innovation and enable organizations to adapt to changing surroundings (Thongyai & Potipiroon, 2022). The success may be ascribed to its employees' imaginative and entrepreneurial nature and its former CEO, Steve Jobs (Megawaty et al., 2022). Organizations must continually grab commercial possibilities to stay viable, especially in less volatile areas. This indicates that employees at all firm levels must remain updated with entrepreneurial habits and attitudes (Abera et al., 2023).

H_1: *Entrepreneur Leadership has a positive effect on the innovation of manufacturing* SMEs.

Entrepreneur Leadership and Employee Ambidexterity contributive towards manufacturing Small and Medium Enterprises Innovation

Organizations that strive for innovation and creativity require the presence of entrepreneurial executives. Individuals need to assist their colleagues to facilitate the exploration of new prospects that will ultimately benefit the company. This is highlighted by research conducted by Gaglio (2004), Huang et al. (2014), Mueller (2007), and Wales et al. (2011). Thus, it may be contended that entrepreneurial leaders motivate their colleagues to possess self-assurance in their skills and ingenuity (Frese and Galenic 2014; Zhao et al. 2005, Chen 2007; Hitt et al. 2011). Entrepreneurial leadership within a business promotes and motivates staff involvement in decision-making processes and enhances employee ambidexterity. An employee with a greater degree of ambidexterity will priorities attaining corporate goals. Higher levels of staff ambidexterity are positively correlated with the organization’s likelihood of achieving its objectives.

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ISSN Print: 2709-7617
Vol.7 No.3, 2024

H_2: Entrepreneur Leadership has a positive impact on The Employee Ambidexterity

H_3.: Employee Ambidexterity positively impacts manufacturing SMEs' innovation.

Entrepreneur Leadership and Error Management Culture helps manufacture SME Innovation

Entrepreneurial leadership cultivates a culture of error management and promotes employee involvement in decision-making while also enhancing employee ambidexterity. Organizations that promote an Error Management Culture by decentralizing decision-making via delegation of power and relaxing bureaucratic processes and restrictions might enhance business performance.

H_4: Entrepreneur Leadership has a positive impact on The Error Management Culture.

H_5: Error Management Culture has a positive impact on innovation of manufacturing Small and Medium Enterprises

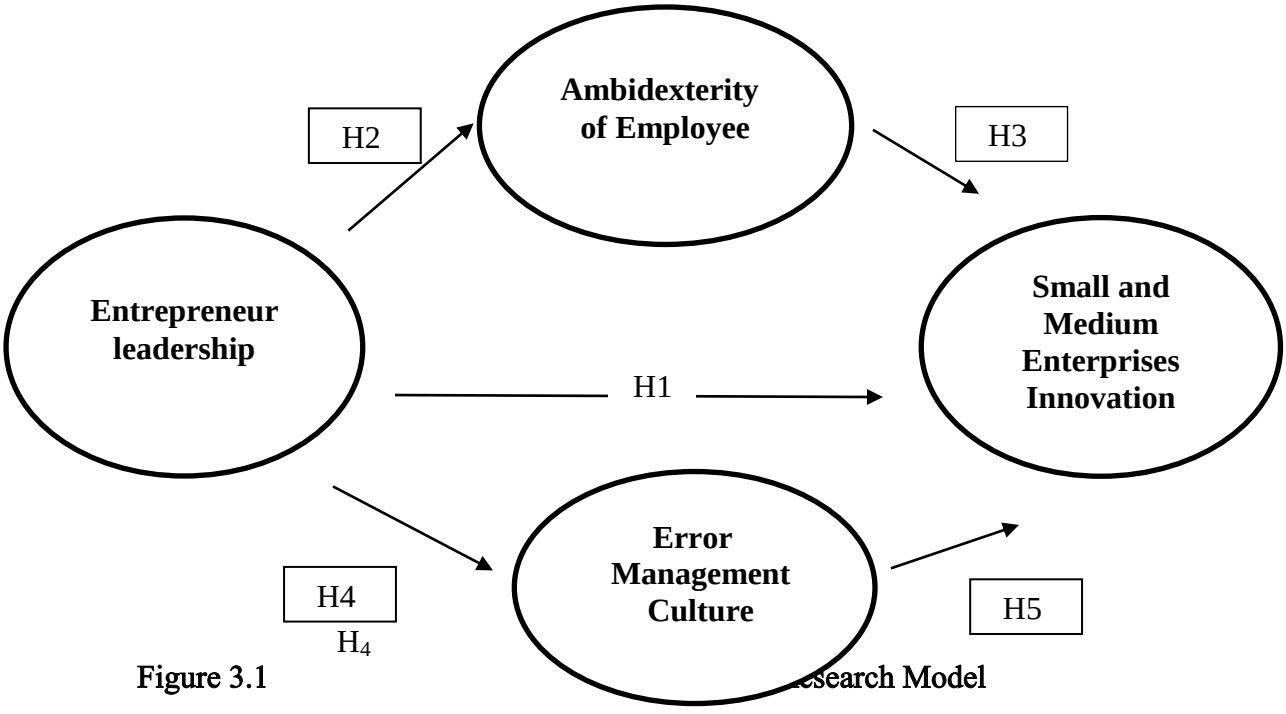

Figure 3.1 **esearch Model**

This model illustrates the relationships between entrepreneurial leadership, employee ambidexterity, error management culture, and innovation within SMEs. Entrepreneurial leadership directly influences both employee ambidexterity and error management culture, which

in turn mediate its impact on innovation. This highlights the importance of leadership in fostering an environment conducive to innovation through effective employee behavior and a supportive organizational culture.

3.0 Research Methodology

The study has used a deductive methodology within a postpositivist framework. The data were gathered using a quantitative survey methodology, specifically collecting cross-sectional data from the industry. Pakistan has many small and medium-sized enterprises (including manufacturing, services, and commerce) across the country. According to the International Finance Corporation (IFC), in 2012, small and medium-sized enterprises (SMEs) made up over 90% of Pakistan's total number of firms, up to 3.2 million. Unfortunately, SME institutions in Pakistan lack appropriate and up-to-date directories or comprehensive population lists that include the industrial sector SMEs. Among Pakistan's 3.2 million business units, the wholesaling, hotels, and restaurant sectors account for 53% of economic activity. According to Raza (2018), Social and Personal Services comprise 22% of all firms, whereas Manufacturing also accounts for 22%. A significant proportion of these small and medium-sized enterprises (SMEs) operate in an informal and unregistered manner, making it challenging to get data from them. The most recent data from the SECP states 87,620 registered firms as of June 30, 2018. Based on the information provided by Madiha (2017), which states that 90% of the establishments are classified as small and medium-sized enterprises (SMEs) and that industrial establishments account for 18% of the total activity, the target population for this research is calculated to be 14,194 SMEs.

Based on Daryle W. Morgan's 1970 research, the sample size required for the study's population is 14194 375. Nevertheless, by employing a post-positivist methodology, we targeted the 380 primary registered Small and Medium Enterprises in major industrial cities of Pakistan. This was accomplished by utilizing a simple random technique, which involved searching through directories such as the Chambers of Commerce of Pakistan, Engineering Goods of Exporters, and Industrial Sourcebook of Pakistan. It was also considered that the Normality of the data and the chosen estimate technique significantly impacted the sample size. (Schreiber, 2006) In addition, they also proposed that 10 replies for each parameter are considered

legitimate. Furthermore, (Bentler, 1987) supported this notion by asserting that a minimal sample size may be determined by obtaining at least five replies for each parameter.

The study used a questionnaire derived from prior research. The questionnaire comprised 36 questions to evaluate the factors contributing to promoting innovation in small and medium-sized manufacturing enterprises. To assess the level of innovation in small and medium enterprises (SMEs), we used a concept derived from Khana's work (2019). Additionally, we employed the scale for measuring entrepreneurial leadership developed by Carsrud (2013). Employee Ambidexterity was assessed using a six-item questionnaire developed by Hage and Aiken (2016). We utilized a seventeen-item scale developed by Dyck (2005) to measure Error Management Culture in the organization. All items for both constructs were measured using a seven-point Likert scale, ranging from strongly disagree to strongly agree. The questionnaire was designed and sent to respondents via email, messages, media groups, and an online link to complete the form. Physical copies were sent to some participants. An email included a hyperlink. By clicking on this hyperlink, individuals may access the shared webpage where the recipient can complete the form using their computer. Upon completion of the form, the responder has the option to submit their answer swiftly. One hundred sixty-eight answers were obtained, indicating a response rate of 45% of the sample size. The response rate in question was deemed acceptable, given that other research had shown 40% or higher response rates (Mokhiber, 2016).

An effectively designed approach for distributing the study questionnaire, along with a thorough campaign of follow-ups and contacting the participants, significantly improved the response rate. Subsequent phone calls and emails to non-responsive businesses resulted in their ability to reply. Despite multiple follow-up attempts, specific organizations failed to respond. The questionnaire was believed to address and eliminate confidentiality concerns adequately, as it did not collect personal or organizational data that could potentially identify individuals or organizations. The data gathered from the survey was analyzed using both descriptive and inferential methodologies. The primary objective was to examine the impact of entrepreneurial leadership on innovation in small and medium-sized manufacturing businesses, together with the influence of staff ambidexterity and the error management culture. The purpose of the descriptive analysis was to provide a comprehensive representation of the gathered data.

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ISSN Print: 2709-7617
Vol.7 No.3, 2024

Inferential analysis facilitates the generation of potential results of statistical tests and draws logical conclusions based on the collected data.

4.0 Data Analysis

4.1 Demographic Profile

The survey participants consist of 85.1% males and 14.9% females. Most respondents had a master's degree, accounting for 45.2 per cent of the total. This was followed by those with a bachelor's degree, comprising 26.8 per cent. The most minor proportion of respondents belonged to the intermediate level, representing 18.5 per cent. I have condensed the information in the table below:

Table 4.1: Demographic profile of the respondents

Area	Description	No of Respondents	Percentage %
Gender	Male	143	85.1%
	Female	25	14.9%
Education	Masters	76	45.2%
	BS	45	26.8%
	Matric	31	18.5%
	Diploma	16	9.5%
Age	20-30 Years	75	44.6%
	31-40 years	55	32.7%
	41-50 years	28	16.7%
	51-60 Years	8	4.8%
	over 60 Years	2	1.2%

Job experience	1-10 Years	91	54.2%
	11-15 Years	39	23.2%
	16-25 years	20	11.9%
	25-35 years	15	8.9%
	over 35 years old.	3	1.8%

4.2 Reliability of Constructs

As per the research conducted by Hair et al. in 2010, a Cronbach alpha value over 0.7 is considered acceptable. (Nunnally, 1994) Stated that a Cronbach's alpha coefficient value over 0.60 is deemed sufficient. This is further corroborated by (Frenetic, 1991), who advocated for a range of 0.30 to 0.70 to indicate a satisfactory scale. Nevertheless, according to academics such as Robinson et al. (1991), the reliability score of .6 alpha is appropriate for developing and early investigations. The research is now in the development phases. Therefore, the reliability score of 0.606 is considered to be somewhat acceptable, as it falls within the range of high reliability for other constructs and the overall model, as shown by previous studies (Nunnally, 1978; Cortina, 1993; George & Mallery, 2003; DeVellis, 2012).

The SPSS Scale, precisely its reliability analysis function, was used to assess the questionnaire items related to Entrepreneur Leadership (consisting of 8 items), Employee Ambidexterity (composed of 6 items), Small and Medium Enterprises innovation (consisting of 6 items), and Error Management Culture (composed of 16 questions). The Cronbach's Alpha coefficient was calculated to measure the internal consistency of these scales. The findings indicate that our measurement satisfies the required standard of measurement dependability. The reliability of Entrepreneur leadership is 0.793 alpha. Employee Ambidexterity has a reliability of 0.774. Small and Medium Enterprises innovation has a dependability of 0.776. Error Management Culture has the lowest alpha score of 0.606.

Table 4.2 Reliability Statistics of Model Variables

Variable	Cronbach's Alpha
Entrepreneurship Leadership	.793
Employee Ambidexterity	.774

Error Management Culture	.606
SMEs innovation	.776
Overall Reliability	.822

Once the reliability and relationship of the constructs with each other have been established, the next step is to analyse the data for correlation, regression, and hypothesis testing.

4.3 Correlation Analysis

This section investigates and discusses correlations performed on model variables. The Pearson correlation coefficient is a convenient statistical formula that helps measure the strength of relationships between different variables. In statistics, this formula is known as the Pearson R test. A formula called the coefficient value is followed to govern the strength of the relationship between two variables. The coefficient value ranges between -1.00 and 1.00. A value of 0 indicates that there is no relationship between variables. If the value is in the negative range, it means a negative association between the variables; if it is in the positive range, it suggests a positive relationship between the variables. This is used to check the association between the variables. Usually, the values should be less than 0.5.

Table. 4.4 Model Correlations

	SMEs Innovation	Employee Ambidexterity	Entrepreneurship Leadership	Error Management Culture
SMEs Innovation	1			
Employee Ambidexterity	.402**	1		
Entrepreneur Leadership	.399**	.485**	1	
Error Management Culture	.244**	.476**	.402**	1

** p<.05, ** p<.01 *** p<.001*

**. The correlation is significant at the 0.01 level (2-tailed).

4.4 Regression Analysis

This section test the research hypotheses using regression analysis performed on survey data. We need to check predictability and dependency in regression analysis using the following terminology.

- **Beta** is a **unit change** in the dependent variable caused by the independent variable. It means the dependent variable changed due to one unit change in the independent variable. It is denoted by **β.**
- **R2 -** The **total change** of the independent variables caused by the dependent variable. If the value of R2 comes to .30, it means that all independent variables collectively brought a 30% change in the dependent variable.
- **R2 - Change** in R2. It is the **actual change** in the dependent variable caused by all other variables. Suppose the value of R2 increases to 28. In that case, the actual change in the dependent variable is 28 % due to the understudy of independent variables after controlling the controlled variables, and the remaining 72% change is due to other variables not considered.

4.4.1 Multiple Regressions

Multiple linear regression analysis indicated that the coefficient of determination R square = 0.336, which suggests that all independent variables in this investigation can clarify 33.6 % of the variation in the dependent variable. The results also show that all independent variables are significantly connected to the dependent variable as all four independent variables meet the rule of thumb where the p-value is less than 0.05. Entrepreneurship leadership has the most effect on the innovation of the SME at a coefficient of correlation (beta) of 0. .363. In summary, this model can significantly represent the association of independent variables with SME innovation.

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ISSN Print: 2709-7617
Vol.7 No.3, 2024

Table. 4.5 Multiple Regressions

Predictors	Small and Medium Enterprises Innovation		
	B	R^2	R^2
Step 1			
Control variables		.104	
Step 2			
Entrepreneurship Leadership	.363***	*.336*	*.232****
Employee Ambidexterity	.237**		
Error Management Culture	.090		

** p<.05, ** p<.01 *** p<.001*

Entrepreneurial leadership has the most significant effect, with a coefficient of correlation (beta) of .363. Next, it is followed by applying employee ambidexterity, with a beta of .237, and error management culture, with a beta of .090. In summary, the value of correlation coefficients demonstrates that innovation in SMEs can be improved by maximizing the application of entrepreneurial leadership. To summaries the discussion, this model can meaningfully represent the relationship of independent variables with innovation in SMEs.

4.4.2 Durbin Watson, Variance inflation factor and tolerance limit.

These tests further justify and strengthen the regression analysis's results. These results further explain the significance of regression results in terms of better outcomes. Durbin Watson is done to check the independence of data; usually, its value should be from 1.5 to 2.5. VIF shows the variance between means of variables; the value of VIF should be less than 2.5; it complements multicollinearity. The tolerance limit between items of variables should be above .20. Table 5.10 below presents the above results.

Table. 4.6 Durbin Watson, Variance inflation factor and tolerance limit

	Employee Ambidexterity	Entrepreneurship Leadership	Error Management Culture

Durbin Watson	1.543		
Variance Inflation Factor	1.681	1.484	1.569
Tolerance Limit	.595	.674	.637

Durbin Watson = 1.543 shows the data's independence since the values lie between 1.5 and 2.5; the Tolerance value is above .20, and the Variance Inflation Factor (VIF) is less than 2.5. That means the data are independent, there is no multicollinearity, and they are within range and stable. Each item represents the variable for which it is made.

4.4.3: Hypothesis Testing

On the other hand, all hypotheses are supported. The first hypothesis of the study, that entrepreneurial leadership has a positive effect on innovation in the manufacturing of small and medium enterprises (H1), was supported. The investigation also revealed that entrepreneurial leadership positively influences employee ambidexterity. (H2). Additionally, the evaluation showed a significant positive relationship between Employee Ambidexterity and Innovation in Manufacturing Small and Medium Enterprises; thus, H3 is supported. Through evaluation, a significant positive relationship was also found between them. Entrepreneur Leadership and Error Management Culture, so H4 is supported. Lastly, a significant association was found between error management culture and innovation of small and medium enterprises (H5), according to the results of the data set in the present study.

Table. 4.7 Hypothesis testing

Hypothesis testing

Constructs	Coefficient	Hypothesis	P-Value	Result
El → SI	.491	1	.000	supported.
El → EA	.464	2	.000	supported.
EA → SI	.450	3	.000	supported.
EI → EMC	.359	4	.000	supported.
EMC → SI	.399	5	.000	supported.

5.0 DISCUSSION.

After going through the research study, it is established that there is a substantial association between entrepreneurial leadership and innovation in the manufacturing

industry in Pakistan. This study established that effective entrepreneurial leadership with abilities and competencies will lead to more significant innovation in small businesses. The result shows a significant association between employee ambition and innovation in small and medium enterprises. In this research, the application of error management culture is found to have a considerable positive relationship with employee ambidexterity and innovation in SMEs. Adopting an error management culture will assist an organization in building Employee Ambidexterity, which will facilitate innovation in SMEs. In conclusion, effective entrepreneurial leadership, high employee ambidexterity, and adopting an error management culture have significantly impacted SMEs' innovation in Pakistan. In contrast, the use of entrepreneurial leadership has the most vital connection among the three variables affecting the innovation of SMEs in the manufacturing industry in Pakistan.

5.1 Main Research Findings

The findings propose that organizational innovation floods when businesses promote entrepreneurial leadership. The research revealed that entrepreneurial leadership in business has a positive relationship with the firm's Innovation, directly and through Employee ambidexterity. Moreover, entrepreneurial leadership has a positive effect on error management culture, which positively influences a firm's success in terms of innovation, which is desired to increase exports, consequently boosting the country's economy.

The first hypothesis of the study, that entrepreneurial leadership has a positive effect on innovation in the manufacturing of small and medium enterprises (H1), was supported. The investigation also revealed that entrepreneurial leadership positively influences employee ambidexterity. (H2). In addition, a significant positive relationship has been found between Employee Ambidexterity and Innovation in the Manufacturing of Small and Medium Enterprises; therefore, H3 is supported. A significant positive relationship has also been found between them. Entrepreneur Leadership and Error Management Culture, so H4 is supported. Lastly, a significant association was found between error management culture and innovation of small and medium enterprises (H5), according to the results of the data set in the present study.

5.2 Research Contributions

In developed countries, extensive studies have been conducted on small businesses; however, this is not true in developing countries. This paper focuses mainly on Pakistan's small and medium enterprises sector, as there is a knowledge gap. Therefore, this study is an attempt to fill this void. This study highlighted the difficulties faced by small and medium enterprises in Pakistan. The study also highlights that the Error Management Culture promotes the ability of employees to simultaneously contribute to their organizations' present and future competitive advantage. This enables them to find better ways of individually fulfilling their duties. As Lin and McDonough (2011) pointed out, an organization must create a culture that encourages learning and knowledge sharing to achieve explorative and exploitative activities within a business unit.

5.3 Research limitations and Prospect

The study findings applied only to the manufacturing sector. Therefore, more effort should be dedicated to studying the factors that affect innovation in different sectors of small businesses in Pakistan. The study only used three precise independent variables. Future researchers can increase the independent or moderating variables to increase the results. In further studies, researchers can develop their research by including the trading and servicing sectors that could improve the diversity of perceptions. One of the limitations of this research is that the sampling frame is based on the latest SECP report, directories of the Chamber of Commerce of Pakistan, Engineering Goods of exporters, and the Pakistan Industrial Sourcebook and is focused mainly on Punjab. Nevertheless, it highlighted all types of firms. However, not all small and medium enterprises can be covered in this study. Despite the shortcomings, research contributes to knowledge storage in small and medium enterprises.

5.4 Conclusion

This research considers those small business managers eager to encourage entrepreneurship at every level in their business setup and incumbents trying to re-establish themselves through entrepreneurial initiatives in the fast-growing business market. Based on the results, effective entrepreneurial leadership, appropriate employee ambidexterity, and the application of an error management culture are significantly related to innovation in small and

medium enterprises. The constructs with the strongest positive association with innovation in SMEs are effective entrepreneurial leadership and adopting an error management culture, followed by high employee ambidexterity.

These findings underscore the pivotal role of leadership styles that encourage risk-taking, experimentation, and learning from errors in enhancing the innovative capabilities of SMEs. Despite the critical importance of innovation for global competitiveness, many Pakistani SMEs struggle due to leadership styles that do not adequately promote these values. By adopting entrepreneurial leadership practices, SMEs can overcome these challenges and improve their innovation performance, contributing to broader economic growth and development.

Future research should focus on longitudinal studies to further validate these findings and explore additional factors that may influence the relationship between leadership and innovation. Policymakers and SME leaders should prioritize developing entrepreneurial leadership skills and fostering organizational cultures that support innovation to ensure sustainable growth and competitiveness in the global market.

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