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University Supervisors as Change Agents: The Role of Innovative Capabilities in Enhancing Institutional Performance

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ABSTRACT

Supervisors innovative capabilities refer to their ability to generate adopt and implement new ideas, processes or solution that improves organizational outcomes. Supervisors' performance encompasses their effectiveness in achieving organizational goals managing teams and maintaining operational efficiency. The current research aims 1) To measure the innovative capabilities of supervisors at the university level.2) To assess performance of supervisors at the university level. There are 12 publics and 6 private universities of Rawalpindi & Islamabad. The present investigation employed a quantitative research methodology. 358 supervisors from the social sciences departments of public and private institutions in Rawalpindi and Islamabad made up the study's population. For the sample selection, a total of 18 public and private universities in Rawalpindi and Islamabad were chosen. A 20% representative sample was used for the final investigation. 186 samples were chosen from a total of 358 students in the social sciences departments of both public and private universities in Rawalpindi and Islamabad using a basic random selection procedure. A self-made questionnaire was created in order to accomplish these goals, and it was distributed to supervisors in the social sciences departments of both public and private institutions in Rawalpindi and Islamabad. Descriptive analysis and Pearson correlation statistical techniques were employed in the processing and analysis of the data using SPSS (Statistical Package for Social Sciences). The study's findings revealed a moderate to significant positive association between supervisory performance and inventive capacities, with a correlation coefficient of 0.579. This implies that supervisors' performance rises in tandem with their capacity for innovation. This suggests that the association is reliable and that the correlation is statistically significant. Supervisors should thus concentrate on encouraging a creative culture, enhancing the inorporation of new technologies, encouraging ongoing professional growth, and utilizing data-driven decision-making. An important area of study in education is the connection between supervisors' performance and their capacity for innovation. Therefore, based on the data gathered, it was determined that the majority of respondents strongly agreed with the statement regarding inventive capabilities.

Introduction

The ability of a company or individual to develop novel concepts, procedures, goods, or services that add value and provide them a competitive edge is referred to as innovative capabilities. These competencies include the set of abilities, resources, knowledge, and strategic thinking that allow organizations to identify opportunities, come up with innovative solutions, and successfully execute changes in response to changing market conditions or technology breakthroughs. Innovative capabilities can be improved by investments in R&D, teamwork, and leadership that promote experimentation and risk-taking. In the context of enterprises, these capabilities are frequently linked to cultivating a principle of innovation, quickness, and continuous improvement (Kiran et al., 2022). Additionally, they must encourage a culture of innovation, pushing staff members to question the existing quo and think creatively (Mehmod et al., 2022).

By doing this, they can guide their teams through ambiguity and produce ground-breaking outcomes. Additionally, an inventive supervisor is adept at seeing chances for advancement, whether they come from new product creation, cross-departmental cooperation, or process enhancements. discovered that managers that encourage innovation greatly enhance problem-solving skills, staff engagement, and morale, all of which have a positive impact on an organization's overall performance. These skills are crucial for drawing in and keeping top talent that seeks out demanding and innovative work environments, in addition to improving business outcomes (Nadia et al., 2022).

To put it simply, supervisors with innovative talents are not only technologically proficient; they also cultivate an attitude that embraces change, stimulates original thought, and helps team members realize their greatest potential. The way university supervisors work has a significant impact on how well students do academically and how they develop professionally. University supervisors, often known as academic advisers or mentors, are essential in helping students navigate their academic paths, offering assistance, and creating a positive learning atmosphere. Their efficacy has a direct impact on academic performance, student retention, and the general university experience. To cultivate a good and fruitful relationship with their students, university supervisors need to have a combination of leadership traits, academic expertise, and interpersonal skills (Mahnaz et al., 2022a; Mahnaz et al., 2022b).

The capacity to oversee a diverse group of students, adjust their methods to meet the needs of each individual, and offer helpful criticism that fosters academic progress are qualities that define effective supervisors. "Supervisors who engage in regular communication, provide timely support, and encourage critical thinking create a sense of belonging and academic confidence in their students." These supervisors' help students grow personally and professionally, preparing them for their future careers in addition to serving as academic learning facilitators (Mahnaz, Mehmood, & Umer, 2022).

Apart from their academic and interpersonal duties, university supervisors are also expected to participate in research, navigate institutional policies, and help build curricula. Thus, a number of indicators, including academic results, mentorship quality, and student satisfaction, can be used to gauge their performance (Bibi et al., 2023). Supervisors can greatly improve the educational experience and assist the university's overall success by creating a tough yet encouraging learning environment.

The success of academic institutions and the general development of students depend heavily on the work of supervisors at the university level. Often called faculty mentors, academic advisers, or thesis supervisors, university supervisors play a variety of roles in supporting students' academic and personal development. Their duties include helping students with their coursework, research,

and thesis projects in addition to providing career guidance and assistance with personal growth. The effectiveness of university supervisors is crucial to attaining educational excellence because of the direct effects these interactions have on student progress, motivation, and retention. Building a solid, encouraging relationship between the supervisor and the student is essential to successful supervision at the university level. In addition to offering academic advice, good supervisors also mentor students, assisting them in overcoming obstacles in the classroom, looking into career options, and developing the skills needed for lifelong learning (Khan et al., 2022).

According to research, students who feel their supervisors are there for them are more likely to be engaged in their studies, have lower stress levels, and perform better academically (Shaheen et al., 2022). Additionally, supervisors' responsibilities at universities go beyond interacting with students; they also include participating in departmental events, research projects, and curriculum creation. Thus, the capacity of university supervisors to successfully manage these duties while promoting a vibrant academic atmosphere affects their performance. "Supervisors who prioritize student engagement and are involved in both teaching and research help to create a rich, inclusive academic culture that benefits all students." Numerous metrics, including as graduation rates, student satisfaction surveys, and the caliber of mentoring as demonstrated by students' academic success, can be used to evaluate their performance (Bahadar et al., 2014).

Objectives of the Study

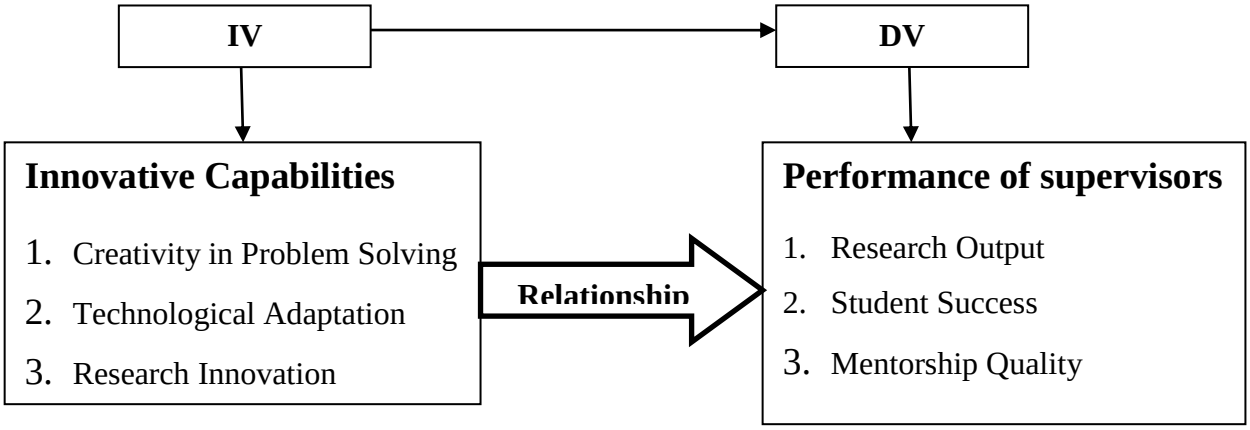
Following was the objectives of the study:

1. To measure the innovative capabilities of supervisors at university level.
2. To assess the performance of supervisors at university level.

Research Questions

1. What is the role of innovative capabilities of supervisors at university level?
2. What is the performance of supervisors at university level?

Conceptual Model



Significance of the present study

The research topic investigating the relationship between innovative capabilities and the performance of supervisors at the university level holds significant implications for academia and beyond. The research on the relationship between innovative capabilities and supervisors performance at universities is significance that it contributes to field of education and management, innovative supervisors enhance student satisfaction, academic outcome and research

productivity Firstly, it sheds light on how innovation within educational leadership directly influences the quality of teaching and learning experiences. Understanding this relationship can help institutions enhance their educational offerings, ultimately improving student outcomes and satisfaction.

Secondly, this research addresses the evolving demands placed on universities in today's dynamic world. By exploring how supervisors' innovative capabilities impact their performance, we gain insights into how institutions can adapt to changing educational landscapes, technological advancements, and societal needs. This adaptability is crucial for universities to remain relevant and competitive in a rapidly evolving higher education environment. Moreover, the findings of this research can inform strategic decision-making within universities, particularly regarding leadership development and resource allocation. Identifying the role of innovative capabilities in supervisor performance can guide efforts to recruit, train, and support academic leaders who are equipped to drive innovation and excellence across various aspects of university operations.

Delimitation of the study

The scope of the current investigation was restricted to**:**

1. Session 2023-2025
2. Supervisors (M. PHIL and Ph.D. level.)
3. Islamabad/Rawalpindi
4. Faculty of Social Sciences Private and Public Universities of Rawalpindi & Islamabad (Both Male & Female)

Literature Review

Innovation plays a crucial role in the educational sector, particularly in higher education institutions, where supervisors must adapt to evolving pedagogical methods, administrative advancements, and technological developments. The effectiveness of university supervisors in achieving institutional goals is often linked to their innovative capabilities, which include problem-solving skills, leadership in adopting new educational strategies, and the implementation of digital technologies (Wajid & Mahnaz, 2021). This literature review explores the relationship between innovative capabilities and the performance of supervisors at the university level, considering various theoretical perspectives and empirical studies.

Innovative Capabilities in Higher Education

Innovative capabilities refer to the ability to generate, adopt, and implement new ideas and practices that enhance performance and productivity (Mahnaz & Kiran, 2024a). At the university level, these capabilities are crucial for supervisors as they oversee curriculum development, faculty management, student engagement, and research activities. Research suggests that innovative supervisors contribute to improved teaching methodologies, efficient administration, and enhanced student learning experiences (Koehler & Mishra, 2019). Furthermore, their role extends to fostering a culture of continuous improvement and adaptability within their institutions (Drucker, 2017).

Theoretical Perspectives on Innovation and Performance

Several theoretical frameworks explain the relationship between innovation and performance in educational leadership. One relevant framework is the Resource-Based View (RBV), which posits that an institution's competitive advantage is driven by its unique resources and capabilities, including the innovative capacities of its supervisors (Barney, 1991). According to this perspective, universities that invest in training and development programs for supervisors can enhance their innovative capabilities, thereby improving institutional performance.

Another pertinent theory is Transformational Leadership Theory, which suggests that leaders who inspire and motivate subordinates to embrace innovation contribute significantly to organizational success (Mahnaz & Kiran, 2024b). Transformational supervisors in universities foster an environment that encourages creativity, collaboration, and the implementation of novel educational strategies, ultimately enhancing faculty performance and student outcomes (Fullan, 2014).

Empirical Evidence on Innovative Capabilities and Supervisor Performance

Empirical studies have consistently found a positive relationship between innovative capabilities and performance in academic settings. A study by Scott and Dinham (2018) examined the role of university supervisors in fostering innovation and found that institutions with proactive, innovative leadership reported higher faculty satisfaction and student engagement levels. Similarly, a meta-analysis by Wajid and Mahnaz (2021) indicated that universities that prioritize innovation-oriented training for supervisors experience improved administrative efficiency and academic achievements.

Technological integration is a key component of innovative capabilities. Research indicates that university supervisors who effectively utilize digital tools, such as Learning Management Systems (LMS) and data-driven decision-making platforms, enhance teaching effectiveness and streamline administrative tasks (Garrison & Vaughan, 2019). Additionally, supervisors who support faculty members in adopting blended and online learning models contribute to improved student performance and institutional adaptability (Means et al., 2020).

Challenges in Implementing Innovative Practices

Despite the evident benefits of innovation, several challenges hinder the implementation of innovative practices among university supervisors. Resistance to change, limited funding for innovation-driven initiatives, and inadequate professional development programs are common barriers (Fullan, 2014). Moreover, traditional bureaucratic structures in universities often slow down the adoption of new strategies, making it difficult for supervisors to implement innovative solutions effectively (Bryson, 2018).

Wajid and Mahnaz (2021) emphasize that overcoming these challenges requires a systemic approach, including policy reforms, increased investment in faculty development, and fostering a culture that rewards innovation. Universities that adopt strategic change management practices tend to experience higher success rates in innovation-driven performance improvement among supervisors (Kotter, 1996).

Future Directions and Recommendations

Future research should focus on exploring the long-term impact of innovative capabilities on supervisor performance across diverse university settings. Comparative studies across different educational systems can provide insights into best practices for enhancing innovation among academic leaders. Additionally, integrating artificial intelligence and big data analytics into university management can offer new opportunities for improving decision-making processes and optimizing faculty performance (Mahnaz & Kiran, 2024c).

The relationship between innovative capabilities and supervisor performance at the university level is well-supported by both theoretical and empirical evidence. Innovative supervisors play a vital role in fostering institutional growth, improving faculty engagement, and enhancing student learning outcomes. However, the successful implementation of innovative practices requires overcoming structural and financial barriers. Future research should explore emerging trends in educational technology and leadership development to further strengthen the link between innovation and academic performance (Sarfaraz et al., 2025; Mahnaz et al., 2025).

Supervisors are essential "in helping students take a disciplinary lens to their research," but they can only accomplish this if they have the necessary subject-matter competence. Even though The latter is more of an explicit managerial function that is built to be more interactional and communication-oriented than transactional. duties, the jobs of Subject Expert and Quality Controller share some similarities. The Official, who is frequently implicitly mentioned in the content, is also located at the transactional end. The need of institutional structures for supervision is demonstrated bythe position demonstrates an administrator's relationship with the student in a variety of ways, such as by giving them guidelines, instructions, or information. All universities in Sweden are governed by the government (Khurshid, Arshad & Mahnaz, 2020; Mahnaz et al., 2022; Bibi et al., 2023)

Research Methodology

Research Design

Quantitative research design was used in the present research**.** For the concerned study, the scholar was used quantitative design to navigate the initial stages of inquiry and explore, discover as well and acknowledge the complexities of the subject by exploring diverse perspectives.

Rational for using Quantitative Design

The research was correlational in nature and questionnaire technique was used to collect the data.

Population of the study

358 supervisors from the social science departments of 18 private and public universities in Rawalpindi and Islamabad made up the study's population. 186 supervisors from 18 public and private universities in Rawalpindi and Islamabad made up the entire sample size (L.R. GAY12th EDITION).

Sample for pilot study

Four Universities were chosen for the pilot study. For pilot study researcher was use (10% L.R.GAY 12^{TH} EDITION) from total population of supervisors there are 52 supervisors were selected for response from 1 private and 3 public university of Rawalpindi and Islamabad.

Sample for final study

The final study's sample was chosen from 20% of the targeted population at the public and private universities in Rawalpindi and Islamabad. (Annex3).sample of final study was consisting 134 supervisors from the total population sample of the current research study. According to the (20% L.R. GAY12TH EDITION) the sample size of the study was selected 134 supervisors from the total population sample (186) in the current study.

Sampling Technique

Because it guarantees that every person of the population has an equal chance of being chosen for the sample in accordance with the study's objectives, the simple random sampling technique was employed in this investigation. It improves the latest study's generalizability and dependability**.**

Research Instrument

Questionnaire was used for the present study asthe tool used for study. A study tool that was self-developed and used a five-point Likert scale was rummage-sale to achieve objectives of the current study. A self-constructed questionnaire consisting 30 items, for this purpose, the five Likert scale was used after taking permission by higher authorities of all the Universities.

Reliability of instrument

To assess the reliability of research tool, specifically the questionnaire a preliminary investigation was conducted on a subset comprising 10% of the total population, excluding the actual study sample. The aim of this preliminary investigation was to scrutinize the questionnaire items and gauge their dependability. The data derived from this initial phase were subjected to rigorous analysis using the Cronbach's Alpha coefficient within the SPSS software. This statistical measure was employed to gauge the internal consistency and reliability of the questionnaire items.

The reliability of questions was analyzed after pilot testing using Cronbach's alpha. This involves evaluating the consistency of responses across the sample, ensuring that the questions were electing stable and consistence information.

Validity of instrument

By including additional space at the end of each topic for expert ideas, the questionnaire was distributed to three subject-matter experts in order to guarantee the content validity. Their insightful comments were incorporated to improve the outcome.

Data collection

Data was gathered via in-person visits. After introducing and discussing the research study with the supervisors, the researcher obtains authorization from the university's head to gather data.

Information was collected under the following steps:

1. Researcher requested permission for data collection from department.
2. Planned the universities visits randomly.
3. Delivering questionnaire to the supervisors.
4. Collected the questionnaire from the supervisors and then say thanks to the supervisors.

This strategy enables focused and quick data collecting ensuring the replies are immediately relevant and represent the current conduction of university level. The distribution crew will be given clear instruction and in depth understanding of the survey in order to promote good contact with supervisors and solve any question that may happen the spot therefore improving the accuracy and quality of the data gathered.

Data Analysis

Data were analyzed by following steps:

1. Coding of the collected data was done.

2. Current research was using SPSS to analyze data quantitatively.

3. To achieve objective 1 researcher was used Descriptive statistics analysis and to achieve objective 3. Researcher was used Pearson correlation statistical analysis.

Ethical Considerations

Researcher, while carrying out a research was ensuring that Ethical norms were compromised by asking any question from respondents.

Data Analysis

Demographic

Table1: Job experience of respondent

Job Experience	Freq	Percent%
5-10 Years	28	15.1
11-15 Years	63	33.9
21-25 Years	61	32.8
26-30 Years	34	18.3
Total	**186**	**100.0**

Table 1 showed that respondent having experience of teaching from 5 to 10 years were 15.1 %respondent having teaching experience 11 to 15 years were 33.9% and 21 to 25 having 32.8 % and 25 to 30 year teaching experience having 18.3% above of the total sample size.

Table 2: Designation of respondent

Designation of respondent	Frequency	Percent
Professor	47	24.7
Assistant professor	73	39.2
Associated professor	66	35.5
Total	186	100.0

Table 2 shows that there was 24.7 % of Professor as a respondent while 39.2% respondent of assistant professor while 35.5% associated professor of the respondent in the total population size.

Objective 1

Table 3: I encourage creative thinking and innovative solution.

Answer scale	Frequency	Percent	Mean	Standard Deviation
SDA	8	4.3		
D	7	3.8		
N	16	8.6	4.16	1.02
A	71	38.2		
SA	84	45.2		
Total	186	100.0		

Table 3 showed reflect a strong emphasis on encouraging creative thinking and innovative solutions. Here are the key points: High Agreement: A total of 83.4% of respondents either agree (38.2%) or strongly agree (45.2%) that they promote creativity and innovation in their work. This indicates a robust organizational culture that values and fosters innovative thinking. Mean Score: The mean score of 4.16 suggests a generally positive response, indicating that, on average, participants feel they effectively encourage creativity in their environments. Standard Deviation: The standard deviation of 1.02 indicates a moderate level of agreement among respondents, suggesting that while most feel positively, there are some varying perspectives. Low Disagreement: Only 8.1% of respondents disagree (3.8% disagree and 4.3% strongly disagree), highlighting that most participants recognize the importance of encouraging creativity. Overall, the data illustrates a strong inclination towards fostering a culture of innovation and creativity within the organization.

Table 4: I effectively incorporate new technologies into their work.

Answer Scale	Frequency	Percent	Mean	Standard Deviation
SDA	16	8.6		
D	11	5.9		
N	16	8.6	4.03	1.26
A	51	27.4		
SA	92	49.5		
Total	186	100.0		

Table 4 showed a generally positive perception regarding the incorporation of new technologies into work. Strong Agreement: A significant majority of respondents (77.0%) either agree (27.4%) or strongly agree (49.5%) that they effectively incorporate new technologies into their work. This suggests a proactive attitude toward technological integration. Mean Score: The mean of 4.03 indicates that, on average, respondents lean towards a positive evaluation of their ability to incorporate new technologies, reinforcing the notion of confidence in this area. Standard Deviation: By a standard deviation of 1.26, there is some changeability in comebacks, suggesting that while most respondents feel positively, a notable number may be less confident or experience challenges. Low Disagreement: Only 14.5% of respondents expressed disagreement (5.9% disagree and 8.6% strongly disagree), indicating that the majority see value in technology use. the data reflects a strong inclination and capability among respondents to integrate new technologies effectively into their work processes.

Table 5: I regularly seek out new ideas and opportunities for improvement.

Answer Scale	Frequency	Percent	Mean	Standard Deviation
SDA	9	4.8		
D	12	6.5		
N	22	11.8	4.01	1.10
A	68	36.6		
SA	75	40.3		
Total	186	100.0		

Table 5 showed respondents' attitudes towards seeking new ideas and opportunities for improvement. Here is the main result: Positive Sentiment: A combined 76.9% of respondents either agree (36.6%) or strongly agree (40.3%) with the statement. This indicates a strong inclination

toward innovation and improvement among the group. Mean Score: The mean of 4.01 suggests that, on average, respondents feel positively about their efforts to seek new ideas, falling just above the midpoint on the Likert scale. Standard Deviation: The standard deviation of 1.10 specifies a restrained level of agreement among respondents, with some variability in responses. This suggests that while many are aligned in their views, a segment holds different perspectives. Low Disagreement: Only 11.3% of respondents' express disagreement (6.5% disagree and 4.8% strongly disagree), showing that the majority do embrace the pursuit of new ideas. In summary, the results highlight a proactive mindset toward improvement within the group, indicating that seeking new ideas is valued and practiced.

Objective 2

Table 6: I effectively communicate expectations and goals.

Answer Scale	Frequency	Percent	Mean	Standard Deviation
SDA	19	10.2		
D	13	7.0		
N	19	10.2	3.96	1.34
A	40	21.5		
SA	95	51.1		
Total	186	100.0		

Table 6 showed how effectively respondents communicate expectations and goals. The key findings are as follows: Strong Agreement: A significant majority (72.6%) either agrees (21.5%) or strongly agrees (51.1%) that they effectively communicate expectations and goals. This indicates a strong belief in their communication capabilities**.** Mean Score: The mean score of 3.96 suggests a general tendency towards agreement, reflecting a positive perception of communication effectiveness among respondents. Standard Deviation: With a standard deviation of 1.34, there is some changeability in responses, indicating that while most respondents feel positively, there are differing views among individuals. Low Disagreement: Only a small portion of respondents (17.2%) disagree (10.2% strongly disagree and 7.0% disagree) with the statement, reinforcing the overall positive sentiment regarding communication practices. In summary, the data reflects a strong consensus on effective communication of expectations and goals, which is vital for successful teamwork and project outcomes.

Table 7: I maintain open and transparent communication.

Answer Scale	Frequency	Percent	Mean	Standard Deviation
SDA	11	5.9		
D	14	7.5		
N	12	6.5	4.19	2.54
A	70	37.6		
SA	78	41.9		
Total	186	100.0		

Table 7 showed the respondents' views on maintaining open and transparent communication. The findings can be summarized as follows: Positive Outlook: A substantial majority of respondents (79.5%) either agree (37.6%) or strongly agree (41.9%) that they maintain open and transparent communication. This indicates a strong belief in effective communication practices within the

group. Mean Score: The mean score of 4.19 suggests that respondents generally have a favorable perception of their communication abilities, leaning towards agreement. Standard Deviation: The standard deviation of 2.54 indicates a wider spread in responses, suggesting some variability in how individuals perceive their communication practices. Minimal Disagreement: Only a small percentage of respondents (13.4%) expressed disagreement (5.9% strongly disagree and 7.5% disagree), implying that the majority feel positively about their communication skills. In conclusion, the data indicates a strong consensus among respondents regarding their commitment to open and transparent communication, reinforcing the importance of this skill in effective teamwork.

Table 8: I demonstrate strong leadership skills.

Answer Scale	Frequency	Percent	Mean	Standard Deviation
SDA	6	3.2		
D	10	5.4	4.04	1.03
N	28	15.1		
A	64	34.4		
SA	78	41.9		
Total	186	100.0		

Table 8 showed data on respondents' perceptions of their leadership skills. The analysis reveals several key findings**:** Overall Positive Perception: A significant majority (76.3%) of respondents either agrees (34.4%) or strongly agrees (41.9%) that they demonstrate strong leadership skills. This indicates a strong sense of confidence among team members regarding their leadership capabilities. Mean Score**:** The mean score of 4.04 suggests that respondents generally view themselves positively in terms of leadership abilities, leaning towards agreement. Standard Deviation: The standard deviation of 1.03 indicates a relatively low variability in responses. Most respondents tend to have similar views about their leadership skills, suggesting consensus on this attribute. Minor Disagreement: Only a small portion of respondents (8.6%) expressed disagreement (3.2% strongly disagree and 5.4% disagree), indicating that few perceive themselves as lacking in leadership. In conclusion, the data suggests that the majority of respondents feel confident in their leadership abilities, highlighting a strong leadership culture within the group.

Table 9: I support the professional development of the team members.

Answer Scale	Frequency	Percent	Mean	Standard Deviation
SDA	11	5.9		
D	22	11.8		
N	24	12.9	3.86	1.23
A	54	29.0		
SA	75	40.3		
Total	186	100.0		

Table 9 showed responses regarding support for the professional development of team members. The data indicate. The majority of respondents (69.3%) agree (A + SA) that they support this development. The mean score of 3.86 suggests a positive inclination toward supporting professional development, while the standard deviation of 1.23 indicates a moderate variability in

responses. The smallest group (SDA) indicates minimal disagreement. This analysis provides a clear overview of team sentiment on professional development support. Conclusion: The overall mean score is 3.86 with a standard deviation of 1.23, suggesting that most respondents lean towards agreement with the statement, indicating a positive perception of professional development support within the team.

Summary

The concept of innovative capabilities in university supervision encompasses a range of competencies vital for generating and implementing new ideas and solutions within the academic environment. These capabilities are reflected through modern teaching methods, innovative research frameworks, and progressive administrative practices, ultimately enhancing the quality of academic supervision and fostering adaptability to the evolving demands of higher education. As universities increasingly recognize the significance of innovation for achieving academic excellence and growth, the performance of supervisors becomes critical in guiding the development of both students and faculty.Fostering contentment and general well-being requires supervisors and graduate students to communicate effectively. According to research, supervisors' emotional support, prompt feedback, and clear expectations greatly increase student involvement and reduce stress. Additionally, academic supervisors are essential in encouraging research innovation, developing students' creative potential, and converting concepts into useful results. To investigate the precise communication practices of supervisors and their impact on student experiences, further empirical study is urgently needed. Embracing innovation is vital for universities striving to thrive in a competitive landscape. Over recent decades, higher education has witnessed significant transformations driven by technological advancements, demographic changes, and evolving societal demands. These shifts have necessitated a reassessment of traditional practices and the adoption of innovative methods to address emerging challenges. Key innovations in this context include the integration of digital technologies, the development of interdisciplinary research initiatives, and the creation of flexible learning environments aimed at enhancing educational quality and access. Despite these advancements, the pursuit of innovation faces numerous challenges, such as institutional inertia, resource constraints, and regulatory barriers. Additionally, there is growing interest in understanding how gender dynamics within supervisor-subordinate relationships influence innovative behavior among faculty and graduate students. This study seeks to bridge this research gap by examining how the gender composition of these relationships affects the propensity for innovation. It proposes hypotheses regarding the interplay of gender role expectations, communication styles, and power dynamics in mediating innovative behavior. Ultimately, this research aims to enrich the understanding of the social dynamics of innovation in higher education, with implications for leadership development and fostering inclusive and equitable innovation cultures.

Finding of the Study

Supervisors have a dangerous role in influencing their teams' capacity for innovation in academic settings. Fostering an effective academic culture requires an understanding of the relationship between supervisors' overall performance and their capacity for innovation. This study aims to explore how these innovative capabilities influence supervisory effectiveness, focusing specifically on graduate students and their research outcomes. Objective 1: Measure Innovative Capabilities of Supervisors. This goal entails evaluating managers' capacity to foster innovation and flexibility among their staff members. Surveys that assess how successfully managers create an atmosphere that is conducive to fresh concepts and solutions can be used to gauge innovative capabilities.

Feedback systems and the supervisor's involvement in encouraging creative work practices among students could be important measures.

Objective 1: Measure the innovative capabilities of supervisor

#	Items	SDA		D		N		A		SA		Mean	S.Dev
		F	%	F	%	F	%	F	%	F	%		
1	I encourage creative thinking and innovative solution	8	4.3	7	3.8	16	8.6	71	38.2	84	45.2	4.163	1.027
2	I effectively incorporates new technologies into their work.	16	8.6	11	5.9	16	8.6	51	27.4	92	49.5	4.032	1.264
3	I open to experimenting with new methods and approaches.	8	4.3	6	3.2	16	8.6	72	38.7	84	45.2	4.172	1.014
4	I regularly seek out new ideas and opportunities for improvement.	9	4.8	12	6.5	22	11.8	68	36.6	75	40.3	4.010	1.105
5	I stay updated with the latest trends and development in our field.	11	5.9	10	5.4	15	8.1	78	41.9	72	38.7	4.021	1.105
6	I create an environment where risk-taking is encourage.	9	4.8	11	5.9	20	10.8	58	31.2	88	47.3	4.102	1.117
7	I value and implements suggestions from team members.	12	6.5	13	7.0	17	9.1	71	38.2	73	39.2	3.967	1.162
8	I effectively communicate the importance of innovation.	10	5.4	8	4.3	22	11.8	61	32.8	84	45.2	4.349	3.753
9	I support continuous professional development and learning.	16	8.6	12	6.5	23	12.4	66	35.5	69	37.1	3.860	1.231
10	I encourage a proactive attitude toward solving future challenges.	4	2.2	15	8.1	18	9.7	68	36.6	81	43.5	4.112	1.020
11	I involve team	8	4.3	14	7.5	26	14.0	51	27.4	87	46.8	4.048	1.140

	members in the decision making process for innovative strategies.												
12	I use data and feedback to drive innovation.	13	7.0	14	7.5	19	10.2	63	33.9	74	39.8	4.580	5.336
13	I demonstrate flexibility and adaptability in managing change.	14	7.5	10	5.4	18	9.7	64	34.4	80	4.0	4.000	1.194
14	I foster a culture of innovation within the department.	14	7.5	9	4.8	26	14.0	65	34.9	72	38.7	3.924	1.183
15	I build strong relationship with stakeholder.	12	6.5	16	8.6	22	11.8	57	30.6	79	42.5	3.940	1.213

1. Finding of encouragement **o**f Creative Thinking: A majority of respondents (83.4%) either agree or strongly agree that they encourage creative thinking and innovative solutions, with a mean score of 4.163, indicating a positive attitude towards fostering creativity.
2. Integration of New Technologies: While 49.5% of participants strongly agree that they effectively incorporate new technologies into their work, the mean score of 4.032 suggests that there is area for upgrading in this area.
3. Openness to Experimentation: The response to openness for experimenting with new methods shows a strong inclination, with 83.9% agreeing or strongly agreeing. The mean score of 4.172 reflects a positive attitude towards trying new approaches.
4. Seeking New Ideas: Although 76.9% of respondents are open to seeking new ideas and opportunities for improvement, the mean score of 4.010 indicates that this is an area that can benefit from more proactive engagement.
5. Staying Updated with Trends**:** Most respondents (80.6%) feel they Keep abreast of the most recent trends. and developments in their field, with a mean score of 4.021. This reflects a strong commitment to professional knowledge.
6. Encouraging Risk-Taking**:** A significant portion (78.1%) believes an environment of risk-taking is encouraged, indicated by a mean score of 4.102. This suggests a supportive culture for innovative ideas.
7. Valuing Team Suggestions**:** While 77.4% recognize the importance of team input, the mean score of 3.967 indicates a need for improvement in implementing those suggestions.
8. Communication on Innovation**:** A solid 77.0% effectively communicate the importance of innovation, with a mean score of 4.349, showcasing effective leadership in fostering innovation.
9. Support for Continuous Learning**:** Although only 66.5% support continuous professional development, the mean score of 3.860 suggests this could be enhanced further.
10. Proactive Attitude**:** A majority (80.1%) encourage a proactive approach to challenges, reflected in the mean score of 4.112, indicating readiness for future obstacles.
11. Team Involvement in Decisions**:** A strong 74.8% involve team members in decision-making, with a mean of 4.048, showing collaborative leadership.
12. Data-Driven Innovation**:** With a mean score of 4.580, 73.7% utilize data and feedback to drive innovation, indicating a strong analytical approach.

13. Flexibility in Change Management**:** Flexibility is highlighted with a mean score of 4.000, reflecting a decent adaptability level among 64.4% of respondents.
14. Fostering a Culture of Innovation**:** Although 73.6% attempt to foster an innovative culture, the mean score of 3.924 suggests room for growth in this area.
15. Building Relationships with Stakeholders: Finally, 73.1% build strong stakeholder relationships, indicated by a mean score of 3.940, which is vital for collaboration.

Objective 2: Assess the Performance of Supervisors

Performance measures were placed on student satisfaction, academic production, and overall supervisory efficacy. By examining quantitative data, this purpose attempts to evaluate how supervisor support and innovative capabilities effect the academic and professional development of graduate students Findings from both goals will shed light on how improving supervisors' capacity for innovation might boost output, which will eventually help the institution as a whole.

Objective 2: Assess the performance of supervisors

#	Items	SDA		D		N		A		SA		Mean	S.Dev
		F	%	F	%	F	%	F	%	F	%		
16	I effectively communicate expectations and goals.	19	10.2	13	7.0	19	10.2	40	21.5	95	51.1	3.962	1.349
17	I maintain open and transparent communication.	11	5.9	14	7.5	12	6.5	70	37.6	78	41.9	4.193	2.545
18	I demonstrate strong leadership skills.	6	3.2	10	5.4	28	15.1	64	34.4	78	41.9	4.064	1.037
19	I manage resources efficiently	9	4.8	8	4.3	14	7.5	67	36.0	87	46.8	4.193	2.545
20	I provide constructive feedback to team members.	8	4.3	7	3.8	24	12.9	68	36.6	79	42.5	4.091	1.043
21	I successful in achieving project goals.	8	4.3	7	3.8	24	12.9	68	36.6	79	42.5	4.172	1.135
22	I can maintain high standard quality in their work	6	3.2	15	8.1	16	8.6	60	32.3	87	46.8	4.655	5.218
23	I effectively resolve conflict within the team	8	4.3	11	5.9	17	9.1	66	35.5	84	45.2	4.1129	1.077
24	I can motivate team members to performs at their best.	16	8.6	11	5.9	17	9.1	66	35.5	84	45.2	3.887	1.222
25	I demonstrate	17	9.1	19	10.2	18	9.7	62	33.3	70	37.6	3.801	1,293

	ethical behavior and integrity.												
26	I ensure that project are completed on time.	9	4.8	11	5.9	18	9.7	67	36.0	80	43.0	4.118	1.276
27	I make informed decision based on data and evidence.	8	4.3	13	7.0	24	12.9	72	38.7	69	37.1	3.973	1.082
28	I effectively delegates tasks and responsibilities	6	3.2	7	3.8	17	9.1	64	34.4	90	48.4	4.532	3.302
29	I support the professional development of the team members.	11	5.9	22	11.8	24	12.9	54	29.0	75	40.3	3.860	1.235
30	I set clear and achievable objectives.	9	4.8	6	3.2	18	9.7	57	30.6	96	51.5	4.209	1.067

16. Communicating Expectations and Goals: A mean score of 3.962 indicates that 51.1% of respondents feel expectations and goals are effectively communicated. However, there is room for improvement, as a significant number rated this lower.
17. Open and Transparent Communication: This item scored higher, with a mean of 4.193. About 79.5% believe that open communication is maintained, reflecting a positive communication culture.
18. Strong Leadership Skills: The mean score of 4.064 suggests that 76.3% of respondents feel leadership skills are demonstrated effectively, indicating confidence in leadership.
19. Efficient Resource Management: With a mean of 4.193, 83.5% of respondents feel that resources are managed efficiently, suggesting good operational practices.
20. Constructive Feedback**:** The mean score of 4.091 shows that 78.6% provide constructive feedback, highlighting a supportive environment for growth.
21. Achieving Project Goals: Scoring 4.172, 78.6% believe project goals are met successfully, indicating effective project management.
22. Maintaining Quality Standards: A high mean of 4.655 suggests that 46.8% maintain high-quality standards, which is crucial for overall success
23. Conflict Resolution: The mean of 4.112 indicates effective conflict resolution within teams, with 80.7% feeling confident in this area.
24. Motivating Team Members: A mean of 3.887 suggests that while motivation is encouraged, there's potential for improvement in this area.
25. Ethical Behavior and Integrity**:** The mean score of 3.801 indicates a focus on ethical behavior, though further emphasis may be needed.
26. Project Timeliness: With a mean of 4.118, 79.0% feel projects are completed on time, reflecting effective time management.
27. Data-Driven Decision Making: A mean of 3.973 suggests a need for stronger data utilization in decision-making processes.

28. Task Delegation: A mean of 4.532 indicates effective delegation practices, with 82.7% feeling that tasks are appropriately distributed.
29. Supporting Professional Development: The mean score of 3.860 reflects a moderate emphasis on professional growth, indicating a need for more support in this area.
30. Setting Clear Objectives: A strong mean of 4.209 suggests that 51.5% respondent reported that objectives are clearly set, which is essential for achieving success.

Recommendation of the Study

Based on the study's findings, a number of recommendations can be put into practice to improve the relationship between supervisory performance and innovative capabilities. These recommendations center on leveraging data-driven decision-making, supporting continuous professional development, integrating new technologies better, and cultivating a culture of creativity.

1) First and foremost, companies must to make a concerted effort to foster an atmosphere that encourages originality and creativity. Regular brainstorming sessions, innovation workshops, and cross-departmental collaboration projects might help achieve this. Organizations might benefit from respondents' favorable attitudes toward creative problem-solving by promoting employees to exchange and experiment with new ideas. To further strengthen this culture, leadership should also honor and reward creative efforts.
2) Secondly, the incorporation of new technology needs to be given top priority. Companies should fund drill programs that equip staff with the skills they need to use new tools and technologies efficiently, as only 49.5% of respondents expressed confidence in this area. Workshops on the newest software, data analysis tools, and cutting-edge technology pertinent to the organization's industry may be included in this training. Furthermore, establishing a mentorship program in which tech-savvy staff members help others helps promote a positive learning atmosphere.
3) Third, professional development should be given more importance by organizations. Structured professional development programs are essential, as just 66.5% of respondents said they felt inspired to pursue ongoing education. This can involve providing possibilities for certifications, attending industry conferences, and granting access to online courses. In addition to providing time for staff members to participate in professional development events, leadership should aggressively promote these resources. Staff members can remain up to date on manufacturing trends and best practices by being encouraged to participate in professional networks.
4) Fourth, companies ought to concentrate on improving their efforts at data-driven innovation. Even though 73.7% of respondents said they use data to make decisions, this area still needs improvement. Businesses should make investments in cutting-edge data analytics software and make sure staff members are properly trained to understand and use data. Establishing a common repository for data can also facilitate teams' access to pertinent data and insights, encouraging a cooperative approach to innovation.

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