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Leaders' Degree of Strategic Improvisation Practice from Education Employees' Perspective

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ABSTRACT: The study aimed to investigate the degree to which leaders in the Ministry of Education practice strategic improvisation from the perspective of the ministry's employees. It also sought to identify the significance of differences in their responses based on gender, academic qualification, and years of experience. A descriptive survey method was employed, with a questionnaire as the tool for data collection. The study population included all employees at the Jordanian Ministry of Education headquarters, totaling 1,510 individuals, from which 305 employees were selected using the stratified random sampling method. The findings revealed that the practice of strategic improvisation by leaders in the Jordanian Ministry of Education and its dimensions—intuition, creativity, adaptation to change, and risk perception—was of a moderate level. In addition, the study indicated statistically significant differences at the ($\alpha \leq 0.05$) level in the average responses of the study sample regarding the degree of strategic improvisation practice by ministry leaders in the four dimensions. These differences were attributed to the academic qualification variable, in favor of employees with doctoral and master's degrees, and the years of experience variable, in favor of those with long and medium experience. However, no difference was found based on the gender variable. The study recommended that the Ministry of Education adopt an organizational culture that encourages strategic improvisation by emphasizing intuition, creativity, adaptation to change, and risk perception while granting sufficient authority to ministry leaders to practice strategic improvisation in ways that enhance workflow and improve the quality of outcomes.

Keywords: leadership, education, strategic improvisation, employees.

I. INTRODUCTION

Social organizations continuously operate within ever-changing environments where data intertwines, and relationships become interconnected through internal networks within the organization, extending to external networks that are equally complex and interwoven. The undeniable truth is the dynamic state of change experienced by the world and society, including all its institutions, especially social organizations where humans constitute a fundamental element in their inputs, processes, and outputs [1].

For social organizations in general, and educational organizations in particular, to ensure their survival in a competitive and changing environment, they must interact with this environment through leadership processes involving modern and non-traditional approaches in decision-making processes [2]. The current reality is ever-changing, unpredictable, and difficult to navigate through strategic plans that guarantee organizational success and excellence by relying on traditional administrative processes. Therefore, administrative processes that address the immediate reality quickly and effectively are required, necessitating the availability of new skills and tools suitable for these new demands [3].

Strategic improvisation is perhaps one of the tools to achieve success for many administrative processes [4]. It is a skill that interacts positively and effectively with renewed data and rapid changes and serves as an effective means of creatively solving problems and making decisions more than methodical and traditional approaches. Literature on strategic improvisation indicates the importance of leadership in organizations practicing strategic improvisation, particularly in higher education institutions. The practice of strategic improvisation by

educational leaders is positively associated with improved performance [5], organizational excellence [6], strategic dominance [7], and enhancing organizational reputation [4]. Additionally, the practice of strategic improvisation by academic leaders improves the quality of administrative decisions [8] and strengthens job stability [9].

Despite the continuous efforts of educational organizations to ensure work quality and continuity and to overcome problems of competitiveness and fluctuations in organizational environments in general, and educational organizations in particular, there remain needs and challenges in modern management methods to address these issues efficiently [10]. Studies have confirmed that organizational weaknesses, centralized management, and the failure to adopt strategic plans to overcome routine and standardized methods in decision-making processes have highlighted the necessity of adopting more efficient and effective mechanisms and strategies in management [11, 12, 13]. Adopting effective strategies to face crises and changes cannot succeed through traditional approaches and strategies in administrative processes [14]. Flexible mechanisms that allow quick decision-making, considering time, circumstances, alternatives, technology, and creative and innovative requirements, are essential.

From the above, educational organizations must incorporate elements of strategic improvisation, an effective approach, and a mechanism in leadership that ensures balance and continuity. This takes into account the internal and external environments of the system, including anticipated, planned, and unforeseen changes [15]. Since most educational studies have addressed the topic of strategic improvisation in university environments, there is still a need to explore it in various environments and educational organizations, particularly those responsible for the state's educational affairs, such as the Ministry of Education. There is a gap in previous studies addressing the practice of strategic improvisation by leaders in the Ministry of Education, especially since the ministry is responsible for schools and educational directorates across a wide geographical area and needs to make quick decisions to address emergencies and solve problems to maintain the continuity of work in the educational field.

Given the gap in previous studies conducted in the Jordanian context, this study aims to examine the level of leadership in the Jordanian Ministry of Education practices strategic improvisation from the perspective of ministry employees, by answering the following questions:

1. What is the extent to which leadership in the Jordanian Ministry of Education practices strategic improvisation across the following dimensions: intuition, innovation, adaptation, and risk perception, from the perspective of ministry employees?
2. Are there statistically significant differences at the level of significance ($\alpha \leq 0.05$) in the average responses of the study sample regarding the extent to which leadership in the Jordanian Ministry of Education practices strategic improvisation, attributable to the study variables: gender, academic qualification, and years of experience?

The significance of this study arises from the importance of its subject, which is considered a contemporary topic in management and leadership. It addresses the dynamic and ever-changing environment in which strategic improvisation is implemented, particularly within social and educational organizations. The study's relevance is further underscored by the nature and activities of the organization it examines. Additionally, there is a scarcity of research focused on strategic improvisation within ministries of education. This is the first study conducted on the Ministry of Education in Jordan as far as the researchers' best knowledge. Moreover, this study contributes to the literature on leadership and management, particularly in educational and academic institutions.

II. THEORETICAL FRAMEWORK

1. DEFINITION OF STRATEGIC IMPROVISATION

Strategic improvisation is a contemporary concept that integrates flexibility and adaptability into decision-making processes within organizations. It can be defined from various theoretical perspectives. From a decision-making standpoint, strategic improvisation is described as the essential integration of decision-making and execution beyond traditional planning processes. This definition emphasizes the shortened time gap between planning and execution, highlighting the applicability of improvisation to new actions, enabling rapid decision-making, strategic flexibility, innovation, and swift resource deployment, which empowers the organization to respond quickly to changing circumstances [16]. From another perspective, strategic improvisation is defined as the deliberate and intrinsic integration of organizational design and execution processes, reflecting an organization's ability to quickly transform in response to unforeseen challenges. This

ability is crucial for maintaining strategic flexibility, allowing the organization to navigate unpredictable environments effectively [17]. A third perspective on strategic improvisation involves a situational interpretation within a specific framework comprising three interrelated components: establishing a clear situational framework (composition), professional interpretation of the situation (interpretation), and situational adaptation based on existing circumstances (improvisation). This perspective underscores the significance of the context in which improvisation occurs [18]. Collectively, these definitions illustrate how strategic improvisation functions as a critical mechanism enabling organizations to enhance their responsiveness and adaptability in an ever-changing business landscape.

The practice of strategic improvisation in organizations manifests in three forms: (1) Making minor adjustments to pre-existing processes; (2) Building on pre-existing processes with a planned approach, followed by improvisation based on the original framework; (3) Ignoring and bypassing previous links to create and establish new patterns and pathways [19].

2. REQUIREMENTS FOR STRATEGIC IMPROVISATION

Practicing strategic improvisation in organizations requires the availability of certain prerequisites to ensure its effective application, including: A) Strategic Vigilance: Is is a necessary requirement due to the dynamism of organizations and the increasing rates of competitiveness. It represents the ability to monitor the surrounding environment and identify potential opportunities and threats [7]. It is essential to achieve the concept of vigilance, which relies on alerting operations and providing information through advanced systems that collect and store data and information, allowing it to be utilized and used in making quick and effective decisions to face challenges [9]. B) Strategic Agility: It requires the organization to adapt to change and accept choosing the most appropriate alternative from a set of available options [13]. This requires an organization led by individuals with high skills and competencies, capable of making agile decisions to overcome obstacles while interacting with change at both the individual and organizational levels. Strategic agility also involves seizing opportunities, responding quickly, investing in obstacles and crises, and turning them into opportunities to enhance performance and transform them into positives that serve the work environment [9]. C) Providing Micro-Structures: Micro-structures play a crucial role in enhancing flexibility and simplifying communication, thereby facilitating faster decision-making and efficiently solving problems through responsiveness to new ideas such as creativity and innovation [20]. D) Investing Resources: Available resources are an important requirement for strategic improvisation. The concept of improvisation is manifested through quickly employing available resources in innovative and creative ways that make strategic improvisation more successful [9]. E) Organizational Memory: It is a critically important requirement for understanding how organizations retain and use knowledge over time. It includes data collection, information, and knowledge accumulated by the organization, which is essential for decision-making and strategic improvisation [21].

3. OBJECTIVES OF STRATEGIC IMPROVISATION

Strategic improvisation aims to achieve several key objectives, the most important of which are: [6, 22, 23]

- Adaptation and Flexibility: In a changing environment, rapid learning, response, and adaptation become essential requirements.
- Enhanced Performance Quality: Strategic improvisation increases performance quality and overall work efficiency.
- Creative Problem-Solving: It offers prompt, original answers to potential issues or roadblocks.
- Utilization of Organizational Data: Strategic improvisation facilitates the collection and use of organizational information and data, enabling the effective seizing of opportunities.
- Motivation and Achievement: Strategic improvisation boosts motivation and achievement levels by empowering the organization to tackle challenges and developments.
- Value Creation: It enhances the organization's value and fosters continuous added value through effective leadership that embraces creativity, innovation, and flexibility.

4. DIMENSIONS OF STRATEGIC IMPROVISATION

According to [24] model, the dimensions of strategic improvisation include intuition, creativity, adaptation, and risk perception. These dimensions can be detailed as follows:

4.1 Intuition: Intuition is the internal sense an individual has regarding the challenges and situations encountered in the work environment or social life [25]. It refers to leveraging mental abilities and thinking unconsciously to offer suitable solutions when needed without relying on comprehensive analysis. Intuition is closely

related to experience [26]. It is based on insight and the ability to perceive, allowing the leader to make decisions in the organization strategically and intuitively. Intuition helps an individual understand situations and matters that cannot be explained by logic and reason, making it an exceptional ability that does not necessarily require high intelligence. Mature experience and positive engagement in the work environment are key features of intuition, which helps individuals develop their expertise and knowledge, with the patience and caution necessary for successful decisions [25].

4.2 *Creativity*: Creativity refers to the ability to develop new ideas and innovative solutions to problems [27]. It is a mental trait that requires fluency and flexibility in producing new within a specific timeframe. It results from the interaction of individual experiences with new, unconventional ways of thinking. Many problems and obstacles in work environments can no longer be overcome with familiar approaches, and it has become necessary to follow creative paths that produce innovative solutions, impacting the work environment and the organization's effectiveness and performance [28]. Creativity enhances the organization's ability to adapt to rapid changes in the internal and external environment. In strategic improvisation, creativity is essential for finding new ways to deal with unexpected challenges [27]. An individual's ability to discover new methods and avoid traditional ones, while striving for development, makes the organization productive and distinguished, thus making creativity one of the most important requirements for strategic improvisation in the organizational work environment [29].

4.3 *Adaptation*: Adaptation is the ability to modify strategies and processes in response to changing circumstances. This requires a high level of flexibility from organizations to change direction quickly when facing new challenges or unexpected opportunities. Adaptation is a crucial part of strategic improvisation because it enables organizations to respond effectively to changing environments [30]. Adaptation is essential for the survival and continuity of organizations. Understanding the nature of change, facing its challenges, and comprehending one's work environment and its internal and external conditions make individuals adaptable to new or different circumstances, whether in decision-making or overcoming challenges, thereby enhancing productivity and performance in the organization [31]. This requires flexibility and awareness of the reality and changing environment to align an individual's actions and behaviors within the organizational setting.

4.4 *Risk Perception*: Risk is understood as the willingness and ability to take risks, initiate actions from scratch, pay attention to opportunities when others do not, discover sources of resources, gather them, and use them optimally. It involves taking *initiative* and calculated risks [26]. The organizational work environment is fraught with risks, some related to the nature of the organization's activities, while others concern laws and regulations. The level of risk increases with the organization's effectiveness, which makes it necessary to perceive these risks and base decisions on knowledge, experience, competence, and skills. Positive interaction to confront risks involves quickly assessing them and taking actions to eliminate or mitigate their negative impacts on the organization or to adapt to some of their effects [32]. Organizations that strongly support strategic improvisation can reduce the impact of risks and concerns related to them, and individuals may perceive the same risk differently depending on their experience, values, and other factors [24].

Globally, many studies have examined the practice of strategic improvisation in organizations in general and educational organizations in particular. In Nigeria, Ibrahim et al. [15] studied the relationship between the strategic improvisation of leaders, the self-efficacy of projects, the performance of higher education institutions in Nigeria, and the degree of need for leaders to have self-efficacy and strategic improvisation. The study sample consisted of 229 academic leaders, and the descriptive analytical method was used. Data was collected through a questionnaire to answer the study questions. The study found a positive relationship between outstanding leaders and the use of improvisational methods. It was also found that the leader's experience plays a role in strategic improvisation. In Malaysia, Auwalu [5] attempted to determine the relationship between strategic improvisation, entrepreneurial self-efficacy, and performance, as well as the mediating role of institutional entrepreneurship and organizational culture in higher education institutions. Data was collected from 229 academic leaders, and the study found that strategic improvisation is practiced to a high degree by leaders, and it is positively related to performance. Strategic improvisation and entrepreneurial self-efficacy were found to be important for institutional entrepreneurship. The study also found that institutional entrepreneurship mediates the relationship between leaders' strategic improvisation, entrepreneurial self-efficacy, and performance. In Portugal, Antunes [33] focused on tracking the process of strategic improvisation and offering a procedural approach to how to apply and develop this strategy over time. The study was conducted on entrepreneurial companies in Portugal, and the results indicated that strategic improvisation develops over time and allows organizations to face strengths and weaknesses resulting from changes in their environmental conditions. In Iran, Rabiei et al. [34] examined the effect of strategic improvisation on competitive advantage through the

mediating role of organizational memory in the banking services sector. Data was collected from 120 employees and senior managers at Bank Iran in Tehran. The results confirmed the impact of strategic improvisation on competitive advantage, in addition to the mediating role of organizational memory in the effect of strategic improvisation on the organization's competitive advantage.

In the Arab world, -Jordan is part of it-, some studies have addressed the topic of strategic improvisation. In Lebanon, Farook et al. [35] aimed to identify the reasons and characteristics affecting improvisation in organizations and to discover the extent of the impact of behaviors on strategic improvisation. The study found several results, the most important being that previous experiences in improvisation proved that failure in implementation and the vision for improving well-established and ready tasks were the most common reasons for deciding on strategic improvisation. In Iraq [6] examined the relationship between strategic improvisation and organizational excellence at the University of Kufa. Data was collected from 212 employees at the University of Kufa in the faculties of Education for Women, Basic Education, and Mixed Education. The results showed a high tendency towards strategic improvisation at the University of Kufa and a positive and significant correlation between strategic improvisation and organizational excellence. In Iraq, Al-Balaghy & Al-Zubaydi [36] conducted a study that revealed the role of organizational improvisation in reducing strategic inertia. Data was collected from 60 administrative leaders at the Middle East Investment Bank in Iraq. The study found a high degree of organizational improvisation in the studied institution and a significant impact of the independent variable, organizational improvisation, on the dependent variable, strategic inertia. A study by Al-Bashqali & Sultan [7] was also conducted in Iraq, aiming to reveal the role of strategic improvisation and its requirements in achieving strategic dominance. The study used a questionnaire to collect data, which was distributed to a sample of administrative leaders in private universities in the Kurdistan region of Iraq. The study showed a moderate degree of strategic improvisation in the universities studied and the impact of strategic improvisation in achieving strategic dominance. It was also found that there were no significant differences in the responses of the study sample concerning strategic improvisation attributed to the variables of position, academic title, gender, age, and years of service. Another study in Iraq Muhammad & Rashid [4] aimed to identify the role of strategic improvisation in enhancing the organization's reputation through its dimensions. Data was collected from 135 administrative leaders in private universities in Kirkuk. The study found a high degree of strategic improvisation in the studied universities and a significant impact of strategic improvisation on enhancing the organization's reputation. In Saudi Arabia, a study by Al-Balawi [8] aimed to explore the relationship between strategic improvisation and the quality of administrative decisions among academic leaders at the University of Tabuk. Data was collected from 391 academic leaders and faculty members, and the study found that the degree of strategic improvisation by academic leaders, in general, and in the dimensions of intuition, innovation, adaptation, opportunity, and risk perception, was moderate. The level of quality in administrative decisions was also moderate, and there was a strong correlation between the practice of strategic improvisation by academic leaders and the level of quality in administrative decisions, with no significant differences in responses related to gender. In Saudi Arabia, another study by Al-Ardan [9] aimed to identify the correlation between strategic improvisation by academic leaders at the University of Hail and job stability. Data was collected from 45 academic leaders, and the results showed a positive correlation between strategic improvisation by academic leaders and job stability at the level of dimensions and overall score. This indicates that strategic improvisation plays an important and effective role in universities' efforts to enhance their capabilities, achieve their strategic goals, and develop competitive abilities in a stable organizational environment.

From the previous presentation, it is evident that the previous studies revealed a research gap related to the lack of studies conducted in the Jordanian environment regarding the practice of strategic improvisation by leaders, particularly in the Ministry of Education, which manages educational institutions across a large geographical area in Jordan. There is a need for strategic improvisation in managing these institutions and addressing the problems and crises that arise in the educational field, requiring quick decision-making to ensure the smooth operation of educational work in Jordan. This gap has been overlooked by all previous studies. Therefore, the current study is unique in being the only one conducted in Jordan on educational organizations, particularly in the Ministry of Education – to the best of the researchers' knowledge.

III. METHOD

The study relied on a descriptive survey design to describe the employees' views at the Jordanian Ministry of Education headquarters regarding the strategic improvisation practice by the ministry's leaders. The descriptive survey design addresses a specific phenomenon to describe it in terms of its nature and the extent of its presence in reality. It provides results that can help give a clearer understanding of the studied phenomenon, which may

contribute to its improvement without the researcher intervening during the study. This design is the most appropriate for the current study to explore the extent to which the leaders practice at the Jordanian Ministry of Education strategic improvisation in its dimensions (intuition, innovation, adaptation, and risk perception) from the perspective of employees at the Ministry of Education headquarters.

1. POPULATION AND SAMPLE

The study population consisted of employees at the Jordanian Ministry of Education headquarters, working in various departments and divisions responsible for organizing the educational sector in Jordan, such as the Directorate of Education, Directorate of Planning and Educational Research, Center for Educational Technology and Information, Directorate of Examinations and Tests, Directorate of Buildings and Projects, Internal Audit Unit, Directorate of Legal Affairs, and Directorate of Financial Affairs. The total number of employees is (1,510) according to the Ministry of Education's statistics for the year (2023).

Thompson's formula [37] was applied to determine the required sample size to represent the population in the study, resulting in a sample of (306) employees at the ministry headquarters. The study instrument was distributed to them. Given the diversity of the study population in terms of gender, experience, and qualifications, as per the Ministry of Education's statistics, the sample was selected using a stratified random sampling method to ensure the representation of the study population in the chosen sample based on their characteristics, including gender, qualifications, and years of experience. Table 1 illustrates the distribution of the study sample according to their characteristics.

Table 1. Distribution of the study sample

Variable	Group	No.	%
Gender	Male	215	70.26%
	Female	91	29.74%
	Total	306	100%
Qualification	Bachelor or lower	159	51.96%
	High diploma	47	15.36%
	Master	68	22.22%
	PhD	32	10.46%
	Total	306	100%
Experience	- 10	82	26.8%
	10 - 20 yrs.	138	45.1%
	+ 10	86	28.1%
	Total	306	100%

2. INSTRUMENT

A questionnaire was designed as a tool to collect the necessary information and data for this study, given its suitability to the study's nature, objectives, and methodology. The preparation of the questionnaire followed the following steps:

- Reviewing the available literature and previous studies on strategic improvisation: The questionnaire was built based on the theoretical framework and tools from some previous studies. Educational literature and studies on strategic improvisation in the educational sector were reviewed, including studies by [6, 8, 9].
- Defining the objective of the questionnaire: The questionnaire aimed to identify the degree to which the leaders at the Jordanian Ministry of Education practice strategic improvisation in its dimensions (intuition, innovation, adaptation, risk perception) from the perspective of ministry employees.
- Determining the format and rating scale of the questionnaire: The questionnaire items were constructed based on a five-point Likert scale, with responses corresponding to five levels (Very High, High, Moderate, Low, Very Low), assigned scores of (5, 4, 3, 2, 1) respectively. This scale was used to assess employees' perspectives on the practice of strategic improvisation by the leaders at the Jordanian Ministry of Education in its dimensions (intuition, innovation, adaptation, risk perception). The following conditions were considered in constructing and wording the questionnaire items: Wording the items clearly and avoiding complex sentences, ensuring that the items did not include any phrases or hints that might influence or direct the respondents' answers, Avoiding the use of negative phrasing in the items.

- Drafting the initial version of the questionnaire: The initial draft of the questionnaire consisted of two main sections:

- Section One: Demographic data of the sample members, including gender, educational qualification, and years of experience.
- Section Two: Questionnaire items measuring the degree to which leaders at the Jordanian Ministry of Education practice strategic improvisation from the employees' perspective. This section initially included (24) items distributed across four dimensions: (Intuition = 6 items, Innovation = 6 items, Adaptation= 6 items, Risk Perception = 6 items). The responses to the items were recorded using the five-point Likert scale described above.

3. VALIDITY AND RELIABILITY

The questionnaire was presented to a panel of seven reviewers from various Jordanian universities, each possessing diverse academic specializations. Their feedback was carefully considered, and necessary modifications were made based on their suggestions. To assess the validity of the internal consistency of the questionnaire items, the Pearson correlation coefficient was calculated between each item and its corresponding dimension. The results of this analysis are presented in Table 2.

Table 2. Correlation coefficients of the questionnaire items with the total score of their corresponding dimensions (n=30).

Intuition		Creativity		Adaptation		Risk Perception	
Item No.	Correlation Coefficient	Item No.	Correlation Coefficient	Item No.	Correlation Coefficient	Item No.	Correlation Coefficient
1	0.744**	7	0.750**	13	0.856**	19	0.873**
2	0.829**	8	0.617**	14	0.557**	20	0.895**
3	0.765**	9	0.875**	15	0.841**	21	0.775**
4	0.742**	10	0.753**	16	0.921**	22	0.854**
5	0.682**	11	0.837**	17	0.836**	23	0.854**
6	0.810**	12	0.764**	18	0.838**	24	0.720**

**Statistically significant at (α = 0.01).

It is shown in Table 2 that the values of the correlation coefficients for each statement in the questionnaire with the total score of the dimension to which it belongs were positive and statistically significant at the level (α = 0.01). This result indicates the suitability of the statements to measure the dimension to which they belong. After verifying the validity of the internal consistency of the study tool, the reliability coefficients for the questionnaire and its four dimensions were also extracted using Cronbach's alpha equation. Table 3 shows the reliability results.

Table 3. Reliability coefficients for the questionnaire and its dimensions (n=30).

Dimension	No. of items	Cronbach's Alpha
Intuition	6	0.851
Creativity	6	0.860
Adaptation	6	0.893
Risk Perception	6	0.907
Overall Questionnaire	24	0.968

The results in Table 3 that the reliability coefficient of the questionnaire and its four dimensions was high. The reliability coefficient of the questionnaire as a whole was (0.968). The reliability coefficients of the four dimensions ranged between (0.851) and (0.907).

IV. DATA ANALYSIS

A)To answer the first question, descriptive statistics were employed to calculate the means and standard deviations of the sample members' responses. To interpret the mean responses according to the five categories used in the questionnaire, the range was calculated as follows:

- Range = Highest score on the scale (5) - Lowest score on the scale (1) = 5 - 1 = 4.
- Length of Category = 4 ÷ 5 categories = 0.80, which represents the length of each category in the five-point scale.

Table 4 outlines the criterion used to interpret the mean responses of the sample members, to facilitate commenting on the results accordingly.

Table 4. Criterion for explaining the sample's responses

Degree of Practice for Strategic Improvisation	Mean
V. high	4.21 – 5.00
High	3.41 – 4.20
Moderate	2.61 – 3.40
Low	1.81 – 2.60
V. low	1.00 – 1.80

B) To answer the second question, a three-way ANOVA and a three-way MANOVA were conducted, along with Scheffe's test to identify the source of statistically significant differences in the responses of the sample members based on the variables of educational qualification and years of experience.

V. RESULTS AND DISCUSSION

1. *FIRST QUESTION: TO WHAT EXTENT DO LEADERS IN THE JORDANIAN MINISTRY OF EDUCATION PRACTICE STRATEGIC IMPROVISATION IN THE FOLLOWING DIMENSIONS: INTUITION, CREATIVITY, ADAPTATION, RISK PERCEPTION FROM THE PERSPECTIVE OF MINISTRY EMPLOYEES?*

Table 5. The overall practice of strategic improvisation by the leaders at the Jordanian ministry of education.

Dimension	Dimensions of Strategic Improvisation	Mean	Std. D.	Rank	Degree of Practice
1	Intuition	3.27	0.53	2	Moderate
2	Creativity	3.18	0.61	4	Moderate
3	Adaptation	3.30	0.63	1	Moderate
4	risk perception	3.25	0.63	3	Moderate
	Total strategic improvisation	3.25	0.55	---	Moderate

The results presented in Table 5 indicate that the practice of strategic improvisation by the leadership in the Jordanian Ministry of Education is at a moderate level. Specifically, the mean responses of the ministry employees regarding the overall questionnaire score were (3.25) with a standard deviation of (0.55). When examining the degree of leadership practice of strategic improvisation across the four dimensions, all dimensions also fell within the moderate practice level. The adaptation dimension came first in terms of ranking with a mean (3.30) and a standard deviation (0.63), followed by the intuition dimension in second place with a mean (3.27) and a standard deviation (0.53). The risk perception dimension came in third place with a mean (2.25) and a standard deviation (0.63), while the innovation dimension came in fourth and last place with a mean (2.18) and a standard deviation (0.61).

This result indicates a beginning of interest in strategic improvisation by leaders in the Jordanian Ministry of Education. Which may be imposed by the nature of the work environment in the ministry, and what it requires in terms of dynamic capabilities to keep pace with rapid changes in the educational needs of society, and what this requires in terms of the ability to adapt, innovate, perceive risks, and employ intuition among leaders, ensuring the continuity of providing quality educational services. However, this average degree may be due to reasons. For example, the Ministry of Education does not adopt a clear strategic framework for practicing strategic improvisation. In addition, some legislative and administrative challenges were found which may limit the ability of leaders to adopt modern administrative approaches, including practicing strategic improvisation effectively.

The average result of the degree of leadership practice in the Jordanian Ministry of Education for strategic improvisation in general and in all dimensions is consistent with the study [7]. The study showed an average degree of practicing strategic improvisation in private universities in the Kurdistan Region of Iraq. It also agrees

with the study [8] whose results showed that the degree of practicing strategic improvisation by academic leaders at Tabuk University was average. The study differs from the study [36] which showed a high degree of practicing organizational improvisation in the researched institution, and the study [4] which concluded that there is a high degree of practicing strategic improvisation in private universities in Kirkuk Governorate. It also differs from the study [6] which showed a high trend toward strategic improvisation at the University of Kufa.

Table 6. Results of the items related to the intuition dimension.

Item no.	Intuition	Mean	Std. D.	Rank	Degree of Practice
1	The leader possesses the ability to sense events before they occur.	3.11	0.64	6	Moderate
2	The leader takes the initiative to plan quickly when sensing crises and problems.	3.28	0.81	3	Moderate
3	The leader continuously compares information received through their sensory perceptions or experiences.	3.18	0.77	5	Moderate
4	The leader encourages employees to adopt quality in performance to avoid crises.	3.42	0.73	1	high
5	The leader identifies weaknesses and deficiencies in the surrounding data.	3.38	0.79	2	Moderate
6	The leader observes relationships between direct and indirect components and processes.	3.25	0.84	4	Moderate
	Total dimension (intuition)	3.27	0.53	---	Moderate

The results in Table 6 show that strategic improvisation by leaders in the Jordanian Ministry of Education in the intuition dimension was at a moderate level (Mean = 3.27, SD = 0.53).

The averages of the Ministry employees' responses to the items of the intuition dimension ranged between "moderate" and "high." Five items fell within the "moderate" practice level, while only one item was rated as "high" practice, namely Item 4: "The leader encourages employees to adopt quality performance to avoid crises" (Mean = 3.42, SD = 0.73). This is a significant practice for identifying problems before they escalate into crises, thereby reducing errors and associated crisis costs.

The results in Table 6 indicate that the remaining items were rated at the "moderate" level of practice, as follows: Item 1: "The leader possesses the ability to sense events before they occur." (Mean = 3.11, SD = 0.64). This result is attributed to the limited critical analysis skills of leaders, which makes it difficult for them to gather accurate information and interpret it correctly. These skills are essential for anticipating events. Item 3: "The leader continuously compares information received through sensory perceptions or experiences" (Mean = 3.18, SD = 0.77). This is often associated with leaders operating in high-pressure and uncertain environments, making it challenging to evaluate information accurately. Item 6: "The leader observes relationships between direct and indirect components and processes" (Mean = 3.25, SD = 0.84). The lack of effective communication channels between leaders and employees can lead to the loss of critical information, reducing leaders' ability to understand complex relationships among different components. Item 2: "The leader takes the initiative to plan quickly when sensing crises and problems." (Mean = 3.28, SD = 0.81). Leaders may struggle to plan quickly due to the absence of a clear strategic vision during critical times. Effective crisis management requires the ability to look beyond immediate challenges and understand the broader context of the crisis. Item 5: "The leader identifies weaknesses and deficiencies in the surrounding data" (Mean = 3.38, SD = 0.79). A lack of communication between leaders and employees may hinder the collection of necessary feedback about performance, limiting leaders' ability to detect problems early and reducing opportunities for learning from mistakes.

The moderate result for the degree of strategic improvisation practice by leaders in the Jordanian Ministry of Education in the intuition dimension aligns with the findings of the studies [7, 8]. However, it differs from the studies [4, 6, 36].

Table 7. Results of the items related to the creativity dimension.

Item no.	Creativity	Mean	Std. D.	Rank	Degree of Practice
7	The leader thinks innovatively and unconventionally	3.07	0.72	6	Moderate
8	The leader focuses on using technological innovations to deliver ministry services innovatively.	3.26	0.71	2	Moderate
9	The leader has the ability to generate new ideas to develop work	3.13	0.88	4	Moderate
10	The leader involves employees in planning for the optimal utilization of ministry resources.	3.12	0.66	5	Moderate
11	The leader is concerned with the results of self-evaluation of ministry services to innovate services that meet community needs.	3.29	0.82	1	Moderate
12	The leader can find innovative solutions to work-related problems.	3.22	0.88	3	Moderate
	Total dimension (creativity)	3.18	0.61	---	Moderate

The results in Table 7 indicate that the practice of leadership in the Jordanian Ministry of Education regarding strategic improvisation in the dimension of creativity is at a moderate level (Mean = 3.18, SD = 0.61). The averages of Ministry employees' responses to all items under the innovation dimension fell within the "moderate" level. The results, in order, were as follows: Item 7: "The leader thinks innovatively and unconventionally" (Mean = 3.07, SD = 0.72). This may be attributed to fear of failure, as leaders might avoid new ideas due to concerns about negative reactions. Item 10: "The leader involves employees in planning for the optimal utilization of ministry resources" (Mean = 3.12, SD = 0.66). The lack of a culture that encourages participation between employees and leaders might lead to low engagement in the planning process. Enhancing transparency and participation is needed to improve interaction and involvement. Item 9: "The leader has the ability to generate new ideas to develop work" (Mean = 3.13, SD = 0.88). If the Ministry of Education's culture does not support innovation or change, leaders may feel constrained, especially if the organizational environment favors traditional methods, potentially leading to resistance to new ideas. Item 12: "The leader can find innovative solutions to work-related problems" (Mean = 3.22, SD = 0.88). A lack of necessary skills or knowledge to fully understand the nature of problems may hinder some leaders' ability to develop effective solutions to work challenges. Item 8: "The leader focuses on using technological innovations to deliver ministry services innovatively" (Mean = 3.26, SD = 0.71). A shortage of skilled personnel trained in technological innovations, such as cybersecurity and data analysis, is among the main obstacles facing leaders in the public sector, including the Ministry of Education. This lack of expertise reduces the ability to provide ministry services in innovative ways. Item 11: "The leader is concerned with the results of self-evaluation of ministry services to innovate services that meet community needs" (Mean = 3.29, SD = 0.82). Some leaders may lack awareness of the importance of self-evaluation in improving performance and meeting societal needs. Additionally, leaders often have busy schedules, making it difficult for them to allocate time for self-reflection and performance evaluation. These pressures may lead to neglecting important aspects, such as self-evaluation, to innovate ministry services.

The moderate result for the degree of strategic improvisation practice by leaders in the Jordanian Ministry of Education in the creativity dimension aligns with the findings of the studies [7, 8]. However, it differs from the studies [4, 6, 36].

Table 8. Results of the items related to the adaptation dimension.

Item no.	Adaptation	Mean	Std. D.	Rank	Degree of Practice
13	The leader adopts new approaches to thinking to address changing conditions.	3.27	0.88	4	Medium
14	The leader is concerned with developing plans aligned with the Ministry of Education's vision and mission.	3.53	0.72	1	High
15	The leader is open to new ideas.	3.16	0.91	6	Medium
16	The leader deals with technological and environmental changes flexibly and consciously.	3.31	0.83	2	Medium
17	The leader continuously adjusts strategies to align with unexpected changes.	3.21	0.88	5	Medium

Item no.	Adaptation	Mean	Std. D.	Rank	Degree of Practice
18	The leader develops work methods to help employees adapt to work pressures.	3.29	0.80	3	Medium
	Total dimension (adaptation)	3.30	0.63	---	Medium

The results in Table 8 indicate that the practice of leadership in the Jordanian Ministry of Education regarding strategic improvisation in the dimension of adaptation is at a moderate level (Mean = 3.30, SD = 0.63).

The averages of Ministry employees' responses to the adaptation dimension items ranged between "moderate" and "high" practice levels. The results indicated that five items were in the "moderate" level, while one item reached the "high" level of practice: Item 14: "The leader is concerned with developing plans aligned with the Ministry of Education's vision and mission" (Mean = 3.53, SD = 0.72). This reflects the Ministry's leadership's commitment to achieving sustainable improvements in the educational system, contributing to building an advanced knowledge-based society.

The remaining items in the "moderate" level of practice, as shown in Table (8), were ranked as follows: Item 15: "The leader is open to new ideas" (Mean = 3.16, SD = 0.91). Some leaders may perceive themselves as all-knowing, leading to a disregard for the opinions and ideas of others, and viewing employees' contributions as insignificant. Item 17: "The leader continuously adjusts strategies to align with unexpected changes" (Mean = 3.21, SD = 0.88). Some leaders may lack the necessary skills to adapt to changing circumstances, including the inability to properly analyze data. Additionally, the absence of a clear future vision may hinder their ability to anticipate changes. Item 13: "The leader adopts new approaches to thinking to address changing conditions" (Mean = 3.27, SD = 0.88). Resistance to new ideas due to concerns about the risks associated with change can be observed among some leaders. This resistance may stem from past unsuccessful experiences, causing them to cling to traditional methods. Item 18: "The leader develops work methods to help employees adapt to work pressures" (Mean = 3.29, SD = 0.80). Some leaders may not recognize the importance of adjusting their leadership style to fit changing conditions, resulting in persistent work pressures without providing adequate support to employees. Item 16: "The leader deals with technological and environmental changes flexibly and consciously" (Mean = 3.31, SD = 0.83). Some leaders face challenges in acquiring the necessary digital skills to cope with modern technological innovations. This lack of knowledge and expertise, along with underdeveloped digital infrastructure, may hinder their ability to respond to technological and environmental changes flexibly and effectively.

The moderate result for the degree of strategic improvisation practice by leaders in the Jordanian Ministry of Education in the adaptation dimension aligns with the findings of the studies [7, 8]. However, it differs from the studies [4, 6, 36].

Table 9. Results of the items related to the risk perception dimension.

Item no.	Risk perception	Mean	Std. D.	Rank	Degree of Practice
19	The leader adopts an effective plan to deal with all risks.	3.27	0.79	3	Moderate
20	The leader uses standardized measures to identify risks before they occur.	3.07	0.87	6	Moderate
21	The leader applies strategic analysis tools to identify opportunities and threats.	3.24	0.80	4	Moderate
22	The leader considers risk management when formulating the strategy.	3.37	0.81	2	Moderate
23	The leader has the ability to foresee and anticipate warning signs before risks occur.	3.14	0.74	5	Moderate
24	The leader develops alternative plans to address emerging situations.	3.42	0.84	1	High
	Total dimension (risk perception)	3.25	0.63	---	Medium

The results in Table 9 indicate that the practice of leadership in the Jordanian Ministry of Education regarding strategic improvisation in the dimension of risk perception is at a moderate level " (Mean = 3.25, SD = 0.63).

The averages of Ministry employees' responses to the risk perception dimension items ranged between "moderate" and "high" practice levels. The results indicated that five items were in the "moderate" level, while one item reached the "high" level of practice: Item 24: "The leader develops alternative plans to address emerging situations" (Mean = 3.42, SD = 0.84). Developing alternative plans is a fundamental concern for leaders in managing any organization, as these plans enable leaders to adapt quickly to changing and unexpected circumstances. They provide additional options to address challenges, thereby mitigating the impact of crises.

The remaining items in the "moderate" level of practice, as shown in Table 9, were ranked as follows:

Item 20: "The leader uses standardized measures to identify risks before they occur" (Mean = 3.07, SD = 0.87). The absence of clear or effective risk management policies can hinder the use of standardized measures to identify risks, especially in organizations lacking a dedicated risk management unit, which diminishes effective oversight of risks.

Item 23: "The leader has the ability to foresee and anticipate warning signs before risks occur" (Mean = 3.14, SD = 0.74). A lack of a clear future vision and insufficient strategic planning can weaken proactive analysis. Leaders without a clear plan or strategy to manage risks may face difficulties in accurately understanding information, which reduces their ability to foresee and anticipate warning signs. Item 21: "The leader applies strategic analysis tools to identify opportunities and threats" (Mean = 3.24, SD = 0.80). Leaders sometimes focus on managing daily operations and urgent tasks, which prevents them from allocating the necessary time and tools for conducting strategic analysis. This could result in overlooking opportunities and threats that may affect the organization's long-term performance. Item 19: "The leader adopts an effective plan to deal with all risks" (Mean = 3.27, SD = 0.79). A lack of sufficient knowledge among some leaders about how to manage evolving risks can result in the development of inappropriate plans. Limited resources for planning further restrict the ability to devise comprehensive and effective strategies for addressing risks. Item 22: "The leader considers risk management when formulating the strategy" (Mean = 3.37, SD = 0.81). The absence of a structured framework for strategic planning can reduce leaders' ability to integrate potential risks into their strategies. This limitation affects their capacity to prioritize effectively when formulating strategies.

The moderate result for the degree of strategic improvisation practice by leaders in the Jordanian Ministry of Education in the risk perception dimension aligns with the findings of the studies [7, 8]. However, it differs from the studies [4, 6, 36].

2. *SECOND QUESTION: ARE THERE STATISTICALLY SIGNIFICANT DIFFERENCES AT ($\alpha \leq 0.05$) IN THE AVERAGE RESPONSES OF THE STUDY SAMPLE REGARDING THE EXTENT TO WHICH LEADERSHIP IN THE JORDANIAN MINISTRY OF EDUCATION PRACTICES STRATEGIC IMPROVISATION, ATTRIBUTABLE TO THE STUDY VARIABLES: GENDER, EDUCATIONAL QUALIFICATION, AND YEARS OF EXPERIENCE?*

The descriptive statistics (mean and standard deviation) for the responses of the study sample regarding the degree of practice of leadership in the Jordanian Ministry of Education for strategic improvisation were calculated according to the variables of gender, qualification, and years of experience, as shown in Table 10.

Table 10. Descriptive statistics of the responses regarding the degree of leadership practice in strategic improvisation, according to the study variables.

Variable	Group	Descriptive statistics	Intuition	Creativity	Adaptation	Risk perception	(total)
Gender	Male	Mean	3.29	3.20	3.32	3.28	3.27
		Std. D.	0.56	0.64	0.67	0.65	0.58
	Female	Mean	3.22	3.15	3.25	3.20	3.20
		Std. D.	0.46	0.54	0.53	0.60	0.47
Qualification	Bachelor or lower	Mean	3.10	3.06	3.14	3.11	3.10
		Std. D.	0.42	0.56	0.53	0.56	0.47
	High diploma	Mean	3.26	3.08	3.12	3.12	3.15
		Std. D.	0.53	0.52	0.58	0.54	0.48
	Master	Mean	3.48	3.34	3.48	3.39	3.42
		Std. D.	0.55	0.66	0.64	0.67	0.57
	PhD	Mean	3.71	3.62	3.92	3.86	3.78

Variable	Group	Descriptive statistics	Intuition	Creativity	Adapta-tion	Risk perception	(total)
Experience	- 10	Std. D.	0.56	0.63	0.68	0.58	0.57
		Mean	3.06	2.91	3.08	3.09	3.03
	10 - 20 yrs.	Std. D.	0.40	0.40	0.44	0.51	0.37
		Mean	3.28	3.22	3.31	3.22	3.26
	+ 10	Std. D.	0.55	0.64	0.65	0.66	0.57
		Mean	3.45	3.38	3.49	3.45	3.44
		Std. D.	0.55	0.65	0.70	0.64	0.59

As shown in Table 10, there is a noticeable variation in the mean responses of the study sample regarding the degree of leadership practice in the Jordanian Ministry of Education for strategic improvisation, both overall and across the four dimensions. These variations are evident in light of differences among the study variables: gender, educational qualification, and years of experience.

To investigate the statistical significance of differences between the mean responses of the study sample on the questionnaire (strategic improvisation as a whole), a three-way ANOVA analysis was conducted based on the study variables: gender, educational qualification, and years of experience, as illustrated in Table 11.

Table 11. Results of the (3-way ANOVA) analysis to detect the significance of differences between the mean responses on the questionnaire in general (strategic improvisation as a whole), according to the study variables.

Source of Variation	Sum of Squares	Df	Means of Squares	f	Sig.
Gender	0.285	1	0.285	1.191	0.276
Qualification	14.900	3	4.967	20.740*	0.001
Experience	5.221	2	2.610	10.900*	0.001
Error	71.602	299	0.239		
Total	92.009	305			

*Statistically significant at ($\alpha \leq 0.05$).

A three-way MANOVA was conducted to examine the significance of differences in the mean responses of the study sample concerning the four dimensions of strategic improvisation, based on the study variables: gender, educational qualification, years of experience, and specialization. The results are presented in Table 12.

A three-way MANOVA was conducted to examine the significance of differences in the mean responses of the study sample concerning the four dimensions of strategic improvisation, based on the study variables: gender, educational qualification, years of experience, and specialization. The results are presented in Table 12.

Table 12. Results of the (3-way MANOVA) analysis to detect the significance of differences between responses on the dimensions of strategic improvisation, according to the study variables.

Source of Variation	Dimensions	Sum of Squares	df	Means of Squares	f	Sig.
Gender	Intuition	0.36	1	0.36	1.617	0.204
Hotteling = 0.553	Creativity	0.11	1	0.11	0.342	0.559
α = 0.697	Adaptation	0.325	1	0.325	1	0.318
	Risk perception	0.401	1	0.401	1.202	0.274
Qualification	Intuition	14.011	3	4.67	20.991*	0.001
Wilks' = 7.384	Creativity	10.683	3	3.561	11.066*	0.001
α = 0.001*	Adaptation	19.755	3	6.585	20.234*	0.001
	Risk perception	17.238	3	5.746	17.202*	0.001
Experience	Intuition	4.61	2	2.305	10.360*	0.001
Wilks' = 4.320	Creativity	8.123	2	4.061	12.620*	0.001
α = 0.001*	Adaptation	5.053	2	2.527	7.764*	0.001
	Risk perception	4.053	2	2.026	6.066*	0.003
Error	Intuition	66.524	299	0.222		
	Creativity	96.224	299	0.322		
	Adaptation	97.305	299	0.325		
	Risk perception	99.876	299	0.334		

Source of Variation	Dimensions	Sum of Squares	df	Means of Squares	f	Sig.
Total	Intuition	85.505	305			
	Creativity	115.14	305			
	Adaptation	122.439	305			
	Risk perception	121.568	305			

*Statistically significant at ($\alpha \leq 0.05$).

Based on the data from the three-way ANOVA and MANOVA analyses in Table 11 and 12, the following conclusions can be drawn:

Differences by gender: The results indicate that there are no statistically significant differences attributed to the gender variable in the responses regarding the degree of strategic improvisation practiced by the leadership in the Jordanian Ministry of Education, both overall and across its four dimensions (intuition, creativity, adaptation, and risk perception). Table 11 shows that the calculated "f" value for overall strategic improvisation is (1.191), which is not significant at the ($\alpha \geq 0.05$) level. Similarly, Table 12 indicates that the Hotelling value for gender is (0.553), with the calculated "f" values for the four dimensions ranging from (0.342) to (1.617), none of which are significant at the ($\alpha \geq 0.05$) level. This result may be explained by the fact that both male and female employees at the ministry's central office operate in a similar organizational environment, where leadership practices, including strategic improvisation, are uniformly applied. Since leadership practices are assessed within the same context, all employees, regardless of gender, observe and evaluate these practices similarly. As a result, there is a shared perception of leadership practices between male and female employees, leading to similar evaluations of strategic improvisation by the leadership in the ministry. This finding aligns with the study [7], which found no significant gender-based differences in strategic improvisation practices in private universities in the Kurdistan region of Iraq. It is also consistent with [8] who reported no gender-based differences in the evaluation of strategic improvisation by academic leaders at the University of Tabuk.

Differences by educational qualification: The results indicate that there are statistically significant differences attributed to the educational qualification variable in the responses regarding the degree of strategic improvisation practiced by the leadership, both overall and across its four dimensions (intuition, creativity, adaptation, and risk perception). As shown in Table 11, the calculated "f" value for overall strategic improvisation is (20.740), which is significant at the (α = 0.001) level. Table 12 further shows that the Wilks' Lambda value for educational qualification is (7.384), with the calculated "f" values for the four dimensions ranging from (11.066) to (20.991), all of which are significant at the ($\alpha \geq 0.05$) level. To determine the source of these significant differences, pairwise comparisons were conducted using the Scheffe test.

Table 13. Scheffe test for significance of differences in responses based on qualification.

Dimensions	Qualification	Mean	Bachelor or Lower 3.10	High Diploma 3.26	Master 3.48	PhD 3.71
Intuition	Bachelor or lower	3.10	----	0.16	0.38*	0.61*
	High diploma	3.26	----	----	0.22	0.45*
	Master	3.48	----	----		0.23
	PhD	3.71	----	----	----	----
	Qualification	**Mean**	**Bachelor or Lower 3.06**	**High Diploma 3.08**	**Master 3.34**	**PhD 3.62**
Creativity	Bachelor or lower	3.06	----	0.02	0.28*	0.56*
	High diploma	3.08	----	----	0.26	0.54*
	Master	3.34	----	----	----	0.28*
	PhD	3.62	----	----	----	----
	Qualification	**Mean**	**Bachelor or Lower 3.14**	**High Diploma 3.12**	**Master 3.48**	**PhD 3.92**
Adaptation	Bachelor or lower	3.14	----	0.02	0.34*	0.78*
	High diploma	3.12	----	----	0.36*	0.80*
	Master	3.48	----	----	----	0.44*
	PhD	3.92	----	----	----	----
	Qualification	**Mean**	**Bachelor or Lower 3.11**	**High Diploma 3.12**	**Master 3.39**	**PhD 3.86**
Risk perception	Bachelor or lower	3.11	----	0.01	0.28*	0.75*
	High diploma	3.12	----	----	0.27	0.74*
	Master	3.39	----	----	----	0.47*
	PhD	3.86	----	----	----	----

	Qualification	Mean	Bachelor or Lower 3.10	High Diploma 3.15	Master 3.42	PhD 3.78
Strategic improvisation (total)	Bachelor or lower	3.10	----	0.05	0.32*	0.68*
	High diploma	3.15	----	----	0.27*	0.63*
	Master	3.42	----	----	----	0.36*
	PhD	3.78	----	----	----	----

*Statistically significant at ($\alpha \leq 0.05$).

The results presented in Table 13 indicate that the source of significant differences in the responses of the study sample regarding the degree of strategic improvisation practiced by leadership in the Jordanian Ministry of Education, particularly in the Adaptation dimension, was found between the doctoral qualification category and all other qualifications, favoring the doctoral qualification. Additionally, significant differences were observed between the master's degree category and the categories of bachelor's degree or lower and high diploma, again favoring the master's degree. For the dimensions of intuition, creativity, and risk perception, significant differences were identified between the doctoral qualification category and all other qualifications, also favoring the doctoral qualification. Moreover, significant differences were noted between the master's degree and the bachelor's degree or lower, favoring the master's degree. These findings suggest that employees' evaluations of the degree of strategic improvisation practiced by leadership in the Jordanian Ministry of Education increase with their educational qualifications. This trend may stem from the fact that individuals with advanced degrees, such as doctorates and master's degrees, are typically trained during their academic studies to engage in analytical thinking regarding leadership practices and to understand the precise criteria for evaluating such practices. They are more aware of the indicators reflecting strategic improvisation in the workplace, leading to a more positive assessment of leaders who demonstrate improvisational skills compared to their counterparts with bachelor's or high diploma qualifications. Furthermore, employees with doctoral and master's degrees often hold leadership positions in the Ministry of Education and have greater insight into the ministry's plans and strategies regarding leadership practices, including strategic improvisation. This enables them to evaluate these practices more favorably than their colleagues with bachelor's or high diploma qualifications.

Differences by years of experience: The results indicate that there are significant differences attributed to the variable of years of experience in the responses of the study sample regarding the degree of strategic improvisation practiced by leadership in the Jordanian Ministry of Education, both overall and across its four dimensions (intuition, creativity, Adaptation, and risk perception). As shown in Table 11, the calculated "f" value for the differences in responses regarding overall strategic improvisation reached 10.900, which is statistically significant at the level of α = 0.001. Additionally, Table 12 demonstrates that the Wilks' Lambda value for the variable of years of experience was 4.320, and the calculated "f" values for the differences across the dimensions ranged from 6.066 to 12.620, all of which are significant at the specified level ($\alpha \geq 0.05$). To identify the source of the significant differences in responses according to the variable of years of experience, pairwise comparisons were conducted using the Scheffe test, as illustrated in Table 14.

Table 13. Scheffe test for significance of differences in responses based on experience.

Dimensions	Experience	Mean	- 10 3.06	10 - 20 yrs. 3.28	+ 10 3.45
Intuition	- 10	3.06	----	0.22*	0.39*
	10 - 20 yrs.	3.28	----	----	0.17*
	+ 10	3.45	----	----	
	Experience	**Mean**	**- 10 2.91**	**10 - 20 yrs. 3.22**	**+ 10 3.38**
Creativity	- 10	2.91	----	0.31*	0.47*
	10 - 20 yrs.	3.22	----	----	0.16
	+ 10	3.38	----	----	----
	Experience	**Mean**	**- 10 3.08**	**10 - 20 yrs. 3.31**	**+ 10 3.49**
Adaptation	- 10	3.08	----	0.23*	0.41*
	10 - 20 yrs.	3.31	----	----	0.18*
	+ 10	3.49	----	----	----
	Experience	**Mean**	**- 10 3.09**	**10 - 20 yrs. 3.22**	**+ 10 3.45**
Risk perception	- 10	3.09	----	0.13	0.36*

	10 - 20 yrs.	3.22	----	----	0.23*
	+ 10	3.45	----	----	----
Strategic improvisation (total)	**Experience**	**Mean**	**- 10**	**10 - 20 yrs.**	**+ 10**
			3.03	**3.26**	**3.44**
	- 10	3.03	----	0.23*	0.41*
	10 - 20 yrs.	3.26	----	----	0.18*
	+ 10	3.44	----	----	----

*Statistically significant at ($\alpha \leq 0.05$).

The results from Table 14 indicate that the source of significant differences in the responses of the study sample regarding the degree of strategic improvisation practiced by leadership in the Jordanian Ministry of Education, both overall and in the dimensions of intuition and Adaptation, was found between the category of those with + 10 of experience and the categories of - 10 and from 10 to less than 20 years of experience, favoring the category of + 10 of experience. Additionally, significant differences were observed between the category of - 10 of experience and the category of 10 to less than 20 years of experience, favoring the latter. Regarding the significant differences in the responses related to the degree of strategic improvisation in the dimension of creativity, differences were noted between the categories of + 10 of experience and 10 to less than 20 years on one side and the category of - 10 of experience on the other, favoring the categories of + 10 and 10 to less than 20 years. For the dimension of risk perception, significant differences were found between those with + 10 of experience and those with - 10 and 10 to less than 20 years, again favoring the category of + 10. These findings suggest that employees' evaluations of the degree to which leadership in the Jordanian Ministry of Education practices strategic improvisation increase with years of experience. This may be attributed to the fact that employees with extensive and moderate experience have encountered more leadership situations and practices involving strategic improvisation. They are also more connected to leadership and familiar with the nature of the work due to their long tenure within the ministry, which enhances their ability to evaluate the leadership's practices compared to their colleagues with shorter experience. This finding aligns with [15] which indicated that experience plays a role in strategic improvisation in higher education institutions in Nigeria. However, it contrasts with the study [7] which found no significant differences in the study sample's responses regarding strategic improvisation practices in private universities in the Kurdistan region of Iraq, attributable to the variable of years of service.

VI. CONCLUSION

Strategic improvisation is considered one of the modern approaches that highlight the importance of flexibility and adaptation in dynamic work environments. In educational organizations, such as the Ministry of Education in Jordan, strategic improvisation requires leaders to practice key leadership skills such as intuition, innovation, adaptation, and risk perception. These skills enable leaders to make quick and effective decisions in response to surrounding changes, generate ideas, and implement them at the right time, thereby enhancing the Ministry's ability to face challenges and achieve success. The results of the field study showed that the practice of strategic improvisation by leaders in the Ministry of Education, from the perspective of the ministry employees, was at a moderate level across all dimensions. The moderate practice of intuition indicates a lack of specialized training focused on developing intuition skills among leaders. There might also be restrictions or traditional practices that limit the leaders' use of intuition skills, such as the administrative centralization in the Ministry of Education. Furthermore, the moderate practice of innovation suggests that the leaders' attempts to improve work by adopting innovative ideas face challenges. These challenges stem from the organizational structures within the Ministry of Education, which do not strongly encourage innovation as one of the dimensions of strategic improvisation. There is also a preference for working within routine frameworks that prioritize adherence to existing procedures rather than flexibility, which may reduce leaders' willingness to engage in innovative improvisational practices that require a degree of spontaneity and a move away from traditional methods. Additionally, the unclear organizational culture supporting innovation in the Ministry of Education may lead to reluctance among leaders to experiment with new ideas or approaches. Regarding the moderate practice of adaptation, this is attributed to the Ministry's limited adoption of strategic improvisation as a tool to adapt to rapid changes in the work environment. The lack of flexible plans that allow leaders to adjust their strategies in response to rapid environmental changes and adapt to them has contributed to the moderate level of adaptation practice. Finally, the moderate practice of risk perception suggests that some leaders in the Ministry of Education face a lack of accurate, comprehensive information and data on potential risks, which somewhat reduces their perception of these risks. This may cause them to avoid relying on improvisation as a

method of managing work affairs out of fear of making decisions that are not based on accurate information. Cognitive limitations may hinder leaders' ability to assess risks accurately, potentially leading to underestimation or overestimation of potential threats, which results in their practice of improvisation being lower than expected.

VII. PRACTICAL IMPLICATIONS

The results of the current study contribute to drawing the attention of policymakers and senior management in the Ministry of Education in Jordan to the necessity of improving the practice of strategic improvisation by leaders in the ministry. This can be achieved by taking the following actions:

1. Conducting training courses for leaders in the Ministry of Education that address the need for a quick response to challenges arising from the rapid development of the educational system in Jordan. The training objectives should focus on teaching participants how to think strategically in unexpected situations. The design of the training content should include effective improvisation strategies and how to apply them, as well as case studies on the effective use of improvisation in various environments. Interactive workshops should be organized where leaders can practice improvisation skills. These training sessions should be conducted by experienced trainers in strategic leadership with a strong theoretical background in strategic improvisation. Relevant stakeholders could also be involved in the training, such as collaborating with the Queen Rania Academy for Training to develop specialized programs tailored to the leadership needs in the field of strategic improvisation.
2. Adopting an organizational culture in the Ministry of Education that encourages strategic improvisation based on intuition, innovation, adaptation to change, and risk perception. Several proposed steps can be followed to enhance the ability to practice strategic improvisation, such as implementing organizational policies that grant sufficient authority to leaders in the ministry to practice strategic improvisation in a way that improves workflow and quality outcomes. Strengthening the organizational culture can also be achieved by modifying the code of conduct for leaders to allow them to practice improvisation based on innovation, adaptation, and risk perception. Establishing effective communication channels between leaders and staff in the ministry can facilitate the exchange of ideas and suggestions that enhance the practice of strategic improvisation. Moreover, creating a flexible environment that allows for accepting mistakes during times of crisis as part of the learning process will encourage risk-taking and improvisation.
3. Based on the study's results, which indicate a moderate level of strategic improvisation practice in the Ministry of Education, it is recommended to conduct future exploratory studies. These include advising researchers interested in improving the Ministry of Education's work to investigate the requirements needed to improve leaders' practice of strategic improvisation. Additionally, research should explore the obstacles that hinder leaders in the Ministry of Education from practicing strategic improvisation effectively.

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Conflicts of Interest

The authors declare no conflicts of interest.

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