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VISIONARY LEADERSHIP AND ITS IMPACT ON OPEN INNOVATION: ANALYTICAL RESEARCH FOR A SAMPLE OF SENIOR LEADERS IN THE MINISTRY OF SCIENCE AND TECHNOLOGY

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ABSTRACT

The current research aims to test the impact of visionary leadership in achieving open creativity in the Ministry of Science and Technology in Baghdad, as well, From identifying the levels of availability and employment to be more appropriate to the reality of the creative development of the ministry and what is required of it in light of the current regulatory environment in Iraq, as well as for the higher management to invest external knowledge and technology and employ it in internal knowledge activities to respond to environmental changes and to keep pace with technical and technological development, the dimensions of visionary leadership were (Determining the direction, change agent, spokesperson, coach), and the dimensions of open creativity (inward-directed creativity activities, outward-oriented creativity activities), while the research problem emerged in asking a set of questions about the existence of a correlation and impact relationship between the research variables, and in light of that, a building A hypothetical model from which two main hypotheses and six subsidiary hypotheses emerged. The analytical descriptive approach in data analysis, and the dimensions were covered through (30) paragraphs included in the questionnaire. And (155) questionnaires were necessary for statistical analysis, and a purposive, stratified sample of (managers, assistants, heads of departments, people's officials) working in the ministry was chosen. The data was analyzed using a set of statistical methods, as the results were extracted using computer programming (SPSS v.24, Excel, Amos v.24), and came out with a set of conclusions, the most important of which is the existence of a significant correlation between visionary leadership and open creativity. This helped to achieve good levels of open innovation in it.

Keywords: *Visionary Leadership, Open Innovation*

INTRODUCTION

Visionary leadership represents one of the dimensions of transformational leadership that provides opportunities to develop the organization's ability to meet the needs of its components. Visionary leadership has emerged as a major determinant of the organization's survival, success and growth in today's turbulent environment and has the ability to build understandable visions that give a sense and purpose to the organization's work. Visionary leadership is closely related to the process The strategy because the organizational strategy is the embodiment of the desired

future state of the organization and its way to achieve that vision. The visionary leadership aims to motivate and mobilize followers towards achieving this, and this type of leadership can face challenges and modern developments by influencing the behavior of subordinates and developing their performance by communicating the vision to them and opening the field In light of the developments experienced by organizations, the concept of open creativity has emerged, which has attracted, over the past ten years, great interest from industrial, service and academic communities as a means to

secure sustainable competitive advantage, and open creativity witnessed strong attraction. Among the leaders of public and private organizations as a strategic solution to meet the challenges and dilemmas faced by organizations in the public and private business environment, while open creativity is seen as the ability of the ministry and its leaders to adopt behaviors and activities that benefit them to obtain external flows that are in the form of resources, knowledge or ideas and employ them from. In order to develop its internal activities, especially since knowledge no longer exists within the boundaries of organizations, and therefore, it needs to acquire knowledge or ideas from other sources such as clients, academics and other organizations.

THE FIRST AXIS: THE METHODOLOGICAL FRAMEWORK OF THE RESEARCH

First: the research problem

Most government sectors, including the science and technology sector, suffer from rapid and complex problems and challenges, especially in an era when organizational boundaries are almost abolished. The society and the exclusion of routine methods in management, and the exercise of leadership a pioneering role in the advancement of these organizations,

and the technical and technological progress and contemporary global challenges constitute a basic motive for all its units to move to discover new ideas and opportunities through creativity in their work, and to share information to achieve the aspirations and aspirations of societies in a way that contributes to their survival and continuity, As it needs openness and cooperation with external partners, acquiring modern external knowledge and techniques, and investing internal ideas and knowledge that enhance the ministry's ability to face external challenges in a way that guarantees its success and superiority. This requires leaders who have an effective vision in applying or accepting new knowledge and integrating it with internal knowledge. organization and work to provide a supportive environment for Open innovation, and the concept of open creativity is one of the concepts that has received great interest by researchers in providing innovative ideas that help many organizations to meet their challenges and provide the best services they have to satisfy the needs and desires of customers, and the Ministry of Science and Technology was chosen to study the two variables in it, the first is leadership Visionary as an independent variable, and the second is open creativity as a dependent variable, so the study problem

can be formulated by the following question (Does the higher management of the Ministry of Science and Technology realize the role of the visionary leadership in achieving and supporting open creativity? From the main question, the following questions can be derived:

1. Do senior departments in the Ministry of Science and Technology have knowledge about visionary leadership and its dimensions ?
2. Do the higher departments of the Ministry of Science and Technology have a clear vision of open innovation and its dimensions ?
3. Does visionary leadership contribute to improving open creativity ?
4. What is the impact of the visionary leadership with its dimensions (setting the direction, change agent, spokesperson, coach) on open creativity in its dimensions (inward-directed creativity activities, outward-oriented creativity activities), in the ministry ?

Second: the importance of research

The importance of this study lies in its handling of two important variables, namely visionary leadership and open creativity, and that it can contribute to strengthening the capabilities and

capabilities of the organization in question in facing challenges and difficulties through a vision with a future vision that enables it to face the surrounding influences and challenges. The importance of the study highlights the following:

1. The research sheds light on the concept of visionary leadership and its dimensions, open creativity and its dimensions, and how to enhance its understanding with the Ministry of Science and Technology. It also acquires its importance as an extension of studies and research that focused on these variables.
2. It helps the ministry to adapt to the changes that are taking place in its internal and external environment for its survival, progress and continuity.
3. The research contributes to providing useful suggestions about the concept of open creativity in the ministry in question through leaders who have a future vision and work in a team spirit.
4. The current research is a modest attempt to contribute to the supply of scientific libraries by being a source of scientific resources for researchers in this field in the future, due to what it has enriched from foreign, Arab and local sources of scientific value that contributed to increasing the

intellectual and knowledge enrichment of research variables, as well as being a model presented For the first time in the Ministry of Science and Technology.

Third: the research objectives

The current research aims to achieve a number of goals in the light of the problem and the importance of the research, which are as follows:

1. Elaboration of a theoretical framework on the concept of visionary leadership and a description of its dimensions and diagnosis in the ministry under study.
2. Provide a clear vision of the variables investigated, which are visionary leadership and open creativity.
3. Identifying the level of practice of visionary leadership and open creativity in the ministry.
4. Determining the relationship between the dimensions of visionary leadership

and open creativity in the Ministry of Science and Technology, as well as determining their impact.

5. Recognizing the impact of visionary leadership on open creativity in the ministry

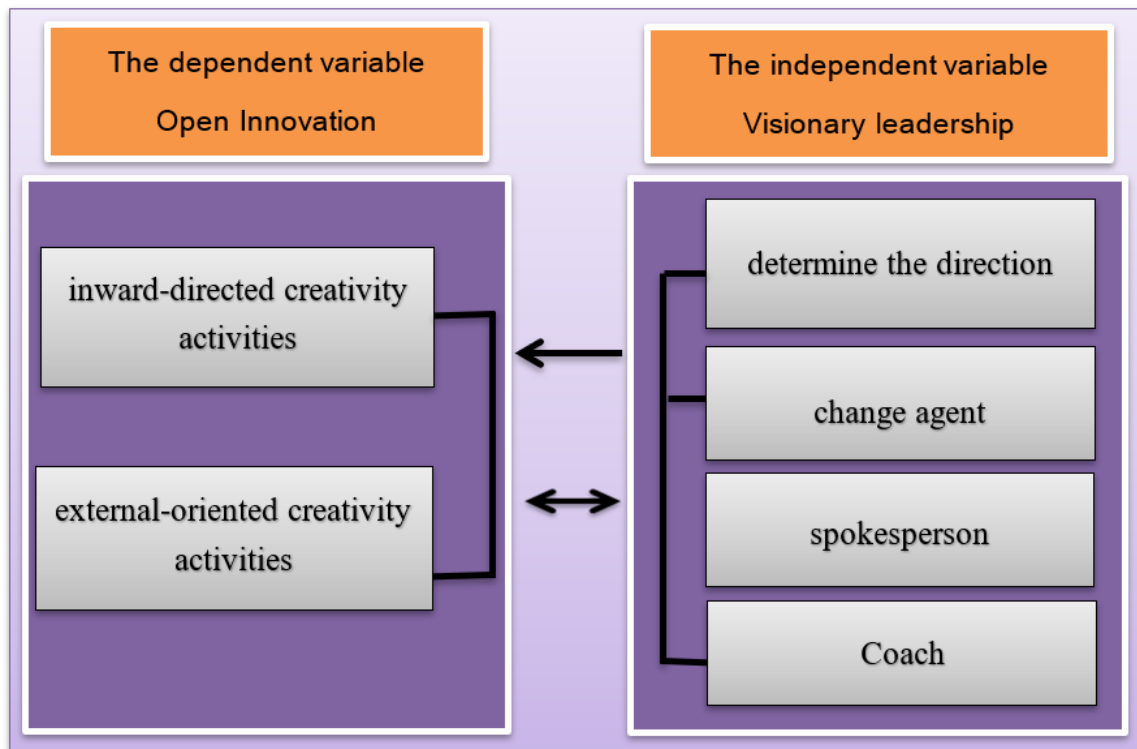
Fourth: the hypothesis of the research

The objective of the research hypothesis is to clarify the logical relationship between the main and subsidiary research variables to embody the approved research hypotheses.

The independent variable: visionary leadership with its dimensions (determining the direction, change agent, spokesperson, coach).

Dependent variable: open creativity with its dimensions (inward-directed creativity activities, external-oriented creativity).

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Fifth: Research hypotheses

The research hypotheses consist of two main hypotheses and six sub-hypotheses related to the research variables, including

First: the correlation hypothesis

Testing the first main hypothesis (Visionary leadership and its dimensions are linked with open creativity and its dimensions are morally related) and the following sub-hypotheses emerged from it:

- 1- Determining the trend is morally linked with open creativity and its dimensions.
- 2- The change agent is morally linked with open creativity and its dimensions.

3- The official spokesperson is morally associated with open creativity and its dimensions.

4- The trainer and open creativity and its dimensions are positively and morally related.

Second: the impact hypothesis

The second main hypothesis of the research was determined: There is a significant effect of the visionary leadership and its dimensions (determining the direction, change agent, spokesperson, coach) combined in open creativity and its dimensions (inward-directed creativity activities, outward-oriented creativity activities), and the following sub-hypotheses have emerged:

1- The dimensions of visionary leadership collectively affect inward-directed creative activities a moral effect.

2- The dimensions of visionary leadership collectively affect the creative activities directed to the outside in a significant way.

Sixth: Research Methodology

The research method reflects the researcher's point of view, which expresses the feeling that there is a problem that must be tried to find appropriate solutions in a way that fits with it. It is scientifically correct, as it means defining the current status of the phenomenon or problem under study as it is and describing it in a way that depends on analyzing its apparent structure and clarifying the relationships between its elements or components. And a statement of its importance and clarification of the correlation and influence relationships between the research variables.

Seventh: Society and research sample

The researcher relied on the research community on a comprehensive inventory method for all administrative leaders in the Ministry of Science and Technology, who numbered (171), and the research community included the departments of

the Ministry of Science and Technology represented in (Department of Technical Affairs, Department of Environment and Water, Department of Materials Research, Legal and Administrative Department, Information Technology Department, The Department of Communications and Space Technology, the Financial Department, the National Anti-Proliferation Control Authority), this sample was represented by (managers, directors of centers, heads of departments, people's officials), and they were selected on the basis of being more familiar with the research variables as well as having a scientific level and experience. By virtue of their administrative positions and being responsible for making decisions in the ministry, the researcher distributed (171) questionnaires to the members of the research sample, which numbered (171) individuals, (159) were recovered from the total questionnaires distributed to the research sample, and the number of excluded questionnaires was (4). A questionnaire that was not answered, (13) a questionnaire that was not returned, until the total sample subject to statistical analysis became (155) people from the research sample.

THE SECOND AXIS: THE THEORETICAL FRAMEWORK

First: visionary leadership

Visionary leadership represents one of the dimensions of transformational leadership that provides opportunities to develop the organization's ability to meet the needs of its components. Visionary leadership has emerged as a major determinant of the organization's survival, success and growth in today's turbulent environment and has the ability to build understandable visions that give a sense and purpose to the organization's work (Gökbulut et al., 2021 : 590), the visionary leadership is closely related to the strategy process because the organizational strategy is the embodiment of the desired future state of the organization and its way to achieve that vision, a process in which the leader participates in specific steps to create a vision, communicate the vision, and enable others to own the vision for themselves in order to achieve organizational goals (Miligan, 2021: 16), and visionary leadership is also seen as a way in which the leader searches for intellectual ways to manage issues. And enabling subordinates to develop and apply new ideas in order to achieve the stated goals and objectives (Kadir et al., 2020: 62), and some of them see it as the ability that the leaders of organizations have in knowing the

strengths and anticipating the opportunities and challenges that must be faced and the threats that arise in the organization and the ability to influence others to invite them to work together to achieve the goals of the organization (Mutohar et al., 2020: 30).

Dimensions of visionary leadership

1- Determine the direction

To determine the direction of the organization, the leader must have first developed a mental picture of a possible and desired future state in the organization. This image we call a vision may be vague like a dream or precise like a goal or mission statement, reliable for the organization (Armstrong, 2012 : 574), and requires leaders. Determining the direction of the organization and what it will be in the future, whether it is a vision statement or goals that its followers work towards (Al-Kawaz, 2018: 251), The vision is also known as an ideal and unique image or the art of seeing invisible things, which is simply knowing what the destination is and to Where are you going, and if the leader does not know where to go, then leadership is nothing (Khan et al., 2016 : 91), and it is referred to as the leader's ability to present a clear picture of the

organization and describe it in the form of drawn goals towards a better future (Tariq et al., 2021: 3250), vision is concerned with determining the future direction of the organization through what the organization wants to accomplish in the future and determining the needs of customers that the organization seeks to satisfy in the future (Durra et al., 2014: 87).

2. Change Agent

The leader has a high ability to adapt to environmental conditions, otherwise, various problems such as achieving goals and facing vital risks can arise when leaders are not effective in decision-making mechanisms in organizations (Demirtas et al., 2020: 2), in the context of change leaders with vision as agents of change must have the ability to adapt, think and act flexibly and have the capabilities to control the risks of environmental changes how to manage them (Nindyati, 2014: 4), and visionary leaders need to survive Relevant to their time and field of work requiring them to continually adapt to the internal and external environment to enhance opportunities and overcome threats, if any (Elkington et al., 2017: 7), visionary leaders are seen as change agents who seek to change the status quo by urging followers to engage collectively in change-

oriented behaviors that help achieve the organization's ideal future (Yim, 2021: 29), the change agent's job is to develop a climate for planned change by overcoming resistance Mobilizing forces to achieve positive growth, and these skills are required under conditions of rapid change, especially in systems that do not respond appropriately to changing environmental forces (Jonathan, 2010: 46).

3- Spokesperson

that Communication by leaders in the organization is important and useful in order to support subordinates in dealing efficiently with work pressures and organizational change (Zito et al., 2021: 6), communication is a tool for measuring and influencing visionary leadership, and effective communication is a critical function and key characteristic of a leader. The owner of a good vision in order to communicate with stakeholders, who are investors, organization employees, customers and suppliers (Atthirawong et al., 2021: 42), that communicating the vision is what enables the followers to work, so the visionary leader must communicate the vision clearly because not communicating it spends most of the followers their time In trying to figure out which direction to take makes them tired and unresponsive to that vision (Taylor et

al., 2014: 567), Communication by leaders with Followers is important for managing change. If any change is proposed, followers need to know what is being proposed and how it will affect them. Resistance to change often arises simply because followers do not know what the change is (Armstrong, 2010: 307).

4- Coach

That developments in the business world require training and qualifying followers, developing their abilities and skills, and making them keep pace with developments and for changes in the business environment (Osama, 2021: 7), as (Dessler) defined training as giving followers New or existing ones have the necessary skills and knowledge they need to perform their work better (Dessler, 2013: 235,). trained leaders provide motivation and encouragement to their subordinates in order to search for intellectual ways to solve problems and analyze the situation for the benefit of the organization (Kadir et al., 2020: 62), A visionary leader is able to encourage and inspire followers to achieve higher goals in their work, improve their organizational performance, and provide guidance to them to achieve the vision successfully (Jahidi , 2020: 309).

(Mansour and others, 2018: 9) Summarize the importance of leaders by training followers clearly through the following points.

- A. Increasing the productivity of dependents, raising their level of performance, and reducing the rate of work turnover.
- B. Training is necessary to train subordinates and lay the organizational foundations for work so that they can adapt to the work environment or the organization.
- C. Training is a continuous process that is provided to all subordinates throughout their career and is an investment in human resources at their various levels, and these benefits accrue to both the subordinates and the organization.
- D. Keeping pace with the development and technological progress that is taking place in the world.

Second: open creativity

Creativity is a powerful mechanism for the sustainable development of organizations in order to meet the needs of customers in the market and drive the productivity of the organization to the better (Srisathan et al., 2020: 2). This term

was coined in the twenty-first century in the United Kingdom for the first time by (Chesbrough 2003) Henry in his book (Open Innovation: the new Imperative for creating and profiting from Technology), which involves benefiting from the distribution of emerging knowledge by opening the creativity process to external inputs (Bengtsson, 2020: 5), organizations seek to establish alliances and strategic partnerships, gain knowledge and interact. When engaging with market participants in order to deal more quickly and effectively with changes that arise in dynamic environments (Moretz et al., 2021: 62), open innovation suggests that organizations can and must purposefully open their organizational boundaries to the flow of knowledge in and out to enhance Creativity and the generation of new knowledge flows (Wikhamn et al., 2022: 2), is seen as a process through which social networking is established. Creative actors that lead to superior creative practices and commercial success (Roberts et al., 2014: 261), and some of them see it as the systematic dependence on the dynamic capabilities of the organization in carrying out the main technology management tasks internally and externally, technology acquisition and exploitation along the innovation process (Obradović et al., 2021: 2)

Dimensions of open creativity

1- Inward-directed creativity activities

Refers to the technological ideas and knowledge that flow into the organization's innovation system so that the organization can access external knowledge and internal ideas to complete its business model (Chou et al., 2016: 41), and this concept refers to how the organization can benefit from external knowledge to acquire new sources of ideas. Creative (Sabiölla, 2017: 5), this type arises when an organization brings in external knowledge or resources from business partners, customers, universities and public organizations to improve its creative performance, by acting in this way innovation initiatives and costs can be reduced by obtaining the required resources (Nunes et al., 2020: 8) incoming knowledge flows help organizations access the resources they need to develop new innovations as well as to improve existing products and enhance the organization's performance by increasing the productivity of the innovation process (Hannigan et al., 2018 :4). It needs to spend high investments in internal research and development, but rather it must exploit the knowledge available from external sources to develop the internal knowledge of the organization

(Claudia, 2015: 7), open innovation allows organizations to outsource research and development to acquire external knowledge, bring in key knowledge developed outside the organization's boundaries, and establish alliances or partnerships with other organization (Francisco et al., 2021: 3)

2- Outward directed Creativity activities

External open innovation refers to external marketing of the organization's creativity through external licensing, spin-off organizations, joint ventures, or alliances, and the organization can search for external organizations that have suitable business models for marketing technology exclusively or in addition to its internal application (Cui et al., 2015 : 349), open external innovation requires organizations to allow unused and underutilized ideas and assets out of the organization to be used by others in their businesses and business models (Chesbrough et al., 2014: 14), and external innovation includes the flow of external knowledge from partner organizations into the organization through Agreements and cooperation with external partners to enrich the internal knowledge base of the organization (Tiwari et al., 2020: 6), and refers to external flows aimed at knowledge or the exploitation of technology and benefit from technological

capabilities that exist outside the borders of the organization, and external exploitation of ideas can occur in different markets through Selling property rights and doubling technology by transferring ideas to the environment Rajya (Naqshbandi et al., 2018: 5), also referred to as the practice of marketing knowledge, technologies, or other intellectual property produced from its laboratory to strategic partners through contractual agreements (Nathasit et al., 2016 : 124) that innovation directed abroad includes the external exploitation of ideas in different markets, the sale of intellectual property and the multiplication of technology by directing ideas to the external environment (Lorenz et al., 2019 : 123).

THE THIRD AXIS: THE PRACTICAL FRAMEWORK

Descriptive analysis of research variables

First: Presentation, analysis and diagnosis of the first independent variable Visionary leadership

The independent variable measured visionary leadership across four dimensions (determining the direction, change agent, spokesperson, coach) through (20) paragraphs and 155 answers from the leaders of the Ministry of Science

and Technology. To the ability of the visionary leader to build and clarify the vision of the ministry and encourage and motivate followers to contribute to the realization of that vision, as it contributes to facing the challenges it faces and predicting them in the future. A relative difference (10.64%) indicates agreement, and after the coach he obtained an arithmetic mean of (4.12) high level and practiced it with relative interest (82.4%) good in possessing the effective vision to be a good coach for the followers or others, and this means that he resorts to cooperation with them in implementing the vision. It gives direction, hope and builds confidence among them, to play an important role in implementing the ministry's vision for the future, as the answers tended to agree with a standard deviation of (0.491), and with a relative coefficient of variation (11.91%), but at the level of paragraphs (20-16), it was I had an arithmetic mean (4.28-3.77) from high to very high in the level, with a standard deviation (1.054-0.700), with a relative coefficient of difference (27.95%-16.35%), and relative interest (85.6%-75.4%), while the second speaking dimension came. The official ranked second, and in what contributes to improving the visionary leadership, so he obtained a high-level arithmetic mean

(4.04), and with a relative interest (80.8%) good in the visionary leaders possessing self-confidence and the ability to express the ministry's vision and mission and talk about the dream of its future and to be useful and exciting, which makes The followers understand and apply it, so the standard deviation of the spokesperson was (0.628), and with a relative coefficient of difference (15.54%), but at the level of the paragraphs that appeared under the sequence (15-11), I got an arithmetic mean (4.21-3.68) that is very high, and with a deviation standard (1.145-0.873), and with a relative coefficient of variation (31.11%-20.73%), to get a high relative interest (84.2%-73.6%) in encouraging followers to carry out the tasks required of them in the best possible way, especially since it employs various types of Communications to ensure that the ministry's vision reaches them, and it happened after determining the direction in the third order and what contributes to it. In improving visionary leadership, an arithmetic mean of (3.96) is high, and (79.2%) is relatively good, as the leader presents the vision and communicates it to followers, motivating and encouraging them to achieve it, with a standard deviation (0.651), and with a relative coefficient of difference (16.43%). At the level of the paragraphs that appeared under

the sequence (6-1), I obtained an arithmetic mean (4.25-3.41) from very high to high level, with a standard deviation of (1.263-0.987), and with a relative coefficient of difference (37.03%-24.27%), to gain relative attention (85%-68.2%), and finally after the change agent came in the fourth rank and what contributes to improving the visionary leadership, so the overall dimension got an arithmetic mean of (3.93) high level, as I paid attention to it in a relative proportion (78.6%) good and shooter To choose the person who is assigned the task of

successfully managing change in the ministry, and with his understanding of the external environment and the ability to take action to respond to the changes taking place in the ministry, with a standard deviation of (0.745), and with a relative coefficient of variation (18.95%), as for the paragraphs that appeared Under the sequence (10-7), I got my mean (4.06-3.72) high, with a deviation with me ari (1.188-0.962), with a relative coefficient of variation (31.93%-23.69%), and a relative interest (81.2%-74.4%), and as shown in the results of the table (1) as follows:

Table (1) Presentation and Analysis of Visionary Leadership Data (n = 155)

Priority	Coefficient of variation%	importance% Priority	Standard deviation Relative	Arithmetic mean	vertebrae	ت
third	16.43	79.2	0.651	3.96	determining the direction	1
fourth	18.95	78.6	0.745	3.93	Change agent	2
twice	15.54	80.8	0.628	4.04	Spokes person	3
First	11.91	82.4	0.491	4.12	Coach	4
10.64		80.2	0.427	4.01	Visionary Leadership Variable	

Second: Presentation, analysis and diagnosis of the dependent variable open creativity.

The responsive variable was measured according to the title of the research and

the hypothetical scheme, open creativity through its main dimensions (inward-directed creativity activities, outward-directed creativity activities) and through (10) paragraphs and answers (155) of the leaders of the Ministry of Science and

Technology, so that open creativity in general obtains a calculated mean of (3.69). High level through the ability of the ministry and its leaders to adopt behaviors and activities that benefit it to obtain external flows in the form of resources or knowledge and employ them in order to develop internal activities, and therefore it needs to acquire knowledge from other sources such as customers, academics and other organizations, so open creativity in general obtained on With a standard deviation of (0.640), a good (73.8%) relative interest, and a relative coefficient of variation (17.34%), after the outward-directed creativity activities, a high-level arithmetic mean (3.64) was obtained, to obtain a good (72.8%) relative interest in ideas and technological knowledge Which flows from the innovation system abroad, and the transfer of their technological knowledge that they do not invest abroad in exchange for selling them to obtain financial benefits, or non-financial as achieving a reputation for organizing and their answers indicated agreement with a

standard deviation of (0.687), and with a relative coefficient of variation (18.87%), while at the level of paragraphs (30-26), I got a very high arithmetic mean (4.03-3.41), with a standard deviation (1.160-0.956) , with a relative coefficient of variation (33.54%-23.72%) and a relative interest (80.6%-68.2%), and it came after inward-oriented creativity activities in the second order, which contributes to its orientation to improve its open creativity, and it obtained a high-level arithmetic mean (3.74) that stems from its giving Interest in the ability to acquire and invest external knowledge and technology and integrate it into the internal research and development process in order to generate creativity and achieve competitive advantage. The sequence (25-21), obtained a high-level arithmetic mean (3.96-3.33), a standard deviation (1.129-1.039), and a relative coefficient of variation (33.90%-27.78%) to get a relative interest of (85.8%-76.2%), and as They are shown in Table (2), as follows

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Table (2) Presentation and Analysis of Open Innovation Data (n = 155)

Priority	Coefficient of variation%	importance% Priority	Standard deviation Relative	Arithmetic mean	vertebrae	ت
twice	21.04	74.8	0.787	3.74	Inward-directed creativity activities	1
first	18.87	72.8	0.687	3.64	outward-directed creativity activities	2
	<u>17.34</u>	<u>73.8</u>	<u>0.640</u>	<u>3.69</u>	Open Innovation variable	

Third: Testing the research hypotheses

Verification of the second main hypothesis: The dimensions of visionary leadership collectively affect open creativity in a significant way:

It was found that there is a preliminary model for the effect with a calculated value of (F) (5.997), which is more than its tabular value (3.905) at the degree of freedom (154), while the results of Table (3) showed the existence of a better model for the effect with an interpretation coefficient of (0.126), and an average interpretation coefficient. (0.115), as the dimensions of (combined visionary leadership) were able to explain (11.5%) of the changes that occur in open creativity, while the remaining percentage (88.5%) is attributed to other variables that were not included in the tested model, as

the interpretation model is an acceptable model. Statistically, and it can be adopted in explaining the improvement that occurs to open creativity that is attributed to the visionary leadership with its combined dimensions.

While it was found that there was a direct positive effect of the trainer dimension in open creativity of (0.337) and a probability value of (0.001), and the calculated (T) value of (3.368), and a positive direct effect of the dimension of determining the trend in open creativity of (0.201) and a probability value (0.009), And with the calculated (T) value (2.655), and all the calculated (T) values exceed their scheduled value (1.976) at the probability value (0.05), while no investment appeared for the dimension of the change agent, and the official spokesperson in improving open creativity, as the researcher noted the

adoption of the Ministry of Science and technology on the dimensions of visionary leadership (the coach, determining the direction) combined in improving open creativity positively, as these results lead

to the acceptance of the second main hypothesis (the dimensions of visionary leadership collectively affect open creativity significantly) , according to the following equation :

the impact of visionary leadership dimensions on open Innovation (n=155) Table (3)

Open Innovation							independent variable
F	T	p-value	A R ²	R ²	B	A	
5.997	1.867	0.066	0.115	0.138	0.159	1.445	determining the direction
	1.393	0.166			0.103		Change agent
	0.468	0.640			-0.039		Spokes person
	3.209	0.002			0.332		Coach
The best model for the impact of the dimensions of Visionary Leadership on the Open Innovation							
10.977	2.655	0.009	0.115	0.126	0.201	1.506	determining the direction
	3.368	0.001			0.337		Coach

FOURTH AXIS: CONCLUSIONS AND RECOMMENDATIONS

First: the conclusions

1. The interest of the Ministry of Science and Technology in defining the trend became very clear, and it worked to strengthen it through rationalizing work priorities and moving towards adopting

mechanisms of continuous improvement, as well as expressing a deep understanding of what its future would be well.

2. Showing the interest of the Ministry of Science and Technology in strengthening the change agent, which results from the effective contribution of its leaders in adapting to changes, achieving goals and

coordinating the activities of its employees well, as well as their anticipation of various types of risks that affect the future success of the Ministry.

3. The Ministry of Science and Technology showed good interest as the official spokesperson for its leaders, which resulted from encouraging its employees to carry out their required tasks and activities in the best possible way, in addition to the fact that its senior management played an active role in solving problems related to the Ministry in a good way.
4. The Ministry of Science and Technology proved to be interested in the coaching capacity of its leaders and to enhance the visionary practices of its leadership in general, as it made it a priority to cultivate the spirit of creativity in the hearts of its employees, resulting from the ability of its senior leaders to read the future and invest opportunities to achieve the success that it aspires to.
5. The Federal Ministry of Science and Technology has shown its interest in developing inward-oriented innovation activities to improve its ability to achieve open innovation through its quest to obtain technologies and patents from various other organizations and use them in developing their current and future businesses, as well as its tendency to

promote and sell its intellectual property to organizations individuals and external parties.

6. The interest of the Federal Ministry of Science and Technology in improving innovation activities directed abroad and in a manner that enhances its open creativity through its interest in sharing knowledge and technology with various foreign organizations through concluding agreements, cooperation and establishing alliances with them, especially since its interest is limited to marketing mature and well-proven foreign technology.

Second: recommendations

1. The necessity for the ministry to focus on practicing research variables in a way that ensures it achieves a competitive advantage and ensures the sustainability of its work in the direction that serves its vision and achieves its goals that it seeks to reach and exploit the available opportunities.
2. The ministry should benefit from after determining the direction in developing its future vision to ensure that it achieves the future direction it intends to go to and what it will be like in the future.
3. The ministry should benefit from the change agent in facing environmental challenges, and the ministry should keep pace with new technical and technological developments and exploit

and invest in the environmental opportunities available to it.

4. It is imperative for the ministry to benefit from the official spokesperson by communicating with stakeholders and other relevant organizations as well as communicating with workers in the ministry and to identify the obstacles facing the ministry and find the best ways to solve them.
5. The necessity for the Ministry to benefit from the trainer by developing and investing the capabilities of the workers and developing their talents and skills by engaging them in courses and training programs, as well as providing encouragement and material and moral support to them to motivate them to present creative work and ideas that are in the interest of the Ministry's work and reward them for it.
6. The need for the ministry to benefit from the dimension of creativity activities directed to the inside through the exploitation and investment of new external knowledge entering it to develop ideas and internal knowledge of the ministry.
7. It is imperative for the ministry to benefit from the dimension of creativity activities directed to abroad through the marketing of patents and ideas achieved by the ministry to benefit from them in

developing its performance , as well as for the ministry to present and market its creative initiatives to foreign organizations.

8. It is imperative for the ministry to publish the research variables among the individuals working in the ministry at all administrative levels through periodic bulletins and bulletin boards in order to consolidate these concepts in their minds.

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