

Environmental sensing and its role in achieving strategic agility Analytical descriptive research in the Iraqi South Oil Company

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Abstract: -The purpose of the research is to measure the role of environmental sensing processes in achieving strategic lightness, based on the descriptive-analytical approach, as the intellectual and philosophical framework for this research was formed through the interaction of two variables (environmental sensing, strategic lightness), and to understand and clarify this framework, the essential dimensions of sensing were adopted. The environment is represented by survey, monitoring, forecasting, evaluation. As for the dimensions of strategic lightness, it was embodied in strategic sensitivity, strategic response, and strategic capabilities. A sample of (82) employees of the South Oil Company was surveyed, and this research sought to answer several questions from During the presentation of the theoretical philosophy and the intellectual implications of these variables, this is in addition to what was reached through the field side of the research in which it was relied on to design a questionnaire form whose paragraphs fit with the nature of the research environment, which was represented in a sample of the workers of the South Oil Company, and the research came out with several conclusions In the light of which several recommendations were raised for the research sample company, and one of the most important conclusions reached by this research is that environmental sensing has an active role No, and a significant impact on achieving the company's strategic agility

Keywords: Environmental sensing, strategic agility, the South Oil Company / Iraq

Introduction

The problem of the continuity of organizations working in their environment is one of the problems that are looking for solutions and that occupied the thinking of researchers in the field of organization management, strategic management, and managers of public and private organizations alike. Very complex environmental conditions and dynamic changes that characterize the Iraqi work environment, as it has been exposed, two decades ago, to abnormal conditions that have affected the existence and work of organizations in general, so the researcher chose the topic of research because of the real threats these organizations suffer and based on the importance and seriousness of these Threats to which these organizations are exposed This research came to explain the importance and impact of the environmental sensing process by employing its indicators (survey, monitoring, evaluation, prediction) in achieving the vision and mission of the organization in reaching strategic lightness.

Research problem

The topic of environmental sensing plays an active role in the life cycle of all organizations, regardless of the size and nature of the activity. Changes and developments and their translation for the benefit of the organization, and this is done through the important information obtained by the organization resulting from sensing its environment and monitoring the movement of external variables to collect and communicate information to and from the organization. In light of this, the research problem was identified by raising the

following main question: (Does the South Oil Company realize the role of sensing operations for its work environment in achieving strategic lightness?) and the following questions are branched from it:-

- 1- What is the level of interest of the SoC in environmental sensing operations?
 - 2- Do environmental sensing operations contribute to achieving the strategic success of the research sample company?
 - 3- What is the nature of the relationship and impact between environmental sensing operations and indicators of strategic lightness, the South Oil Company?
- research assumes

In light of the research problem, the researcher puts two main hypotheses, as follows:

The first main hypothesis: There is no significant correlation between environmental sensing and its operations with strategic success in its dimensions.

The second main hypothesis: There is no significant effect of environmental sensing processes on achieving success Strategic dimensions.

Strategic sensing concept

(1967: 165, Thompson) referred to the term environmental sensing for the first time, as a way to adapt to the external environment to protect the technical core of the organization. And organizations outside the boundaries of its organization (Hodge & Anthony, 2003: 111) and (Raghu & Vinze, 2005: 1-5) indicated that the process of environmental sensing must be managed through an appropriate combination of (technology, skills, and knowledge) to ensure the success of the organization in an environment of uncertainty. (2005:43, Dess et al.) explained that environmental sensing includes monitoring the external environment of organizations to predict environmental changes from their sources and predict current changes under any direction, and successful environmental sensing warns the organization of critical trends and events before those changes develop and realize their risks. And before competitors distinguish it, environmental sensing embodies patterns of activities for a group or organization that are developed over some time, so that the organization can develop its competencies in the face of the risks of environmental uncertainty, so it needs to make more efforts to support its ability and skill in environmental sensing At the internal and external level (Levina & Vaast 2006:13, so it is a set of activities that occur within the internal and external borders of the organization to maintain the level of interaction in the relationship of the organization with the surrounding environment (Hustad & Bechina, 2012: 122), and indicates (7:2013). Often, environmental sensing is a creative approach that provides the organizational process with new information about the environment by linking the organization with its environment, which facilitates the flow of information between the environment and the organization and ultimately leads to the strengthening of the process interaction between them. In light of the foregoing, researchers believe that environmental sensing is a continuous, dynamic process of paramount importance to all business organizations, regardless of the size and nature of the activity, as it guarantees them the ability to read the future and seize the opportunities available in it and enhance their capabilities in the face of expected risks, enabling them to survive and grow in a world its own business.

Dimensions of strategic sensing:-

Survey: Surveys refer to surveying the environment in general to discover ongoing environmental change and to identify signs of potential environmental change. Before formulating the strategy, the senior management examines the external environment to identify potential opportunities and threats, and often the information obtained by the organization through examinations The environment is ambiguous, incomplete, or unconnected (2001:41, Hitt et al. The senior management is responsible for analyzing the data and giving it the exact meaning and transforming that data into information that can benefit the organization. The survey is an important activity because it includes identifying the variables of the influencing factors and collecting them in a consistent manner Between the external and internal environment (Salman et al., 2021: 74)

Monitoring and measurement: It is the organized process of tracking environmental events and fluctuations discovered through survey operations, as analysts, through monitoring operations, confirm their intuition about the environmental signals and changes in the previous stage and sort the data that constitute an important element in this stage and set aside some data that the analyst sees as unrelated to the events and the

changes being measured. At this stage, the organization determines the impact of these factors on it. It focuses on the factors that it believes have a significant impact on the organization's activity (1993:24Narayanan & Nath.)

Forecasting: (Salman et al., 2021: 74) indicates that the forecasting strategy is based on the necessity of research and field survey of market requirements, identifying fluctuations in demand for products and services, and developing appropriate solutions for them. Harem (2003: 190) emphasizes that the forecasting strategy enables the organization to have the necessary resources available, as well as to anticipate the demand for products, the organization's plans. It shows that if it is difficult to control environmental fluctuations through reservation or grading, the organization resorts to predicting or anticipating changes in the conditions of supply and demand and adapting to them, as the organization can anticipate and then prepare for the variables that cannot be reserved or gradual (Dagher and Saleh, 2000: 132 If accurate forecasting is possible, the technical core of the organization can be protected and its performance is preserved (Jackson et al., 1988: 132). It is possible to prepare for the impact on the environment by making some adjustments to preserve the technical essence, such as postponing expansion plans and canceling non-productive units when anticipating difficult days, anticipating some shifts in supply and demand, and preparing for these surprises (Thompson, 1967:164).

Evaluation: Its objective is to determine the timing and importance of the impact of the environmental factors that resulted from the survey, measurement, and forecasting processes. Analysts can understand the environment through their large data on the environment but without a clear correlation or relationship regarding where the effects will be harmful to the organization or represent opportunities that must be Their investment and that the evaluation process enables them to decipher the puzzle, understand the interconnectedness and clearly define the relationship between environmental and organizational factors (Salman and others, 2021: 75).

The concept of strategic agility

The origin of strategic agility as a concept in business can be traced back to Flexible Manufacturing Systems (FMS) Initially the path to manufacturing flexibility was thought to be through automation to enable rapid change (eg reduced set-up times) and thus greater responsiveness to changes in product mix and volume (Aitken, 2002). :2) The term light manufacturing was coined by a U.S. government-sponsored research program at Lehigh University, at the Iacocca Institute in 1991 (Bennett & Katayama 2012: 227), (Oyedijo, 1999:2) to describe a flexible manufacturing system that has the capabilities necessary to meet the rapidly changing needs of the market and can respond to the requirements of customers promptly (Nematizadeh & Khoshnood 2017: 221) in response to the request of the US Congress to prepare a report on the strategy of industrial organizations in the twenty-first century, the report emphasized that the current system of mass production was not sufficient to ensure Improvement and help organizations keep pace with the competition, especially Japanese manufacturing organizations, which were characterized by their flexibility, and this, in turn, requires a new system of production (Sethi, 2004: 18. It seems that manufacturing organizations reinforced the concept of lightness within organizations By the mid-nineties of the twentieth century, the largest American organizations, especially in the information technology and telephony sectors, adopted the concept of lightness (Young, 2013:5), and in the period after (2000) the trend towards studying lightness from an organizational perspective (Wendle, 2013: 150) He stated (2016:3) (Najrani) that the presence of Khuffa is not limited to business only but also, in government, non-profit bodies, schools, universities and all classes of organizations. With the expansion of the horizons of organizations and the development of their future direction and the service of their strategic direction, the term agility was adopted as a strategic direction for it, and the efforts of the Finnish researchers (Kozonen & Doz) were among those endeavors, and despite the adoption of the concept of agility in many of their researches, they raised the term "strategic agility." In their book (Fast Strategy) in 2008, and it appeared in their research on this topic (Audran, 2011:47) and became a description of strategic agility as the ability to continuously adjust and adapt to the strategic direction in the core business, creating not only new products and services but also new business models and innovative ways to create value for the organization (Teoh, 2017:223) Therefore, the literature and studies provide different perspectives on strategic leanness or manufacturing leanness research. It is not surprising to see that the

concept of leanness has been defined in different ways in the literature (Beh, 2007:34) sees (245: 2003, Sambamurthy et al.) It includes the exploration and exploitation of opportunities, exploration is the experimentation with new alternatives and the pursuit of knowledge about currently unknown opportunities for competitive action, and exploitation is the use and development of things already known through the refinement and expansion of existing competencies, technologies and knowledge Pinsonneault & Tallon (2011: 473) defined strategic agility as referring to the speed with which organizations can detect and respond to opportunities and environmental threats. Bouwman et al. (2017:2) describe it as a concept applied in organizational theory and industrialization to It is the ability to adapt and respond to change and uncertainty, related to policy, regulation or regulation, the market, competing for behavior, or fundamental technological changes. (Allwein, 2017: 35) introduced another concept in which he indicated that it is “an expression of what individuals do or achieve, not what they can do or the capabilities they possess” and that these shifts focus on the practices in the organization while holding (Al-Amri and Hussein, 2018: 5) that strategic agility is the ability of organizations to deal with changes in the business environment through Gaining strategic thinking to adapt to these sudden changes accurately, quickly and in a way that is ahead of competitors, which helps the organization to maximize its strengths, and thus achieve a good competitive position in the market designed to meet the changing needs and desires of customers.

Dimensions of strategic agility

Strategic sensitivity: Strategic sensitivity represents both the intensity of awareness, the intensity of awareness and attention, that is, it combines early and acute awareness of trends in the environment with a strong, real-time sense of strategic situations as they develop and emerge (Doz & Kosonen, 2008b: 96). To anticipate future trends and the direction of areas of work that need strong intuition (Mace, 2016:41) and this requires organizations to be open to as much information, intelligence and innovations as possible by creating and maintaining relationships with different people and different organizations (Santala, 2009: 46) It is also the ability of organizations to actively seek to collect usable data, absorb this data and filter the appropriate ones, accurately and in a timely manner, to be able to anticipate or detect opportunities and threats in the business environment (Mavengere, 2013:11) and strategic sensitivity is a combination of foresight foresight, insight and simple investigations, with the utmost importance for foresight (Al-Amri and Hussain, 2018: 150) foresight consists of a set of techniques, practices, and processes that Organizations serve them to discover new events and changes in their external environment, explore their evolution and potential impacts, and determine response options (Vecchiato, 2014:2), that is, perceiving, learning and anticipating trends in the evolving business environment and depends extensively on pattern awareness, which is the quality that the expert in a game possesses. Chess can see a lot of forwarding moves, while the opponent sees only a little less, and foresight is only as good as the ability to understand and plan an environment and anticipate its development (Doz & Kosonen, 2008:7). Insight is awareness, analysis, and understanding of complex strategic situations, and when When they develop, they are ready to take advantage of them (Mavengere, 2013:11). True strategic insight means looking for new trends and innovations even when they are not supported by the current strategy and require radical changes (Santa, 47: 2009).

Strategic response: The strategic response represents the organization's ability to quickly and smoothly reconfigure its resources and operations in cooperation with its customers and partners as a response or anticipate change and consists of an internal response orientation, and an external response orientation (Mavengere, 2013:11) "External response orientation" has been analyzed into proactive and reactionary For the business environment, as for the “internal response” orientation, it was analyzed to resource fluidity and business process maturity. Resource fluidity is related to the rapid redistribution of resources and the reconfiguration of business systems after considering the internal capabilities. As for the process maturity, it is the effectiveness and control of the chain of work activities in the organization and the possibility of Forecasting it (14:2013 (Mavengere Phys. 96:20) Doz & Kosonen describes resource liquidity as the internal ability to rapidly reconfigure business systems and redistribute resources based on organizational processes, resource allocation, people management approaches, mechanisms, and incentives, and thus allow the organization to organize and launch Expanding the scope and implementing new growth initiatives and new businesses may make its core business more resilient. (Al-Amri and Hussain, 2018: 151) divided it into three

main groups; Mobilizing capital resources, which means enhancing resources in a way that enables them to absorb changes in the environment and has an impact on the direction of development, mobilizing people and knowledge that contributes to the reallocation of scarce resources, creating models for structures that allow facilitating the reallocation of resources through reusable systems and processes that help organizations To reduce risks related to the start of new business. As for (2015:17, Weichert Tautermann &) sees that the strategic response includes three capabilities; Speed refers to the ability to cover needs quickly, reactivity refers to how quickly needs can be identified, and visibility refers to capturing events promptly. That is, it is concerned with the availability of liquidity, resources, and capabilities in the internal business systems and the rapid reconfiguration and redistribution of resources (Al-Amri and Hussein, 2018: 150).

Collaborative capabilities: The organization can benefit from the integration of all its resources, for example, information, employees, functions, infrastructure, and partners, and represents a comprehensive dimension of strategic agility and consists of all basic organizational capabilities that are not classified within strategic sensitivity and strategic response (Mavengere, 2013: 12-14), the value of cooperation and integration leads to organizational empowerment, because it makes it more informed, more flexible and responsive to changing customer needs and enables it to make quick decisions. Focusing on the top-down role, however, others have since argued that the term ignores the distributed role of leadership, seeing the unity of command as only one determinant of the team's higher ability to reach collective commitments. Thus, group commitment is a common ground, Shared interest, empathy, and trust to increase the participation of members of the organization. Collaboration between senior management and working in coordination with colleagues enhances the performance of the management team through the development of constructive dialogue and, most importantly, the leadership style of the CEO, that enables the organization to achieve maximum diversified results and form a harmonious management team (Pesonen, 2009: 16). Collaboration and teamwork are very important characteristics of light organizations, when properly implemented, teams lead to the emergence of different viewpoints, which can greatly improve the creation process and the organization's ability to adapt to change. But for these opinions to be effective, team members' views must be channeled through clear, goal-oriented dialogue to avoid any loudly motivated decisions (2011:41, Audran)

The practical side:-

Research hypothesis testing

The researchers adopted a set of statistical methods to test the hypotheses that emerged from the research, as follows:

1- There is no significant correlation between environmental sensing in its dimensions and strategic lightness in its dimensions. Table (1) indicates the results of the correlation relations (Speannan between variables, and it is clear from it that there are positive correlations between them, but they were fluctuating in terms of their statistical significance, and as follows: following:

Table (1) shows the correlation matrix, arithmetic means, and standard deviations of the research variables.

Dimensions	mean	standard deviation	strategic sensitivity	strategic response	cooperative ability	strategic agility
scanning	3.59	0.64	0.286*	0.076	0.004	0.104
Monitoring and measuring	3.58	0.79	0.159**	0.152	0.118	0.149
Forecasting	3.42	0.75	0.333**	0.364**	0.485**	0.478**
Evaluation	3.41	0.78	0.429**	0.471**	0.332**	0.468**
environmental sensing	3.50	0.55	0.467**	0.409**	0.355**	0.470**
Arithmetic mean			3.46	3.54	3.51	3.50
standard deviation			0.64	0.72	0.84	0.59

**Significant at the level (1%) * Significant at the level (5%)

According to Table (1), the survey's relationship with strategic sensitivity was significant at level (5), while it was not significant with the rest of the dimensions as well as at the overall level. The control relationship was

not significant with any of the dimensions of strategic lightness, and the relationship of both prediction and evaluation was positive and significant with the dimensions of strategic lightness at the sub- and macro levels. At the macro level, the environmental sensing variable achieved statistical and significant correlation relationships at the sub- and macro levels with the strategic agility variable.

The researcher infers from the possibility of the South Oil Company benefiting from the environmental sensing operations available to it to enhance its strategic agility. Accordingly, the researchers inferred the rejection of the above hypothesis in part.

2- There is no significant effect of environmental sensing in achieving strategic lightness in its dimensions. To test the above hypothesis, the researchers used multiple regression and the (Stepwise) method, which is a statistically efficient method as it identifies the variables most influential in the dependent variable, as follows:

- The dimensions of environmental sensing do not affect the dimension of strategic sensitivity.

Table (2) below shows the above hypothesis testing using the Stepwise method) where both the survey and observation dimensions were omitted, and the analysis settled on the prediction and evaluation dimensions as follows:

Table (2) Testing the first sub-effect hypothesis using the Stepwise method

dependent variable \ independent variable	strategic sensitivity		Calculated t value	computed f value	R ²
	α	β			
Forecasting	1.85	0.225	**3.32	**11.65	0.24
Evaluation		0.245	**2.71		

**Significant at the level (1%)

It is evident from the above table that:

- 1- Prediction affects survival by (0.225) if it changes by one unit, and this is a positive and significant effect at the (1%) level because the calculated f value was significant at the mentioned level.
- 2 - The evaluation affects survival by (0.245) if it changes by one unit, which is a positive and moral effect at the level of (1%). Because the calculated f) value was significant at the mentioned level.
- 3- The value off), which measures the significance of the regression model, reached its value (11.65), which is a significant value at the level of (1%).
- 4- The value of the coefficient of determination (R) was (0.24), which means that the two dimensions of prediction and evaluation explain the amount of (24%) of the changes that occur in the survival dimension, and the remaining percentage is due to other factors not included in the model. This is what the researcher infers to reject the above hypothesis by (50%).

- The dimensions of environmental sensing do not affect the dimension of the strategic response.

Table (3) below shows the above hypothesis test using the Stepwise method, where both the survey and observation dimensions were omitted, and the analysis settled on the two dimensions of prediction and evaluation, as follows:

Table (3) Testing the second sub-hypothesis using (Stepwise) method

independent variable \ dependent variable	strategic response		Calculated t value	computed f value	R ²
	α	β			
Forecasting	1.76	0.28	**3.73	**12.34	0.26
Evaluation		0.24	**2.45		

**Significant at the level (1%)

It is evident from the above table that:

1- The prediction affects the strategic response by an amount of (0.28) if it changes by one unit, and this is a positive and significant effect at the level (1%) because the calculated f value was significant at the mentioned level.

2- The evaluation affects adaptation by (0.24) if it changes by one unit, which is a positive and moral effect at the level of (1%). Because the calculated f) value was significant at the mentioned level.

3- The value off), which measures the significance of the regression model, reached its value (12.34), which is a significant value at the level of (1%).

4- The value of the coefficient of determination (R) was (0.26), which means that the prediction and evaluation dimensions explain the amount of (26) changes that occur in the strategic response dimension, and the remaining percentage is due to other factors not included in the model. The researchers inferred the rejection of the above hypothesis by (50%).

• The dimensions of environmental sensing do not affect the dimension of strategic capability.

Table (4) below shows the above hypothesis testing using the (Stepwise) method, where both were omitted after the survey

The analysis settled on the two dimensions of prediction and evaluation, as follows:

Table (4) Testing the third sub-hypothesis effect using the (Stepwise) method.

independent variable \ dependent variable	strategic ability		Calculated t value	computed f value	R ²
	α	β			
Forecasting	1.21	0.48	**3.81	**13.75	0.28
Evaluation		0.25	**2.72		

**Significant at the level (1%)

It is evident from the above table that:

1- The prediction affects the strategic ability by 0.48 if it changes by one unit, and this is a positive and significant effect at the (1%) level because the calculated (f) value was significant at the mentioned level.

2- The evaluation affects the strategic ability by (0.25) if it changes by one unit, which is a positive and moral effect at the level of (1%). Because the calculated (f) value was significant at the mentioned level.

3- The value of (f), which measures the significance of the regression model, reached its value (13.75), which is a significant value at the level of (1%).

4- The value of the coefficient of determination (R) reached (0.28), which means that the two dimensions of prediction and evaluation explain the amount of (28%) of the changes that occur in the dimension of strategic ability, and the remaining percentage is due to other factors not included in the model. The researchers inferred the rejection of the above hypothesis by (50%).

Conclusions and Recommendations:-

This topic deals with the conclusions and recommendations that were reached according to the field side of the study, as follows:

Conclusions

The results of describing the opinions of the research sample showed a great interest in environmental sensing operations, and the survey process ranked first in the interests of the research sample, which indicates that it works on identifying the first signals and following them up on changes in the general environment and its trends by developing a complete perception of the external environment, as well as showing its interest. In the second degree, the monitoring process, which indicates that the management of the South Oil Company is working on analyzing the external environment as a means of evaluating environmental trends, following up on events and scheduling activities by systematically examining the development of environmental changes to identify opportunities and warn against threats, as well as tracking the behavior of customers and competitors' activities. The prediction process is ranked third, as this indicates that the research sample company is working to develop acceptable trends about the direction, extent, speed, and strength of environmental changes around the company, to know the expected changes in the external environment, which helps in identifying opportunities and threats and evaluating future environmental factors in preparation for determining the appropriate behavior to deal with them. , while the evaluation process ranked fourth among the company's interests in the research sample, which indicates It realizes the importance of determining the timing of environmental changes and their importance and directions on strategic management through surveys, monitoring, and forecasting to determine the interdependence and relationship between its internal factors and the external environment. The statistical results also showed the existence of a significant correlation between environmental sensing operations and strategic lightness, which confirms that the company is interested in the research sample with survey operations because of its positive relationship to obtaining resources and capabilities that allow it to develop its competitive advantage. As well as the interest of the Southern Oil Company in monitoring operations, as it has a positive relationship with providing a level of protection that provides it with the necessary information because of the changes and events around it that may determine its success now or in the future.

The results also indicated that the South Oil Company uses forecasting processes for its positive relationship to the lightness of the company in the future as a result of what it predicts regarding its future environment and the opportunities or threats it will face or avoid in the future. The company also relies on the evaluation process for its positive relationship to achieving a high level of efficiency and effectiveness, which results in Information outputs that serve as inputs to the process of making strategic decisions. The statistical results showed that there is a significant effect of environmental sensing processes on strategic lightness through the significant impact of the forecasting process in building the strategic lightness of the company. The research sample came first in terms of impact, and it is a process that provides information and knowledge about what will affect the environment and work to avoid it or confront it. It came in second place in terms of the impact of the evaluation process. The research sample company deliberately evaluated the information it obtained to indicate its validity, auditing, and classification according to importance and delivery to decision-makers, while the monitoring process ranked third in terms of impact. This indicates that the research sample companies are constantly monitoring their environment R to prepare for it and adapt to it.

Recommendations: -

In light of the foregoing study of the impact of environmental sensing and strategic lightness in its theoretical aspect, and the results of field analyzes, the current research reached a set of recommendations that contribute to building strategic lightness by activating environmental sensing processes for the research sample companies in particular and business organizations in general, and my agencies The focus is on the

practice of environmental sensing operations in the South Oil Company more broadly in light of the environment of Iraq, which is characterized by change and environmental uncertainty by constantly doing the following:

The external environment, which gives it the advantage of identifying changes that threaten its existence and opportunities that, if invested, will help it to fortify its competitive position with the Iraqi consumer, by monitoring the external environment, enabling it to compare what it owns with its competitors to identify its market position and maintain its market share in the Iraqi environment. And predicting the external environment to reveal what it contains future opportunities and threats to adopt or adapt to them with the capabilities and capabilities it has that enable it to sustain its current success. Working on evaluating the external environment through the information it collected, classifying it, classifying it, and communicating it to decision-makers faster than it can outperform competitors. Strengthening the company's resources and capabilities at all levels in a way that competitors find it difficult to overcome by searching for new resources that help it sustain the production wheel, which does not allow it to stop as a result of the lack of basic resources for production operations, as well as developing its capabilities and capabilities at all levels, whether they are production, service or marketing To advance the Iraqi product inside the country with its future development to obtain the ISO 9001 certificate with the possibility of marketing it outside the country, and to identify modern technology that contributes to the speed of production and meeting the needs of the local market in the required quantities by raising the production capacity, which increases its profits and market share compared to what is imported from outside Country.

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