THE ROLE OF STRATEGIC FLEXIBILITY IN INFORMATION TECHNOLOGY INFRASTRUCTURE ANALYTICAL RESEARCH AT THE STATE COMPANY FOR COPPER AND MECHANICAL INDUSTRIES

Ahmed Bassem Hassan, Asst. Prof. Dr. Saadoon Mohsen Salman

University of Baghdad, College of Administration and Economics

Date of Receiving: 14 June 2022, Date of Acceptance: 10 July 2022, Date of Publication: 31 July 2022

ABSTRACT

The research aims to know the impact of strategic flexibility in its dimensions (competitive flexibility, production flexibility and market flexibility) on the information technology infrastructure in one of the companies of the Ministry of Industry and Minerals, based on the descriptive analytical method. In the General Company for Copper and Mechanical Industries, as the information for the crisis was obtained through questionnaire forms and distributed to an intentionally swallowed sample of (157) directors, and after analysis through the SPSS statistical program, the study reached a set of conclusions, the most important of which are: There is a clear impact of the combined dimensions of strategic flexibility. (Competitive flexibility, productivity flexibility, market flexibility) Information technology infrastructure, meaning that the company takes advantage of flexibility to improve information technology infrastructure services, and that after-market flexibility has a significant and clear impact, followed by productivity flexibility.

***Keywords**: strategic flexibility and IT infrastructure*

INTRODUCTION

Today, the world is witnessing many developments in the fields of business, the most important of which are technological developments. It is imperative for organizations to keep pace with these developments by adopting strategic means that contribute to facing these developments, such as strategic flexibility that contributes to enhancing the management of the organization's capacity and working to raise the efficiency of the organization and improve the effectiveness of its performance and activities.

As a result of the interest in strategic flexibility, organizations have become more focused on the information technology infrastructure because it is one of the means of predicting environmental conditions, as it has become one of the most important organizational needs in the direction of competitors, and the development of the skills of individuals that ensure increased production and

raise competencies, so organizations are looking for mechanisms to ensure obtaining flexibility Strategy by creating a positive environment that contributes to increasing the organization's capabilities to face rapid environmental fluctuations.

THE FIRST TOPIC: THE SCIENTIFIC METHODOLOGY OF RESEARCH

First: The Research Methodology

The information technology infrastructure is one of the most important modern working mechanisms that help organizations in predicting the fluctuations of contemporary work. The theory has it at the local and international levels, so who should organizations work with the concept of strategic flexibility? It is considered the ability of the organization in the face of environmental fluctuations and one of the modern means of success that enables the organization to achieve competitive advantage and enhance the market value of the organization.

The research problem can be determined that there is a weakness in the infrastructure of information technology in the General Company for Copper and Mechanical Industries, and in order for the organization to continue in its productive work, it must be aware of the importance of the concept of strategic flexibility as it is considered one of the concepts of success that enables the organization to maintain its market value and improve mechanisms The research problem lies in the following main question:

What is the impact of strategic flexibility on the quality of information technology infrastructure services in the State Company for Copper and Mechanical Industries?

Second: The Importance of Research

The importance of the research lies in the following points:

1. The vitality of the topic you are dealing with, and its relative scarcity, as this topic is characterized by modernity and scientific and practical excellence.
2. Clarify the impact of strategic flexibility on the information technology infrastructure of the community and the study sample.
3. Clarify the importance of IT infrastructure for industrial organizations in light of rapid environmental changes

Third: Research Objectives

The main objective of the research is to show the impact of strategic flexibility on the information technology infrastructure and to define the senior management represented by managers the importance of strategic flexibility by providing a set of conclusions and recommendations at the theoretical and practical levels.

Whereas, the five-point Likert scale was used to classify the answer scores, which range between (5-1) degrees, as shown in Table (1):

Table (1) Likert scale scores for resolution

Totally agree	I agree	neutral	I do not agree	I don't totally agree
5	4	3	2	1

Relying on the categories for comparison and clarifying the importance of the results obtained, I calculated the difference between the upper and lower bounds of the scale and thus dividing the output on the upper bound of the quintuple scale and then adding the output (0.80) to the lower bound starting and continuing in order to produce the categories below, as in Table (2) below:

Table (2) Categories and level of answer

the answer	Very weak	weak	Average	high	very high
Category	1.80-1	2.60-1.81	3.40-2.61	4.20-3.41	5-4.21

Fourth: Research Hypotheses

In order to achieve the research objectives, two main hypotheses were formulated:

1. The first main hypothesis: There is a statistically significant relationship between strategic flexibility and information technology infrastructure.
2. The second main hypothesis: There is a statistically significant effect of strategic flexibility in the information technology infrastructure

THE SECOND TOPIC: THEORETICAL SIDE

First: The Concept of Strategic Flexibility

Strategic flexibility refers to the organization's ability to respond to uncertainties by using the information and skills it possesses while continuing to work on continuous development. regulation (Han, Zhang et al. 2021). (Ostia, Edwinah, 2022:54) believes that strategic flexibility helps organizations discover and respond to major changes in their environment, eliminates organizational inertia, and stimulates creativity and innovation, so the organization should enjoy strategic flexibility in order to respond to problems quickly.

The researcher defines strategic flexibility as the organization's ability to adapt and respond quickly to environmental changes. In this sense, strategic resilience can be defined as the organization's ownership of management capabilities that enable it to respond quickly to and adapt to environmental changes and to gain and maintain a competitive advantage in the business environment.

Second: Dimensions of Strategic Flexibility

1. Competitive flexibility

It is the set of efforts and procedures followed by the organization, through which the organization is able to meet the challenges of the corresponding organizations, and thus enable it to keep pace with changes in the labor market ((Obaid & Al-Abachee, 2020: 6706). He explained (Al-Najjar, 2012: 60) the most important Sources from which the organization can achieve competitive advantage:

A - Cost Reduction: Providing products at a low cost.

b- Speed: Working to provide products and services faster than competitors.

c- Flexibility: Increasing the capacity of the production system to adapt to innovation.

d- Creativity: Continuing to add and change the characteristics of the product and provide it with high value to the customer.

C- Customer Service: Highly responding to the desires and needs of customers

2. Productive flexibility

Known as the ability to respond to changes. Changes may relate to modifications in the design features of a product or service, the volume demanded by customers, or the mix of products or services offered by the organization. High resilience can be a competitive advantage in a changing environment (Stevenson,:2018:42). Production flexibility has the ability to change operations also in terms of volume. Flexibility here is to increase or decrease the quantity of production, as well as time. Flexibility of time here is the time taken by the mixture of products or services provided, and production flexibility is not limited to production processes, as it affects the supply chain. (Schroede,2018:317))

3. Market flexibility

And I defined it (Asia, 2017:59-60) as the ability of the organization to obtain the correct information from customers at the right time in order to work to fulfill its desires and work to balance its marketing forces in a short period of time in order to respond to changes in the business environment.

And (Shalender et al. 2017: 65-74) believes that market flexibility enables the organization to achieve the different desires of customers within the general limits of the strategy in which the organization operates, by introducing new products, working on developing existing products, distributing products, or entering global markets.

Third: IT Infrastructure

Information technology infrastructure refers to the provision of modern hardware and software, appropriate human resources, means of communication and appropriate databases in the organization in order to process, organize, exchange, store and display data efficiently and at the appropriate speed (Trabelsi and Fayadh. 2020:101-115).

Laudon & Laudon.2022:197) defines IT infrastructure as the shared technology resources that provide the platform for an organization's information systems applications that include investment in hardware, software, and services—such as consulting, education, and training—that are shared across the company. entire or across entire business units of the company.

The IT infrastructure framework is one of the best known service management techniques targeting the IT industry, which can be adapted to any work environment to achieve a range of benefits for organizations, including: (Arraj.2010:44-45)

1. Increasing the satisfaction of users and customers with information technology services.
2. Improve service availability, directly leads to increased business profits and revenue.
3. Optimizing marketing time for new products and services

Both (Laudon & Laudon.2022:197) referred to the components of the information technology infrastructure in the following figure (1):

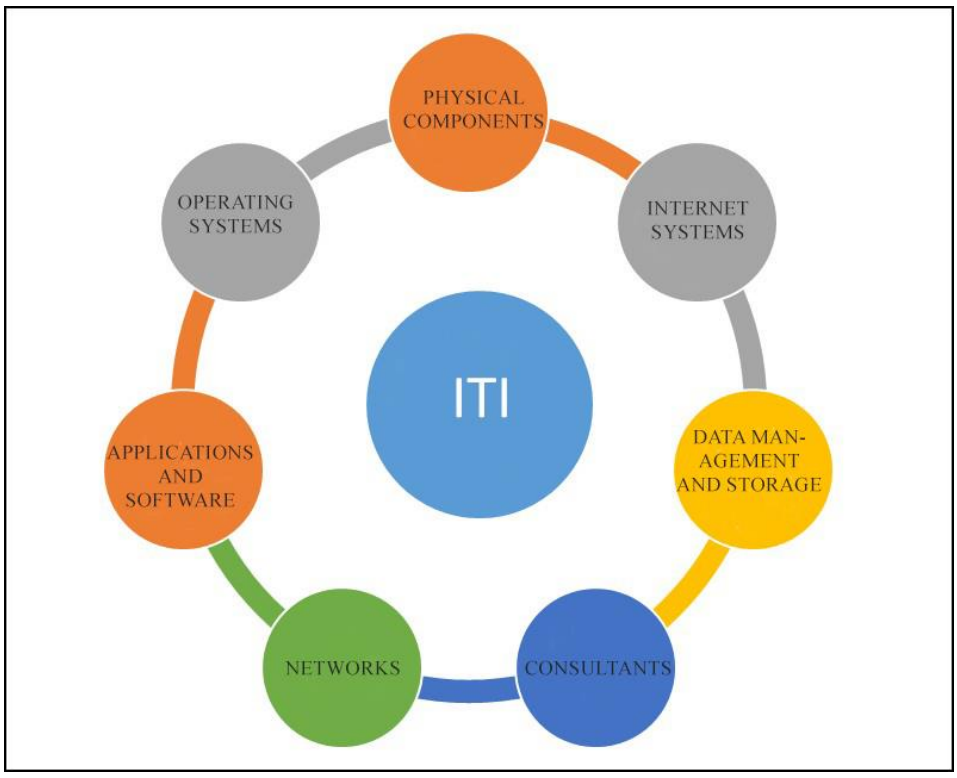

Figure (1) Components of IT infrastructure

Source: Laudon, K. C., & Laudon, J. P., (2022), Management Information Systems, Managing the Digital Firm, Global Edition

THE THIRD TOPIC: THE PRACTICAL SIDE

In order to reach, diagnose and analyze statistical results, descriptive statistical tools were used.

First: Presentation and Analysis of the Sample Responses to the Variable Strategic Flexibility

The strategic flexibility variable was measured across four dimensions (competitive flexibility, market flexibility, production flexibility), and Table No. (3) indicates the arithmetic means and standard deviations of the sample's view of the strategic flexibility variable in the General Company for Copper and Mechanical Industries, reflecting the arithmetic mean of the total degree of the variable The strategic flexibility of (3.520) with a standard deviation of (0.899), and a coefficient of variation of (25.55%) and its importance is high, which indicates that the strategic flexibility is applied in the General Company for Copper and Mechanical Industries, in addition to the standard deviation index, if it was with little dispersion, this is indicated in High agreement of results.

Productive flexibility came in the first rank with an arithmetic mean (3.580), a standard deviation (0.958) and a coefficient of variation of (26.77%), followed by the dimension of competitive flexibility in the second rank with an arithmetic mean (3.531), a standard deviation (1.022) and a coefficient of variation of (28.95%). They are followed by the dimension of market flexibility in the third order with an arithmetic mean (3.521) and a standard deviation (0.990) and a coefficient of variation of (28.11%), and finally the dimension of competitiveness flexibility came in the third order with an arithmetic mean (3.531), a standard deviation (1.022) and a coefficient of variation of (28.95%).

Table (3) Arithmetic averages and standard deviations of the strategic flexibility variable and its dimensions

	Items	Arithmetic averages	standard deviations	Variation coefficient	Relative importance	Dimensional order
1	Competitive flexibility	3.531	1.022	%28.95	%70.62	3
2	market flexibility	3.521	0.990	28.11. %	70.43%	2
3	production flexibility	3.580	0.958	%26.77	71.60%	1
Strategic flexibility		3.520	3.520	3.520	3.520	

Second: There is a Statistically Significant Relationship Between Strategic Flexibility and Information Technology Infrastructure

Table (4) below shows the values of the Spearman correlation coefficients for the strategic flexibility variable and the information technology infrastructure variable as below:

Table (4) Correlation matrix between strategic resilience and IT infrastructure

The variable strategic flexibility	**independent variable** / **dependent variable**
.760**	IT Infrastructure
157	N
*The correlation is significant at the level of significance (0.05).	
** The correlation is significant at the level of significance (0.01).	

As it is evident from Table (4) that there is a strong direct relationship between strategic flexibility and information technology infrastructure, as the correlation coefficient reached (0.671**) at the statistical level (0.01), which is a strong correlation with a positive statistical value, meaning that the change in strategic flexibility leads to change With the same trend in the information technology infrastructure, meaning every increase in strategic flexibility leads to the same increase in the information technology infrastructure, depending on the results above, we accept the first sub-hypothesis of the first main hypothesis with the content “there is a statistically significant relationship between strategic flexibility and structure information technology infrastructure.

Third: There is a statistically significant effect of strategic flexibility in the information technology infrastructure

Table (5) shows the degree of contribution of the variable strategic flexibility by its dimensions in explaining the variance of the degree of information technology infrastructure and extracting the results for simple linear regression analysis as in Table (5)

Table (5) matrix of the impact of strategic resilience and IT infrastructure

Variables	IT Infrastructure	
Strategic flexibility	R2	.434
	F. value	118.644
	P. value	.000
	β0. value	1.617
	β1. value	.610

The strategic flexibility explained the amount of (.434) of the variance in the infrastructure dimension, and that the amount of (.566) is a variance that is not explained by other factors that did not enter the regression model, and that the test is significant at the level of significance (0.05) meaning that there is an effect of flexibility. The strategy is in the infrastructure dimension, which indicates that the regression curve describes the relationship between them, and the results above show the acceptance of the first sub-hypothesis of the second main hypothesis which they stated, "there is a statistically significant effect of strategic flexibility in infrastructure".

And the value of the constant (β0 = 1.617), which indicates when the value of strategic flexibility is equal to zero, therefore the value of the infrastructure dimension will not be less than the value of the constant, while the value of the regression coefficient (β1 = .610), which indicates that adding one value to the strategic flexibility will increase After the infrastructure the same amount.

THE FOURTH TOPIC: CONCLUSIONS AND RECOMMENDATIONS

First: The Conclusions

Through the statistical analysis, a set of conclusions were reached, the most important of which are:

1. The dimensions of (competitive flexibility, productive flexibility and market flexibility) have achieved high importance for the company, evidence of the senior management's interest in these dimensions of the independent variable, strategic flexibility.
2. There is interest from the General Company for Copper and Mechanical Industries in the information technology infrastructure, because its availability at the required level is what facilitates the production process, which allows the workflow and achievement as planned.
3. There is dependability on the part of the senior management of the company with the outputs provided by the Information Technology Department of the General Company for Copper and Mechanical Industries and through the equipment and software used in order to reach the results to be achieved.
4. The first main hypothesis was confirmed and verified, as the strategic flexibility in the General Company for Copper and Mechanical Industries has a clear role in enhancing information

technology infrastructure services, which makes it able to absorb the dynamic changes that occur in the company's internal and external environment and the speed of dealing with them

5. There is a clear impact of the combined dimensions of strategic flexibility (competitive flexibility, productive flexibility, market flexibility) in the information technology infrastructure, meaning that the company takes advantage of flexibility in its dimensions to achieve the quality of information technology infrastructure services, which represents a strong weapon for competition as it is a major strategic resource, and that the dimension of flexibility Logistics is the most influential and is followed by the productivity flexibility dimension.

Second: Recommendations

1. Support and increase the company's focus on the concept of strategic flexibility to enhance its capabilities in the face of internal and external environmental changes, which is also considered a distinguished performance in raising the company's performance.
2. Urging the company's management to continue paying attention to strategic flexibility as it is one of the reasons that contribute to enhancing the quality of information technology infrastructure services, which increases the organization's ability to face internal and external environmental changes.
3. The company should work to support and increase the focus on the information technology infrastructure, as it is one of the main resources that operate in advanced technological conditions.

REFERENCES

1. Laudon, K. C., & Laudon, J. P., (2022), Management Information Systems, Managing the Digital Firm, Global Edition
2. Arraj, V. (2010). ITIL: The basics white paper. The Stationary Office
3. Tripoli, Siraz. Fayyad, Samer. (2020). Assessment of the suitability of the information technology infrastructure for the flexibility of human resources at Tishreen University - a field study on the employees of Tishreen University. Hama University Journal, 3(4).
4. Han, C., & Zhang, S. (2021). Multiple strategic orientations and strategic flexibility in product innovation. European Research on Management and Business Economics, 27(1), 100136
5. Obaid, H. J., & Al-Abachee, A. S. F. (2020). The role of inclusive leadership in enhancing the strategic flexibility. International Journal of Psychological Rehabilitation, 24(7), 6766-6776
6. Mohsen, Abdul Karim and Najjar, Sabah Majeed (2012) Production and Operations Management, Fourth Edition, Baghdad, Memory for Publishing and Distribution
7. Stevenson, William.J: 2018, Operation Management, 13th ed, McGraw-Hill Education, New York, p6

8. Schroeder, Roger G. & Goldstein, Susan Meyer (2018), Operations Management in the Supply Chain, Decisions and Cases, 7th ed, Carlson School of Management University of Minnesota, McGraw-Hill Education, USA
9. Asia, Ben Ahmed (2017). The impact of strategic flexibility on the quality of performance effectiveness and the competitiveness of the institution. An applied study on Mobilis telecom company. Doctoral thesis, Faculty of Economics, University of Jilali El Yabis, Sidi Bel Abbes
10. Shallender, K., & Yadav, R. K. (2019). Strategic flexibility, manager personality, and firm performance: The case of Indian Automobile Industry. Global Journal of Flexible