Developing a model of the capacity of improvisation in Iraqi technology companies

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تطوير نموذج قدرة الارتجال في شركات التقنية العراقية

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Abstract
Objective: Nowadays, rapid changes and developments have affected organizations with today's complex environment and have faced the challenge of uncertainty, crises and disruptions. In order to respond to these changes, companies have needed to improve their improvisation capabilities. Therefore, the purpose of this study is to expand the model of improvisation capabilities in the companies of technology in Iraq .
Methodology: The research method is qualitative. Participants in the study include senior managers and experts in technology companies active of the ICT industry that have about 10 years of experience in the official presence in Iraq. The statistical sample of the qualitative section consisted of 1.2 experts and senior managers in Iraq who were selected by snowball sampling method. The data collection tool in this study was semi-structured interviews. The validity and reliability of the questionnaire was also measured by the apparent validity, contention and reliability of the retest. The data obtained in the qualitative section were analyzed using the data theory of the Strauss and Corbyn Foundation .(١٩٩٧)
Results: After analyzing the results of the qualitative section, 253 open codes, 69 pivot symbols and 14 main classes were extracted based on the geo-theory model. The network of relationships was drawn based on the typical model of paradigm theory. According to the above-mentioned, causal factors include regulatory, supporting factors, and structural factors. Contextual factors include environmental analysis and improvised learning. Improvisation is individual abilities, executive abilities and managerial abilities. Interrelated factors are internal factors in implementation and external factors. Strategies include market-oriented and continuous innovation. The consequences also include business performance and local performance.
Conclusion: According to the results, improvisation capabilities can be used as a tool for the organization to prepare itself and respond in case of disturbances. The current framework allows organizations to observe and understand the conditions that implement the improvisation capabilities, and therefore improvisation capabilities in Iraqi technology companies must implement it.
Keywords: improvisation, improvisation, technological companies, terrestrial theory

Expanding marketing strategic improvisation capabilities in startups in Iraq
abstract
Objective: Today's rapid changes and transformations have impacted organizations with today's complex environment and faced the challenge of uncertainty, crises and disruptions. To respond to these changes,

companies need to improve their improvisation capabilities. Therefore, this study aims to expand the model of improvisation capabilities in technology startup companies in Iraq.

Methodology: Qualitative research method. The statistical community includes senior managers and experts in technology companies; with 10 years of official presence and experience in startups in Iraq, the statistical sample of the qualitative part research was interviewed with 12 people from the administrative staff, experts and senior managers of technology companies active in the field of communication in Iraq. The data collection tool was semi-structured and in-depth interviews .

Results: After analyzing the qualitative section results, 253 open codes, 69 base codes and 14 main categories were extracted. The relationship network was drawn based on the geotheorem model. In the basic theory model, causal factors include regulatory, supporting factors, and structural factors. Contextual factors include environmental analysis and improvisational learning. The main phenomenon of improvised ability consists of individual abilities, executive abilities and managerial abilities. Overlapping conditions include internal factors in implementation and external factors. Include Market-oriented strategies and continuous innovation. The consequences include business performance and internal performance.

Conclusion: Based on the results obtained, we presented improvisation capabilities as an alternative means of the organization in the direction of formation in disarray. This framework allows organizations to observe and understand the conditions for the implementation of improvised capabilities, and thus the implementation of improvised capabilities in Iraqi technology companies .

Keywords: Improvisation, Improvisation Ability, Technology Startup Companies, Founding Data Theory

1.Introduction

Today's business world is full of rapid changes and developments. There is hardly an organization that has not been affected by today's complex environment and does not face the challenge of uninterruption, crises, turmoil and "trying to have a regional and global presence" as one of its main concerns. For this reason, among managers and owners, commentators have formed the view that the complexity of today's world that is a growing and persistent challenge in the field of strategic decision-making of organizations (Kantur & Iseri-Say, 2012). Crises challenge interpretations and impose strong demands on the sense maker" (Weick, 2001). "It can cause great confusion for managers trying to direct these events. However, managers facing a crisis must make critical decisions and take strategic action in the face of high uncertainty" (Hodgkinson et al., 2016) .

 Descriptive decision theory (or school of learning) emphasizes adaptability, quick initiation of actions, and avoidance of adherence to predetermined or formal strategic plans or actions (Brinckmann et al., 2019). This current of decision theory recognizes that managers, due to cognitive limitations, limited mental schema, unfamiliar context (e.g., crisis) and limited rationality can rarely make optimal choices or rational decisions (Wiltbank et al., 2009). The emphasis in the latter theory on flexible decision-making corresponds to the use of improvisation (Daood & Giustiniano, 2024). Due to crisis situations and conditions of uncertainty, information and data are less accessible and unreliable, limiting the implementation of the formal or normative processes provided for (Brinckmann et al., 2019). In fact, in high-speed environments, dynamic abilities develop through experimental activities, such as improvisation, prototyping, real-time information, and experimentation (Cunha et al., 2020). Improvisational ability means the creation and creation of new responses, without prior planning and without certainty about their consequences; in other words, improvisation, Planning and execution at the same time is a strategy. Such an approach emphasizes formal strategy planning and control (Steele, & Stefánsson, 2020). Improvisation is a crucial mechanism that enables the implementation of effective management interventions as a means of survival, adaptation or potential growth in difficult situations (Hughes et al., 2020).

 Previous research has revealed some key elements of improvised ability, which include rapid decision-making speed (Tabesh & Vera, 2020; Nemkova et al., 015), Resource Establishment (Fultz & Hmieleski, 2021; Valaei & Rezaei, 2017), Resilience (Liu et al., 2018) and TaghYarat (Zhang et al., 2023; Jun et al., 2022). Although researchers are now beginning to provide key insights into the stages of organizational improvised capacity (Miner et al., 2001) evidence has been provided that improvised ability is associated with better organizational performance (Liao et al., 2023; Jun et al., 2022, however, many aspects about improvised ability have not been discovered (Cunha et al., 2020; Redé & El Sway, 2024). Despite the fact that the consequences of implementing improvised abilities are obvious, there has yet been no framework for determining all the dimensions involved in the formation of improvised abilities and how to implement them in practice. Therefore, in theory and empirically, there is an urgent need to provide a model for implementing an organization's

improvised capacity (Kung & Kung, 2019; Limon & Dilekçi, 2020). Technology companies have always strived to survive, develop and improve the level of competition. Managing the market by traditional and rotating methods in the world and focusing on facing the sudden problems of organizations no longer meet the requirements of the new era that do not correspond to the constant change, development and requirements of technological companies, and here lies the importance of creating a model for the implementation of improvisation possibilities that are emerging for technology companies.

This study, drawing on previous research, solves this deficiency by providing theoretical development and developing an improvised capacity model in the organization. We chose Iraqi tech companies as an experimental industry for this study for two reasons. First, the development of the required model can provide conditions that can be considered when thinking about changes strategically. It can achieve the ability to improvise individually or within an organization (Alsaqal et al., 2021) .

However, the ability to improvise is a vital mechanism to guide the vision of tech companies as a means of survival, adaptation, or potential growth in difficult situations. Technological and knowledge-based companies need to improvise, plan and simultaneously implement strategy (Tabraei et al., 2015). Zahra et al. (2006) suggest that young non-traditional companies develop their dynamic capabilities by relying on improvisation and learning through practice. Second, improvisation is a great ability that is not available to all managers, leaders, or workers equally, and few are distinct, and this is a challenge faced by technology companies facing modern-day commercialization (Alsaqal et al., 2021). Therefore, the requirements that form the basis of the framework necessary to create the readiness and capacity of improvisation must be discussed and theorized. Therefore, the current study seeks to develop the model of improvised capabilities in Iraqi technology companies. Therefore, the research questions are as follows:

Question 1: What are the factors influencing the implementation of improvised capability in Iraqi technology companies?

Question 2: What are the strategies for implementing improvised capabilities in Iraqi technology companies?

Question 3: What are the platforms for applying improvised capability in Iraqi tech companies?

Question 4: What are the barriers to implementing improvised capability in Iraqi technology companies?

Fifth question: What are the achievements and results of the ability to improvise in Iraqi technology companies?

Question 6: What factors are involved in the implementation of improvised capability in Iraqi technology companies?

In order to answer the above questions, the literature on improvised ability, its dimensions and background will be reviewed. Next, a qualitative study with a basic theoretical approach will be designed and an improvised ability model will be presented.

-٢ Theoretical foundations of research

.٢،١ Improvisation

Henry Mintzberg (1973) introduced the concept of improvisation to management research to explain how certain strategies emerge adaptively to respond to environmental changes. Karl Wick (1993) later investigated the deaths of 13 firefighters in the Man-Gulch fire disaster, noting that three survivors, in an "improvised batch" due to their ability to think on their feet and act quickly, managed to escape the fire. This outstanding work inspires research on how improvisation can help in situations characterized by unpredictability due to frequent surprises and time pressures .

Improvisation's first research stream focuses on how improvisation helps organizations solve urgent and unexpected problems, providing insights for a very quick and reliable response. (Klein et al., 1993; Weick, 2006; Bechky and Okhuysen, 2011). The second stream of research deals with improvisation to create creative and innovative results (Barrett, 1998; Crossan, 1998; Vera and Crosan,

With time, researchers have come up with different definitions of improvisation, yet these definitions share one key element: the convergence of planning and implementation (Crossan et al., 2005), so that "the closer the design and implementation of an activity in time, the more improvised it is" (Moorman and Miner, 1998a). In addition, they all view improvisation as a They describe interactive and spontaneous action in response to unforeseen events, in which people find a way to manage an unexpected problem (Weick, 1993; Morman and Miner, 1998a, 1998b; Miner et al., 2001). and/or create something new in response to the unknown (Crossan et al., 2005).

٢،٢. The ability to improvise

Improvisational ability refers to the ability to assess situations quickly and instinctively and to use the most appropriate contextual solutions (Banin et al., 2016). Organization-wide improvised capability is the ability to innovatively and spontaneously manage unexpected events (Hadida et al., 2015; Hadida and Odiase, 2024), reflecting creativity and spontaneity in problem solving.

According to Liao et al. (2023) and Trumpnarres and Wolliams (2004), establishing improvisational ability means promoting and supporting work, fault tolerance, trust, and improvisation. The company's full support in allowing employees to experiment and encourage them to actively participate in proposing, thinking and solving problems promotes work quickly; work is based on the principle that completely encourages employees to break the rules. Conducting bold experiments and groundbreaking innovations while the company provides resource supportOr intangible rewards for creative actions. Independence and free space to engage in a range of activities related to the goals of the company is to promote work. That is, they are process-based and not results-based (Liao et al., 2023).

The ability of improvising an organization does not focus so much on results and more on work. The procedure also emphasizes prompt and effective written communication between members of the company. This significantly reduces the communication distance between members and makes communication feedback and mutual engagement timely and effective. Therefore, when a company encounters unexpected problems, employees are encouraged to react spontaneously and quickly (Cunha et al., 2020).

Fault tolerance refers to the acceptance of mistakes made by employees as a result of their innovations, indicating that the company is willing to pay for the damages caused by innovative actions, creating an environment in which employees can make decisions with confidence (Yongwei et al., 2024). Under these circumstances, the company supports informed leadership, which fully enables employees to make independent decisions slowly. Therefore, employees are strong enough to engage in improvisation in uncertain situations. In addition to So, fault tolerance indicates that organizational membership is fair. Employees are more willing to take risks and try new approaches when they realize that there is no threat to themselves or other members, or that others tolerate their mistakes and even support them (Shalley and Gilson, 2004) .

Trust and support efforts is a third principle that refers to the efforts and actions of company members to trust and support each other (Feitosa et al., 2020; Men et al., 2020). The company does not differentiate between upper and lower levels. A flat organizational structure is accepted because there is no concept of lower and upper levels that do not oppress or resist the company's employees. Adaptability is more suitable for the immediate actions of employees in this case (Cunha et al., 2020). In this area, the company's activities are not controlled step by step or they are not framed by laws. Instead, companies encourage creative leaps, lateral thinking and bold innovation, and vertical and horizontal interactions between departments are relatively frequent. This kind of active atmosphere makes it easy to create innovative thinking, especially when it comes to developing new products .

٢،٣. Dimensions of the ability to improvise

The ability to improvise organizational is a multidimensional structure and can manifest itself to different degrees. Many researchers in this field have tried to classify improvisational ability. Accordingly, the ability to improvise can occur at the individual, personal and organizational levels (Limon & Dilekçi, 2020; Limon & Dilekçi, 2020; Limon & Dilekçi, 2020; Limon & Dilekçi, 2020; Limon & Hadida et al., 2015). Vera et al. (2016) from an individualistic perspective describes improvisational ability as the ability of an individual to orient themselves in a spontaneous way. In addition, improvisational behavior requires the desire to create an idea or solution that has not been tried or tested before. For successful improvisation, individuals must be able to plan beyond familiar norms to produce something unusual, unique or completely (Tabish and Vera, 2020) . Kang & Kang (2019) believes that the capacity of organizational improvisation includes three dimensions: "rapid response, reconfiguration and new solutions." Rapid response refers to the short interval between planning and implementation. Reconfiguration is the ability to organize and use resources in a short time (Kung, & Kung, 2019). Finally, new solutions refer to the degree to which new ideas or processes have been developed to solve specific situational problems or The answer refers to environmental disturbances. The ability to improvise at the organizational level, including two dimensions: spontaneity and creativity (Vera & Crossan, 2023).

Sakkal et al. (2021) presented strategic flexibility, strategy of vigilance, innovation and strategic orientation as dimensions of improvised capability. Strategic flexibility expresses the concept of strategic flexibility, the ability of an organization to respond quickly to changing environmental conditions and maintain its competitiveness with the same efficiency, ability, creativity and innovation. The Mindfulness Strategy expresses the activity of The organization aims to disseminate knowledge, collect and analyze data about its external environment in order to provide the necessary information to enable the organization to take advantage of opportunities and avoid threats to maintain survival and growth (Sakkal et al., 2021). Innovation is the process by which an organization recreates or redesigns its organizational strategy to drive business growth, adapt to the pace of technological changes, create value for the company and its customers, and create a competitive advantage, which includes organizational restructuring, business design, organizational processes, new policies and strategies, new control systems, etc. Strategic direction is a company-wide strategic direction that includes organizational strategy practices and behaviors and philosophies Management with an entrepreneurial nature whose main aspects are innovation, entrepreneurship and risk (Anderson et al., 2015).

Liu et al. (2018) states that improvised ability mainly covers three qualities of creativity: the ability to cope with stressful situations and the ability not only to act, but also to persevere. The ability to improvise usually appears in a highly error-tolerant cultural environment where members understand and trust each other (Suhaib, 2021; Rahman et al., 2020). For example, fault tolerance helps to come up with new ideas and instant interactive behaviors. Improvisation encourages employees to use spontaneous improvised outputs to compensate for inadequacy or isolate planned behaviors in the process of developing a new product or providing a service (Du et al., 2015).0

-٢Research Background

Sheila et al. (2024) believe that flexibility is a requirement for improvisation that can be transmitted through personal learning and development. Liao et al. (2023) showed the impact of organizational culture on improvisational ability. They emphasized that the ability to improvise could improve the performance of the Organization. Zhang et al. (2023) conducted a review using bibliometric measurements and content analysis in the field of dynamic abilities they gave them. In the literature review, they identified multiple perspectives, including organizational routine, entrepreneurship, and improvised capabilities, and then developed a framework for the partial development of individuals, groups, and organizations.

Stendhal et al. (2022) investigated improvisation and the emergence of additional knowledge in a study. Their model demonstrates how multinationals can innovate new regulatory practices that innovate the needs of multinationals and local subsidiaries by adopting an improvised approach. Hughes et al. (2020) In the research that business crises for business The threat of unexpected or unexpected extreme threats is characterized in situations where strategic response times are low and executives fall victim to enormous time pressures to act quickly on strategic responses to these events. They have extracted a theoretical framework based on the five requirements of thefirst strategy , which underpins the mandatory strategic framework C10 for improvised preparedness.

Moradi et al. (2021) state that organizations active in chaotic environments can improve an organization's entrepreneurial approach and increase its competitive advantage by applying improvisation. Based on the results, they propose to implement supportive policies, motivational, communication, strategic, human, cultural, intra-organization and outside the organization to implement improvisation. Harandi (2017) showed that knowledge companies The foundation of the IT field is full of development because of their environment, they need to formulate an improvisation-based strategy to increase decision-making accuracy. They showed that The use of improvisation in the strategies and intelligence of the organization leads to greater agility of the company. Tabari and Khashai (2015) showed the impact of strategic improvisation on organizational performance in terms of increased environmental response agility, flexibility, structural adjustment, and practical agility in knowledge-based firms.

What can be concluded from a review of previous research is that this research has mostly looked at the effective factors and consequences of improvisation and the ability to improvise and did not discuss how they were formed and implemented in the organization, especially in small tech companies. Given the limited resources of these types of companies, providing a model of how improvisation abilities are formed can prevent them from suffering.

Table 1: External and internal background of the research

Results	Years	Author
The influence of organizational culture on the ability to improvise	2023	Liao et al
Investigate the impact of work procedures on improvisation	2023	Zhang et al
The effect of improvisation on innovation	2022	Stendhal et al.
The impact of the strategic framework on improvisation	2020	Hughes et al
The relationship between improvisation and entrepreneurship	1400	Moradi et al
The use of improvisation in the strategies and intelligence of the organization is the most important factor in the agility of the company	1396	Haranda
Investigate the impact of strategic improvisation on organizational performance	1394	Tabari and Khashai

4. Research Methodology

The current research falls into the category of exploratory research in terms of ontophilosophical foundations, based on the explanatory model, in terms of methodology, because it focuses on developing theory through data collection and analysis simultaneously. Also, in terms of research strategy , it is qualitative research. According to the data, it is qualitative, based on the basic theory of data taken from Strauss and Corbin (1997) and is fundamental in terms of purpose.

4.1 Statistical population

Participants in this study were managers and employees of technology companies active in the field of communications and information technology in Iraq, and have a history of about 10 years of experience in the official presence in Iraqi technology companies.

4.2. Sample size and sampling method

Alvani et al. (2016) sample of 5 to 25 people for qualitative studies. Accordingly, different managers and employees were selected by the snowball sampling method, and after the tenth interview, no new material was extracted and theoretical saturation was established. Two more interviews were conducted to ensure that no new material was missed, and a total of 12 interviews were used for analysis.

4.3. Data collection method

To collect data, two methods were used for desk studies, documentary studies and semi-structured individual interviews. The interview questions in this study include eight descriptive questions that were asked to senior managers in the field of technology companies active in the field of computer networks and IT systems management in Iraq, and they answered them in detail and detail. The first part of the interview questions includes information such as "gender, education, work in technology companies, and years of presence in companies" technological". The second part concerns descriptive questions. Expert professors confirmed the correctness of the face of the questionnaire questions. The authenticity of the content was

also confirmed by ensuring the appropriateness of the research questions.

Since the ability to improvise has been chosen as a pivotal variable, in order to identify the factors of this and provide a conceptual model, the methodological approach to terrestrial theory proposed by Strauss and Corbyn (1997) has been used, which is used inductively to formulate a theory in relation to a central phenomenon. Based on this method, after collecting data, at the first stage, open coding involves identifying the main categories and topics, and then the coding is done to organize the categories and link them to the subcategories. The final stage of selective coding is carried out and the model model is presented for research.

The interviews were analyzed in several stages. Thus, after the interviews were conducted, the oral interviews were first converted into books, and then the minutes of the interviews were completely revised without losing sight of the smallest details.   Meaningful proposals have been identified, that is, sections that contain meaningful information related to research questions.

Below the researcher defined the concept that contains the meaning of that assumption. The manual sum of points for each interview was determined and the components were identified in each interview.   At this stage, the sub-components are first extracted and then the main dimensions are extracted and the similar components are transformed into a more general component , after classifying the components and placing each, under its own theme, the componentsof the common subject in interviews with each other, examined and identified Main and sub-for each. In order to ensure the correctness and reliability of data with specific criteria for qualitative research, the necessary studies were carried out including acceptability and verifiability. In order to increase acceptance, review methods were used by participants. In order to achieve this, the researcher returned the interviewees to the interviewees for confirmation or correction by repeating the words and assumptions during the interview and summarizing the interviewee's statements. The first participants were returned for review and confirmation and the suggested points were applied. In order to calculate the reliability of the retest, several interviews are selected as a sample and each is coded twice in a short and specific period of time. The selected codes were then compared in two time periods for each interview. In each of the interviews, similar symbols in two time periods are classified as "agreement" and mismatched symbols are classified as "difference".

Table 2: Calculation of retest reliability

Reliability retest (percentage)	Number of disagreements	Number of agreements	Total number of symbols	Interview Title	Row
93%	8	17	25	P01	1
72%	7	6	19	P04	2
76%	4	6	13	P07	3
83%	3	5	12	p. 09	4
97%	22	23	47	Sum	

5 .Results

In Table 3, descriptive statistics related to the demographic and demographic characteristics of interviews at the qualitative stage by gender, age and educational degree are presented. According to the presented table, it can be seen that of the 12 samples selected, 11 (91.7%) were males and one person (8.3%) were female. Of the 12 samples, 2 (100%) held managerial positions in the company. Also, 4 (33.3%) have a master's degree and 5 (41.7%) have a doctorate degree.

Table 3: Demographics of interviewees

Percentage	abundance	Parameter	
7/91	11	Man	
3/8	1	Wife	sex
100	12	Total	
3/58	7	manager	
6/41	5	Expert	Related to
100	12	Total	
25	3	Bachelor	
3/33	4	Master	education
7/41	5	Doctor	
100	12	Total	

The results of the qualitative stage were carried out in three stages: open coding, coding, and selective coding. The sample of open coding of the participants' data is presented in Table 4. In the right column of the markup tables, meaningful proposals (the main sentences extracted from the interview) obtained from the research data are presented. This meaningful proposal is mentioned in the fourth column. A total of 253 open codes from interviews .

Table 4: Participant Data Coding Table Template

Concept	symbol	Contributor Code	Meaningful suggestion
Take advantage of changes Capitalize on changes by taking advantage of opportunities in the environment	p. 12	P!	Companies operating in changing and uncertain environments can use organizational improvisation as their competitive advantage. If something goes wrong with the organization, improvisation is often a response to a return to normal life. Changes and improvements. When an organization's strategic plans fail to meet expectations, successful organizations often use improvisation.

Concept	symbol	Contributor Code	Meaningful suggestion
Clarify measures to continuously improve preparedness for change	p. 52	P5	One of the appropriate strategies for improvisational presentation is to consider measures to strengthen and constantly improve the readiness for changes, at each stage of maturity, to be a clear guarantee of the implementation of strategic plans in the organization. Less time is spent on estimates, management decisions, and resource allocation to accelerate the implementation of changes due to the transparency of weaknesses and performance gaps in the organization.
Ability of managers to create and implement new strategic plans	p. 36	P3	Factors influencing organizational performance improvisation in a technology company in Iraq include: innovation, creativity and adaptability Ability of managers to create and implement new strategic plans
planning Continuous monitoring, analysis and evaluation	p. 102	p. 10	Improvisation is meant to plan.، Continuous monitoring, analysis and evaluation of all requirements that organizations must meet to achieve their goals and objectives.
Possess sufficient knowledge of managers and knowledge of writing. Possess creative abilities Flexibility	p. 35	P3	In order to have the ability to improvise, company managers must have sufficient knowledge and knowledge, as well as creative abilities, flexibility, strategic thinking, the ability to manage in the face of performance and supervision.
Increasing the capacity to respond to environmental challenges	p. 16	K1	The purpose of improvisation in a company is to improve the performance of the organization. Improvisation increases the ability to respond to environmental challenges, makes the organization flexible and improves the agility of the organization.

Concept	symbol	Contributor Code	Meaningful suggestion
The impact of marketing systems	p. 47	p. 4	In order to have the ability to improvise strategically, company managers must have a strong will and appropriate flexibility.
Improve the flow of regulatory information Improve organizational memory	p. 58	P5	Appropriate solutions for delivering strategic improvisations in the company are to improve the level of organizational information flow and improve the level of organizational memory.
Risk Possess the appropriate level of knowledge and information	p. 69	p. 6	In order to have the ability to improvise, company managers must have a good level of risk and also have a good level of knowledge and knowledge.
Team building under the name of different teams	p. 810	P8	Factors affecting the improvisation of organizational performance in the company are: Market Information Flows Team cohesion based on shared values and goals Team building under the name of different teams
People Training Encourage people to come up with new ideas Leverage existing technologies and knowledge	p. 103	p. 10	Appropriate solutions to deliver strategic improvisation accompanied by training people, encouraging people to introduce new ideas , taking advantage of existing technologies and knowledge, etc.
Creating value for the organization	p. 113	p. 11	Improvisation of organizational performance is the creation of value for the organization, and the organization deliberately pursues stimulating activities that do not correspond to pre-designed plans.

Concept	symbol	Contributor Code	Meaningful suggestion
Ability to perform quick analysis	p. 1205	p. 12	In order to have the ability to improvise, company managers must have sufficient experience and the ability to work as a team. Also, the presence of innovation in managers is an important factor. Proficiency in adaptive behaviors and the ability to perform rapid analysis are also effective characteristics.

After the initial open codes were extracted, at the second stage, meaningful suggestion was performed. Symbols that were more similar to each other and could make a single semantic meaning, were placed in one category and categories of symbols were created, to which the term "subject" was assigned. In this step, in the first step, the attributes were numbered several times in order to achieve other categories of elements. It was revised, and finally the same classification mentioned was confirmed in the previous step, which was the result of several steps back and forth. The main concepts and sub-themes resulting from coding are presented in Table 5 based on the typical model of terrestrial theory.

Table 5: Results of main and sub-themesof improvised abilities

concept	Sub-class	Main class
Cohesion and harmony	Structural factors	Causal conditions
Structural adjustment		
Response		
Agility in operations		
Clarify measures to continuously improve preparedness for change		
Senior Management Support	Supporting factors	
Supportive Policies		
Incentive Policies		
Transition		
Use of existing social materials and resources		
Government support		
Policy Making	Organizational factors	
Organizational Culture		
Production flexibility and possession of a technological strategy		

concept	Sub-class	Main class
Have the right strategy and business model		
Networking and establishing effective seamless relationships with internal and external stakeholders		
Ability to create organizational infrastructures		
Performance Appraisal System		
Planning	Actionable capabilities	
Control		
Human Resource Management		
Addressed		
Data Management		
Agility		
Arousal	Individual abilities	The central phenomenon of improvised abilities
Ability to work as a team		
Adaptive behavior skills		
Ability to perform quick analysis		
Possess creative abilities		
Flexibility		
Ability to work as a team		
Possess strategic thinking		
Smart opportunism from a systemic perspective		
Ability to make decisions		
Increased participation in the Organization	Management	
Risk Management		
Total Quality Management		
Leadership Improvement		
Empowering the active forces in the organization		

concept	Sub-class	Main class
Participation Appreciation		
Reaction to environmental disturbances	Ecological dynamics	Contextual conditions
Speed of work in decision-making	Ecological dynamics	Contextual conditions
Ability to respond to important events, opportunities, or threats in the appropriate time frame	Ecological dynamics	Contextual conditions
Improvisation skills	Impromptu learning	Contextual conditions
Learner's adaptability	Impromptu learning	Contextual conditions
Dynamics of the learning environment	Impromptu learning	Contextual conditions
Application of new technologies	Continuous Innovation	Strategies
Innovative Solutions	Continuous Innovation	Strategies
Encouraging people to be creative	Continuous Innovation	Strategies
Creative thinking in our lives	Continuous Innovation	Strategies
Create and create new answers without planning ahead	Continuous Innovation	Strategies
Information Technology Development and Information Systems	Continuous Innovation	Strategies
Improve the flow of regulatory information	Continuous Innovation	Strategies
Number of products based on customer reviews	Marketism	Strategies
Responding to customer needs	Marketism	Strategies
Learn from competitors	Marketism	Strategies
HR Challenge	Internal implementation factors	Nested conditions
The challenge of inefficient management	Internal implementation factors	Nested conditions
Challenging inefficient structures	Internal implementation factors	Nested conditions
Number of competitors	External factors	Nested conditions
Intensity of competition	External factors	Nested conditions
Profit growth	Business Performance	Consequences

concept	Sub-class	Main class
New Customer		
Return on investment		
Customer satisfaction		
Quality		
Value	Built-in function	
Employee satisfaction		

After analyzing the results of the qualitative part, based on the model of terrestrial theory, 253 open symbols, 69 pivot symbols and 14 main categories were extracted. At the third stage, in selective coding, the theory of the main phenomenon was developed. When drawing the relationship between categories, the approach of terrestrial theory is used to identify causal conditions, contextual conditions, overlapping conditions, strategies, mediations, and outcomes in order to correctly draw relationships between them. Figure 1 shows the network of the relationship of categories to each other based on the typical model of the fundamental theory.
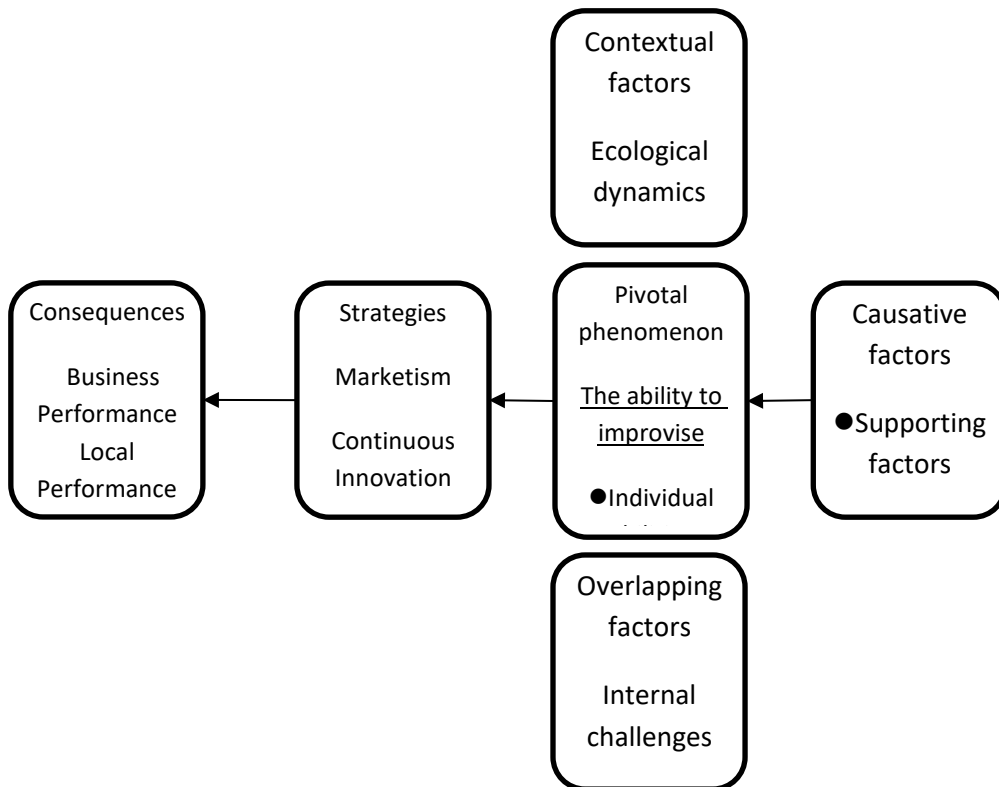

Figure 2- Connecting the categories network with each other based on the typical model of terrestrial theory (Source: Researcher)

.٦Conclusion

The rapid and remarkable increase in technology companies in Iraq and other countries has prompted researchers to study, investigate and solve the challenges these companies face in dynamic and changing environments by relying on improvisation strategies and capabilities. Issues such as technology development and advancement, increase the speed of information transfer, and empower all regulatory stakeholders, social, political and economic influencing factors, and the competitiveness of the business environments of technology

companies increase their level of complexity. Improvisation abilities are suitable when environmental disturbances are very high. Improvsation abilities are used to help organizations achieve and maintain competitiveness that takes it. Hence, improvisation abilities have been introduced as a means alternative to the composition in case of turbulence. In order to increase the success of these companies using scientific concepts related to the use of improvised capabilities. In this study, a model of improvisation capabilities in technology companies in Iraq was developed. The current study method The quality and tool of data collection are interviews. For this purpose, 12 managers and employees of technology companies in Iraq were interviewed. After collecting and coding the interviews, the categories and topics were presented in the form of a model model of paradigm theory. Accordingly, improvisation abilities were defined as the ability to form an enterprise to create new operational capabilities to deal with urgent situations, in new and unforeseen environmental conditions for environments with predictable patterns of change that include individual capabilities of employees in the organization, management ability and executive capabilities .

Causal factors include regulatory, supporting factors, and structural factors. Contextual factors include environmental analysis and improvisational learning. The central phenomenon of improvisation is individual abilities, executive abilities and managerial abilities. Intrusive factors include internal factors in implementation and external factors. Strategies include market-oriented and continuous innovation. The consequences include business performance and internal performance.

According to the research results, causal conditions affecting the research model model include organizational factors, supporting factors, and structural factors. Organizational factors such as policy-making, organizational culture, production flexibility, having a technological strategy, having an appropriate strategy and business model, communicating and having effective seamless relationships with internal and external stakeholders, and the ability to establishment of organizational infrastructures and systems Performance appraisals have been formed. Supporting factors include support from senior management, supportive policies, incentive policies, communication, use of available social materials and resources, and government support. Also, structural factors include coherence and coordination, structural adaptation, speed of response, flexibility of processes and clarification of measures to enhance readiness for change and continuously improve. The main phenomenon, improvised ability, consists of individual ability, managerial ability and executive ability. individual ability consists of motivating employees to do work, competence to work as a team, skill in adaptive behaviors, ability to conduct quick analysis, creative abilities, flexibility, possession of strategic thinking, intelligent opportunism, Systemic perspective and decision-making ability. Managerial capacity also includes increased participation in the organization, risk management, total quality management, leadership improvement, and empowerment of active forces. On the other hand, contextual factors includeimprovised learning and interaction with environmental dynamics. Reaction to environmental dynamics includes reaction to environmental disturbances, speed of action in decision-making, the ability to respond to important events, and consideration of opportunities or threats within the appropriate time frame .

Interrelated factors consist of two parts: internal challenges and external challenges. The internal challenge includes the challenge of human resources, the challenge of inefficiency of management, and the challenge of inefficient structures. An external challenge includes a competitive market, i.e. the number of competitors, and the intensity of competition .

Strategies are classified into two categories: market-oriented and continuous innovation, which shows that in order to carry out improvisation, commercialism and continuous innovation must be used as tools. Also, in this study, the consequences include the consequences of business performance and internal performance. The dimensions of business performance are profit growth, new customers, return on investment, and customer satisfaction, and the dimensions of internal performance include quality, value, and employee satisfaction.

Based on causal circumstances , we have shown that the implementation of improvisation can be done through market orientation, market monitoring and continuous innovation in the organization, and has positive consequences such as improving internal performance and business performance.

 Classical improvisation research in previous studies began with an examination of each individual's abilities, and then continued to examine processes at the team level. But in the face of uncertainty and rapid changes in the modern digital business environment, strategy, organizational agility,   and researchers tend to focus their attention on the ability to improvise at the organizational level. The results of this study are similar to previous studies (Pavlou and El Sawy, 2010; Sheila et al., 2024; Miner et al., 2024). Pavlo and El Savy (2010) showed that improvisation improves a company's external performance by creating competitive advantage and profit

growth, which matches the results of the model presented by this study. Our results in demonstrating organizational culture as one of the causal factors of organizational factors are also identical to those of Liao et al. (2023) that the influence of culture on improvised ability is identical. Continuous is one of the strategies for implementing improvised ability, which corresponds to the result of Stendhal et al. (2022) and examined the impact of improvisation through innovation. We also emphasized improvisational learning as a contextual factor, which is in line with the opinion of Sheila et al.(٢٠٢٤) .

١to 6 Theoretical implementation
This study helps to expand the use of improvisation capabilities in Iraqi technology companies. First, after examining previous research, we found that the ability to improvise has been further explored at the individual level and requires a clear framework to adapt to the situation based on the facilities and conditions offered at the regulatory level to Iraqi technology companies, which has not been done before. These results show that despite its spontaneity and emerging nature, improvisation abilities are not random or random, but rather a collective, repetitive, and purposeful concept that can be planned to implement by knowing the phenomenon itself, causal and contextual factors, and their strategies. In fact, the nature of improvised ability can be considered a three-level variable of individual, executive and managerial abilities, an educational mechanism behind the creation and development of other operational and dynamic capabilities that make it a multifunctional ability.
Secondly, we have developed a model based on ground theory at the organization level. This framework allows us to observe and understand the conditions for the implementation of improvised capabilities , thereby broadening and deepening the relationship between dynamic capability theory and improvised capabilities in Iraqi technology companies. As confirmed by previous studies including Mendonka and Wallace (2007) and June et al. (2022) On understanding and modeling improvised cognitive processes. Third, this study sheds light on the factors and causes, barriers to implementation, consequences of improvised capacities, and reveals the mechanisms of strategies for the implementation of improvised capacities and internal paths.

.٢,٦Implementation of management
Acquiring improvisation skills is critical for technology companies moving in a dynamic and unpredictable business landscape. Managers can incorporate the use of improvisation into their future strategic plans and provide frameworks for teaching improvisation. The current model provides a practical path for technology companies to develop to create improvisation and make it possible to pursue the program to achieve current goals and availability. Technology companies mustEncourage a culture of experimentation and risk-taking in order to better implement the improvisation of supporting and structural factors. Tech companies need to learn faster than their failures. In fact, create an environment where failure is seen as an opportunity to learn. They also adopt agile methods that prioritize flexibility, adaptability, and development. This allows employees to learn ways to improvise. In order to implement organizational factors, managers need to promote open communication and collaboration. Play open and honest communication channels Which allows the free exchange of ideas an important role in the creation of improvisation .
Using the proposed model, Iraqi technology companies could develop a structure in which they could analyze underlying factors and causal conditions to implement the ability to improvise in a meaningful way.
To improve the implementation of individual abilities in the central phenomenon of improvisation, organizing workshops or training courses specifically designed to enhance improvisational skills, such as improvisational theater or improvisational comedy, can be effective. In addition, role-playing exercises should be performed regularly to simulate real-world scenarios and practice responding to unexpected situations.
In technology companies, management capacities to deal with potential crises and plan scenarios through training should also be strengthened. He suggests that tech companies look for people from different backgrounds and experiences, who are more likely to offer unique perspectives, problem-solving approaches and enhance individual capabilities. In this context, People who are comfortable with ambiguity and uncertainty, who show a willingness to adapt to changing conditions are selected. The use of cloud technologies and artificial intelligence that enables rapid response to changing market conditions increases the company's resilience.
At the organizational level, companies must be able to plan scenarios to use market-oriented strategies and continuous innovation , to anticipate potential future challenges and develop contingency plans .

.٦،٣Limitations and future suggestions for research

This study was conducted in a short period of time and in Iraqi technology companies, so the results should be circulated to other companies with caution. Research interviews were conducted based on the model model of the ground method with the Strauss and Corp Yen approach, which measures specific factors and provides a qualitative model. Future research can test the validity of the proposed model with a quantitative research strategy through survey research. Also, other factors can be involved in this model that should be investigated. An example of this model model does not extract the dimensions of improvised ability. In this regard, future research can determine the dimensions of the ability to improvise in technology companies.

The current study was conducted in the presence of managers and experts of technology companies in Iraq who are active in the field of information technology. Therefore, the results should be generalized to other areas of startups or even large companies with caution. It is suggested that future research use the action research method and examine the productivity of the company before and after the implementation of the current model . reviewer

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