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The Role of Leveraging Core Competencies in Crisis Management of the Pharmaceutical Industries Sector- A Study on Yemen

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Abstract: The study aims to assess the availability of core competencies and crisis management practices in the Yemeni pharmaceutical industry. It also seeks to explore the role of leveraging core competencies in the crisis management process within this sector. To achieve these objectives, the study employed a quantitative approach, utilizing both analytical and descriptive methods. Data was collected through a questionnaire distributed to ten companies in the Yemeni pharmaceutical industry, with a sample of 415 participants from various administrative levels. Statistical analysis was conducted using SPSS 26 and AMOS 26. The findings indicate that while core competencies are highly available, their utilization is not optimal. While crisis management is being practiced at a good level, it is below the required level. The study concludes that leveraging core competencies plays a statistically significant role in crisis management in the pharmaceutical industry sector in Yemen. The study recommends that industry leaders increase their awareness of the importance of developing core competencies as a fundamental pillar for achieving excellence and overcoming threats. It emphasizes the need to build and continuously update these competencies to prevent obsolescence. Additionally, the study highlights the importance of focusing on crisis management practices, particularly preventive strategies.

Keywords: Competencies; Crisis Management; Human Capital; Leveraging; Technology Management; Strategic Flexibility; Marketing Capabilities; Pharmaceutical; Yemen

1. Introduction

The term “crisis” applies to different situations characterized by unpredictability and unwanted uncertainty, indicating sudden unexpected events that cause anxiety, stress and danger, which greatly affects public life. Since 2011, Yemen has been witnessing continuous crises that have affected all aspects of life. The local pharmaceutical industry in the Republic of Yemen, like other sectors and business organizations, faces many challenges and threats at the external environment level represented by turbulent political conditions and unstable economic conditions, which have deeply affected the health and lives of the population. The ongoing conflict, political instability, and financial challenges have exacerbated the healthcare system crisis, prompting many qualified healthcare and pharmaceutical professionals to migrate for better opportunities. This migration has increased the pressure on the healthcare system’s ability to provide adequate care and generated multiple crises

within the pharmaceutical sector. The blockade and closure of Sana'a airport have disrupted the supply of necessary medicines and raw materials, which are primarily imported. The high costs of importing these materials, due to supply chain interruptions and shipping difficulties through the port of Aden, have exposed medicines to damage and affected their safety. This has led to a shortage of raw materials and other inputs necessary for production, rendering national pharmaceutical companies unable to meet the demand for essential medicines. Consequently, essential medicines are scarce, leading to significant price increases, making them unaffordable for large segments of the population. There is an urgent need to provide local products and leverage the basic and local capabilities of the pharmaceutical industry sector. However, local pharmaceutical companies have been unable to meet the local market's needs for these essential medicines [1].

In such circumstances, crisis management is crucial to reduce economic losses and ensure the survival of companies [2]. Crisis management is a vital management topic in the modern era, often raising controversy regarding its application and feasibility. However, practical reality has proven the importance of this method due to the complexity of contemporary life and its various fields. From a practical standpoint, crisis management has become essential for organizations to manage crises successfully and overcome their effects efficiently and effectively through systematic knowledge and a studied methodology [3].

Statistics from the National Strategy for the Development of the Pharmaceutical Industry (2018) indicate that existing production lines have large untapped capacities, with only 50% being utilized. Therefore, identifying the core competencies of the Yemeni pharmaceutical sector is the first step in crisis management. This may include adapting existing products, services, or business models to meet the specific needs and challenges of the conflict and blockade, such as providing emergency medical care, distributing essential medicines, and supporting the reconstruction of infrastructure [4]. Leveraging core competencies also plays a crucial role in overcoming crises related to product availability [5]. The term "leveraging" refers to the optimal use of resources. In contexts such as entrepreneurship, disaster recovery, and business models, it involves transforming resources into tangible wealth through human activity [1]. Core competencies require deliberate efforts to identify, optimize, and discover potential new resources. In this study, leveraging core competencies refers to the effective use of assets and skills in the pharmaceutical sector to achieve its objectives. That is, organizational resources, whether tangible (such as human, financial, and physical resources) or intangible (such as information resources, intellectual property, patents, and organizational reputation), are essential to the success and survival of the organization, and weakening any of these resources can harm the organization's interests and operational and strategic objectives [6].

Based on the above, there are still many important questions about the ability of pharmaceutical manufacturers to meet the market needs for essential medicines and the possibility of benefiting from local capacities and diverse natural resources in Yemen, including the large vegetation cover and the abundance of medicinal herbs. This gap emphasizes the need for empirical studies to investigate appropriate responses to the ongoing crisis within Yemeni organizations. Therefore, this study presents a model that takes advantage of existing capacities to help Yemeni organizations overcome the crisis or mitigate its impact. This study's importance lies in the topic itself and its compatibility with the current challenges facing pharmaceutical manufacturing companies. Its importance also stems from its coverage of an important vital sector - the pharmaceutical industry- Specifically, the main objective of this research is to study the role of leveraging core competencies in crisis

management. The following section provides a detailed literature review of core competencies and crisis management concepts.

2. Theoretical Basis and Literature Review

2.1. Leveraging of Core Competencies

Through studying the intellectual framework of crisis management and through the results of previous studies, it became clear that leveraging core capabilities plays an important role in confronting crises facing organizations, as the theory of resources and competencies (1959), the theory of core capabilities (1990), and the theory of dynamic capabilities (1994) emphasized the importance of organizations possessing a diverse and efficient mix of these resources. The more they are activated and invested to achieve their strategy, the higher and different levels of performance they achieve from competitors, and their chances of competing, surviving, and continuing are greater. The importance of resources lies in the fact that they are a tool to help organizations take advantage of opportunities and eliminate the environmental threats they face. Rather, they are the basis for building sustainable excellence [1]. The results of [7] also showed an impact of human capital on crisis management. The study of [8-9] explored the impact of Strategic flexibility on crisis management. While study [10] emphasized the importance of the position of marketing activities in crisis management.

The concept of core competencies is common across various fields and has multiple meanings. Researchers and writers have different perspectives on the precise definition of core competencies, influenced by their strategic thinking and field of work. Javidan [11] noted that the term "core competencies" gained prominence after Hamel and Prahalad (1990) introduced it in the Harvard Business Review, describing them as unified resources and capabilities pervasive across an organization. At the individual level, Christopher and Garson [12] defined competencies as the essential skills and knowledge required for task efficiency, while at the organizational level, they represent collective strengths for leveraging future opportunities. Yang [13] emphasized their integration of expertise, skills and technologies, and Kawshala [14] viewed them as the foundation for value creation through group learning and coordination of diverse production skills.

The researchers operationally define core competencies as the essential resources, skills, and knowledge possessed by the Yemeni pharmaceutical industry companies, which serve as a source of strength enabling them to confront crises, ensuring their survival, growth, and excellence. These competencies can be measured through the following dimensions: Human Capital: The collective skills, knowledge, and experience of the workforce. Organizational Learning: The process through which organizations develop, enhance, and manage knowledge and standards within their functions. Physical and Organizational Resources: Tangible assets and structural capabilities that support organizational functions. Technology Management: The ability to effectively utilize and manage technological resources and innovations. Strategic Flexibility: The capacity to adapt to changes and uncertainties in the environment. Marketing Capabilities: The proficiency in promoting and selling products or services, including market research and advertising strategies.

Numerous studies have addressed the importance of core competencies to organizations. Amaral et al. [15] emphasized the role of local manufacturing capacities during crises, while Issa et al. [16] highlighted the significance of managerial capabilities and strategic renewal in family

businesses during times of crisis. Similarly, Al-Momani [17] linked core competencies to crisis management. Amari [18] uncovered their contribution to achieving exceptional performance, while [19] focused on their impact on organizational excellence.

2.2. Crisis Management

The development of human life and the formation of human societies that spread widely across the globe led to the emergence of crises that man had never known before, as they developed and became more complex with the complexity and development of life. The world of crises is described as a dynamic and interactive realm with distinct phases, characteristics, and causes, making it an inevitable part of human and institutional life. Preble [20] pointed out that the word "crisis" is derived from the Greek word "krisis" meaning judgment, choice, or decision, depending on its usage. In the context of management, particularly business management, the term crisis indicates a critical state that an organization is experiencing. Al-Ammari [21] described it as an emergency that disrupts the normal sequence of events within an organization, leading to interactions that pose threats and risks to the organization's core interests. This necessitates quick decision-making under conditions of tension and uncertainty due to a lack of information.

To address crises effectively, it is essential to develop appropriate mechanisms and methods. This need has driven the search for suitable models and strategies for crisis management, a field still in its formative stage [20-22] and relatively new [23-24] requiring further theoretical development. Due to its novelty, researchers have varied definitions of crisis management, with no single, universally accepted definition. Crisis management is known as defined as an ongoing, integrated, and comprehensive effort by organizations to understand and prevent crises and manage those that occur effectively, considering planning, training activities, and stakeholder interests [25-26]. Casto [27] described it as the art of making decisions under pressure with limited information and coordinating the organization's response to crises.

The researchers defined it procedurally as: the ability of the pharmaceutical industry sector to manage the chain of crisis events effectively and efficiently, according to paths based on proactive plans and programs that help prevent or contain the crisis, reduce its effects, and limit it to bring the sector to a normal state, restoring its activity and restoring its balance.

Researchers have developed various crisis management models, such as those by [28,29,30-31], which include five key mechanisms: signal detection, prevention/preparation, damage containment, recovery, and learning. This model represents the crisis life cycle, with subsequent research addressing the comprehensive period of crisis management, such as [32,23-26]. Despite diverse perspectives and intellectual traditions, [1] noted a significant convergence of views on crisis and crisis management definitions over the past twenty years. Recent major studies in crisis management have focused on issues relevant to this study. Mahto et al. [33] examined the role of owners in mobilizing resources during crisis recovery. Damavandi [34] emphasized leadership, planning, and innovation in managing COVID-19. Chaves & Gaitán [35] explored the dynamic interaction between marketing capabilities and innovation on firm performance during economic crises. Alkhawlani et al. [36] addressed factors influencing crisis management in Yemeni organizations. WHO and World Bank reports (2021) indicate an urgent need for immediate measures to address the medicine shortage, ensure their availability at affordable prices, and rebuild the health infrastructure to alleviate the population's suffering and improve access to basic health services [37].

3. Research Gaps and Study Purpose

According to the above discussion, and when examining these previous studies, researchers found that there is only a very limited overlap and correlation Between the fields of study and previous studies, as the literature review reveals a significant lack of empirical studies that identify solutions, factors, and roles that help in crisis management by taking advantage of core competencies, as studies focused on addressing core capabilities with other variables and did not link them to crises, especially within Yemeni organizations. This gap emphasizes the need for further research to obtain conclusive results. Also, most of the crisis management literature focused mainly on strategic planning, administrative leadership, strategic flexibility, performance improvement, or competitive advantage and their roles in crisis management, without linking core competencies to crisis scenarios, especially in conflict contexts, according to specific models such as [22]. This literature did not fully take into account the diversity and dynamics of crises, and that what works in one situation may not be suitable for another. Therefore, the intellectual debate on this topic is still ongoing and is still in the formative stage [20] and requires additional theoretical framing. Therefore, the gap still exists and justifies the need for empirical studies to investigate the correct response to the ongoing crisis in Yemeni organizations. Therefore, this study aims to fill this gap by exploring the relationship between core competencies and crisis management in the Yemeni pharmaceutical sector. In addition, the research includes models such as [23] and [26] to provide new insights into this unexplored area. Based on the current situation of the pharmaceutical manufacturing sector, the study questions and hypotheses are formulated as mentioned below.

4. Research Questions and Hypotheses

The primary research question is: What is the role of leveraging core competencies in their dimensions to manage crises in the Yemeni pharmaceutical sector? The sub-questions are:

- What is the level of Leveraging of core competencies in the pharmaceutical industry sector, sample of the study?
- What is the level of crisis management practice in the Yemeni pharmaceutical sector?

The study's hypotheses are based on the theory of resources and competencies, which suggests that the better an organization can utilize its core competencies, the higher its chances of surviving and thriving in a crisis. The study hypothesizes that leveraging core competencies plays a significant role in managing crises in the Yemeni pharmaceutical sector. In light of that, this hypothesis was built, which aims to know the role played by leveraging core capabilities in crisis management in the pharmaceutical industry sector in Yemen, as follows:

H1. There is a statistically significant role for leveraging core competencies in all their dimensions in managing crises in the Yemeni pharmaceutical industry sector. From this main hypothesis emerge six sub-hypotheses, each of which is specialized in clarifying the impact of each dimension of the core competencies in crisis management, which were built based on some previous studies, the results of which prove the existence of an impact for each hypothesis, and they are formulated as follows:

H1-1. There is a statistically significant role for human capital in managing crises in the Yemeni pharmaceutical sector.

H1-2. There is a statistically significant role for organizational learning in managing crises in the Yemeni pharmaceutical industry sector.

H1-3. There is a statistically significant role for financial and organizational resources in managing crises in the Yemeni pharmaceutical sector.

H1-4. There is a statistically significant role for technology management in managing crises in the Yemeni pharmaceutical industry sector.

H1-5. There is a statistically significant role for strategic flexibility in managing crises in the Yemeni pharmaceutical industry sector.

H1-6. There is a statistically significant role for marketing capabilities in managing crises in the Yemeni pharmaceutical industry sector.

Accordingly, and concerning the theories of administrative thought related to the variables of the study, in addition to what is appropriate for the field of study, this model and hypothetical diagram were built, which represent an explanation of the variables under study and the correlation and influence relationships between them, as shown in the following Figure 1.

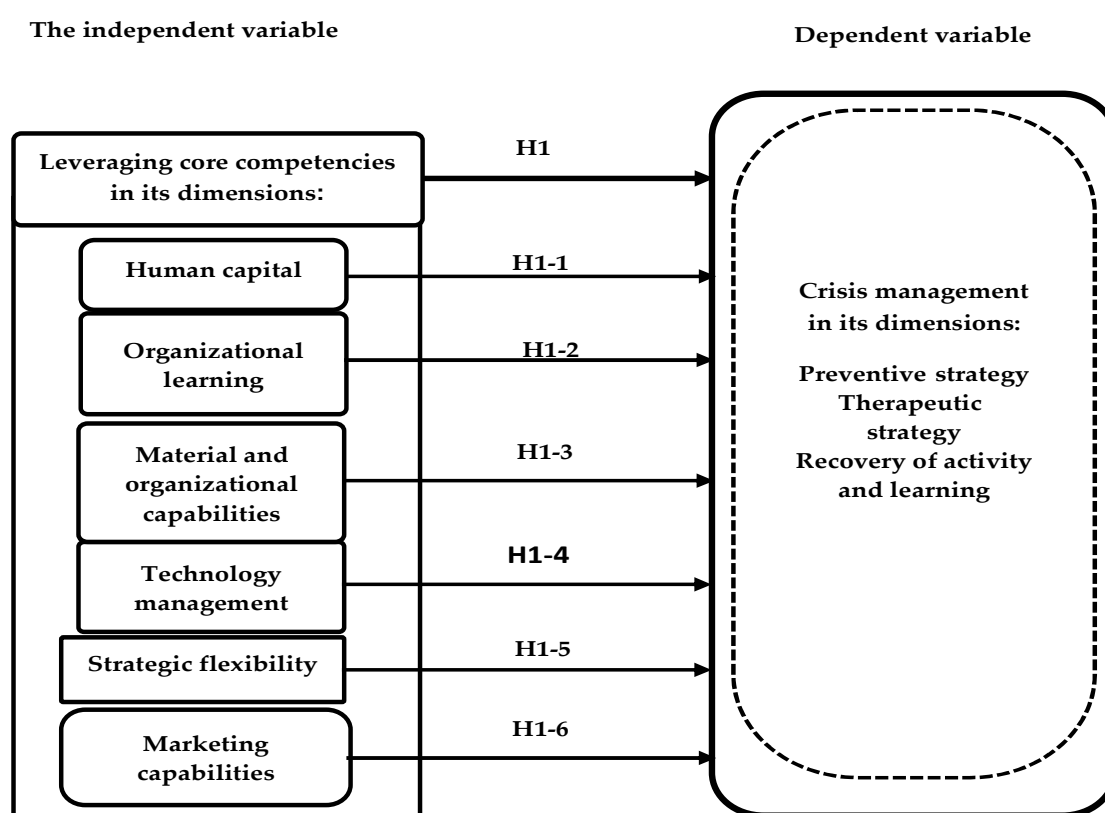


Figure 1. Conceptual framework of the study (Author's construction).

5. Materials and Methods

Study Method: Adopted the study on Curriculum Quantitative in Style Descriptive and analytical, considered one of the most widely used approaches in studying social and human phenomena.

Study population: The study population represents administrative leaders in Yemeni pharmaceutical manufacturing companies and factories located in the capital, Sana'a Governorate, and Hadhramaut Governorate, which numbered (10) by the year 2023, currently represents the pharmaceutical industry sector in Yemen, and are registered with the Supreme Board of Drugs & Medical Appliance [38].

The study sample: Due to the small size of the study population, the study sample is selected using a comprehensive inventory of the leadership of pharmaceutical manufacturing companies, represented by the administrative categories, as they are responsible for crisis management and are directed to leveraging the core competencies. Both according to their location and according to the description of each company, there are (415) respondents to the questionnaire.

Data collection sources: Secondary sources: The researcher relies on many references, books, and studies related to the topics of the study, in addition to documents related to the pharmaceutical industry sector, information published by it, statistics, and reports issued by and about it. Primary sources: The nature of the research required relying on the questionnaire tool is an important tool in collecting primary information from the field study.

Data Collection and Analysis Methodology:

The study employed a questionnaire as the primary data collection tool, utilizing a seven-point Likert scale ranging from "Strongly Agree" to "Strongly Disagree." The questionnaire was carefully designed to ensure alignment with the study's objectives and subject matter. After drafting the initial version, it was reviewed by experts, including faculty members from Yemeni universities and professionals in pharmaceutical manufacturing and public health, to validate its content. This process, which contributed to establishing content and face validity, led to the final version of the instrument consisting of 72 items aimed at measuring the study's objectives and testing its hypotheses. The analysis of the data was conducted using SPSS 26 and AMOS 26, employing structural equation modeling (SEM), specifically path analysis, due to its suitability for the study.

The validity and reliability of the instrument were thoroughly assessed. The validity of the tool ensured that it measured the intended variables accurately and included the necessary components for analysis. The clarity of its items contributed to its ease of understanding. Specific validity tests were conducted, including (convergent validity), which examined the positive correlation between measures of the same variable, and (discriminant validity), which ensured that the study variables differed from each other as required by statistical criteria. Additionally, the (stability) of the questionnaire was tested, focusing on its consistency over repeated applications using methods such as Cronbach's Alpha and Composite Reliability (CR). A Cronbach's Alpha value above 0.70 and a CR value above 0.7 indicated good reliability. Exploratory factor analysis (EFA) was then conducted to explore relationships between variables and underlying factors. The analysis aimed to group questionnaire items into factors based on their correlations and significance. The conditions for EFA, including reliability coefficients, correlation coefficients, and factor loadings, were met using SPSS 26 and AMOS 26. Confirmatory factor analysis (CFA) followed, testing specific measurement models grounded in theoretical foundations and evaluating their validity by comparing multiple models and assessing the fit of the factor structure to the data.

6. Results:

6.1. Data Reliability and Validity

Looking at the table, the results of the confirmatory factor analysis of the variables show that they are significant, and the weights of all items are greater than (0.7). This indicates that the previous conditions have been met, indicating that the model has convergent validity. It also turns out that all values of (MSV) and (ASV) are smaller than the AVE values. This indicates that discriminatory

validity has been achieved. The results also show that all values of the Cronbach Alpha coefficient are greater than (0.60) [39], which is the minimum acceptable limit for the Alpha coefficient. The results also indicate that all values of the Cronbach Alpha coefficient are greater than (0.65) and this indicates the study measures have a high degree of internal consistency. It is also found that all CR values are greater than (0.7), which indicates good reliability.

Table 1. The reliability analysis and tests of confidence, validity, and reliability.

Dimensions	N. of phrases	Cronbach's alpha	CR	MaxR(H)	MSV	AVE
Human capital and organizational learning	8	0.910	0.912	0.918	0.702	0.567
Strategic flexibility and marketing competencies	5	0.844	0.876	0.897	0.447	0.591
Material and organizational competencies	4	0.787	0.793	0.825	0.600	0.495
Technology management	4	0.816	0.845	0.848	0.431	0.577
Preventive strategy	5	0.889	0.883	0.884	0.387	0.601
Recovery activity and learning	4	0.858	0.847	0.854	0.586	0.581
Therapeutic strategy	3	0.807	0.776	0.808	0.656	0.539

6.2. Exploratory Factor Analysis of the Independent Variable Core Competencies

To ascertain the suitability of the data for exploratory factor analysis (EFA), it is essential to employ the Kaiser-Meyer-Olkin (KMO) measure, which evaluates the adequacy and appropriateness of the sample for such analysis [40]. The KMO value ranges between 0 and 1, where values closer to 1 indicate greater validity and reliability for conducting EFA. Conversely, values approaching 0 suggest that the data are unsuitable for EFA. A KMO value exceeding 0.50 is generally considered acceptable, representing a fundamental criterion that must be satisfied [41]. Additionally, Bartlett's test of sphericity is utilized to confirm that the correlation coefficients do not equal zero, ensuring the presence of acceptable correlations among the questionnaire items. The significance of the chi-square (χ^2) value further validates the acceptability of these correlations.

Applying exploratory factor analysis to the study data, the researchers determined that the KMO value was 0.883, indicating that the sample size was adequate for conducting factor analysis. Furthermore, Bartlett's test yielded a significant result ($\chi^2 = 5344.391$, $p = 0.000$), which is less than 1%, as illustrated in Table 2. This confirms the suitability of the data for factor analysis. Regarding the items associated with the variable, a correlation matrix was constructed among the original variables, which comprised six axes representing the core estimator factors, totaling 31 items. A cutoff point of 0.50 was applied, ensuring that no cross-loadings exceeded this threshold and that the initial factor loadings were not less than 0.50. Additionally, the KMO value was maintained above 0.60, and the eigenvalues were greater than 1. Items with cross-loadings or low-factor loadings were removed from the analysis.

The analysis resulted in the merging of two dimensions—human capital and organizational learning—into a single dimension. Similarly, the dimensions of strategic flexibility and marketing competencies were combined into one dimension. Several items with low factor loadings were

excluded, resulting in four core factors derived from the scale of core competencies. Collectively, these factors explained 66.476% of the variance for each statement, a proportion exceeding 0.60%, which is considered robust in social science research according to [40]. The factors were rotated using the Varimax orthogonal rotation method to load the variables onto the most closely associated factors, ensuring complete independence among the factors. The rotated factor matrix is presented in Table 2.

Table 2. Exploratory factor analysis of the independent variable core competencies.

KMO	Kaiser-Meyer-Olkin Measure		0.883			
Bartlett's Test of Sphericity	Approx. Chi-Square		5344.391			
	Df		210			
	Sig.		0.000			
Rotated Component Matrix ^a						
Variables	Ferries	code	Component			
			1	2	3	4
Human capital and organizational learning	The company is interested in providing means of protection and safety for its workers.	Q4	0.76			
			5			
	The company is keen to identify the training needs of employees to provide them with the necessary skills for development.	Q2	0.74			
			7			
	The company's management encourages employees to acquire knowledge in a way that improves their performance and serves the company.	Y3	0.74			
			5			
	The company maintains its employees as they are an essential resource for achieving success and excellence.	Q5	0.71			
			1			
Strategic flexibility and marketing competencies	The company motivates its employees financially and morally to ensure the continuity of their giving.	Q3	0.68			
			8			
	The company is keen to spread knowledge in all circles and administrative levels.	Y4	0.68			
			8			
	The company seeks to absorb new knowledge in the pharmaceutical industry.	Y1	0.66			
			4			
	The company attracts individuals with distinguished skills to work in it.	Q1	0.62			
		0				
Strategic flexibility and marketing competencies	The company has efficient distribution channels to deliver its products in a way that meets customer expectations.	W5		0.81		
				8		
Strategic flexibility and marketing competencies	The company has extensive knowledge of market trends and the expected volume of demand for its products.	W1		0.80		
				3		

	The company can quickly adapt to the market environment.	V1	0.74 1
	The company can deal with sudden events very effectively.	V2	0.69 4
	The company trains and appoints highly qualified sales representatives on an ongoing basis.	W4	0.60 5
	The company is keen to maintain the machines at specific intervals and regularly to avoid stopping production.	U6	0.70 4
Material and organizational competencies	The company owns assets and properties that enable it to continue and excel.	U1	0.68 6
	The company continuously develops its financial and technical competencies and competencies.	U3	0.61 9
	The company pays attention to the quality requirements of the products.	U4	0.61 5
	The company focuses on providing its products with the latest technological means.	X3	0.79 5
Technology management	The company designs programs and operating systems appropriately to ensure their effectiveness.	X2	0.77 0
	The company constantly follows technological developments in the pharmaceutical industry.	X1	0.66 2
	The technology used in the company is compatible with the competencies of its employees.	X4	0.62 1

Considering the results of the exploratory factor analysis of the independent variable, the core estimators, shown in Table 2. We observe that the saturations of each factor and its items are not less than 0.5, and the latent root of each factor is not less than one, according to the Kaiser test [41]. Four factors were identified, summarizing about 65% of the total information for these factors, indicating a loss of less than 35% of the information compared to reducing the number of factors from six to four. The table also shows that the percentage of representation on the factors is high, with none less than 0.60%, making the result acceptable.

6.3. Exploratory Factor Analysis of the Dependent Variable: Crisis Management

Similarly, an exploratory factor analysis was conducted for the dependent variable, crisis management in the pharmaceutical industry sector. The analysis resulted in the deletion of two items with coefficients less than 0.5, without deleting any dimension of the variable. Three factors were identified as the basic components of all the items in the pharmaceutical sector crisis management scale, explaining 72.063% of the variance for each item, which is considered good in social research [40]. The factors were rotated using the VARIMAX orthogonal rotation method to load the variables on the factors most closely related to them, ensuring the factors were completely independent of each other. This was evident from the analysis of the Rotated Component Matrix and the results of the

SPSS analysis shown in Table 3.

Table 3. Exploratory factor analysis of the dependent variable: crisis management.

KMO	Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.838		
Bartlett's Test of Sphericity	Approx. Chi-Square	Df	2939.161		
	Sig.		66		
			0.000		
Rotated Component Matrix ^a					
Variables	Ferries	code	Component		
			1	2	3
Preventive strategy	The company's management prepares an emergency crisis management plan annually.	L2	0.83		
			7		
	The company can predict indicators of crises occurring.	L1	0.83		
			3		
	The company's management provides the necessary competencies to deal with the crisis appropriately before it occurs.	L4	0.81		
			3		
	The company monitors and updates its crisis management plans according to environmental changes.	L3	0.81		
			2		
	The company deals with imbalances and problems that occur in performance immediately and solves them before damage occurs.	L5	0.77		
			5		
Recovery activity and learning	The company reviews crisis management plans and programs to gain experience to deal with future crises.	N3		0.83	
				2	
	The company effectively draws lessons and lessons learned from previous crises.	N4		0.81	
				9	
	The company's management is devoting its efforts to recovering its activity immediately after the crisis.	N1		0.78	
				6	
	The company's management is working to simplify procedures for a quick return to normal.	N2		0.78	
				3	
Therapeutic strategy	The company takes appropriate decisions to mitigate the damage of the crisis and not aggravate it.	M3			0.83
					3
	The company develops a clear plan for business continuity during the crisis.	M2			0.80
				5	
	The company adopts effective crisis remedial measures to accelerate recovery.	M4			0.68
					0

Considering the results of the exploratory factor analysis of the dependent variable, crisis management in the pharmaceutical industry sector, shown in Table 3, we observe that the saturations of each factor and its items are not less than 0.5, and the latent root of each factor is not less than one, according to the Kaiser test [41]. Three factors were identified, summarizing about 72% of the total information for these factors, indicating a loss of less than 28% of the information in exchange for

reducing the number of statements from fourteen to twelve and grouping them into three factors. The table also shows that the percentage of representation on the factors is high, with none less than 0.60%, making the result acceptable.

6.4. Confirmatory Factor Analysis (CFA)

The first model for the study consists of seven dimensions of the study variables, measured by (33) statements according to the results of exploratory factor analysis. This model is tested by applying CFA to the study data to measure and clarify the dimensions of the relationship between its axes. The initial model's goodness-of-fit measures provide quality measures with acceptable validity but lack indicators of the model fit quality, as shown in Table 4.

Table 4. The goodness of fit for the study variables before modification.

Fit Index	Acceptance Criterion	Structural Model
Chi-Square Test (χ^2)	Not statistically significant at $p > 0.05$	3012.024
degree of freedom(df)		474
Chi-Square to Degrees of Freedom Ratio (χ^2/df)	$1 \leq \chi^2/df \leq 5$	6.354
Goodness of Fit Index (GFI)	≥ 90	0.688
Root Mean Square Error of Approximation (RMSEA)	< 0.05	0.115
Normed Fit Index (NFI)	≥ 90	0.705
Comparative Fit Index (CFI)	≥ 90	0.738
Adjusted goodness of fit index (AGFI)	≥ 90	0.630

Table 5. The goodness of fit for the study variables after modification.

Fit Index	Acceptance Criterion	Model structure
Chi-Square Test (χ^2)	Not statistically significant at $p > 0.05$	883.628
degree of freedom(df)		332
Chi-Square to Degrees of Freedom Ratio (χ^2/df)	$1 \leq \chi^2/df \leq 5$	2.662
Goodness of Fit Index (GFI)	≥ 90	0.943
Root Mean Square Error of Approximation (RMSEA)	< 0.05	0.064
Normed Fit Index (NFI)	≥ 90	0.944
Comparative Fit Index (CFI)	≥ 90	0.943
Adjusted goodness of fit index (AGFI)	≥ 90	0.909

Looking at the matching table above, we find that it does not meet the standard estimates, and this necessitates performing some modification indicators suggested by the program to address the problem of common variances between the items of the scale, and loading each statement with its factor, until all parameters exceed the standard estimates, as shown in Figure 2; and Table 5; which

showed that that the study variables, after modifying and correcting the model, gives excellent goodness-of-fit measures.

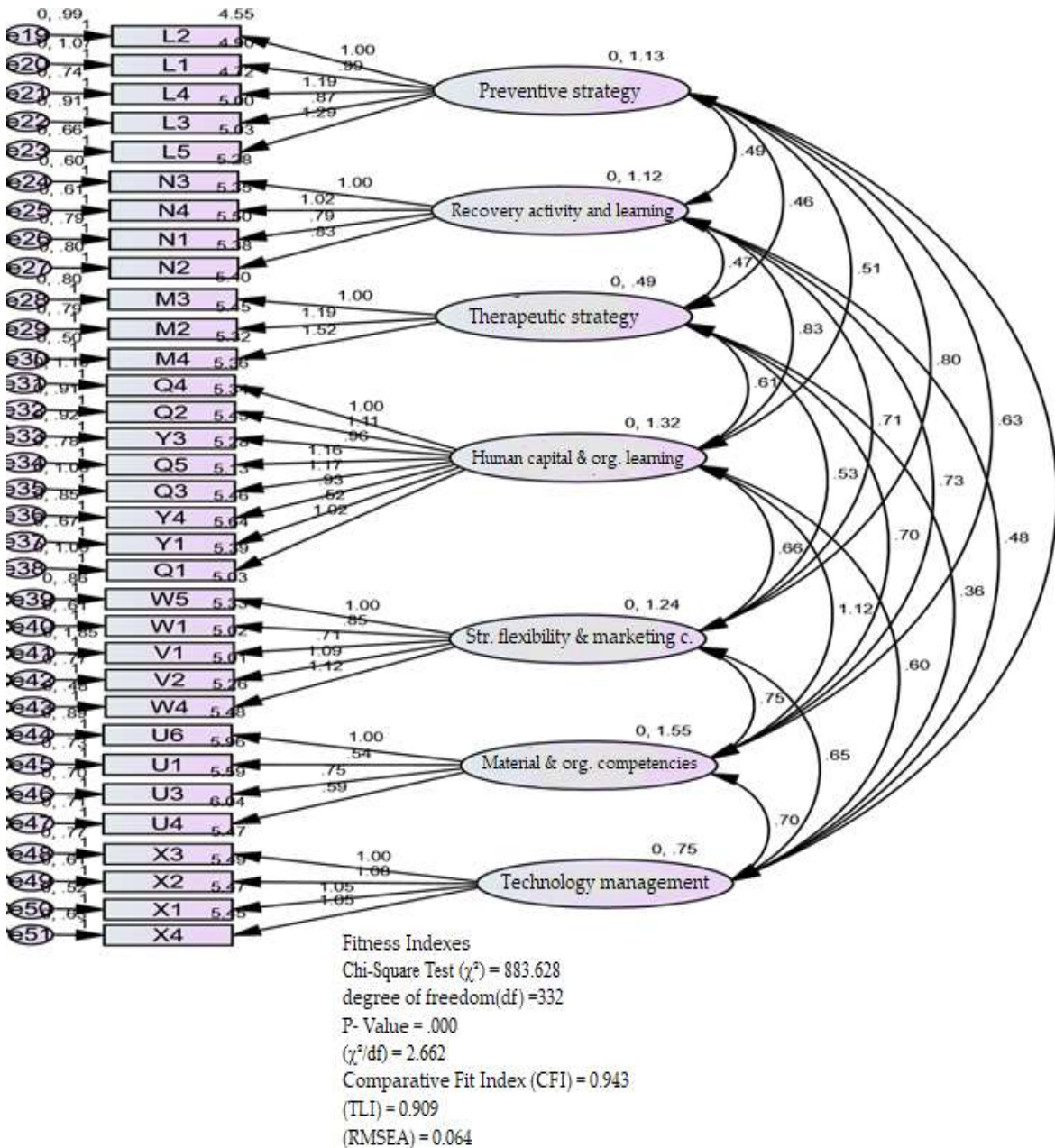


Figure 2. The results of the confirmatory factor analysis for the study variables after modification.

From the data in Table 5, it is clear that the value of the “goodness of fit indicators” of the study model fulfills the matching conditions. This indicates the usefulness of these parameters and their accuracy in representing the dimensions to which they belong in measurement, and that the study model has obtained a high level of agreement.

6.5. Dependability Validity and Efficiency of the Operation for Modeling the Study

Reliability analysis is used to find the internal consistency of data and ranges from (0 to 1). The value of (Cronbach’s alpha) was calculated. To find the internal consistency of data, if... The values of the Cronbach's alpha coefficient are closer to (1). The internal consistency of the variables is

considered great. To decide on the required Cronbach's alpha value depends on the purpose of the research in the early stages of basic research. While [48] indicates that reliability from (0.50-0.60) is sufficient and that increasing credibility to more than (0.80) may be excessive. While [40] suggested that the value of Cronbach's alpha should be more than (0.70). Through Cronbach's alpha value or through composite reliability (CR), which is what was based on, as shown in the following Table 6.

Table 6. Results of the reliability test (Cronbach's alpha).

	Variables	N. of phrases	Cronbach's alpha	CR
Independent variable	Human capital and organizational learning	8	0.910	0.912
	Strategic flexibility and marketing capabilities	5	0.844	0.876
	Material and organizational capabilities	4	0.787	0.793
	Technology management	4	0.816	0.845
Dependent variable	Preventive strategy	5	0.889	0.883
	Therapeutic strategy	3	807.0	0.776
	Restore activity and learning	4	0.858	0.847

From the data in Table 6, it is clear that Cronbach's alpha value and the composite reliability for all variables is greater than the condition he [40] to be more than 0.70, which means that the study measures have achieved internal consistency for the variables.

6.6. Correlation Coefficients Between Variables in the Study

Correlation analysis is conducted on the field study data to determine the initial picture of the inter-correlation between the variables of the study, as the closer the degree of correlation is to the correct one, this means that the relationship is strong between the two variables, and the lower the degree of correlation is from the correct one, the weaker the relationship between the two variables, and it may be the relationship is direct or inverse. In general, the relationship is considered weak if the correlation coefficient value is less than (0.30), and it can be considered moderate if the correlation coefficient value ranges between (0.30) to (0.70). The relationship is considered strong if the correlation coefficient value is more than (0.70). Table Below (7) shows the correlations between the study variables.

Table 7. Correlation analysis coefficient between the study variables.

Dimensions	Path analysis	Dimensions	Estimate	Interpretation of the relationship
Human Capital & Organizational Learning	<-->	Preventive strategy	0.391	Medium correlation
Material and organizational capabilities	<-->	Preventive strategy	0.449	Medium correlation
Technology management	<-->	Preventive strategy	0.611	Medium correlation

Strategic flexibility & marketing capabilities	<-->	Preventive strategy	0.619	Medium correlation
Human Capital & Organizational Learning	<-->	Restore activity and learning	0.665	Medium correlation
Material and organizational capabilities	<-->	Restore activity and learning	0.566	Medium correlation
Technology management	<-->	Restore activity and learning	0.534	Medium correlation
Strategic flexibility and marketing capabilities	<-->	Restore activity and learning	0.623	Medium correlation
Human Capital & Organizational Learning	<-->	Therapeutic strategy	0.741	Strong correlation
Material and organizational capabilities	<-->	Therapeutic strategy	0.775	Strong correlation
Technology management	<-->	Therapeutic strategy	0.569	Medium correlation
Strategic flexibility and marketing capabilities	<-->	Therapeutic strategy	0.669	Medium correlation

6.7. Averages and Standard Deviations for Study Variables

Table 8. Arithmetic means and standard deviations for the study variables.

Variables	Arithmetic mean	Standard deviation-SD	Relative importance	Statistical significance
Human capital and organizational learning	5.3824	1.17186	77%	High degree of approval
Material and org. capabilities	5.7678	0.99576	84%	High degree of approval
Technology management	5.4694	0.96450	79%	High degree of approval
Strategic flexibility and marketing capabilities	5.1324	1.16388	73%	High degree of approval
Preventive strategy	4.8412	1.25996	69%	High degree of approval
Therapeutic strategy	5.3889	1.04925	77%	High degree of approval
Restore activity and learning	5.3750	1.07347	77%	High degree of approval

The researchers used means, standard deviations, and the relative importance of the study variables, where both the arithmetic mean and the standard deviation are calculated for each statement of the focus of the study. To analyze the values of the arithmetic, mean descriptively, the hypothetical mean of the survey must be extracted, which represents the sum of the scale ranks divided by the number of items in the scale and according to the questionnaire of the current study. Which is designed according to the seven-point Likert scale, the hypothetical mean of the study is the number (4). After finding the arithmetic mean of the expressions, it is compared with the hypothetical mean of the study. Agreement is achieved in the paragraphs if the arithmetic mean of the statement is greater than the hypothetical mean (4), and disagreement is achieved if the arithmetic mean is less than the hypothesized mean. Below is Table 8, which shows the arithmetic mean and standard

deviation for the dimensions of the study variables, the independent and dependent variables. It is clear from Table 8 above that:

The average of all dimensions exceeds the hypothesized mean (4). This result indicates that the sample members agree on those dimensions in the society under study, as a high level of agreement is achieved. All statements achieved an overall average of (5.63), with a standard deviation of (1.062), and a relative importance of (77 %).

The general mean for the core competencies variable is (5.438) with a standard deviation of (1.074) and a high degree of agreement. About its dimensions, it is clear that the arithmetic mean and standard deviation for the material and organizational capabilities dimension (arithmetic mean = 5.7678, standard deviation = 0.99576) is the largest average, followed by the technology management dimension (Mean = 5.4694, standard deviation = 0.96450), then the dimension of human capital and organizational learning (mean = 5.3824, standard deviation = 1.17186), and finally the dimension of strategic flexibility and marketing capabilities (mean = 5.1324, standard deviation = 0.77205). Thus, it is concluded that the respondents under study focus more on the dimension of material and organizational capabilities than the rest of the dimensions of other core competencies in terms of mathematical settings.

The general mean of the crisis management variable is (5.201), with a standard deviation of (1.127), and a high degree of agreement. Regarding its dimensions, the activity recovery and learning dimension ranked first (arithmetic mean = 5.3750, standard deviation = 1.07347) as the largest average, followed by the therapeutic strategy dimension (arithmetic mean = 5.3889, standard deviation = 1.04925), and finally the preventive strategy dimension (arithmetic mean = 4.8412). standard deviation = 1.25996), and thus it is concluded that the respondents under study focus more on the dimension of restoring activity and learning than the rest of the other dimensions of crisis management in terms of computational settings.

6.8. A Test Distribution Natural

Table 9. Normal distribution tests.

Model	Collinearity Statistics	
	Tolerance	VIF
Human capital and organizational learning	0.276	3.626
Material and organizational capabilities	0.421	2.375
Technology management	0.527	1.898
Strategic flexibility and marketing capabilities	0.461	2.167
Preventive strategy	0.500	2.000
Therapeutic strategy	0.421	2.374
Restore activity and learning	0.475	2.103

Before starting to apply path analysis to test the study hypotheses, the researchers conducted some tests to ensure the suitability of the data to the assumptions of the regression analysis, where it was confirmed that there was no high correlation between the independent variables (Multicollinearity), using the variance inflation factor (VIF) taking into account not exceeding the variance inflation factor (10), Table 9 shows the results of these tests.

It is clear from the results presented in the above Table 9 that there is no multicollinearity

between the independent variables, and what confirms this is the values of the standard inflation factor (VIF) test, as all values are less than (10) Therefore, the data follows a normal distribution.

6.9. Testing the Study Hypotheses

The relationship between the independent variable, core competencies and their various dimensions, and the dependent variable, crisis management, is examined. The main hypothesis posits that there is a statistically significant role for the independent variable, core competencies in their various dimensions (human capital and organizational learning, physical and organizational capabilities, technology management, strategic flexibility, and marketing capabilities), in crisis management. To test this hypothesis, the path analysis method is used to identify this relationship. The results of the path analysis indicate the quality of the model, as the model quality measures meet the required standards and conformity is achieved as in Figure 3 and Table 10.

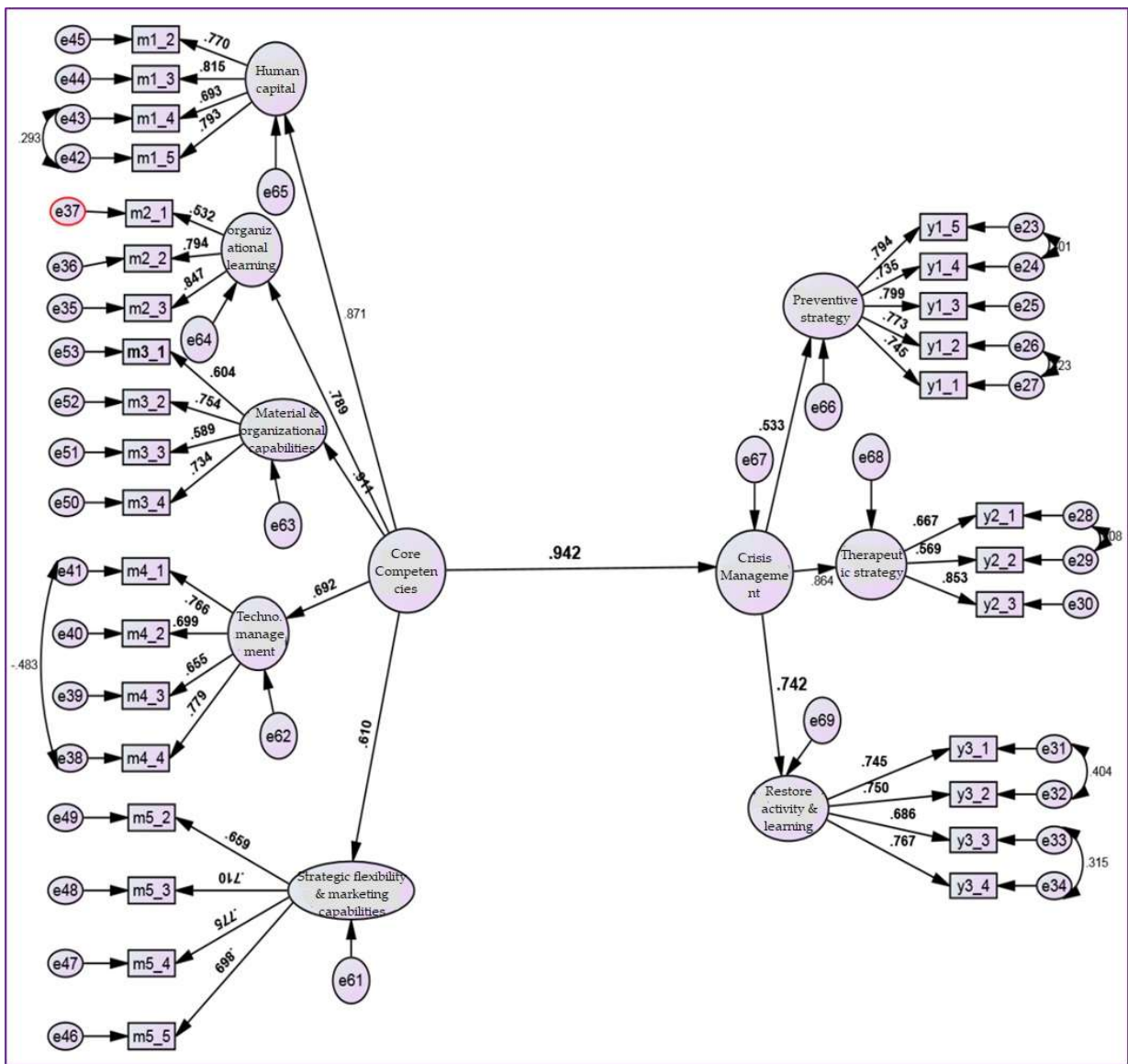


Figure 3. AMOS resulted in a model.

The results in Table 10 demonstrate that the model fit indicators for the role of the mediator Leveraging core competencies in crisis management within the pharmaceutical sector fall within

acceptable fit ranges for indicators such as CMIN/df, CFI, GFI, RMSEA, AGFI, and TLI. This indicates that the theoretical model aligns acceptably with the study data.

Table 10. Indicators of Model Fit Quality for Measuring the Role of Leveraging Core Competencies in Crisis Management.

Indicators	Ideal Fit Values	Acceptable Fit Values	Measured Indicator Values
Chi-Square to Degrees of Freedom Ratio (χ^2/df)	< 2	< 5	4.353
Goodness-of-Fit Index (GFI)	≥ 0.90	0 to 1	0.747
Adjusted Goodness-of-Fit Index (AGFI)	≥ 0.80	0 to 1	0.686
Comparative Fit Index (CFI)	≥ 0.90	0 to 1	0.780
Tucker-Lewis Index (TLI)	≥ 0.90	0 to 1	0.752
Normed Fit Index (NFI)	≥ 0.90	0 to 1	0.744
Root Mean Square Error of Approximation (RMSEA)	≤ 0.05	0.05 to 0.08	0.080

Table 11. Path Coefficient for Core Competencies' Role in Crisis Management.

The path	Effect Coefficient (β)	Standard Error (S.E.)	Critical Ratio (C.R.)	P-Value
Core Competencies → Crisis Management	0.942	0.079	11.924	***

Table 11 reveals a Critical Ratio (C.R.) of 11.924, which is statistically significant and exceeds the threshold of 1.96. This confirms the significant role of core competencies exploitation in crisis management. The study results further indicate that the predictive regression coefficient ($\beta = 0.942$) implies that a 100% improvement in the exploitation of core competencies leads to a 94.2% improvement in crisis management, assuming all other variables are neutralized. Therefore, the hypothesis is accepted.

6.10. Testing the Sub-Hypotheses

To validate the sub-hypotheses, path analysis was used to build a cognitive model and ensure its alignment with the study data, as presented in Table 12.

Table 12. The path analysis values for the results of the first hypothesis.

N	Relations			Estimates	Standard error	Critical ratio	P
	Dimensions of core competencies	Analysis path	Dependent variable	(β)	S. E	CR	
1	Human capital	---->	Crisis	0.774	0.055	14.073	***
	organizational learning	----->	Management	0.716	0.057	12.561	***
2	Financial and organizational capabilities	----->	Crisis Management	0.806	0.056	14.393	***

3	Technology management	-----▶	Crisis Management	0.691	0.086	8.035	***
4	Strategic flexibility and marketing capabilities	-----▶	Crisis Management	0.880	0.066	13.333	***

1. **First Sub-Hypothesis:** From Table 12, the Critical Ratio (C.R.) is 14.073, which is statistically significant (greater than 1.96). This confirms the significant role of human capital in crisis management. The study results show a predictive regression coefficient of ($\beta = 0.774$), implying that a 100% improvement in human capital leads to a 77.4% improvement in crisis management, assuming no influence from other unmeasured variables. Therefore, the first sub-hypothesis is accepted.
2. **Second Sub-Hypothesis:** Table 12, shows a Critical Ratio (C.R.) of 12.561, statistically significant (greater than 1.96). This highlights the significant role of organizational learning in crisis management. The regression coefficient ($\beta = 0.716$) indicates that a 100% improvement in organizational learning results in a 71.6% improvement in crisis management under the same assumptions. Therefore, the second sub-hypothesis is accepted.
3. **Third Sub-Hypothesis:** The Critical Ratio (C.R.) is 14.393, statistically significant (greater than 1.96), confirming the significant role of leveraging physical and organizational resources in crisis management. The regression coefficient ($\beta = 0.806$) suggests that a 100% improvement in resource exploitation yields an 80.6% improvement in crisis management. Therefore, the third sub-hypothesis is accepted.
4. **Fourth Sub-Hypothesis:** Table 12 reports a Critical Ratio (C.R.) of 8.035, statistically significant (greater than 1.96). This emphasizes the role of technology management in crisis management. The regression coefficient ($\beta = 0.691$) indicates that a 100% improvement in technology management enhances crisis management by 69.1%. Therefore, the fourth sub-hypothesis is accepted.
5. **Fifth Sub-Hypothesis:** The Critical Ratio (C.R.) is 13.333, statistically significant (greater than 1.96), confirming the significance of strategic flexibility and marketing capabilities in crisis management. The regression coefficient ($\beta = 0.880$) means a 100% improvement in strategic flexibility and marketing capabilities leads to an 88.0% improvement in crisis management.

7. Discussion and Conclusions

The results indicate that the level of core competencies is available at a high level and can be measured according to the results of exploratory factor analysis through (human capital and organizational learning - material and organizational resources - technology management - strategic flexibility and marketing capabilities). This indicates that the sector possesses these capabilities that help it survive and flourish, but the level of Leveraging of these capabilities is moderate, that is, not ideal or sufficient. The National Strategy for the Development of Local Pharmaceutical Industries (2018) indicated a 40% underutilization of domestic production lines and that locally manufactured medicines accounted for only 25% of the market.

Studies by [4-43]. Highlighted significant challenges facing Yemen's pharmaceutical industry, a concern echoed in World Health Organization (WHO) and World Bank (WB) reports from 2021. also shows that the dimension of physical and organizational capabilities comes in the first place as the

largest average, followed by the dimension of technology management, then the dimension of human capital and organizational learning, and finally the dimension of strategic flexibility and marketing capabilities. This is due to the sector's companies' awareness of providing a strong infrastructure along with their belief in the importance of keeping pace with technological changes. And the necessity of employing what is necessary for the benefit of developing the work technology used, and their conviction of its prominent role in increasing the efficiency and effectiveness of most of the sector's activities and operations. The availability of human capital also indicates management's awareness and awareness of the importance of the human element, and the necessity of investing in it, as a basis for enhancing and developing administrative and organizational performance, The ability of individuals to acquire external knowledge, modify it, and integrate it with internal knowledge represents a fundamental ability for the human resource capable of discovering and leveraging opportunities. As for the lack of interest in strategic flexibility and marketing capabilities, the matter may be due to the external restrictions imposed during this stage, which require maintaining them. And work to improve it.

The results indicate that the level of crisis management practice is available at a good level and can be measured through (preventive strategy, remedial strategy, recovery and learning), which indicates the availability of these practices in the industrial sector in a good way. The study also shows that the recovery and learning dimension had the largest average, followed by the remedial strategy dimension and finally the preventive strategy dimension. This indicates that companies focus more on the recovery and learning dimension than the rest of the crisis management dimensions, and this effect can be explained due to the dominance and dominance of the concept. Traditional crisis management views a crisis as being limited to how to deal with it after it occurs and contain the damage resulting from it, and thus senior management intervenes directly and focused, which leads to the company's need to provide information in the appropriate quantity, quality, and degree of reliability, given that the organization faces challenges and risks. Which requires concerted efforts to reduce its impact. This indicates that the researched agencies do not care about the preventive strategy as it is the most important, which indicates the absence of a relevant department or team specialized in crisis management, and that crises are faced in an improvised manner, and this is an indicator of the weak capabilities of organizations to predict crises before Their occurrence, which contributes to the occurrence of crises or the rise in risks and potential negative effects thereof. Given the importance of these results, it is worth noting two important things. The first is that these results are somewhat shocking, especially since these companies under study are considered among the leading companies in the Republic of Yemen. This indicates that there is a deficiency in the level of awareness. Of the leadership of these companies about the importance of crisis management systems, starting with preparedness. Prevention and ultimately learning from it. The second matter perhaps the nature of the current crisis that the Republic of Yemen is going through has led to the adoption of subjective models in crisis management that may not be compatible with the model on which the study is based, and each party works according to what it deems appropriate for it. Due to the specificity of the stage, especially in light of the complete uncertainty about the essence of the crisis, it is primarily due to the repercussions of the war and political instability.

Main hypothesis: The analysis showed that there is a positive role and a significant relationship between core competencies and crisis management. This indicates that the sector is aware of the importance of its core competencies in crisis management and that it has a desire to harness them to

confront any threats, which enables it to adapt, plan, innovate, and communicate. And lead effectively while dealing with emerging problems. Thus, the hypothesis is accepted. This is partially consistent with the results of the study by [16] which emphasized the importance of administrative capabilities and strategic renewal in family businesses during crises, as well as the study by [33], which demonstrated the role of dynamic resources and capabilities in enhancing post-disaster recovery for family businesses.

The first sub-hypothesis: The findings of the study indicate a statistically significant positive effect ($\alpha = 0.05$) of the human capital dimension on crisis management, leading to the acceptance of the hypothesis. This can be attributed to pharmaceutical manufacturing companies' recognition of the critical role of human capital in addressing crises. The results suggest that the study sample acknowledges the importance of training programs aimed at enhancing employee competencies to improve their performance levels. Employees' ability to acquire, modify, and integrate external knowledge with internal knowledge represents a core capability of the human resource. This capability enables individuals to identify and exploit opportunities, which in turn enhances crisis management effectiveness. These findings align with previous research, such as the study [44,45,46-7], all of which demonstrated the pivotal role and effectiveness of human capital in managing crises.

The second sub-hypothesis: The study findings revealed a statistically significant positive effect ($\alpha = 0.05$) of the organizational learning dimension on crisis management, leading to the acceptance of the hypothesis. This result may stem from the pharmaceutical manufacturing companies' focus on acquiring external knowledge, disseminating it across managerial levels, modifying it, and integrating it with internal knowledge. Such practices enhance their capacity to address crises effectively. These findings are consistent with the results of the study [47,48-49] which proved the role of organizational learning in crisis management.

The third sub-hypothesis: The results of the analysis showed a statistically significant role for the dimension of material and organizational capabilities in crisis management. This result may be because the pharmaceutical sector has an infrastructure and resources that qualify it to play its role in confronting the crisis of the unavailability of local medicines. Perhaps they believe that the level of stock of resources and capabilities is what makes the facility adapt to the external environment and generate value and distinguished performance. Therefore, the hypothesis is accepted. This is consistent with the study [50] which confirmed the existence of a positive relationship between institutional capacity building and crisis management.

The fourth sub-hypothesis: The results of the study show a positive, statistically significant role at a significance level of ($\alpha = 0.05$) The dimension of technology management in crisis management, which indicates the belief of sector companies that technology capabilities play an important and pivotal role in confronting crises and raising the level of their management, and therefore accept the hypothesis. This is consistent with the study [51-52].

The fifth sub-hypothesis: The results of the study show a positive, statistically significant role at a significance level of ($\alpha = 0.05$) for the dimension of strategic flexibility and marketing capabilities in crisis management, which indicates that companies are alert to the importance of strategic flexibility and marketing capabilities, albeit at a weak level. Therefore, the hypothesis is accepted, and this is consistent with the study [53,8-9] which addressed the role of strategic flexibility individually, while [10] emphasized the importance of the position of marketing activities in crisis management.

8. Recommendations

- It is necessary to enhance the awareness of sector leaders and other workers in the sector about the concepts of (core competencies for crisis management) and the importance of developing and leveraging core competencies as they are considered the basic foundation for overcoming threats.
- Increasing attention to the practice of crisis management, especially the preventive strategy, as it is the first and most important step in discovering warning signs or indicators of the occurrence of a crisis through forming a specialized unit or team concerned with this.
- Increasing interest in organizational learning mechanisms to facilitate the process of obtaining and disseminating knowledge within companies and encouraging individuals to generate new visions and ideas that are characterized by creativity through holding seminars and conferences, as knowledge accumulation leads to the development and development of capabilities and protects them from erosion. This requires increased investment in research and development activities.
- It is necessary to pay attention to analyzing value chain activities, through which the strengths and weaknesses of the activities of these companies are identified, and the strengths are directed to appropriate strategic paths to invest in the available environmental opportunities, address weaknesses, and contain threats, to strengthen the current situation and push these companies to a better position.
- Also recommends the need to improve marketing capabilities because of their important role in introducing the local product.

9. Determinants and Future Proposals

The main limitation of the current research is the scarcity of relevant references and the difficulty of obtaining field information under the exceptional circumstances that the country is going through, which limits the external generalization of the results to local environments under normal conditions. However, the results are very useful for external environments under similar conditions. Therefore, one of the potential directions for future research is to conduct more studies to understand local crises in general and the organizational, cultural and environmental conditions to which they are subject. There is also a need to build a crisis management model based on empirical studies in the local environment, as such a model currently does not exist in a homogeneous local or Arab context. We encourage researchers to innovate local business models. In addition, we suggest conducting future studies to explore crisis management and core competencies in the context of digital transformation or artificial intelligence, focusing on how to build core and local capabilities and their role in achieving added value for business organizations.

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