

Leveraging Systems Thinking and Smart Operations for Organizational Excellence: Evidence from Jordanian Pharmaceutical Companies

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Abstract. This study aims to investigate the effect of systems thinking on organizational excellence at Jordanian pharmaceutical companies through the mediating role of smart operations. The population of the study encompassed the (30) Jordanian pharmaceutical companies which were registered in (JFDA), 17 companies participated in the study and from those (145) functional managers were targeted, formed the sampling unit of the study.

For information and data collection a 4 part questionnaire was employed. By using Smart – PLs 4 program for statistical analysis the main results indicate that these companies have reasonably adoption of systems thinking mindset and practices, and smart operations, moreover the companies own considerable internal excellence platforms.

The hypotheses tests results showed a significant positive direct effect of systems thinking on organizational excellence and smart operations which partially mediated the impact of systems thinking on organizational excellence.

The findings provide empirical support for utilizing holistic systems perspectives coupled with intelligent use of technology to enhance production quality, efficiency, and organizational performance.

Keywords: systems thinking, smart operations, organizational excellence, Jordanian pharmaceutical companies.

1. Introduction

Extensive research has been conducted during the last years intended to explore the impact of Covid-19 on both developing and developed economies. The pandemic swept across all sectors at the global level, creating challenges and dilemmas, some of which are impossible to be controlled (McDermott, et al., (2021).

According to Batool et al., (2022) to avoid any future crisis; organizations need to equip themselves with the right capabilities, clear direction on how work is performed and the way of managing its internal operations.

Going with the same tendency Grewatsch, et al., (2023) introduced systems thinking as the magic solution for the un-preferable environmental issues, they pointed out that the fragmentation of organizations operations will escalate problems. According to Voulvoulis et al., (2022) systems thinking encourages managers to consolidate internally, and expand their lenses outside the boundaries of the organization. Thus the essence of systems thinking notion assumed that the organization is one entity distributed to set of combined aggregated components/ functions. Each of these parts performs a predetermined task, the coordination and complementary modes between these functions constitutes the performance of the organization (Hansen et al., (2020).

Nguyen et al., (2023) argued that systems thinking provide management with road map to salient outcomes, and excellence. Likewise Rabieh, et al., (2023) confirmed systems thinking advantages in moving organizations from ordinary approaches to outstanding outcomes and pleased stakeholders.

Excellence can't be acquired simply, Akanmu et al., (2023) remarked, consequently two facts must be comprehend in business work; the first is that competition penetrates the locality and regionalism to everlasting globalization. While the other fact is concerned with novelty, creativity and continuous innovation which can't be isolated from the daily techniques of managing organizations.

Moreover according to Hassan et al., (2020); Antony et al., (2023) organizational excellence requires a smart integrated framework of internal operations, competent to combine people, technology, information knowledge and other resources in one holistic system.

The synergic rout distinguishes forefront industrial organizations, Heizer et al., (2017) demonstrated, and also they shed light on the interconnection between the whole internal system with the external environment, organizations are likely to be affected by the external environment through the inputs, and on return affect the external environment through the outputs.

Consequently this study explicitly aims to assess the systems thinking mindset of managers, and the degree to which managers are aware of the crucial role of smart operations and systems thinking to accomplish excellence at the Jordanian pharmaceutical manufacturing companies. Lately these companies have experienced many challenges especially during and after Corona. So that management endeavors towards sustainability and competitive advantage dominated the scene, building an internal complementary system has become an urgent approach towards efficiency and effectiveness.

These companies success is vital, for their major contribution to supplying the Jordanian health sector with drugs and medicine in addition to what is exported to more than 85 countries outside Jordan.

Moreover this industry has a considerable financial contribution in the country's Gross Domestic product (GDP), and in enhancing the balance of trade; high portion of the sector's outputs are exported outside Jordan.

Accordingly this research attempts to examine the effect of systems thinking in achieving organizational excellence, evaluating the mediation of smart operations at the Jordanian Pharmaceutical Industry.

Therefore this study is intended to answer the following questions to fill full its objectives:

1. What is the level of systems thinking in the Jordanian pharmaceutical manufacturing companies?

2. What is the level of organizational excellence at the Jordanian pharmaceutical manufacturing companies?
3. Is there an application of smart operations in these companies?
4. Is there an impact of systems thinking on organizational excellence through smart operations as a mediator in the Jordanian pharmaceutical companies?

2. Literature review

2.1 systems thinking (ST)

The notion “systems thinking” was brought into being in 1930 by Von Bertalanffy as one of the systems theory outcomes; to assert the interrelationship between groups of components (subsystems) in any context.

It is not an emergent concept, Von Bertalanffy, (1972) argued; its roots historically, go back to the emergence of the universe, to be manifested in the balanced interconnections among the nature elements.

Based on the systems theory, each system has its own subsystems, and every system has boundaries and a causal relationships with other systems external these boundaries (Yu, X., et al., 2023).

This cohesion among the internal parts plus the (reciprocal connection with the external environment) were highlighted in Peter Senge work as an antecedent for excellence (Senge, 1997). Peter Senge introduced systems thinking as one of the corner stones in building a learning organization. In spite that it is the fifth, out of a five platforms to transfer any organization into a learning one, systems thinking according to Senge is the critical success factor of the other four (personal mastery, new mental models, shared vision and teams learning) (Senge , 2006).

Moreover Voulvoulis et al., (2022); Hansen et al., (2020) findings revealed that systems thinking correlate positively with creativity and innovation, in particular in the manufacturing sector.

Krajewski, & Malhotra, (2022) illustrated that the integrated and synergist connection of organizations internal functions is the road map towards organizational success and excellence.

Within the same context Heizer et al., (2017) commented that each one of the functions (operations) performs in an efficient and effective manner, for example human resources function is responsible for providing the other functions with qualified, well trained and motivated staff.

The financial function is in charge of all the financial decisions and support; to make the other functions able to perform. While the marketing function is tied up directly with the operations function before production, and continued after the completion stage.

Form Gupta & Starr (2014) point of view there are other functions than the basic 4 , the smart combination among the functions is decisive for robust competitive advantage, and superiority, but according to Senge (2006) this side of systems thinking is integrated with external systems thinking which underlined the mutual effect between the organization and (the external environment) .

This approach is embedded in the open systems theory, the main assumption encloses that organizations don't live in a vacuum, regardless of the type, size, purpose; all organizations are subsystems of the larger system (the external environment) (Wheelen et al., 2018).

Managers recently realized the significance of agility rather than the rigidity of closed systems, (Bakir, 2022) the mutual effect that frames the external systems thinking highlighted the degree to which the external environment is affecting the organization through its inputs, while it is affected by organizations outputs followed by outcomes.

Based on the previous explanation the following 2 hypotheses can be formulated

Ha1: there is a statistically significant impact of systems thinking on organizational excellence

Ha2 there is a statistically significant impact of systems thinking on smart operations

2.2 Organizational excellence (OE):

The notion Excellence has been connected to different meanings, e.g. outstanding performance, creativity, innovation, quality, success, superiority.. etc.

According to Ubaid et al., (2020) the diverse descriptions of excellence symbolize a positive condition of an individual, group, or other entities. Whereas in business world, the concept emerged to portray a distinguished organizational performance.

Moreover Daharat et al., (2022) described OE as the best employment of organizations' resources to satisfy customers' needs beyond their expectations, and to achieve sustainable development.

Within the same context Antony et al., (2023) argued that excellence is a state that never stop, it is difficult to identify its boundaries, they mentioned that excellence is associated with continuous improvements that was forced by customers and market needs, plus the instability of stakeholders' mood, and accordingly the unique organizational initiatives to satisfy all groups.

In short Sony (2019) pointed that Organizational excellence is a systematic process through which all departments participate in implementing strategies, aiming for better outcomes than before internally , and exceed competitors yield when it comes to external benchmarking.

Memon et al., (2022) pointed that worldwide competition, globalizations, the change and complexity of the external environment, reduced business organizations choices for survival and growth, but forced them for superior accomplishment and excellence particularly after covid-19 and the pandemic unpredictable consequences.

The questions is how can organizations gain excellence?

In their book "in search of excellence" Peters, & Waterman, (1984) set forth a clear road map to organizations excellence, they highlighted the combination of many elements that ought to be available in the internal environment as excellence preconditions

The two thinkers focused on giving human resources the freedom to utilize other resources, while adding value, developing the spirit of creativity and innovation, especially in converting inputs into outputs and in operations. They proposed group of central components for excellence, but highlighted human resources, management (leadership), structure, culture and entrepreneurship orientation, in addition to continuous improvement and updating technical tools.

Moreover Paraschi et al. (2019) proposed a model of 6 fundamentals to create organizational excellence encompasses (human resources, leadership, processes and operations, "suppliers and resources" customers and finally strategy). At the same time Masfi, & Sukartini, (2022) pointed out that McKinsey 7s model which was introduced in 1977 identified 7 elements of excellence as follows: "Strategy, Structure, Style, Staff, System, Skill, Shared Value" the smart alignment of the 7s will reinforce organizations' sustainable development, including the effectiveness of the financial and non-financial objectives.

Based on the previous literature this study focused on the following critical success factors for obtaining organizational excellence (human resources, leadership, culture, structure and technology):

Human resources excellence:

There is a consent among researchers and management practitioners that human resources is the vital resource to make radical shift towards organizational excellence, qualified human resources are the mean for sustainable success (Armstrong

Lawler & Boudreau, (2018) demonstrated that changes in the external environment, require alteration in the type and qualifications of human resources. 'Achieving excellence as they recommended necessitate developing flexible HR strategies able to attract, develop and retain talents. Those talents according to Seyed et al., (2018) are responsible for implementing corporate and competitive strategies successfully and gain superiority and excellence.

The results of Ahmed et al., (2023) likewise highlighted the role of human resources in enhancing organizational outstanding performance and accordingly excellence.

Leadership excellence:

Some researchers as Singa et al., (2020) , Raharjo and Eriksson (2017) believed that leadership is a critical driver for (OE). Their research findings cleared out the major role of top management support and commitment to equip organizations with excellence requirements.

Leaders have the major responsibility for creating organization's vision and mission, they set Smart objectives and formulate strategies. They inspire and motivate the human resources to keep dedicated to make all these come true as targeted (Irfan et al., 2022).

Culture excellence

Organizational culture is the set of company's values, beliefs and attitudes, which influence the behavior of employees. The term excellence oriented culture was proposed by Carvalho et al., (2023) It explained the interactive and reciprocal relationship between organizational culture and operations excellence, the findings of Giménez Espín, et al., (2023) reinforced the correlation between organizational culture and organizational excellence. In their research they highlighted the learning and innovation culture as a facilitators to excellence.

Structure excellence:

According to Daft, & Armstrong, (2021) in business organizations there are two types of organizational structures (the organic and mechanical), where the first is linked with decentralization, informality and empowerment, the goal is to enhance employees' creativity and innovation that output uniqueness and excellence.

One of the requirements to promote organizations' excellence is to shift towards a flexible organizational structure that facilitates communication, information transfer and knowledge sharing among all the managerial levels without obstacles (Bakir, 2022).

Zhang, Q., & Sun, X. (2023) pointed out that the mechanical structures are more conservative and match stable, simple environment, which is impossible within the uncertainty and complexity of the external environment.

2.3 Smart operations:

The interaction between organizations functions has a major concern of operations management thinkers;

Krajewski, & Malhotra (2022) pointed out that the operations is one of four basic functions in any organization. It is the function that is responsible for producing goods and services within the right (quantity, quality, cost and time).

Moreover Sterman et al., (2015) stated that the essence of the operations function is to add value during the transformation process: (transferring inputs into outputs). Adding value is a synergic group

work, Brown et al., (2018) pointed that operations management is established on many functions within the organization, it is not stand alone, not restricted in a specific department.

Mahapatra, (2023) highlighted the strategic lens of operations management which are presented in the smart combination between operations as the core competence of the organizations, in particular the manufacturing ones.

Heizer et al., (2017) commented that systems thinking bring to the scene the theoretical ground of the synergic mindset, while smart operations is the practical side that transfer the dreams of unity into reality in manufacturing organizations.

Moreover according to Del Giudice, et al., (2021) smartness in manufacturing and operations can be gained by exploiting in robust agile internal interconnections among all the units, and exploring together under unified supervision the changes in a high turbulent environment.

Zhou et al., (2022) embraced the move from conventional approaches into smart structures, smart decisions and intelligent operations, their suggested model can achieve efficiency and effectiveness to organizations with combination among humans' intelligence, knowledge and information technology.

According to the previous discussion the following hypotheses can be build

Ha3: there is a statistically significant impact of smart operations on organizational excellence.

Ha4: there is a statistically significant impact of systems thinking on organizational excellence: smart operations as a mediator in Jordanian manufacturing Organizations.

3. Research Methodology

This study employed the quantitative descriptive analytical method in collecting and analyzing the data to investigate the influence of systems thinking on organizational excellence, through the mediating role of smart operations. For collecting data a questionnaire was developed based on the previous literature related the study's variables.

To analyze the collected data the researchers relied on Smart-PLS 4 software for variance-based structural equation modeling (SEM) using the partial least squares (PLS) path.

3.1 Study Population, Sample and Unit of Analysis

The study's population included 30 Jordanian Pharmaceutical Manufacturing companies which were registered at- Jordan Food & Drug Administration (JFDA) by May 2023 .

(JFDA) is the national authority in Jordan that is responsible for drug safety and efficacy, and compliance with the drug and pharmacy law.

The researchers communicated with the companies' management to get the formal approval for distributing the study's questionnaire, some of them refused mainly for confidentiality considerations. Accordingly, out of the whole population (17) companies agreed to participate in the survey.

The functions managers were targeted as the respondents of the survey, they were chosen because they have the convenient awareness of the dependency between departments, meaning that the success of one function cannot be isolated from the efforts exerted by other functions. Managers must have faith of team work and synergy. Their essential duty as functional managers is to lead their organizations to excellence.

Referring to Krajewski, & Malhotra, (2022) there are 4 basic functions in any organization (the operations function. The human resources, the marketing, and the financial) in manufacturing

organizations R&D and quality assurance and quality control, materials and supply chain management, are indispensable functions moreover public and international relations departments .

With regard to the number of functions in the surveyed companies (145) managers were obtained from the 17 companies, accordingly 145 questionnaires were distributed electronically, through employing google form. 128 were retrieved and analyzed. With 88.3% response rate.

3.2 The study instrument

The study basically utilized a 4 part questionnaire for data collection.

The first section was developed to collect information of respondents characteristics, categorized to (Gender, age, education and finally experience)

The other sections focused on the study measurements. Likert Scale of frequency was employed in these sections, taking the following values: (always 5 points), (Very Often 4 points), (Sometimes 3 points), (Rarely 2 points), (Never 1 point).

The study measures / variables were as follows:

The independent variable (IV): the systems thinking (internal and external), this variable was measured by (7) questions based on (Senge, 2006) considering that systems thinking is the fundamental pillar of the learning organization.

The dependent variable (DV): the (Organization excellence) which was measured by (6) questions, expressing the excellence of the internal environment pillars (human resources excellence, leadership, culture, and structure), relied on the valid measures of (Paraschi et al. (2019); Irfan et al., 2022),

The mediator (the smart operations): based on (Zhou et al., (2022), 4 questions utilized to measure this variable highlighting the benefit of information technology to implement the production plan successfully.

Figure (1) displays the measures model of the study, the relationship of the 3 variables and the number of questions for each variable. In addition to the questions loading (Factor loading) which as shown in the figure for all the questions are > 0.70 . According to Hair et al., (2021) any value of loading exceed 0.70 is acceptable.

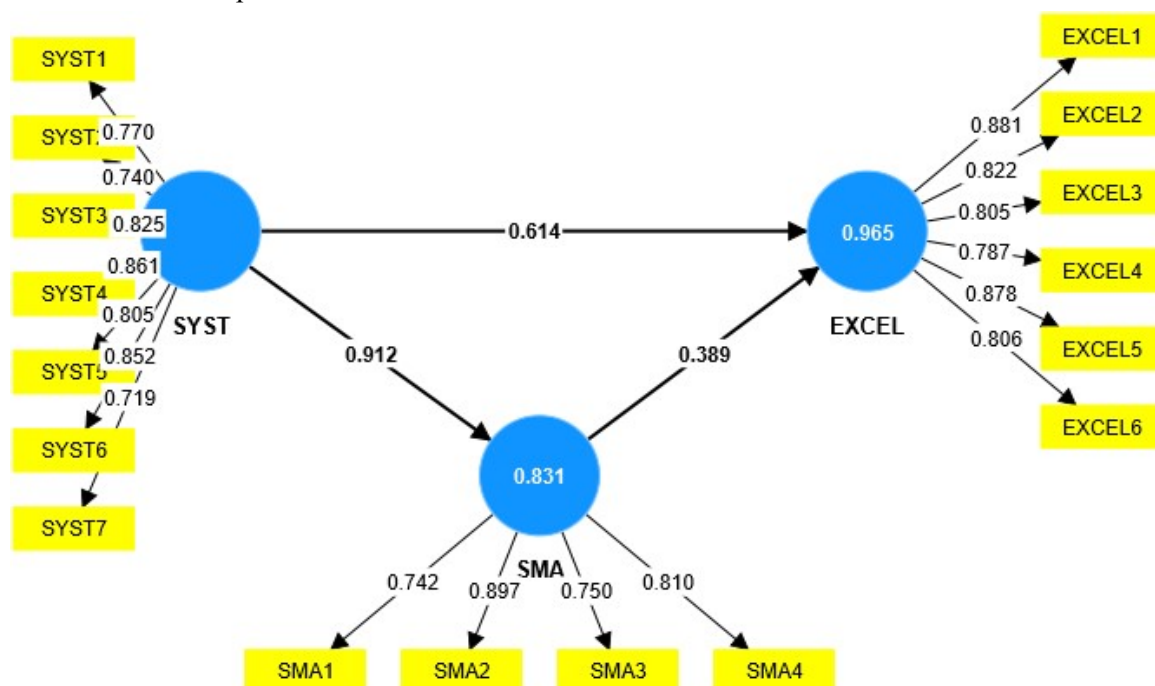


Fig.1: the measures model

4. Analysis Calculations and Results

4.1 The questionnaire reliability and validity:

The questionnaire reliability was verified by estimating Cronbach's Alpha test, and Composite reliability, these metrics are used to measure the internal consistency of the variables questions. The values range from (0 to 1). If the results of the 2 tests were $\geq 70\%$ the internal consistency will be assured.

For the questionnaire validity, the convergent validity is established by taking into consideration the values of (AVE) "the average variance extracted" this metric indicated that the variables elements are measuring the same concept. The threshold of (AVE) values according to Hair et al., (2021) is > 0.50 .

Table (1) manifests the results of the mentioned tests, the values of Cronbach alpha and composite reliability are > 0.70 confirmed the reliability of the questionnaire. The values of (AVE) are > 0.50 indicated a valid questionnaire.

Table 1: Construct reliability and validity and VIF results

Study's variables	Construct reliability and validity				VIF
	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)	
organizational .excellence	0.895	0.901	0.920	0.657	2.026
smart operations	0.806	0.809	0.873	0.632	1.833
systems thinking	0.905	0.911	0.925	0.640	3.269

Furthermore the variance inflation factor (VIF) was calculated to assure that the problem of multicollinearity doesn't exist between independent variables which affects the accuracy of the regression results.

According to Sekaran & Bougie (2016) getting (VIF) values less than 5 implied no collinearity problem. The results in table (1) confirmed that the study variables are free of this issue.

4.2 Respondents' characteristics:

Table (2) displays the categories of respondents' characteristics, (gender, age, education and experience). The main features are as follows: when it comes to gender (57%) are males, while 43 % are females

This contrast can be attributed to the nature of managers' duties, the long working hours and the need to travel always inside and outside Jordan, which makes it difficult for females to find the sufficient work life balance. The other characteristics results were as follows: 74.8 % of the respondents were over 30 years old and less than 50, all the respondents had university degrees. The largest percentage was for bachelor's holders, then master's holders. Likewise the table shows that 115 of the respondents had more than five years practical experience in the same filed.

The above mentioned results concerning education and experience, can be explained by the essential requirements to occupy managerial positions in the surveyed companies.

Thus the results articulated highly educated knowledgeable managers with convenient experience enables them to carry out highly standard performance.

Table 2: Respondents Characteristics

Variable	Frequency (128)	Percentage (100%)
Gender		
Male	73	57%
Female	55	43%

Age		
Less than 30	17	13.2
30- less than 40	45	35
40- less than 50	51	39.8
50- less than 60	15	12
Older than 60	0	0%
Education		
Diploma	0	0
bachelor's degree	86	67
Master degree	37	29
Ph.D	5	4
Experience		
Less than 5 years	13	10
5-less than 10	46	36
10- less than 15	41	32
15 years and more	28	22

4.3 The descriptive statistics results:

Table (3) presents the arithmetic means and standard deviations for study's questions distributed on the 3 variables.

This part of the statistical analysis aims to figure out the level to which the pharmaceutical companies are engaged in systems thinking, and the level of their excellence, addition to the degree to which they considered smart operations in their daily basis activities.

The means ranged from (1-5), classified to high application (3.68-5), moderate (2.33-3.67) and Less than 2.33 is a weak and inconsiderable adoption of the variable.

The table shows that all the means are greater than 3.68, revealed that the target sample of companies are engaged in systems thinking, they perceived the crucial role of internal synergy and team work from one side, and the mutual influence with the external environment and also the necessity for forecasting and adaptation to the predicted and the unpredicted changes.

The results also articulated the companies' endeavors for organizational excellence in terms of excellence in human resources, leadership, culture, structure, as the cornerstones to reach the targeted level of excellence.

Furthermore the means of smart operations refer to reasonable resources allocation plus rationality in transferring inputs to outputs efficiently and effectively (the right quantity, quality, and cost) faster than competitors. Avoiding any type of waste or defective units, taking advantage of technology advancement.

Table 3: the means and standard deviations results

Variables	Mean	Standard Deviation
Systems thinking		
Q1. the systems mindset	3.820	0.980
Q2. the mutual effect between the functions	3.781	1.030
Q3. integrated relationship among functions	3.891	0.895
Q4. the interdependency of subsystems performance	3.938	0.899
Q5. The organization is part of the whole external system	3.853	0.934
Q6. the mutual effect between the company and the external environment	3.813	0.974

Q7. Adaptation with and responsiveness to external changes.	3.751	0.916
Smart Operations		
Q1. Best utilization of the scarce resources	4.383	0.561
Q2. Investment in information technology	4.375	0.545
Q3. the right combination among functions	3.903	0.689
Q4. Avoiding mistakes and continuous improvement	4.219	0.728
Organizational Excellence		
Q1. Attract and retain highly qualified human resources	4.133	0.722
Q2. Provides continuous training and development programs for employees	3.805	0.876
Q3. Organizational culture is characterized by encouraging and rewarding creativity and innovation	3.828	1.039
Q4. Leaders Promote effective communication and team spirit	3.758	1.059
Q5. Supportive and considerable leadership	3.790	0.944
Q6. Flexible and flat organizational structure	3.910	0.980

4.4 Hypotheses test results

This part of the statistical analysis intends to examine the way the three variables are related employing the structural equation modeling as statistical analysis technique utilized to analyze structural relationships among multivariable. The researchers used Smart PLS 4 program for testing the following hypotheses:

Ha1 examines the influence of systems thinking on organizational excellence without mediation. This effect is called the total effect, without considering the interrelationship between the three variables. The second (Ha2) is built to test the influence of systems thinking on smart operations.

The third hypothesis (Ha3) aims to test the influence of smart operations on organizational excellence.

And finally the fourth (Ha4) is intended to test the impact of systems thinking on organizational excellence with the existence of smart operations as a mediator.

According to Hair et al. (2021) if the value of t sig is less than 0.05 will assert the statistically significant impact of the predictor (X) on the dependent variable (Y).

The results of the first hypothesis (Ha1):

Figure (2) shows the value of t sig = (0.000), which is less than 0.05.

Based on this result, the statistically significant impact of systems thinking on organizational excellence is confirmed.

Moreover the value of R^2 demonstrated that 94.1% of the positive variation in excellence is attributed to systems thinking according to the respondents' point of view.

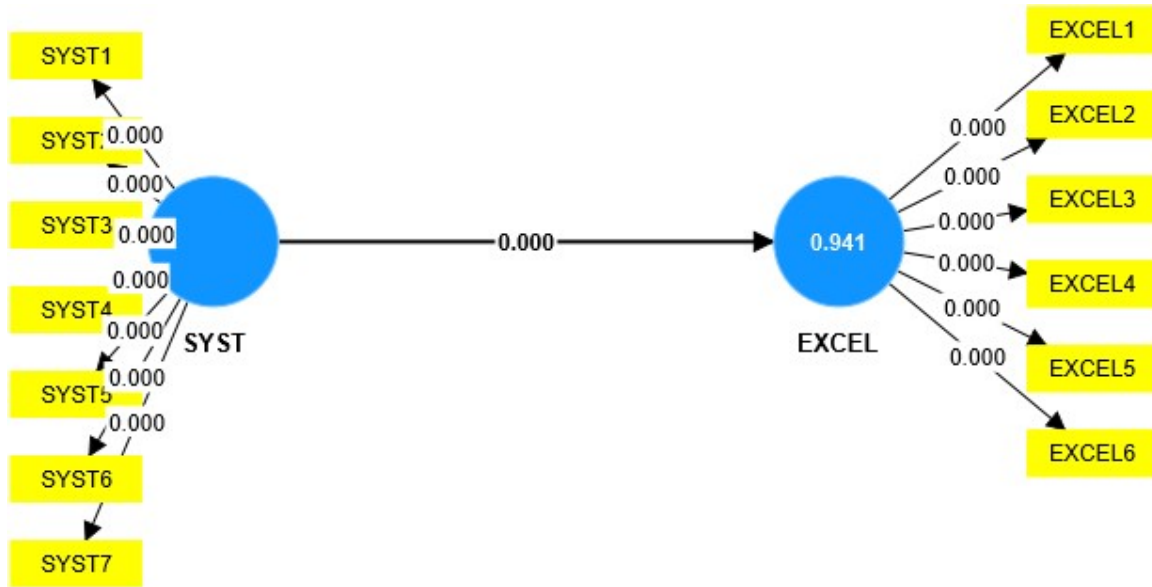


Fig.2: the results of Ha1

A third variable (smart operations) was inserted under the assumption that it has a positive contribution on organizational excellence.

Table (4) displays the path coefficient and the results of the relationship between the 3 variables through smart operations mediation.

The table shows p values =(0.000) which are for the 3 hypotheses less than 0.05 as manifested in figure (3) .

Furthermore the calculated t values respectively= (71.519) , (9.576), (15.516) are > than t tabulated value (1.96) in the construction of 95% confidence intervals. The results that are portrayed in table (4) and figure (3) revealed a statistically significant impact of systems thinking on smart operations, and a statistically significant impact of smart operations on organizational excellence, and also a statistically significant impact of systems thinking on organizational excellence through smart operations as a mediator.

The table also shows that the total indirect effect of systems thinking on organizational excellence is statistically significant.

The results shown above proved the four hypotheses of the study

According to Baron & Kenny (1986) when all the causal relationships is statistically significant, the mediation is partial.

Consequently smart operations has a partial mediation in the effect of systems thinking on organizational excellence.

Table 4: the path coefficient

Hypothesized path	T statistics	P value
Systems thinking -> smart operations	71.519	0.000
Smart Operations --> organizational excellence	9.576	0.000
Systems thinking → organizational excellence	15.516	0.000
The total indirect effect		
Systems thinking → organizational excellence	9.130	0.000

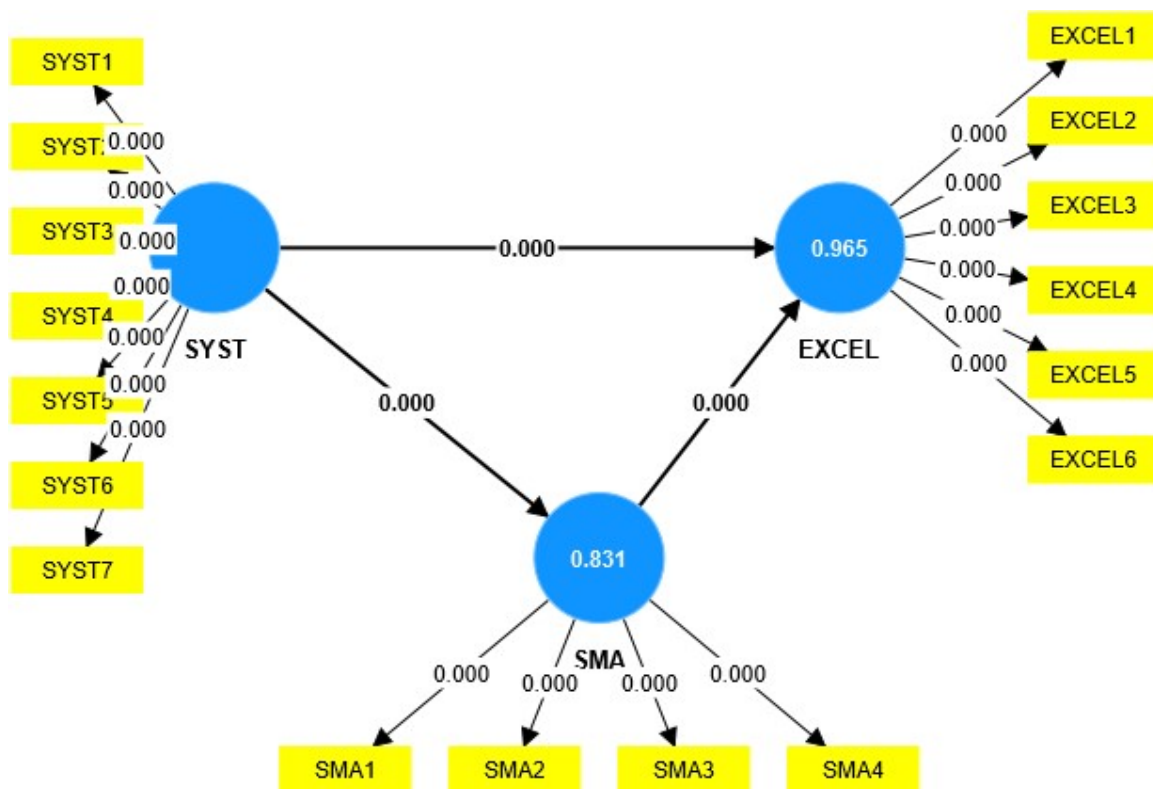


Fig.3: p values for Ha2, Ha3, and Ha4

5. Discussion

Pharmaceutical manufacturing companies are facing unanticipated, and uncontrollable challenges in a terrible competitive environment in particular after Covid- 19

These organizations are likely to confront risks of not having the convenient inputs, the pitfalls of waste and inappropriate processes, furthermore the threats of low quality outputs reflected in high cost of internal and external failures.

These challenges cannot be overcome easily. Devoting time, efforts, and cooperation among all workers in the organization are fundamental because it has been proven practically that synergy and group work are critical success factors for organizational success.

Therefore systems thinking and smart transferring inputs into eminent outcomes are prevalent endeavors in the new era.

Obviously traditional routine methods are not effective to achieve survival and growth. Covid- 19 consequences have motivated strategic thinkers to find the best approaches in resources utilization internally, and agility in handling external factors.

So that this study aims to highlight the magnitude of systems thinking in achieving organizational excellence, via smart operations as a mediator in Jordanian Pharmaceutical manufacturing companies .

The results of the statistical analysis demonstrated the surveyed companies' attention to teamwork and the value added of complementary relationships between various functions, this awareness was evident through the arithmetic means results which underlined building mental models that enhance departments' and functions cohesion.

In reference to Senge (2006) five pillars of the learning organizations the surveyed companies are engaged in continuous improvement having high levels of enthusiasm towards transferring to learning organizations, the companies' managers are aware of the environment changes, and get benefit from what they experience during Covid- 19 .

The findings of this study confirmed previous studies results ; Seyed et al., (2018); Nguyen et al., (2023) and Rabieh e al., (2023) deduced an extensive contribution of systems thinking in enhancing organizations performance.

The arithmetic means of the dependent variable (organizational excellence) revealed an alertness of the internal elements strengths in achieving outstanding performance.

Starting with the human resources and leadership, the most important critical success factors and the core of the inimitable sustained competitive advantage.

People in any organizations are responsible for gaining excellence, by maximizing the benefits of other internal factors. Consequently having competent, skilled and creative human resources and leaders distinguish successful organizations. the mentioned results go with Ahmed, et al., (2023) proposition of the vital role of human resources to gain organizational excellence. The same as Irfan et al., (2022) findings which assured leadership contribution in both organizational and human resources excellence.

The findings also underlined the significance of the strong culture that rewards creativity encourages experimentation, and innovation. These findings are compatible with André et al., (2023), in confirming the influence the strong learning culture has on organizational excellence.

Based on the results the surveyed companies have flat structures that enhance interdepartmental activities, and flows communications freely cross the organizational levels. This study's orientation is similar to Zhang, & Sun, (2023) perception of flat structure dynamism in promoting synergy and systems thinking, knowledge sharing that yield innovation and excellence.

The findings of smart operations show a considerable alertness of transferring inputs into high quality outputs efficiently. The results go in in parallel with Zhou et al. ; Antony et al., (2023) and Del Giudice et al., (2021)

regarding the key role of operations and production functions for building smart manufacturing organizations .

The results of hypothesis testing proved that there are statistically significant causal relationships between all variables comprehending that the smart positioning of systems thinking and lean operations will outcome exceptional performance. These results are close to (Batool et Al., 2022); (Daharat, et al., (2022), they highlighted the positive impact of systems thinking and synergy on organizational performance.

6. Conclusion

Relying on the results this study implies that excellence can only come through an awareness of the external environment uncertainty and being agile enough to respond in an intelligent manner internally. So that it is recommended to enhance systems thinking as the dominated approach in managing organizations, and achieving efficiency by the best utilization of the internal pillars.

This research focus was on the pharmaceutical manufacturing companies, taking into considerations middle managers perception of the significance of the 3 main variables (systems thinking, organizational excellence and smart operations) and the causal relationship among these variables.

For future research and to go beyond this research limitations it is recommended to examine the

significance of systems thinking in other fields than the pharmaceutical industry, and to survey the perception of non-managerial positions.

It is recommended either to examine the impact of systems thinking on dependent variables other than organizational excellence.

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