

RESEARCH ARTICLE

OBSTACLES TO KSA PHARMACEUTICAL INDUSTRY'S RESILIENCE

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Abstract

Saudi Arabia is the 6th largest oil exporter in the world, where crude oil exports are 82% of the total exports of the country. In 2016 Saudi government launched Vision 2030, a reform program, and decided to reform its economy and reduce its dependence on the export of crude oil and diversify its economy. Saudi Pharmaceutical industry is one of the fastest growing industries and have strong potential to increase its share in the country's export. This study explores the relationship between innovation, supply chain management capability, competition, and resilience. This research also explores the moderating role of culture and mediating role of innovation as well. The base of this research is an in-depth literature review for the development of questionnaires. The data for this study was collected from the employees working in the pharmaceutical industry of KSA. This research employed simple random sampling and distributed a questionnaire among 310 respondents. The collected data was examined by using SPSS and AMOS 23. The findings of the study supported the proposed hypothesis. These results also support the moderating role of culture and mediating role of Innovation. The findings are helpful for academicians in their future studies.

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Introduction:-

In present economic conditions and the environment, organizations are facing uncertainty on the regular basis in terms of future growth. Because of instability in the global economy, technology being used by organizations is changing regularly which is also resulting in continued outsourcing and offshoring. Moreover, there is a regular increase in the competition in the organization which is resulting in the regular search for innovative technology. Scholars have shown that organizations are trying to coordinate and work more closely with their supply chain partners. But, there are a very small amount of organizations that are focusing on the development of collaborative partnerships with the other organizations (Yoon, Lee, & Schniederjans, 2016).

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Innovation in the supply chain has received a lot of attention in the domain of marketing as it has a lot of potential in the domain of research as well as marketing including operational efficiency, service effectiveness and economic

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prosperity. Innovation is the regular process of the implementation of ideas and generating skills and resources within the functions of organizations (Goffnett & Goswami, 2016).

For the implementation of ideas, innovation is the collective culture that is generated within the organization based on the skills and resources of the organization. It became possible for the organization to achieve desired goals and results in several settings. It affects the effectiveness, efficiency and performance of the organization. So, it is key for the organization and the top management of the organization to remain focused on organizational innovation. Therefore, different supply chains need different kinds of innovative techniques for the different supply chain management. The innovation process that is well managed among the organization in the networks of supply chains needs innovation to maximize the effectiveness of the supply chain (Wong & Ngai, 2020).

Past studies noted that the organizations can handle disruptions in the supply chain when they note and occur regarding the organizational ability to adapt the resilience (Ambulkar, Blackhurst, & Grawe, 2015). Scholars noted that interactions between supply chain risks and digital technology are at the initial stage of development. The organizational ability to configure and adapt is an important factor for the resilience in the supply chain in which it is possible to mitigate the risks so they can make sure the regularity of the operations of the supply chain. One of the important losses of the organization is the capability loss which has the potential for the organization to be involved in a great risk. It is because workers tend to forget the physical importance of the process.

Another possible reason is that an automated process may leave the organization as well (Bag, Gupta, & Foropon, 2018). In any case, capability loss can affect the resilience of the organizational supply chain. As the supply chain resilience technology can minimize the chance of risks, so they are very important for the organization. On the other hand, this technology also allows optimization of business empowerment and adaptation of business processes. It also includes the logistics in real-time as well. The organization needs to be ready for the reinforcement of supply chains (Ralston & Blackhurst, 2020).

The capability concept is mainly emphasized in literature as strategic management. It is pointed out that corporate strategies of business should be developed on the capabilities of organizations. Researchers also suggested that the resources of the organizations decide the basic capabilities of the organization. Additionally, the competitive advantage of the organization is affected by the organizational capabilities. Several past studies have reported the relationship between organizational capabilities and organizational performance, these studies reported that the capabilities of the organizations hold strategic importance. On the other hand, it is strategically important for the organization to develop a relationship withthe natural environment so they can develop a competitive advantage (Bals, Schulze, Kelly, & Stek, 2019).

In the present era, the number of industries is growing in which organizations are trying to maximize their organizational profits and market shares. These organizations are willing to minimize the price, increase the facilities, increase the quality of the products and higher the level of services. To explain the specific explanation of the market, the terms competition and dynamics are used. To improve the competitive characteristics of the organizations, the organizations need to develop competition at the supply chain level of the organization. The organizations need to develop networks of the supply chain so they can compete with each other (Sabahi & Parast, 2020). On the other hand, disruption in the supply chain can harm the organization on a short term and long-term basis. One of the major harms of the disruption is to lose of the market share of the organization. It is because disruption in the supply chain can prevent it from developing long term market demand (Gasowska, 2016).

Pharmaceutical industry of KSA is one of the key industry. This industry is important because majority of workforce in this industry is highly skilled. Moreover, in year 2021 the total sales in this sector were 30 billion SAR. Therefore, the focus of this study is to explore the relationship between supply chain capability, competition, and supply chain innovation on resilience capability in the pharmaceutical industry of KSA. This study also explored the moderating role of organizational culture as well.

Literature Review:-

Supply management capability

Capabilities are considered a very complex bundle of accumulated knowledge, assets and individual skills that are exercised by the organization throughout the manufacturing or production process. Capabilities enable the organizations to coordinate among different departments and utilize different resources. Researchers suggested that

for every organization, there is no overall skill that fit them. Therefore, there is a requirement for careful analysis to identify such skills. In this way, organizations can easily develop a competitive advantage. Moreover, It will also result in an increase in the number of suppliers and the focus of the organization will also be altered to satisfy the customers. A wider business view will be needed to purchase the professionals. Therefore, they will also be willing to take the risks. Additionally, the business future will automatically be affected by the regular changes in the preferences of the customers, rising demands of the customers, level of information, sustainability and alteration in globalization (Lintukangas, Hallikas, Koivisto-Pitkänen, & Kähkönen, 2016).

Therefore, managers of the supply chain must get knowledge regarding the management of the supply chain and its importance in competency-based strategies. Moreover, to move forward toward the process orientation. Among the resources of the organization, supply management is considered one of the important ones. It is also considered as the interface to acquire the knowledge that can help the organization acquire a competitive advantage. Therefore, it is not only the practice but also the set of unique resources of the organization to develop and sustain competitive advantage (Attia & Eldin, 2018).

The capabilities of supply chain management are defined in studies as the overall capacity of the organization as well as the ability to manage the functions of procurements as well as the supply base. It also includes carryingout the responsibilities, routines and internal tasks so the desired goals can be achieved. At the level of organization, the research conducted regarding supply chain is very vague so far. In this regard, scientists have attempted to separate capabilities and skills concerningthe management of supply (Daddi, Heras-Saizarbitoria, Marrucci, Rizzi, & Testa, 2021).

Researchers argued that it is possible to observe the skills. On the other hand, the capability of the organization is the latent phenomena that can help to manage, develop and structure the alignment of the supply base in the alignment of the priorities of organizational business. Researchers suggested that the competitive advantage of the organization is affected by the capability of supply management by impacting the important dimensions such as product availability, communication, capacity planning, customer service and costs. Additionally, the capacity of the organization is the asset of the organization at the organizational level that can impact the performance and competitiveness of the firm. The outcomes of the organization become visible shows the existence of capability (Ahmadi, 2021; Lintukangas et al., 2016).

Competition (Environmental context)

With time, it is getting more and more important for organizations to make decisions in the area of logistics. The flow of materials is supervised by the logistics managers. This flow of information and materials are supervised by the logistic managers within the supply network, supply chains and enterprise. The basis to win the competition is the effective and efficient flow of services and goods along with information that is associated with these goods. Collaboration and communication are the keysto the implementation and creation of logistics within the business partners and organizations. On the other hand, supply chain competitiveness in the supply chain's capability so the value can be created for the customers (Dametew, Beshah, & Ebinger, 2021).

The basis of all logistic innovations is based on logistic management that tends to affect the activity effectiveness so the competitive advantage can be gained. It will help in the development of service enterprises. There is a need for close cooperation among the partners so a competitive advantage can be developed by the organizations. Whereas there is a need fora regular increase in the value of customers as well for the achievement of competitive advantage. Moreover, for the partners of the organizations, the competitive advantage includes the usage of knowledge efficiently after its absorption. It also includes learning different processes of innovation (Gąsowska, 2016). It is key to note that the competition of the organization determines the number of goods that should be supplied after manufacturing in the market to counter the rival so a certain market share can be gained. For this purpose, it is important to look at the potential demand for the product as well (Rezapour, Farahani, & Pourakbar, 2017).

SC Innovation

Researchers have defined SC innovation as alteration within the process of the supply chain, the technology of supply chain and networks of the supply chain that can contribute to organizational firms, within an organization, in any industry or within the supply chain so the value creation can be enhanced for the partners. Innovation in the supply chain includes changes in technology, products, processes and services improvements in processes and procedures that enhance the efficiency and satisfaction of customers. Whereas SC innovation can also be defined as

the combination of processes that includes complex procedures so the requirements of the customers can be met by the organizations. Past studies point out that the service industry must focus on the innovation of the supply chain because of effective operations, timely delivery, lower costs, and high quality (Beltagui, Kunz, & Gold, 2020).

The literature related to logistics and its related processes can be found to show the evidence for innovation in the context of supply chains. Researchers have viewed innovation as advantageous and new for a certain audience. On the other hand, innovation can also be the most fundamental part of the organizations like transportation firms. Innovation in the supply chain is also termed as basic marketing, production and logistic process. It can also be the combination of innovation in communication and information technologies with new marketing procedures, production and logistics so that operational efficiency can be improved. As a result, the effectiveness of the services can be enhanced (Abdelkafi & Pero, 2018).

Resilience capability

Around five decades ago the concept of resilience was introduced in terms of an ecosystem process. The concept of resilience determines whether a system could resist the changes in the environment. Whereas adaptation shows organizational ability to restore the disturbances. If the recovery speed of the organization is faster, then the stability of the system will be greater as well. In literature, the term resilience capability is used in economic and social contexts to describe the behavioural response of systems regarding groups, systems and national economies. Therefore, in the organizational context, when the external or internal impact is received by any system, the effect of resilience is reduced because of disruption (Scholten & Schilder, 2015).

Researchers summarized the past studies discussing organizational capabilities and their effects on the organizational strategies and capabilities to achieve organizational goals. The resilience capability of the organization can be found and can be used to mitigate the threats to the organization. Generally, several factors regarding the resilience capabilities are reported in past studies namely robustness, velocity, collaboration, efficiency, speed, visibility and flexibility (Yang & Hsu, 2018).

Relationship building

Supply chain innovation and resilience capability

Researchers have reported that supply chain innovation is a double edge sword for the organisation it'll play a major role in its success. innovation in the supply chain brings a lot of opportunities for the organisation to minimise the uncertain practices. Supply chain innovation makes it easy for the organisations in the process and business to operate Which make it difficult but the biggest update. Moreover, a high level of innovation and complexity Make it very difficult for organisations to operate at the global level. Therefore, innovation is claimed tobe one of the important and dynamic capabilities of the organisation that plays a very important role in improving the responding capability (Shamout, 2019).

Most of the time innovation is materialised in the form of technology, advanced equipment, latest machinery. this innovation plays a very important role in shipping the risk management capability, improving resilience, recognition of resources and improving infrastructure. researchers argued that it is key for the organisation to manage the disruption as it can affect the organisational performance. as a result resilience capabilities are also affected(Kwak, Seo, & Mason, 2018).

H1: Supply chain innovation has a positive influence on resilience capability.

Supply management capability and Supply Chain Innovation

The ability of the firm to integrate is its dynamic capability. It plays a very important role to recognise and building external and internal competencies. Wang and Hu (2020) reflected a positive significant relationship between innovative capabilities and the innovation performance of the organisation. these scholars also asserted that there is a positive relationship between supply chain capabilities and the innovation performance of the organisation (Najar, 2022). Such capability aims to minimise the cost, concentrate on the management of time, minimise the waste of the organisation, minimise the distortion of the cycle, using the sources are the optimum level and their standardisation. evolution of new products is not all of the sudden. it is rather a transition, development Aww improvement of the already existing product. Therefore, in terms of supply chain management capability, the focus should be on the improvement of different processes of the organisation (Sabahi & Parast, 2020).

H2: Supply management capability has a positive influence on Supply Chain Innovation.

H3: Supply Chain Innovation mediates the relationship between Supply management capability and resilience capability.

Environmental Competition context and Supply Chain Innovation

The innovation of the organisation is affected by vendor organisations competing with each other in the development of products and also in the product market. the relationship between these variables is very complex and also led to several scenarios that affect the organisational capability on a long term basis (Marshall & Parra, 2019). The innovation-decision of the organisation can be affected by the environmental competition context. Scholars stated that the competition among organisations is a very long term and continuous process. IT consists of several struggles among organisations to gain a competitive advantage in terms of resources and target market. Therefore, organisations gain financial performance that is superior to the competitors. the organisations need to produce a high level of services and products so they can compete at the global and domestic levels. It is very important for is promoted by the competition in which environmental contacts play a very important role(Kabadurmus, 2020).

H4: Competition (Environmental context) has a positive influence on Supply Chain Innovation. H5: Supply Chain Innovation mediates the relationship between Competition (Environmental context) and resilience capability.

Organizational Culture Moderates the Effect of SC Innovation on Resilience capability

different values develop a culture. the human being living in a society as well as in the organisation support this culture. the culture of the organisation is a very complex and dynamic web of common values, attitudes and behaviour in the organizational setting. Operational culture shows that values are powerful and long-lasting Beliefs about organisational goals. in this regard, there are a number of goals that can affect organisational values. Values of the organisation play the role of the backbone of the culture Because they determined whether organisational activities are good or bad. Scholars emphasised that shared ideas and perceptions have linkage with people around them (Jermsittiparsert & Srihirun, 2019). Culture enhances innovation in organizations.



Research Method:-

This study used random sampling for the collection of data from the employees of pharmaceutical organizations. The sample size of the study was 310 respondents to whom the questionnaire was distributed. All of the ethical considerations were strictly followed during data collection. Moreover, it was also ensured that data is collected from all genders i.e., male and female. Respondents were approached personally by the scholars for the data collection. These respondents were guaranteed that their confidentiality and anonymity will not be released. It was important for the detection of specific organizations or employees.

The present research was conducted using a quantitative approach through SEM. As mentioned above that the employees of pharmaceutical firms were the target population of the study. It is key to note that the pharmaceutical

industry is one of the key industries inKSA. The data was gathered by distributing questionnaires personally among the employees which wereanalysed by using AMOS 23 software.

Among the respondents, more than 49.6 percent of the respondents were female whereas the remaining were male. The sample of the study also revealed that around 13.5 percent of the respondents were more than the age of 46 years; 22 percent were between 36 to 45 years; 36 percent were between the age of 26 to 35 years whereas the remaining were less than 25 years of age. The usable response rate of the study was 59.26 percent which is according to the acceptable range proposed by Laguilles, Williams, and Saunders (2011) who pointed out that the response rate should be a minimum of 50 percent.

Results:-

Before the conduction of the analysis, it is vital to conduct a descriptive analysis of the study. The mean, as well as standard deviation, represents the descriptive statistics. The table below represents the descriptive statistics of the study. On the other hand, the table below also represents the correlation of the study. All of the values are less than 0.90, showing there is no issue of multicollinearity in this study.

	Mean	SD	1	2	3	4	5	Reliability
SMC	3.38	1.20	1					0.77
CEC	3.47	1.11	.635**	1				0.79
SCI	3.55	1.03	.589**	.633**	1			0.84
CUL	2.33	1.41	.651**	.622**	.564**	1		0.79
RC	3.59	1.18	.588**	.638**	.672**	.684**	1	0.70

Table 1:- Correlation and Descriptive Statistics.

This study also tested multicollinearity among the IVS with the help of VIF. There is no issue of multicollinearity if the value of VIF is less than 10. The values mentioned in table 2 below show that there is no issue of multicollinearity through VIF as well because all values are less than 10.

	1		
Model		Tolerance	VIF
1	(Constant)		
	CUL	.555	1.803
	SMC	.529	1.890
	CEC	.491	2.037
	SCI	.428	2.335

Table 2:- Collinearity Statistics.

Confirmatory Factor Analysis: Reliability and Validity

To examine the validity and reliability of the data, the researcher in this study conducted CFA which is also known as confirmatory factor analysis. Items of all of the loadings were taken on a single factor as proposed by Anderson and Gerbing (1988). All of the loadings of the items are in satisfactory range as mentioned in the table below.

Table 3:- CFA Factors Loadings.

			Estimate
SMC1	<	SMC	.833
SMC2	<	SMC	.752
CEC1	<	CEC	.700
CEC2	<	CEC	.809
CEC3	<	CEC	.740
SCI1	<	SCI	.642
SCI2	<	SCI	.511
SCI3	<	SCI	.790
SCI4	<	SCI	.810
SCI5	<	SCI	.785
RC1	<	RC	.719

RC2	<	RC	.739
CUL1	<	CUL	.693
CUL2	<	CUL	.737
CUL3	<	CUL	.823

Table 4:- Model Fit Indices.

Model	Description of Model	Model Fit Indices						
		X2	df	X2/df	CFI	TLI	GFI	RMSEA
Model 1	Single factor CFA	255	90	2.83	0.87	0.78	0.83	0.11
Model 2	Five factors CFA	162.982	80	2.03	0.95	0.93	0.91	0.07

Table 5:- Mediation model fit indices.

Model	Description of Model	Model Fit Indices							
		X2	df	X2/df	CFI	TLI	GFI	RMSEA	
Model 1	Mediation model	117.60	49	2.40	0.91	0.89	0.86	0.04	

Interpretation of Goodness of Fit

It is very important to examine the goodness of fit at the early stage of the analysis (Crowley & Fan, 1997). In this regard, Byrne (2001)pointed out that CFI is important to assess the goodness of fit. Moreover, as per the standards defined by Hu and Bentler (1998)and (Hooper, Coughlan, & Mullen, 2008), the present study achieves the criteria of goodness of fit as mentioned in the table above. Moreover, table 5 also shows that the model fitness of mediation is also good.

To test the reliability of the items, this study examined Cronbach's alpha. According toHair, Black, Babin, Anderson, and Tatham (2006), the Cronbach alpha must be more than 0.70 for the reliability of the data. The values of reliability mentioned in table 1 assure that this study achieved the reliability. This study used AVE to assess the construct validity. According to Fornell and Larcker (1981), the value of AVE must be more than 0.50. As per the values mentioned in the table below, the criteria are fulfilled as well. Additionally, for the assessment of discriminant validity, the value of AVE must be more than the square of the correlation of the other variables. The values mentioned in table below reflects that the values of AVE at diagonal are more than the remaining values.

	1	2	3	4	5
SMC	0.63				
CEC	0.39	0.56			
SCI	0.53	0.39	0.51		
CUL	0.42	0.38	0.31	0.56	
RC	0.33	0.40	0.44	0.46	0.53

Table 6:- Construct Reliability and Validity.



Figure 2:- Model Test.

In the next phase, the researcher examined the indirect as well as direct results. The statistical results mentioned in the table below shows that all proposed hypotheses are statistically significant to each other. Therefore, all proposed hypotheses are accepted.

Table 7:- Direct and Indirect effect

	SCI	RC	Remarks		
	Direct effect	Direct effect	Indirect effect	Total effect	
SMC	0.40**	0.28**	0.14**	0.42	Partial mediation
CEC	0.62**	0.39**	0.26*	0.65	Partial mediation
SCI		0.48**		0.48	

Cell values describe the standardized regression weights n=300

* Significant at 0.05 ** Significant at 0.01 *** Significant at 0.001

Moderated Mediation Model

This study used process macro through SPSS for the testing of moderation as proposed by Hayes (2013). For this purpose, Model 1 of Hayes Macro is adopted to test the moderation relationship of culture. The results supported the hypothesized relationships.

Table 8:- Results.

Independent variable	Dependent Variable	Moderator high and	low	Conditional indirect effects	Boot LLCI	Boot ULCI
		low leve Culture	l of	0.35**	0.13	0.58
Culture	Resilience Capability	High leve Culture	el of	0.63***	0.46	0.80

Int Cul*SCI =0.10* and ΔR^2 =0.01* (i.e., both significant at 5%). The above table shows that the Culture significantly positively moderates the effect of SC innovation on the Resilience capability.



Figure 3:- Culture strengthens the positive relationship between SCI and RC.



Figure 4:-

Conclusion:-

In the present era competition among organizations is mounting at the domestic as well as global level. The same is the issue in the KSA Pharmaceutical industry. So the organizations need to focus on the factors that can bring innovation and resilience to the firm. Therefore, this study examined the relationship between supply chain management capability, competition and resilience capability with the mediation of supply chain Innovation. Moreover, the moderation of organizational culture was also assessed in the study. The findings of the study mentioned that supply management capability and the environmental aspect of competition directly affect innovation. These results are similar to the findings of (Sabahi &Parast, 2020) and (Kabadurmus, 2020). Moreover, the study also supports the notion that innovation has direct relationship with resilience as revealed by (Kwak, Seo, & Mason, 2018). In the end, the moderating role of organizational culture is also supported statistically. These findings highlight the importance of innovation and organizational culture to survive in this competitive environment.

This research has few limitations as well. This study collected data from the pharmaceutical industry. Whereas, the same research model can be applied to any other manufacturing industry inKSA as well. This research provides insight into the importance of organizational culture in pharmaceutical firms. This study helps the academicians of management sciences in their future studies.

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