

Exploring the Nexus between Supply Chain Agility and Firms' Performance within Emerging Nations

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Abstract: This paper aims to determine the relationships between supply chain agility (SCA) in different directions and the operations of the firms operating in emerging nations. An additional objective of this paper is to establish the mediating role of innovative climate in the specific domain. The quantitative field study was conducted on a sample of different SME's managers in Pakistan; 200 surveys were distributed, and the search engine marketing (SEM) technique was utilized to analyze the outcome. Several factors of SCA in the supply chain have been taken into consideration to determine the links of supply chain performance (SCP) and to ascertain the effects of SCP and SCA. SCA factors like swiftness (FAWC) and alertness (FASC) were utilized to establish those linkages towards SCP along with mediating the role of innovative climate. On the basis of calculations, it was observed that there is a positive linkage between FASC and SCP. The linkage of FSWC was also found positive on SCP. Therefore, this study ascertains the fact that FAWC and FASC contain positive connections with the SCP having a positive mediating influence on the innovative climate in the domain of Pakistan. This paper contributed to establishing the fact that innovative climate positively mediates the relationships between FAWC and SCP of the organizations as well as between FASC and SCP, respectively. Such findings confirm the significance of an innovative climate in the organizations, which further support achieving the organization SCP. The findings of this study have implications for sales managers, policymakers, and practitioners who may be interested in considering the impact of personality from a sales perspective.

Keywords: Swiftness capability, alertness capability, supply chain agility, supply chain performance, quantitative survey, SMEs of Pakistan, company performance.

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1. Introduction

With the affirmation of positive connectivity among the distinct types of agility and performance factors, such as factors of SCA, particularly alertness (FASC), the significance of agility in the operations and processes of businesses has surfaced (Dubey et al., 2021). Keeping in view FASC having different aspects of business, multiple researchers particularly academic researchers are trying to extract results in this regard. Nevertheless, those all hold the stance that further advanced research is required to acquire additional outcomes for the sake of additive evidence (Gligor et al., 2016; Prater et al., 2001). Furthermore, many research outcomes have substantiated the connectivity of FASC in the developed countries taking

into account multiple kinds of performances; like financial, non-financial, operational, and economic performances (Prater et al., 2001; Gligor et al., 2016; Liu et al., 2013; DeGroote and Marx, 2013; Rao and Holt, 2005).

Saving time in the different operations of a business can act as crucial maneuvering for the enterprises; however, firms are attempting different strategies to obtain the factor that can minimize the time. Researchers deduced the fact that the capability of agility can obtain that efficiency in the case firm through the inclusion of those factors in respective operations. On the other hand, it is observed that supply chain operations (SCOP) are also a vital firm operation and introducing agility in SCOP is quite an intriguing task for any firm. To potentiate the multiple

types of performances, previous researchers considered agility a very important phenomenon performance (Agarwal et al., 2007; Gligor et al., 2016). Multiple researchers considered the time an instrument, particularly in the competition; agility in the supply chain can enhance the outbound and inbound logistics and relevant organizations' operations (Svensson, 2002; Chow et al., 2007). The main purport is to deliver the required product to the end consumer at a particular time. Otherwise, the final customer could take a negative perception of that product. Researchers have probed into different aspects of the supply chain like supply chain effectiveness, supply chain agility, lean supply chain, logistic management, green supply chain, supply chain performance, outbound and inbound logistics, and lean supply chain; and have given positive connectivity for organizational capability, performance and function through the economies (Chow et al., 2007; Blome et al., 2013; Yang, 2014; Gligor et al., 2015; Rai et al., 2006; Van Hoek et al., 2001). Therefore, these research outcomes were taken into account in multiple domains, contexts, and sectors throughout the economies. However, this research work is concentrated to elaborate the literature of supply chain management, supply chain performance and supply chain agility for Pakistan accounting for two main factors like FAWC and FASC for Pakistan.

Pakistan is quite an unparalleled part of the earth having unique significance around the globe with a population of more than 22 million (Stat, 2019). Additionally, it is found that Pakistan is located at the 5th position in the list of the top 20 world's highest populated countries (World Population Review, 2021). Pakistan contains a huge amount of industries operating under the Pakistan government. Those industries are enlisted as textile, automobiles, pharmaceuticals, and electronics, and this study is focused to substantiate the linkage of capabilities taking into account of sectors like pharmaceuticals and electronics within Pakistani SMEs sectors like pharmaceuticals and electronics are regarded as the main industrial sectors of Pakistan containing international significance. This is the reason the authors concentrated on these two important industrial sectors keeping in view their considerable share in the GDP of the Pakistani economy. Hence, taking into account the significance of FASC and these industrial sectors, the authors tried to establish the connectivity between the two FASC factors, that is, swiftness and alertness by taking the given objectives of the research.

The very first objective is to interpret the very connectivity between SCP and FASC factors of supply chain agility in Pakistan. The second task is to determine the connectivity between SCP and FAWC factors. Additionally, the authors will endeavor to furnish the reader with a theoretical contribution confirming the relationships of both FASC factors. In the next section, comprehensive literature is given with the aid of a hypothesis. A concrete methodology is provided in the next section. After that results and discussions are presented containing managerial implications as well. In the end, paper limitations and future directions for the readers are provided.

2. Literature Review

Supply chain management (SCM) is the phenomenon that deals with the management of the flow of products and services from purchase point to sales point and many researchers have demonstrated different operations addressing multiple operations of SCM (Van Hoek et al., 2001; Yang, 2014; Gligor et al., 2015; Mentzer et al., 2001). On the other hand, the term agility gives the meaning of process efficiency of the businesses, while agility in terms of the supply chain is taken as the constituent of operational efficiency within whole supply chain operations. In the previous research, multiple scholars have surfaced the significance of agility in terms of SCM, keeping in view distinct aspects (Yang, 2014; Lambert and Cooper, 2000). Five factors of agility (FACTORS OF SCA) have been observed, and the impact of SCA has been computed independently and collectively by different scholars providing multiple positive outcomes (Gligor et al., 2016; Li et al., 2008; Li et al., 2009; Gligor, 2014). Those factors of SCA are normally termed as swiftness, accessibility, flexibility, alertness, and decisiveness. In addition, different scholars deduced the impact of these factors in distinct ways and proposed that these factors are key tools to enhance the overall performance of any organization (Van Hoek et al., 2001; Gligor et al., 2015; Rai et al., 2006; Yang, 2014; Gunasekaran et al., 2004; Li et al., 2006; Kuei et al., 2001). However, the center of research corresponds to the two fundamental factors of SCA, that is, FAWC and FASC; and the objective of this research work is to affirm the previous outcomes concerning the latest empirical evidence keeping in view the scenario of Pakistani industries like pharmaceutical and electronics. The two industrial sectors act as an instrument to improve the GDP index of Pakistan. Hence, taking into account the function of supply chain agility factors like FASC and FAWC, it may furnish future researchers with the latest empirical results. The given hypothesis has been demonstrated following up the main objectives.

First, alertness (FASC) can be termed as an SCA factor that has the potential to analyze the abrupt changes or variations and grapple with those variations in the most optimistic way (Gligor et al., 2016). Other researchers suggested the FASC as a useful agility factor that aids the whole supply chain process to enhance the operational performance and deliver the goods timely. It is highly expected to deal with multiple challenges like abrupt ambient forces and turbulence while FASC may help to deal with these forces in a more active manner (Zhao et al., 2001). Different scholars and researchers have affirmed the key activity of SC agility factors considering different aspects and proposed the positive action of this SC factor in distinct ways (Agarwal et al., 2007; Van Hoek et al., 2001; Li et al., 2009; Prater et al., 2001; Rafique et al., 2018; Zhang and Sharifi, 2000). To manage supply chain operations and fulfill the satisfaction level of customers, Zhang and Sharifi (2000) suggested the FSAC as the key factor. Moreover, researchers suggested that innovative climate (IVC) is an important element for the organizations in which organizations attempt to create an innovative environment. In the past, researchers have worked to understand the importance of an innovative climate. However, a lot of research can be executed to elaborate on

the multidimensional data and the innovative climate. Hence, considering this phenomenon, given connectivity has been assumed to substantiate Pakistan. Taking into account the very useful suggestions by the multiple researchers in terms of FSAC towards performance, the authors have endeavored to take FSAC as a key factor in the supply chain process to affirm Pakistani MNEs. To enhance supply chain process performance, SCA is considered to be a vital dimension. Hence, the assumed hypothesis is given as follows:

H1: SCA factor of supply chain agility has a positive connectivity with SCP

H2: IVC mediate the relationships between FACA and SCP

The second is swiftness (FSWC), which is termed the capability of SC that assists the organizations and their respective logistics activities by introducing swiftness in the corresponding operations (Gligor et al., 2016; Yusuf et al., 2014; Lin et al., 2006). FSWC supports the organization by accelerating the speed of movement of any product in a very efficient manner (Yusuf et al., 2014). Many researchers have suggested that the introduction of swiftness in SC operations is a compulsory factor (Farrow et al., 2005). FSWC is recommended as the key factor in dealing with abrupt issues that are relevant to the environmental forces (Lin et al., 2006). Researchers consider that obtention of customer loyalty is very crucial for any organization, and FSWC can play a key role in acquiring such a level of capability (Christopher and Towill, 2000; Gligor et al., 2016). In addition, other various factors have been observed those contain a positive influence over distinct parameters and performance indexes that vary from country to country (Gligor et al., 2015; Gunasekaran et al., 2004; Yang, 2014; Rao and Holt, 2005). Several scholars have emphasized the importance of FSWC and recommend the FSWC as the most competent factor that can enhance the overall operational potential in terms of supply chain and supply chain agility (Christopher and Towill, 2000; DeGroot and Marx, 2013). Therefore, in recent times, FSWC is considered the key factor that can bring agility in supply chain operations leading to confirming the connectivity of FSWC in terms of SCP (Schücking and Jochem, 2021); and it is found significant to furnish with additional empirical evidence keeping given Pakistani MNEs. Additionally, scholars recommended that innovative climate (IVC) is a crucial constituent for the organizations to produce an innovative atmosphere. In the previous studies, scholars have probed to examine the effectiveness of innovative climate. However, a lot of research is still required to elaborate on the multidimensional data of the innovative climate. Therefore, taking into account this phenomenon, given connections is assumed to confirm for Pakistan.

H3: FSWC factor of supply chain agility has a positive connectivity with SCP

H4: IVC mediate the relationships between FSWC and SCP

In addition to the proposed two hypotheses, there are various other instruments and methods were adopted to

compute the outcomes and provided the empirical evidence that is elaborated in the next section.

3. Methodology

To obtain data, supply chain managers of Pakistani SMEs, especially those related to supply chain operations in the electronic and pharmaceutical sector, were approached and a period of analysis of almost four months was selected. Approximately, 300 documents having various questions were circulated among those managers to get back their responses. In the end, 200 managers filled the surveys accurately from October 2018 to January 2019. Fundamental factors like FASC and FAWC were used to substantiate the connectivity towards SCP and were utilized as independent variables. A total of 20 questions were asked by the respondents, which are 5 questions for FASC, 5 questions for FAWC, 4 questions for SCP, and finally, 5 questions for the ICV variable of this study where the Performance of organization in terms of SCP is taken as the dependent variable. Various researchers recommended that identifying the construct reliability is highly crucial before switching to the next step; hence, reliability of variables was used through Cronbach alpha, where all of the values were precise, containing more than 0.7 outcomes (Hair et al., 2006; Podsakoff and MacKenzie, 1994). In addition, execution of pre-examination of the variables is another intriguing task for the scholars that could be a critical factor for realizing the data validity against the target variables like SFCA, i.e., SFCA and FASC through DV as SCP. Utilizing Cronbach alpha, all the calculated data was examined using small respondents, and results were found accurate and precise. The five-point Likert scale was demonstrated to collect the data. Because most similar studies have used a similar scale to accomplish the studies. Therefore, we adopted the Likert scale to finalize the current study.

In this study, two types of variables like SFCA and FASC were analyzed as IV, and the factor of SC was considered to obtain the significance of Pakistani firms. SFCA and FASC of SC agility were taken from the previous studies (Beamon, 1999). Secondly, the DV is SCP which is based on multiple scales taken from the literature (Gligor et al., 2013). All the relevant data related to reliability, validation, loading, mean and average variance extracted (AVE) are demonstrated in section 4. Innovative climate (ICV) was taken from the literature having been based on definite factors.

Data analysis is the fundamental entity of any research process where various techniques are executed, leading to computing the data precisely (Talwar et al., 2021). In this study, certain techniques are improvised to determine the significance of SC agility factors like SFCA and FASC in terms of Pakistani SMEs and supply chain processes. These applied techniques are mentioned as Cronbach alpha, descriptive, structural modeling having criteria of (Kline, 2011) and CFA having criteria of (Hair et al., 2006) to affirm the connectivity and relationships among SFCA, FASC, and SCP. The major outcomes related to SFCA and FASC agility factors and corresponding relationships with SCP are mentioned in the following section.

4. Results and Findings

Table 1 describes the data produced against the survey conducted with 200 participants and categorized in terms of their respective age, gender, marital status, and qualification level.

Table 1. Demographic Information

Dimensions		Freq.	%
Gender	Male	150	80.0
	Female	50	20.0
Age	15-25	60	30.0
	26-30	20	10.0
	31-35	40	20.0
	>36	80	40.0
Qualification	Bachelor	50	25.0
	Master	40	20.0
	PhD	30	15.0
	Others	80	40.0
Status	Single	170	85.0
	Married	30	15.0

Table 2 describes the data relevant data of FASC and FAWC factors. To obtain the reliability and validity of under observation variables, two major tests were conducted. The fundamental values of loadings, averages, and SD were provided along with the values of AVEs for an improved understanding of criterion results.

Table 2. Confirmatory Factor Analysis

Items	Mean	SD	FL	CR	AVEs
<i>SCA</i>					
<i>FASC</i>					
FASC1	3.231	0.503	0.893	.783	.639
FASC2	3.243	0.532	0.684		
FASC3	3.443	0.542	0.793		
FASC4	3.574	0.903	0.674		
FASC5	3.133	0.893	0.684		
<i>FAWC</i>					
FAWC1	3.043	0.342	0.694	.803	.702
FAWC2	3.583	0.903	0.784		
FAWC3	3.058	0.834	0.803		
FAWC4	3.354	0.889	0.784		
FAWC5	4.355	0.849	0.893		
<i>SCP</i>					
SCP1	4.054	0.935	0.893	.877	.792
SCP2	4.454	0.954	0.683		
SCP3	4.532	0.833	0.894		
SCP4	3.940	0.904	0.754		
<i>ICV</i>					
ICV1	3.583	0.342	0.684	.803	.673
ICV2	3.058	0.903	0.793		
ICV3	3.354	0.834	0.674		
ICV4	3.583	0.935	0.894		
ICV5	3.058	0.952	0.754		
ICV6	3.354	0.954	0.6738		

Abbreviation. SCA= factor of SC agility; FASC= alertness factor of SCA; FAWC= swiftness factor of FACTORS OF SCA; ICV= innovative climate; SCP=supply chain performance; SD= Standard Deviation; CR= Correlation Radiometry; AVE= Average Variance Extracted

Table 3 ascertains the connectivity among FAWC and FASC variables toward supply chain performance. The outcomes describe the linkages along with the inter-linkage among the target variables (Benesty et al., 2009; Kline, 2011; Hair et al., 2006).

Table 3. Correlations Matrix

	FASC	FAWC	SCP
FASC	1	--	--
FAWC	0.283	1	--
SCP	0.394	0.341	1

FACTORS OF SCA= factor of supply chain agility; FASC= alertness factor of SCA; FAWC= swiftness factor of SCA; SCP=supply chain performance

Table 4 presents the final results and decision regarding the proposed connectivity for SCA factor of SC agility and FASC factor of SC agility keeping in view Pakistani SMEs. The major outcomes elaborate on the given positive connection.

Table 4. Structural equation modeling (SEM)

Proposed Paths	Direction	β	p*	Decision
FASC→SCP		0.293	0.000	<i>Supported</i>
FAWC→SCP		0.301	0.000	<i>Supported</i>
IVC as mediator between FASC and SCP		0.493	0.003	<i>Supported</i>
IVC as mediator between FAWC and SCP		0.319	0.002	<i>Supported</i>

FASC= alertness factor; FAWC= swiftness factor; SCP=supply chain performance

5. Discussion and Implications

The major outcomes describe that SCAs are very supportive of enhancing the supply chain performance significantly. The obtained results are found to be consistent with the previous literature, and SCA is observed to contain position connectivity towards various types of performances (Yang, 2014; Van Hoek et al., 2001; Kuei et al., 2001; Arzu Akyuz and Erman Erkan, 2010; Gligor et al., 2015). Therefore, recently introducing agility in the supply chain has overturned the trend of different businesses by focusing on these factors. Hence, supply chain managers should keep the supply chain operations up to the mark by taking on FAWC and FASC agility factors that are witness of productive entities to enhance the supply chain efficiency. In this study, a survey method was adopted to collect the data, and two major relationships were utilized to compile the research. In the first relationship, the authors endeavored to determine the connectivity between SCA factors, i.e., FAWC and FASC. The major outcome authenticated that the FASC contains important connectivity with SCP at $\beta=0.293$; $p=000$, rendering effectiveness that can be utilized as a key instrument to improve the overall efficiency of the supply chains of Pakistani SMEs. In the same manner, it was presumed for the second connectivity where the authors endeavored to obtain the relationship between SCP and FAWC. The outcomes affirmed that FAWC has crucial connectivity with SCP at $\beta=0.301$; $p=000$. In addition, mediating of IVC has been observed between the connections of SCP and FASC as well as between SCP and FAWC $\beta=0.493$; $p=003$ and at $\beta=0.319$; $p=002$, respectively. These findings elaborated the significance of FAWC and FASC in SC operations, and supply chain managers are additionally encouraged to implement SCA, especially FAWC and FASC to improve the SCP of any organization.

6. Conclusion and Limitations

Integration of agility factors in the supply chain (SC) by introducing swiftness (FAWC) and alertness (FASC) can

assist the supply chain performance (SCP) and supply chain process in the Pakistani organization like electronic and pharmaceutical industries. This research work deduced the positive linkage between FASC, FAWC, and SCP. It is observed that FAWC contains a significant positive impact on SCP, and its proper improvisation can improve the supply chain management (SCM) capability in terms of product delivery. Multiple scholars concluded that SC agility is a very effective instrument that can enhance the corresponding operational procedures if the organization takes on FASC and FAWC capabilities to enhance the SCP. It is a fact that there are various factors available that can affect the SC operations, but FASC and FAWC are the most crucial, decisive, and essential factors to enhance the SCP of any organization. The results of this research work have implications for managers such as sales managers, policymakers, and practitioners that may consider this work to consider the role of personality within sales perspectives. Furthermore, it is observed that an innovative climate positively mediates the relationships between FAWC and SCP of the organizations as well as between FASC and SCP, respectively. Such findings confirm the significance of an innovative climate in the organizations, which further supports the achievement of the organization's supply chain performance.

On the other hand, the study contains certain limitations enlisting: generalization limitations, sampling, and limitations related to location. The SC managers of large enterprises can be approached for future work to acquire other critical evidence by ensuring the inevitability of the FASC in terms of SCP. In addition, research generalization is highly crucial where future research work relevant to agility and other FASC factors can expand the boundaries of literature. This research work focuses on two major industries of Pakistan, i.e., the electronic and pharmaceutical industries. Future researchers can gather useful data from other sectors and cities of Pakistan, and different countries that can be considered to provide additional literature related to SC agility and SCM. In the end, the study concluded that implementation of two SCA factors, i.e., FAWC and FASC where scholars can implement other agility dimensions to give additional effects that may enhance the supply chain efficiency of the organization around the globe. This study only adopted an innovative climate as a mediator between the relationships between agility factors and SCP. However, in the future, more internal as well as external factors might be adopted to understand the relational strength of FAWC and FASC toward SCP within Pakistani SMEs and worldwide.

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