

Behavioral Competencies, Supply Chain Resilience and Firm Performance: The Moderating Effect of Internal Integration

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Abstract

This study explores the mediating effect of supply chain resilience on the relationship between behavioral competencies and firm performance and how internal integration can moderate the relationship between supply chain resilience and firm performance. The study adopted explanatory research design and a purely quantitative approach. A convenient and purposive sampling techniques were used to collect 227 responses. The structural equation model was used to analyze 227 healthcare delivery firms drawn from the health sector in Ashanti Region of Ghana. The findings show that behavioral competencies have a positive and significant effect on supply resilience. Supply chain resilience had a positive and significant effect on firm performance. Again, supply chain resilience positively and significantly mediates the relationship between firm performance and supply chain resilience. The study finally established that internal integration positively and significantly moderates the relationship between supply chain resilience and firm performance. This study provides insight into the mediating effect of supply chain resilience on behavioral competencies and firm performance. The study further explores the moderating effect of internal integration on supply chain resilience and firm performance. The study makes both theoretical and managerial contributions.

Keywords: Behavioral competencies of practitioners, Supply chain resilience, Internal supply chain integration, Firm performance

Citation: Owusu K., Issah Ofori., I., Ackah., D., (2025), "Behavioral Competencies, Supply Chain Resilience and Firm Performance: The Moderating Effect of Internal Integration", African Journal of Procurement, Logistics & Supply Chain Management Society 2025, 8(01): pp.18-40, DOI: <https://dx.doi.org/10.4314/ajplscm.v8i1.2>

Submitted: 01 December, 2024 | Accepted: 20 December, 2024 | Published: 28 January, 2025

1.0 INTRODUCTION

The concept of supply chain management is one that has received widespread acceptance worldwide in practice and academia as an area for customer value delivery, cost reduction and a source of competitive advantage. Recent scholars argue that the competition that used to exist among rival firms in the past has now moved beyond firm levels to include entire supply chains (Lummus and Vokurka, 2016). A supply chain refers to a group of firms that collaborate to provide a product or service to the market. In recent times, strategies such as outsourcing, strategic alliances, and third-party partnerships have made supply chain relationships increasing complex and some

scholars (Chopra and Meindl, 2007) argue that the use of supply web is more appropriate due to the multifaceted network of relationships. Managing a supply chain involves planning and coordination operations within the supply chain to deliver value to the end consumer.

The effect of relational competencies on firm performance has over the years received a lot of attention in literature (Stevenson et al., 2020). Several studies considered sales representatives who have direct interaction with customers in the marketing sector and how their actions affect firm performance (Santanu et al., 2019).

However, in the empirical examination of supply chain practitioners who have no direct contact with customers, less attention has been paid on how the practitioners behavior affect firm performance (Chen et al., 2018). It is therefore essential for this study to consider the effect of behavioral competencies of supply chain practitioners on firm performance. In literature, resilience has been admitted as a catalyst for attaining firm performance. The issue is that supply chain resilience is a good predictor for achieving firm performance. Zuoming (2019) outlined the importance of supply chain resilience as a measure to mitigate the effect of a disruption to ensure firm sustenance and survivability in turbulent times. However, Feng *et al.* (2021) noted that supply chain resilience is very important for organizations to achieve operational and financial performance. It is therefore important that this study sought to examine the effect of supply chain resilience on firm performance.

While some findings have suggested positive association between behavioral competencies and firm performance (Santanu et al. 2016), others found no significant relationship (Christopher et al., 2014). These mixed findings prompted Feng (2021) to call for deeper understanding of how a mediating variable can interact to influence the relationship between behavioral competencies and firm performance. This then raises the need to ascertain the extent to which supply chain resilience mediates the relationship between behavioral competencies of supply chain practitioners and firm performance. It is in this regard, that this present study is important and timely to address this knowledge gap.

It has been acknowledged in literature that internal integration enhances firm performance (Ponomarov et al., 2014). The implication is that internal integration is a good predictor of the relationship between supply chain resilience and firm performance. There is therefore the need to examine the extent to which internal integration is moderating the relationship between supply chain resilience and firm performance. The antecedents of internal integration included database usage, teamwork, communication and working relationship whilst previous research used database as the only construct. Scholars anticipated that relational competencies should enhance resilience and therefore firm performance (Santanu et al., 2014).

On the other hand, Stevenson *et al.* (2020) used the theory of planned behavior (TPB) to ascertain firm performance and noted that intentions and perceptions do not always translate into actual behavior. There is therefore the call for further investigations on how behavior can lead to resilience. It is therefore imperative that this study examines the effect of behavioral competencies on firm performance. This study sought to introduce self-esteem and integrity as antecedents that influences a person's actual behavior.

2.0 LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1 Behavioral Competencies

Behavioral competency definitions might vary, but the key content remains the same. Paulraj *et al.* (2008) defined behavioral competency as communication between

companies based on a relational view that could continuously increase its competitive advantage. Kale *et al.* (2000) argued that behavioral competency can significantly drive the acquisition of new skills and strengthen one's capabilities during the collaboration between companies. Similarly, Park (2015) defined it as the capability to manage relationships by accumulated knowledge, unique ability, and trust within the companies. Employees are not only required to perform their routine task, which require only operational capabilities but also expected to have dynamic capabilities which help their organization in constantly configuring resources (Hazen *et al.*, 2017). In every organization, employees need to demonstrate competencies to succeed in their job. The knowledge that employees gain firm schools usually focuses on disciplinary expertise (Jackson and Chapman, 2012) and it is expected to help in performing actions that contribute to the achievement of an organization's business objectives. In other words, employees are expected to demonstrate behavioral competencies (Leme, 2007, 2012). Individual engagements such as creativity, collaboration and complexity are also deemed necessary for employees to succeed in their job. These individual commitments are known as behavioral competencies (Jackson and Chapman, 2012).

For employees to be successful, they need to learn and demonstrate the competencies expected. In different organizations, competencies ought to be identified. Some competencies such as creativity, intelligence is needed (Boyatzis, 2000; Field, 2009). Generally, competencies are demarcated as capabilities that help organization in achieving business and strategic objectives (Amara, 2015). Boyatzis (2008) identified three competency clusters that help employees in performing on their job demands, using individual attributes and coping with organizational environments. Similarly, Torres (2012) diagnosed dimensions such as interpersonal skills, and (Gomez Arizaga *et al.*, (2016) discerned sub dimensions such as reflection, passion, and empathy as competency instances. According to Rocha *et al.* (2017), the competency-based model emerged as a reaction to the position-based model of management, in which employee's performance would be evaluated. A competency model is a collection of competencies that together define successful performance in a particular work setting.

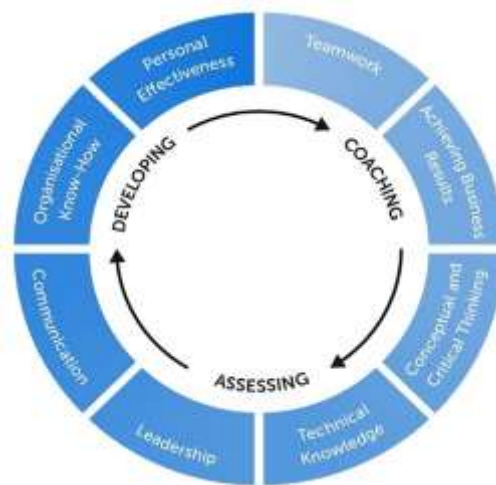


Figure 2.2: Competency based model | Source: Rocha *et al.* (2017)

Competencies are capabilities entailing attributes, skills, abilities and values that help employees in operating successfully in the work place. To Blaskova *et al.* (2000),

competencies constitute personal and professional skills or talents as well as behavioral patterns forming the basis of proficient performance. Edwards-Schachter *et al.* (2003) defines competencies as repertoires of skills utilized to perform specific task. In this study, behavioral competencies refer to set of skills and abilities expected from supply chain practitioners that should enhance organizational performance. This is in agreement with the definition of (Blaskova *et al.*, (2000). This study measures behavioral competencies in terms of communication, cooperation, commitment and trust.

Communication refers to the act of transferring information from one place, person or group to another. Every communication involves at least a sender, message and a recipient. The transmission of the message from sender to recipient can be affected by a huge range of things. These include our emotions, the cultural situation, the medium used to communicate and even our location. This complexity is why good communication skills are so desirable by employers. Accurate, effective and unambiguous communication is extremely important. Communication in this study will be measured by the ability to share information with other members of the supply chain in a timely manner and the exchange of periodic reports.

Cooperation is the process by which groups and individuals work together for a common or mutual benefit. Sigmund *et al.* (2016), measures cooperation in three basic dimensions, namely: fairness, resource sharing and engagement in joint activities. Cooperation is generally the interaction that results in a net gain for all participants over time. This study measures cooperation in terms of the ability of team members to resolve their own problems and also assist every department willingly.

Commitment is key to organizational success. Employee commitment is necessary for every organization in order to have extraordinary performance on long term basis. Employees want to give their outstanding as individuals and in teams and this increase organizational performance (Peace, 2014). However, employees would also want to be part of organizations that provide good income, job security and opportunity for development. Employees who have high commitment will contribute their time and energy to achieve set goals and objectives (Hunjra, 2010). Motivating of employees will lead to their satisfaction and hence increased productivity (Ayman, 2017). This study agrees with Ayman (2017), and therefore measures commitment in terms of motivation to work beyond working hours and complying with agreed terms.

Trust is the belief that someone or something is reliable, good, honest or effective. Generally, trust is very important in our general dealings and transactions. Supply chain practitioners are expected to exhibit high level of trust in their dealings with other supply partners within the organization. As organizations increasingly rely on teams, there has been a greater impetus to determine how team performance can be optimized (Carter *et al.*, 2018). Trust is a shared psychological state among team members comprising willingness to accept positive expectations from each other (Fulmer and Gelfand, 2012). Trust is an interdependent relationship that leads to outcomes through risk-taking behavior (Akgun *et al.*, 2005). Teams that are successful in developing trust among their members foster cooperation, which facilitates members accomplishments of organizational goals, (Dayan, 2010). Dayan further argued that trust among supply chain members is a critical drivers of new product development. This study further agrees with Dayan and therefore measures trust as sincerity to each relationship, the believe in the accuracy of information provided and keeping to one's promises.

2.2 Behavioral Competencies and Firm Performance

Behavioral competency is a crucial factor within the supply chain that both determines and strengthens partnership and performance. Behavioral competencies

can improve firm performance by influencing the patterns of supply chain activities. According to Wu *et al.* (2014), behavioral competency (mutual trust, dedication, and benefits) within the supply chain enables information sharing and enhances cooperation among trading partners. Behavioral competency allows supply chain partners to focus on common goals, decision-making, and establishing partnerships. Wittman *et al.* (2009) emphasized the importance of relationship immersion, trust, and communication, which are fundamental elements of relational competency and significantly impact business cooperation. To mitigate supply chain disruptions efficiently and effectively, supply chain firms must develop tangible and intangible capabilities (Pettit *et al.*, 2010).

Behavioral competencies (BC) of practitioners such as trust, cooperation, and information sharing are the preconditions to the design and development of appropriate exchange (both transaction and relational) relationships among the supply chain members and for the enhancement of firm performance (Wei *et al.*, 2012). Further, good relationships between supply chain members are founded on mutual trust, joint problem solving, and commitment to promises (Srinivasan *et al.*, 2011). Therefore, literature suggest that supply chain relationship quality is characterized by trust, commitment, mutual adaptation, reciprocity and mutual sharing of business risk (Lahiri *et al.*, 2012).

Studies by Cannon and Homburg (2001) and Shin *et al.* (2000) attributed behavioral competencies as the driver for performance improvement of firms and their supply chains. Previous studies (Gao *et al.* 2005) posited that intra-organizational trust, cooperation and commitment among members helped in information sharing and reduced uncertainty in the supply chain networks. Similarly, information exchange and trusted relationships among supply chain partners offset the problems associated with demand and supply disruptions (Chowdhury and Quaddus, 2015). Further, behavioral competencies among supply chain members are useful for improving the commitment toward mutual understanding and support (Wong *et al.*, 2012). In essence, good behaviors like communication, trust enhances collaborative relationships with network members helps to build skills and capabilities that leads to superior firm performance (Agarwal and Selen, 2009). It is argued that:

H1: Behavioral competences is expected to have a positive influence on firm performance

2.3 Behavioral Competencies and Supply Chain Resilience

Turbulent environmental conditions place a premium on both the speed and quality of decision making and firm actions (Eisenhardt, 1989). A key factor in a buying firm's capability to achieve both speed and quality is the use of real-time information (Eisenhardt, 1989). Firms with large and diverse interpersonal relationships provide favorable settings for managers with different information and knowledge bases to interact frequently; thus, greater diversity can be a strategic asset that enables firms to gain competitive advantage (Barney and Wright, 1998; Collins and Clark, 2003) and create supply chain resilience (Durach and Machuca, 2018). In general, a larger number of interpersonal relationships provide a greater capacity for information than a smaller number of interpersonal relationships (Granovetter, 1973; Burt, 1982).

Risk management relational behaviours involves flexibility, providing assistance in the case of emergencies, changes or supply problems (Noordewier *et al.*, 1990), and a supplier proactively initiating efforts to prioritize production plans, delivery or service for the buyer in anticipation of potential supply disruptions (Fan and Stevenson, 2018).

These initiating behaviours send a signal to the buyer that the supplier genuinely cares about learning the buyer's business and is motivated to perform in the buyer's interests (Leuthesser, 1997) of better dealing with potential supply disruptions. Therefore, we propose that there will be general positive effects on SIRMB from the size and range of interpersonal relationships.

According to the competency codebook (Boyatzis et al. 2000), the individuals that are characterized by achievement orientation need continuously improve themselves and consequently always seek new opportunities and challenges, take calculated risks, and feel responsible for their ideas and actions. Cognitive and social competencies always come together to make a behavioral competency led to resilience. Having competent people with good behavioral characteristics to manage a firm's supply chain activities means they can put measures in place to build resilience for the firm.

Dyer and Singh (1998) argued that improved behavioral competences enhance relationships among supply chain partners, and will automatically build resilience to cater for future disruptions. Good behaviors exhibited by practitioners including like ability to communicate in a timely manner, been committed by honoring promises made and been trust worthy is good for the organization. In turbulent or disruption times, firms need practitioners who can stand out, be proactive with their transactions and can build resilience to mitigate the effect.

H2: Behavioral competencies positively impacts supply chain resilience

2.4 Supply Chain Resilience and Firm Performance

Supply chain resilience is essential for managing the vulnerabilities arising from numerous disruptions and risks (Chowdhury and Quaddas, 2017). Disruptions may immensely and adversely affect performance (Petit et al., 2013). Tukamuhabwa et al. (2015) recommended a wide range of resilient strategies including, increasing flexibility and creating redundancy, forming collaborative relationships. McCann et al. (2009) envisaged that supply chain resilience was a crucial factor influencing firm performance. However, the operating context in which SCR is likely to enhance SCP of organizations has remained relatively under researched. It is in view of this that this research seeks to explore the health sector to find out if SCR can positively influence firm performance. Resilience is an important enabler of firm performance in that building resilience prevents disruptive events from occurring and assist in establishing and maintaining acceptable levels of performance (Juttner and Maklan, 2011).

Marcus Wallenberg (2013) concluded that a resilient supply chain has the ability to maintain high level visibility and responsiveness to ensure high performance and customer value. It was evidenced that during the severity of COVID-19 pandemic, firms that did not have resilient capabilities had to shut down their operations. Supply chain resilience influences firm performance (Ali et al., 2017). Examining the effect of supply chain resilience on firm performance in the above arguments leads to the development of the following hypothesis:

H3: supply chain resilience positively influences firm performance.

2.5 Internal Integration, Supply Chain and Firm Performance

Internal integration is the extent to which members in a firm interact and collaborate to achieve efficient and effective flow of information, products, and services in a most efficient way (Zhao et al., 2008). The objective of SCI is to provide high level of satisfaction and value to customers through speed and cos-effective flow of information

and materials (Flynn et al., 2010). Internal integration involves different functional teams with the requisite expertise to share their skills, information and take good decisions about the organizations operational processes together (Koufteros et al., 2005). Increase in the level of internal integration can lead to a firms' resilience and automatically improve performance. The relationship between supply chain resilience and firm performance can be explained by internal integration.

Maklan (2010) predicted that internal integration helped to improve supply chain resilience and firm performance. We argue that a firm's internal integration should enhance resilience and performance.

H4: Internal integration positively moderates supply chain resilience and firm performance.

2.6 Behavioral Competencies, Supply Chain Resilience and Firm Performance

Though it is the first time these three variables are put together in the same research. Supply chain resilience is expected to mediate behavioral competencies and firm performances. Soni *et al.* (2014) identified SC resilience enablers as agility, collaboration, information sharing, sustainability, risk sharing, trust, visibility, risk management culture, adaptive capability and structure. Similarly, Jain et al. (2017) extended resilience capability with 13 items: adaptive capability, collaboration amongst players, trust amongst players, sustainability in supply chain, risk and revenue sharing, information sharing, supply chain structure, market sensitivity, supply chain agility, supply chain visibility, risk management culture, minimizing uncertainty and technological capabilities amongst partners.

Brusset and Teller (2017) regarded resilience as an operational capability and identified four variables to explain the level of resilience capability: evaluating process vulnerabilities, deploying alternative plans for risk, evaluating the level of risks and increasing visibility over the whole supply chain. Barreto (2010) also stresses that research should focus on factors such as resilience capability that can support firms in achieving dynamic capability. Largely inspired by several authors (Barreto, 2010; Soni et al., 2014; Jain et al., 2017; Brusset and Teller, 2017), the items of SC resilience capability are summarized in Table 2.

In this study, resilience capability in the supply chain is a prerequisite. In other words, operational capabilities including agility, collaboration with partners, information sharing, risk evaluation, trust, SC visibility, risk management culture, adaptive capability, adaptive SC structure and technology capability (Soni et al., 2014; Jain et al., 2017; Jain et al., 2017; Brusset and Teller, 2017; Rubbio *et al.*, 2019) are antecedents or enablers for achieving SC resilience to address unforeseen changes in the supply chain environment. Supply chain resilience capability is an antecedent and enabler in being adaptable to risks, thus, its mediating effect is expected to be higher than the direct relationships between supply chain risks and resilience. With the introduction of supply chain resilience as a mediator, a positive relationship is expected.

H5: Supply chain resilience mediates the relationship between behavioral competencies and firm performance.

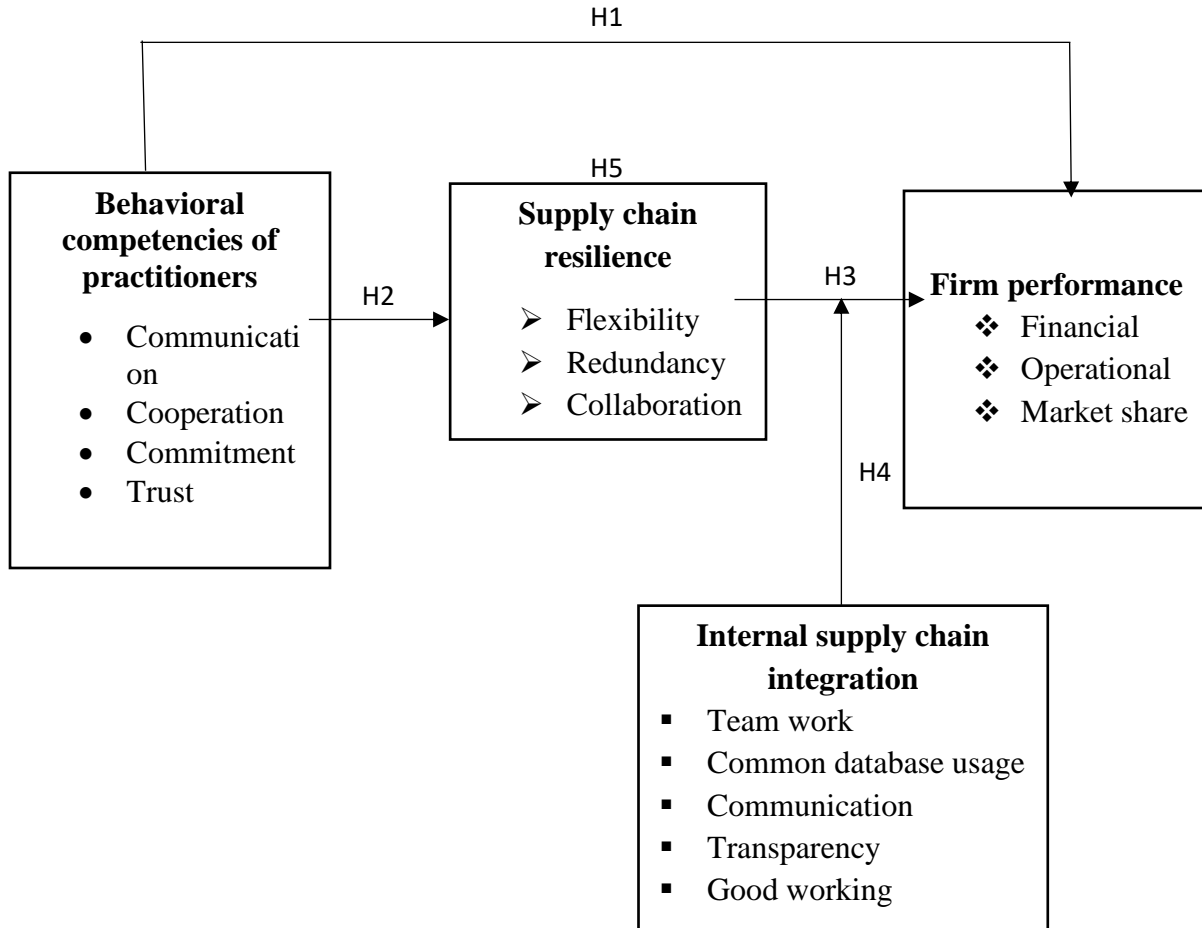


Figure 2.1 Conceptual framework

3.0 METHODOLOGY

3.1 Population of the Study

Population refers to the entire mass of observations, which is the entire group from which a sample is to be formed (Singh, 2006). According to Cooper and Schindler (2014), the research population is best referred to as the “target population” which consists of all people, events, or records that contain the desired information the researcher needs to address the study’s objectives. The study’s population comprises of all health facilities in the Ashanti Region of Ghana, including mission, private and government owned institutions. Although there are 530 health service providers in Ashanti region excluding CHPS compound, of which 316 have supply chain practitioners who are top management members. Hence, the target population therefore consisted of top management members in the 316 health facilities in Ashanti Region of Ghana. This Region was chosen because it contains the highest number of health facilities in Ghana and so data collected can be considered reliable and supported in generalization of the study’s findings.

3.2 Sample Size and Sampling Technique

Sample size refers to the participants or observations included in a study. It is the number of units that are chosen from which data will be gathered. Neuman (2007), also recognizes sample size as a smaller set of cases a researcher selects from a larger pool.

Sampling is a technique of selecting individual members or a subset of the population to make statistical inferences from them and estimate characteristics of the whole population. Different sampling methods are widely used by researchers. Purposive and convenience sampling techniques were jointly used in selecting the respondents. This is because the questionnaire was targeted at supply chain managers who are heads of the procurement and supply chain department.

During the administration of the questionnaire, some of the target respondents were not at post and therefore as a matter of convenience the researchers could not retrieve their responses. Out of the 316 questionnaires that were administered, 227 usable questionnaires were retrieved for analysis. Hence, the sample size of the study is 227 responses.

3.3 Data Collection Method

According to Yin (2003), primary data is data observed or collected directly from first-hand experience. Primary data can be collected through observation, discussions, interviews and the issuance of questionnaires. This study employed the use of questionnaires in gathering primary data. The questions were basically closed ended in nature. All research questions were answered through the use of primary data. The researchers personally visited the premises of the target respondents to administer the questionnaires.

3.4 Data collection instrument

The instrument used for data collection in this study is a questionnaire. Research instrument are essential tools to research in obtaining information that are important to the research.

Table 3.1 Data collection instrument

Constructs	Indicator	Number Of Items	Source
Behavioral competencies	<ul style="list-style-type: none"> • Communication • Commitment • Trust 	7	Chen et al., (2007)
Supply chain resilience	<ul style="list-style-type: none"> • Redundancy • Flexibility • Collaboration 	8	Christopher et al., (2004)
Firm performance	<ul style="list-style-type: none"> • Operational • Market share • Financial 	9	Braunscheidel and Suresh (2009)
Internal integration	<ul style="list-style-type: none"> • Database usage • Teamwork • Communication • Working relationship 	9	Petit et al., (2013)

3.5 Measurement Instrument

The measurement instrument was developed after a review of the pertinent literature was conducted. The scale used in the study are continuously refined through discussions and brainstorming. A 5-point Likert scale was used to indicate the extent

to which respondents agree or disagree with each statement where 1 = strongly disagree, 2 = disagree, 3 = Neutral, 4 = agree and 5= strongly agree.

Section A measured behavioral competencies of supply chain practitioners using communication, commitment and trust as the constructs, (Chen et al., 2007). Supply chain resilience as a mediating variable was also measured by redundancy, flexibility and collaboration, (Christopher et al., 2004). The constructs that were used to measure firm performance included operational, market share and financial, (Braunscheidel and Suresh 2009). Internal integration as a moderating variable was measured by constructs such as database usage, teamwork, communication and working relationship (Petit et al., 2013).

4.0 DATA ANALYSIS

4.1 Reliability and validity test

Prior to data collection, content validity was conducted and supported the constructs. To test the reliability of the constructs, both convergent and discriminant test were performed using Smart PLS version 17. Before the hypothesized relationships could be reliably explored, it was imperative to ensure that the research model was sound by conducting a measurement model analysis. The measurement model was assessed by performing the relevant tests and ensuring they meet recommended thresholds. Convergent validity was assessed by evaluating the psychometric properties of the research constructs (Cronbach's alpha, Composite reliability, rho_A, and average variance) and ensuring they meet the recommended thresholds (Hair et al., 2014)

Table 4.1: Reliability and validity test (Convergent and Divergent validity)

Variable	Cronbach's Alpha	Rho A	Composite relations	Average variance (Convergent validity)	Discriminant validity
Behavioral competencies (BC)	0.992	0.992	0.993	0.958	0.919
Supply chain resilience (SR)	0.992	0.993	0.993	0.941	0.970
Firm performance (FP)	0.996	0.996	0.996	0.969	0.984
Internal integration (II)	0.995	0.995	0.996	0.968	0.984

Regression analysis was conducted to ascertain the reliability and validity of the constructs. Cronbach's alpha measures the reliability of constructs used to measure the variables. George and Mallery (2003) identified the following rule to measure validity and reliability: > .9 (Excellent), > .8 (Good), > .7 (Acceptable), > .6 (Questionable), > .5 (Poor) and < .5 (Unacceptable). Cronbach's alpha reliability coefficient normally ranges between 0 and 1. The closer the coefficient is to 1.0, the greater is the internal consistency of the items (variables) in the scale.

Behavioral competencies with 9 items have a Cronbach alpha of .951, whilst supply chain resilience with 8 items have .994, firms' performance with 9 items have .990 and finally internal integration with 9 items have a Cronbach alpha of .996. All the variables under consideration are greater than .900 and closer to 1. Based on George and Mallery (2003), the constructs and internal consistency used for this scale can be described as excellent as they are very close to 1.

Table 4.2: Correlation of behavioral competencies, supply chain resilience, firm performance and internal integration

Estimate		
BC <--> FP		.784
BC <--> SR		.796
II <--> SR		.791
FP <--> II		.795
BC <--> II		.691
FP <--> SR		.699

Correlation coefficients are used to measure how strong a relationship between two variables. They are indicators of the strength of the linear relationship. A correlation coefficient closer to 1 means a positive significant relationship between the variables. If both variables tend to increase or decrease together, the coefficient is positive. Behavioral competencies and firm performance have a P-value of .784, which is closer to 1. This implies that there is a significant positive relationship between the variables. Behavioral competencies and supply chain resilience has a P value of .796 which is closer to 1 and above average.

This implies a significant positive relationship between the variables. Internal integration and supply chain resilience has a P value of .791 which is closer to 1 and this denotes a strong positive relationship. The relationship between firm performance and internal integration has a P value of 0.795. This suggests a significant positive relationship between the variables. Firm performance and supply chain resilience have a P value of .699. This is above average and closer to 1, hence there is a significant positive relationship between the variables.

Table 4.3 Factor loadings

Communalities		
Construct	Initial	Extraction
CMM01	1.000	.911
CMM02	1.000	.951
CMT01	1.000	.973
CMT02	1.000	.915
TRU01	1.000	.964
TRU02	1.000	.935
TRU03	1.000	.980
RED01	1.000	.972
RED02	1.000	.979
RED03	1.000	.938
FLE01	1.000	.980
FLE02	1.000	.905
COL01	1.000	.979
COL02	1.000	.980
COL03	1.000	.973
OPE01	1.000	.976
OPE02	1.000	.979

OPE03	1.000	.976
MKS01	1.000	.789
MKS02	1.000	.884
MKS03	1.000	.939
FIN01	1.000	.980
FIN02	1.000	.957
FIN03	1.000	.925
DBU01	1.000	.969
DBU02	1.000	.981
TMW01	1.000	.975
TMW02	1.000	.953
TMW03	1.000	.969
TMW04	1.000	.971
CMU01	1.000	.962
WKR01	1.000	.936
WKR02	1.000	.971
Extraction Method: Principal Component Analysis.		

Factor analysis was done to aid in data summarization as it reduces large number of variables into fewer numbers. It extracts maximum common variance from variable and puts them in a common score. From the table above, the least score is 0.789 and the highest score is 0.98. This implies that all the above constructs are useful.

Table 4.4 Covariance of variables

			Estimate	S.E.	C.R.	P	Label
BC	<-->	FP	.872	.090	9.684	***	par_30
BC	<-->	SR	.822	.085	9.681	***	par_31
II	<-->	SR	.676	.071	9.492	***	par_32
FP	<-->	II	.721	.076	9.519	***	par_33
BC	<-->	II	.750	.079	9.545	***	par_34
FP	<-->	SR	.788	.082	9.645	***	par_35

Covariance provides insight into how two variables are related to one another. Covariance precisely refers to the measure of how two random variables in a data set will change together. A positive covariance means that the two variables at hand are positively related, and they move in the same direction a negative covariance mean that the variables are inversely related, or they move in opposite directions. No negative covariance was found to establish that there is no inverse relationship.

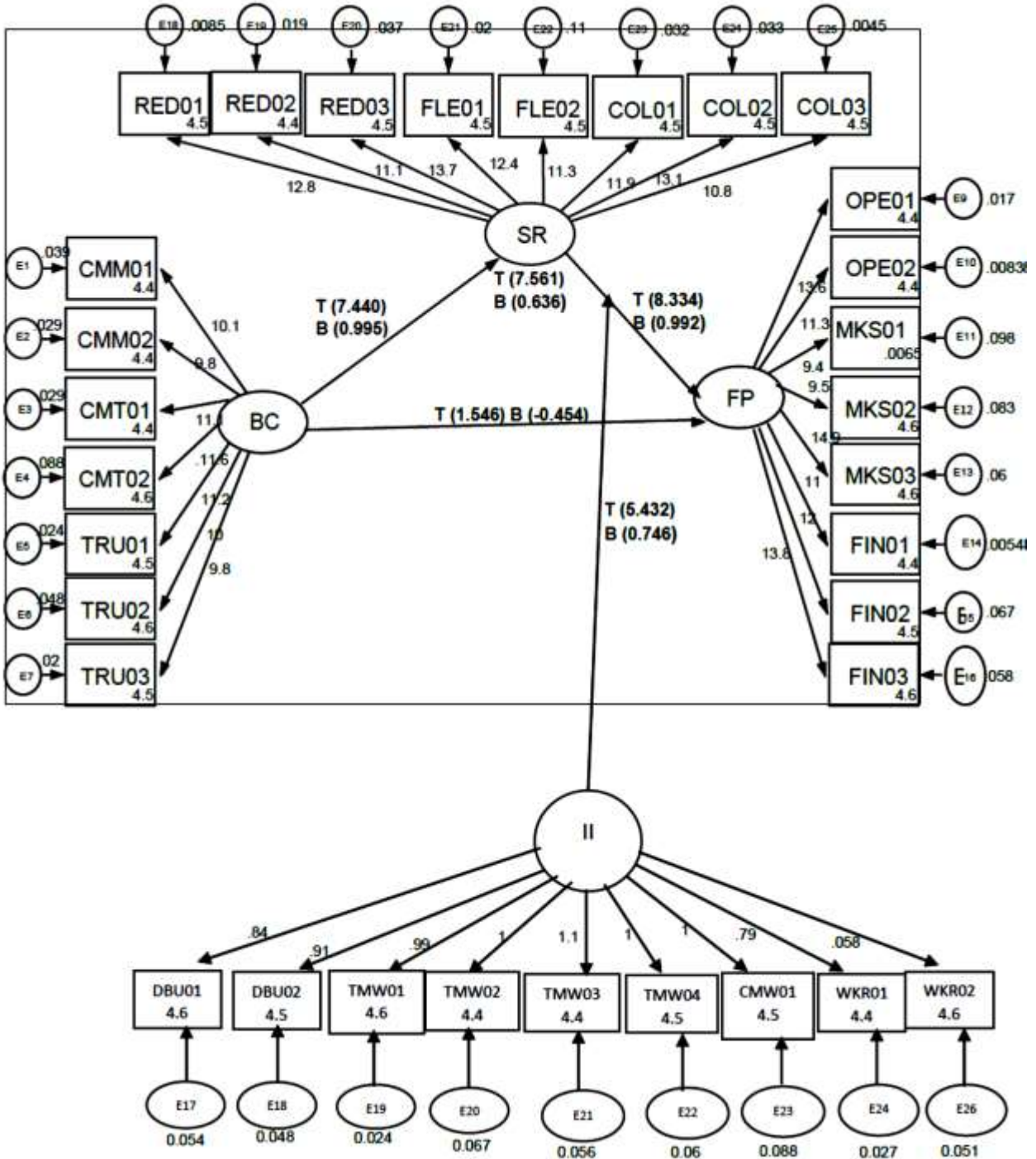


Figure 4.1: Structural equation model

NOTE: BC-Behavioral competencies, SR- Supply resilience, FP – Firm performance, II- Internal integration

Table 4.5 Regression weight results

Model	Estimate	S. E	C.R	P
BC- --> FP	.002	0.741	1.546	.122
BC- -->SR	.496	0.121	7.440	.000
SR- --> FP	.591	0.153	8.334	.000
SR- -->II*FP	.463	0.186	5.432	.000
BC- -->SR- - ->FP	.531	0.217	7.561	.000

Source: Field survey, 2022

The regression output suggest that the model is statistically not significant ($p < 0.05$). From the result, behavioral competencies explain only 32.9% of the variation in firm performance (r squared .329) which is far below average. A standard error of 0.741 and a critical ratio 1.546. This suggest that there is no direct impact of behavioral competencies on firm performance. The t-value is used to find evidence of significant difference between population means. It measures the size of the difference relative to the variation in the sample data. The effect of behavioral competencies on firm performance produced a t- value of 1.546 which is less than 1.96 and a p-value of 0.122 which is greater than 0.005. A negative Beta value of -0.454 implies no statistical significance was achieved. This implies that there is no significant effect of behavioral competencies on firm performance.

The model achieved statistical significance ($p = 0.05$). The results show that behavioral competencies explain 98.9% (r squared = 0.989) of the variation in supply chain resilience. There is a great effect size and therefore explains that there is a positive effect of behavioral competencies on supply chain resilience. This means behavioral competencies positively influences supply chain resilience. Behavioral competencies and supply chain resilience had an estimate of .496, a standard error of .121 and a critical ratio of 7.440.

The model achieved statistical significance ($p = 0.05$). The results show that supply chain resilience explain 98.3% (r squared = 0.983) of the variation in firm performance. This achieved a standard error of 15.3%, a critical ratio of 8.334 and P value of 0.000. The effect size is very huge and therefore explains that the significant effect of supply chain resilience on firm performance. A t-value of 6.580 implies that statistical significance is achieved. A positive Beta value of 0.992 is an indication of a positive effect size. The null hypothesis is therefore rejected. There is a significant positive effect of supply chain resilience on firm performance.

Moderation analysis was performed to examine the moderating effect of internal integration (II) on the relationship between supply chain resilience (SR) and firm performance (FP). This produced a standard error of 18.6% and a critical ration of 5.432. The analysis revealed a positive coefficient of 0.629, which is significant. The moderation effect on supply chain resilience and firm performance produced a P-value of 0.000 which is significant. The T-value of the moderation is also 5.432 which is greater than 1.96, hence significant. This implies that the moderating variable II has a positive significant effect on the relationship between SR and FP.

This study hypothesized that supply chain resilience played a potential mediating role in the relationship between behavioral competence and firm performance. Mediation analysis was performed to assess the mediating effect of SR on the linkage

between BC and FP. The results revealed that the total effect of BC on FP was positive but not significant at Coefficient = 0.168, $t=1.479$, $P=0.002$. With the inclusion of the mediating variable SR, the impact of BC on FP became insignificant at Coefficient 0.034, $t=0.957$, $P= 0.336$. The indirect effect of BC on FP through SR was found significant at Coefficient=0.636, $t=7.561$, $P=0.000$. This shows that relationship between BC and FP is fully mediated by SR. There is significant effect of the mediator (SR) on the relationship between BC and FP.

Table 4.6 Hypothesis testing and findings

Hypothesis	Relationship	P- value	Beta	T- value	Remarks
H1	BC → FP	0.122	-0.454	1.546	Not supported
H2	BC → SR	0.000	0.995	6.440	Supported
H3	SR → FP	0.000	0.992	6.580	Supported
H4	SR → II*FP	0.000	0.636	5.432	Supported
H5	BC → SR → FP	0.000	0.746	7.561	Supported

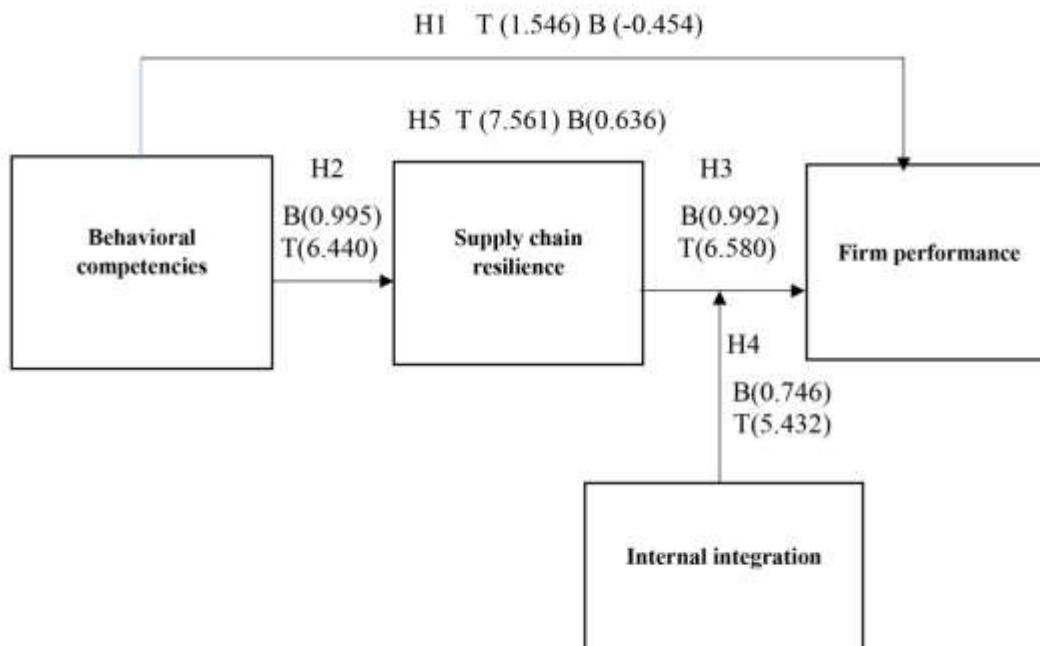


Figure 4.2: Results of hypothesis in a conceptual model

Behavioural competence was regressed on firm performance. With an effect of t -value 1.546 and statistical significance was not achieved ($p = .122$). Behavioural competencies have no direct influence on firm performance. Behavioural competencies positively and significantly affect supply chain resilience. This is evident with a t -value of 6.440 and a statistical significance of 0.000. The study examined the effect of supply chain resilience on firm performance and found a positive effect. This produced a t -value of 6.58 and a p -value of 0.000. Internal integration positively moderates the relationship between supply chain resilience and firm performance. This is evident with a t -value 5.432 which is greater than the desired 1.96. Statistical significance was achieved with a p -value 0.000 which is less than 0.05. Supply chain resilience positively mediated the

relationship between behavioural competencies and firm performance. This is evident with a t-value 7.561 and statistical significance was achieved at $p=0.000$. With the introduction of the mediator there is low direct relationship between the dependent variable behavioural competence and the independent variable firm performance. Hence, the mediator supply chain resilience positively influences the relationship between behavioural competencies and firm performance

4.2 Discussion of Results

The effect of behavioural competencies on firm performance

This objective tried to investigate the direct effect of behavioural competencies on firm performance. The study found no direct effect of behavioural competencies on firm performance. This can be attributed to lack of trust, poor communication and untimely communication. In Ghana, trust, communication and commitment are good competencies that many do not hold in high esteem. The level of trust among members within the supply chain in Ghana has always been a major problem. The timely release of vital information to aid in decision-making has also been a major challenge and these may account for the negative effect of behavioural competencies on firm performance.

The findings of the study is in agreement with Christopher *et al.* (2014). Christopher *et al.* (2014) examined the effect of relational competencies on supply chain performance. The study found no direct effect of relational competencies on firm performance.

Unlike the findings of Juttner and Maklan, (2011) and Wieland and Marcus Wallenberg (2013) who found a direct significant positive effect of behavioural competencies on firm performance. Behavioural competencies was measured by trust, commitment, communication and cooperation. The direct positive effect may be due the environment and country the researches were conducted. In Europe, trust and timely communication are held in high esteem.

The effect of behavioural competencies on supply chain resilience

The study sought to examine the influence of behavioural competencies on supply chain resilience in the health sector. The findings reveal a positive significant effect of behavioural competencies on supply chain resilience. This implies that managers need to foster trust, cooperation, commitment and collaboration among supply chain partners to increase the effectiveness of supply chain resilience. This finding is in agreement with Kale *et al.* (2000), Park (2015) and Wu *et al.* (2014) who found that behavioural competencies can significantly drive firm's resilience in the event of supply disruptions.

According to Wu *et al.* (2014) behavioural competencies (trust) among supply chain partners enables information sharing and enhances cooperation among members. BC allows supply chain partners to focus on common goals, decision making and establishing partnership to respond and resist supply chain disruptions. Wittman *et al.* (2009) emphasized the importance of BC which is a fundamental element to business relationship which will automatically lead to resilience.

The effect of supply chain resilience on firm performance

This objective of the study sought to examine the effect of supply chain resilience on firm performance. The study found a direct positive effect of supply chain resilience on firm performance. This implies that increased supply chain resilience strengthens firm performance. This is consistent with the findings of (Brandon-Jones *et al.*, 2014; Aragon and Sharma, 2003). Additionally, developing resilience is a precondition for

developing performance, otherwise organizations and their supply chains will be affected by the disruptive events that might result in huge financial losses to supply chains (Petit et al., 2013). This finding is further supported by the studies of Chowdhury and Quaddus (2017), Wicland and Marcus (2013 and Ponomarov and Holcomb (2009) that there is a direct positive effect of supply chain resilience on firm performance. This therefore suggest that health facilities in Ghana need to build resilience in order to resist and mitigate the effect of disruptive events to ensure firm performance.

The moderating effect of internal integration on the relationship between supply chain resilience and firm performance

The findings revealed that internal integration positively moderates the relationship between supply chain resilience and firm performance. This implies that there is the need for investment into equipments and devices that will enhance integration to finally lead to firm performance. Integration requires a database system that will ensure access to information irrespective the person's location. Dyer and Singh (1998) asserted that the performance of firms was enhanced when the trading partners combined, exchanged or invested in firm-specific idiosyncratic assets, knowledge and capabilities.

It is not surprising that the Ministry of Health in Ghana has introduced the Ghana Integrated Logistics Management System. A database that makes information available to its user at every point in time to aid in decision making. It is incumbent on all health facility management to ensure the procurement of a database accessible to all members in order to reap the benefit thereof and performance will be enhanced.

The mediating effect of supply chain resilience on the relationship between behavioural competencies and firm performance

This objective sought to examine the mediating effect of supply chain resilience on the relationship between behavioural competencies and firm performance. The study found that supply chain resilience positively mediates the relationship between behavioural competencies and firm performance. This implies that behavioural competencies would improve firm performance if supply chain resilience acts as a buffer in improving flexibility (i.e. using multiple suppliers) and reducing supply chain vulnerability (Li and Amini, 2012; Craighead et al., 2007; Wagner and Bode, 2006).

Using alternative suppliers may open additional options during supply disruptive events in supply chains (Juttner, 2005; Berger et al., 2004). Furthermore, alternative supplier options also allows the organization to reduce the risk associated with supply cost and supply failure (Tang and Tomlin, 2008). Such flexibility leads to higher firm performance (Basole and Bellamy, 2014; Hearnshaw and Wilson, 2013). This present study explored the operational context in terms of BC in which SR improves FP. Although there was no direct effect of BC and FP but when the mediator SR was introduced, there was a significant positive effect. This means SR positively mediates the relationship between BC and FP.

5.2 Managerial implications

To industry players in the health sector in Ghana, this research has provided significant insight into how firms can build resilience in turbulent times in order to ensure firm performance. In the wake of COVID-19 where the Ghanaian health sector suffered severely with price hikes due to shortages in the supply of medicines and medical consumables. This research work would help practitioners in the health sector to develop resilient strategies to mitigate the effect of a disruption. This implies that

planned behavior will not necessarily lead to actual behavior. This is because a planned or expected behavior may vary due to circumstances. Hence, supply chain managers must inculcate the habit of self-esteem and integrity into their members. By so doing, workers will exhibit the required behavior, which will enhance resilience, thereby ensuring firm performance.

If managers will adhere to the recommendations proposed by this study, there will be efficiency in its operations, risk control, survivability of the business and finally increased performance. To policy makers this work will serve as a guide for the formulation of policies that will direct the operations of supply chain practitioners in Ghana to ensure increased performance.

To the Ghanaian economy, if the recommendations made by this research is adhered to, it will help organizations to be more resolute to ensure they are not taken by surprise when a disruption strikes. The Ghanaian economy suffered huge income losses due border closure in the COVID-19 era. The implementation of the proposed resilient measures will help organizations to minimize the effect of such disruptions and to recover quickly.

To policy makers, this research proposes good behaviors expected from practitioners to be resilient. It is therefore inherent on policy makers to ensure that practitioners possess good communication skills, cooperation and are trusted. Policies can therefore be developed to ensure that people who are recruited possess these qualities to be resilient in order to enhance firm performance.

5.3 Theoretical Implications

The underlying theory driving this study is the theory of planned behaviour because according to the theory, the behaviour of people is guided by personal attitude, subjective norms and perceived behaviour, which will lead to intention. The Theory of planned behaviour assumes that the consequences on a behaviour affects the actions of people (behavioural belief), the expectation of people around influences their decision to act is a particular way (normative beliefs) and factors that may facilitate or impede performance of the behaviour (control behaviour), (Ajzen, 1991, 2012). Behavioural beliefs produce a favourable or unfavourable attitude toward the behaviour. Normative belief results in perceived social pressure or subjective norm: and control beliefs give rise to perceived behavioural control. In addition, attitude toward the behaviour, subjective norm and perception of behavioural control led to the formation of a behavioural intention.

This is not always the case that a perceived behaviour becomes the actual behaviour, Kruglanski (2019). This present study therefore identifies intention-behaviour gap. The immediate antecedent of behavior in the TPB is the intention to perform the behavior in question; the stronger the intention, the more likely it is that the behavior will follow. To return to the above example, we could assess the intention to buy a car in the next 4 months and determine whether participants did or did not implement their intentions. However, unanticipated events such as insufficient time, lack of money, or resources and not having a driver's license and a multitude of other factors may prevent people from acting on their intentions.

The degree to which people have actual control over the behavior depends on their ability to overcome barriers of this kind and on the presence of such facilitating factors as experience and assistance provided by others. In light of these considerations, this current study provides an extension of the TPB by introducing two parameters or variables, namely Self-esteem and Integrity. Self-esteem and integrity guide the actions of people to always put up the desired and good behavior. This present study therefore

postulates that attitude, subjective norms and perceived behavior leads to intention and self-esteem and integrity will finally lead to behavior. In this case, the behavior of people will be influenced by their self- esteem and intergrity at stake.

5.4 Recommendations

Considering the theoretical gap, the researcher makes the following recommendations: Esteem describes a person's overall subjective sense of personal worth or value. This implies how a person feels about their abilities and limitations. When you have a healthy self –esteem, you feel good about you self, respect for self and will therefore not do anything that will bring him or herself into disrepute. Self-esteem therefore influences good behaviour. Supply chain managers who hold themselves in high esteem should put up good behaviours that will enhance performance. Managers who have self-esteem will not take bribes and take decisions that affect their organizations negatively. They put their organizations at heart in their transactions to ensure that the firm comes first. They do not consider their personal gains ahead of theirs.

Based on the findings of this study, the researcher proposes what is termed as 5R's of supply chain resilience. The 5R's are Readiness, Resistance, Reliability, Redundancy and Recovery. If organizations can practice these, then improved performance is assured. Supply chain disruptions are inevitable in our world today. These disruptions include, trade barriers, port closure, fire outbreaks and pandemics of which our world suffers today (COVID-19). Restrictions on movement and closure of borders imply shortage of the flow of goods and services.

When Ghana experience closure of borders and other restrictions on movement, there was no inflows, which implied shortage of medicines and consumables to attend to patients. Readiness here implies building local capacity, proper procurement planning, staying alert and developing measures to lessen the effect of any unforeseen circumstance before it strikes. If health facilities in Ghana can develop a comprehensive procurement plan, develop multiple sources of supply including local one's, then there is the tendency to reduce the effect of any disruption along the supply chain.

Moreover, resistance to supply disruptions here refers to this is the ability to withstand any supply disruption. Resistance here implies implementing the readiness measures developed. If counter measures and plans are not adhered to, then there would be no effect. Resistance in this context explains the need for firms to offer variety of products and services to their customers. This implies that a sudden reduction in sales of a particular product due to a disruption will not lead to the closure of the firm, as the sale of other products can ensure survivability of the business in turbulent times. The provision of the necessary financial and technical assistance to ensure that these measures are implemented should be made available. To implement the readiness measure such as keeping excess stock, building local capacity, etc. funds should be available to execute these tasks.

Again, reliability refers to the degree to which the result of a measurement calculation or specification can be depended on to be accurate. If firms are able to implement plans and curative measures, no matter the disruption that occurs, they can still meet the demand of their customers hence their reliability. Customers today seek firms that can at every point in time be ahead and provide them with things that solves today and tomorrow problems. Patients who visit various health facilities require that their medications and laboratory examinations can be conducted in the same health facility other that referring them. Health facilities can meet this expectation of patients when they provide their needs and such health facilities will be termed has been reliable.

Moreover, on redundancy, firms need to keep adequate and buffer stock to cater for sudden changes in demand and failure in supply. Though holding inventory comes with its associated cost such as, rent, cooling, lighting, insurance, security etc, but the benefits thereof outweigh the cost. In case health facilities maintain adequate and excess stock, it helps to attend to patients without any delay, thus avoiding the possibility of losing the patronage, hence sales. Holding inventory further helps facilities to enjoy quantity discount from bulk purchases and reduces ordering cost. In our world and Ghana for that matter where supply chain disruptions are unavoidable, there is the need to have excess stock manage any unexpected disruption. Keeping excess inventory moreover helps health facilities to cater for any unexpected increase in patient attendance. Keeping buffer stock will help ensure continuity of operations if there is supply failure or disappointment.

Furthermore, recovery refers to the process of regaining possession or control of something. As supply chain disruptions are unpredictable, firms should be able to recover from its negative effect in a timely manner. The speed at which firms recover from a disruptive event is very important as it affects sales, customer and general performance of the firm.

Lastly, the study recommends that health facilities in Ghana should ensure that their systems are well integrated. This can be done when various departments in the health facility have a computer and a software that connects them. A proper integration means there will be timely availability of relevant information to aid in decision making. The introduction of the Ghilmis software by the Ministry of Health is a good move towards integration. There is therefore the need to ensure accessibility to all health facilities especially those in the rural communities.

5.5 Limitations and Future Studies

This study adopted a structured questionnaire of which respondents had to choose from the various options provided. This implies that the views and opinions of respondents, which were not included in the questionnaires, were not captured. Some respondents wanted to express themselves in their own way. This research was only limited to health facilities in Ashanti region and therefore generalization of the study's findings would be difficult. Although there are 16 regions in Ghana but the chose only Ashanti region since it has the highest number of health facilities.

This study examined behavioural competencies, supply chain resilience, firm performance, and the moderating effect of internal integration in the health sector. Future studies can replicate the same study by filling the empirical gap by using a qualitative method. The same study can be done by doing a moderated-mediation, introducing other variables and constructs to measure those variables. A similar study can also be replicated in a different sector of the Ghanaian economy for comparison purposes.

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