Modernizing Supply Chain through Cloud Adoption: Role of Cloud Enabled Supplier Integration in Gaining Competitive Advantage and Sustainability

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Abstract--- Cloud computing is deepening its roots in modern day businesses as companies are using it not only for their internal operations but also for suppliers and customers. Cloud enabled supplier integration system is one of the finest examples of such modernization which is being adopting by the firms for better organizational outcomes. However, evidence of such progress is quite rare. This study has targeted to identify the impact of cloud adoption on firm's sustainability and competitive advantage in mediating role of cloud enabled supplier integration in manufacturing industry of Thailand. Such manufacturing organizations of Thailand were taken in sample which have already adopted cloud system in their firms and 32 such entities' management was surveyed through questionnaire. Data was afterwards analyzed on AMOS and SPSS for hypotheses testing and screening purposes respectively. Results have confirmed significant positive impact of cloud adoption on firm's sustainability as well on competitive advantage along with significant mediating role of cloud enabled supplier integration. Originality of this study is inclusion of competitive advantage in model to check its relation with both cloud adoption and cloud integration. Implications of this study are there in paper along with limitations and future research indications.

Key Words: Cloud Adoption, Cloud Enables Supply Chain Integration, Firm's Sustainability and Competitive Advantage

1. Introduction

The concept of competitive advantage is not new, competitive advantage is something that an organization strives to have against the competitors or against the similar kind of organization [1]. This competitive advantage is what differentiates one organization from the other organization, and this is what is needed to lead the market. In the present era sustainability is also a very important and novel concept which is the sustenance of a firm at its peak conditions [30-31]. The primary goal of any firm is to get at the peak at the first place. Whenever the organization achieves that goal, the next and very important concept and step is the sustenance of that place and the progress is made step by step after that [2]. All of the present conditions are dependent on the process of responding to the external environment and the challenges that the external environment is offering. The need of the time is to go on with the flow that the external environment offers. It includes the responses that the organization gives to the outer environment. These responses are the ones that determine whether the organization is to stay or will be vanished away by the immense competition and the environment of immense innovation [3]. A very novel concept is the innovation in the supply chain of any organization, the supply chain is referred to as all of the steps, following which an organization can deal with the customers and consumers in a very smooth and proper way. The supply chain demands the organization to reframe and redesign it again and again, only in order to make it according to the customer of that time [32-33]. It means that the supply chain should be according to the ones with which the company is going to deal. The organization needs to make its systems according to the ones it is

going to deal with. Cloud adoption is a concept that deals with creating data bank of all of the useful information in a way that everything becomes integrated and everything becomes connected to each other [4].

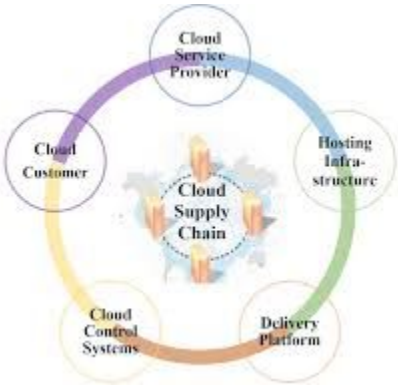


Figure 1: Cloud adoption in supply chain (Source: Semantic scholar)

Figure no. 1 is showing the cloud adoption process in supply chain system. In this way the information of the supply chain becomes connected and can be accessed from anywhere around the world. All of the steps occurring from the start till the end involves the supplier and the customers that need to be integrated at one place so that all of the information of both can be accessed from anywhere and can be controlled. The present study is aiming to know about the impact that cloud enabled supplier integration casts on the competitive advantage of the firm and the sustainability of the firm [5]. This study is aiming to know the advantages and the disadvantages that occur with cloud adoption method. This study will be elaborating that how competitive advantage is attained through cloud adoption and how it helps the organization is sustenance. This topic is very novel because there are almost no studies in the past that have discussed the importance of cloud adoption for the competitive advantage and sustainability of the organization. Almost no study in the past have addressed the global issue that how organizations need to modernize and innovate their supply chain for the sake of improvement and to gain competitive advantage. This study will be a very significant addition to the literature about the cloud adoption which will increase the level of cloud adoption for the firms that have been planning on doing it [6]. After the detailed study of this research the firms will find it easy to decide whether to implement this method in their systems or not and it will also be contributing to the policy making process of the organizations where the organizations will mark it mandatory to make their systems cloud enabled. Previous studies did emphasis on the concept of cloud enabled supply chain processes but they did not do it in the context of sustainability and competitive advantage of a firm [7]. The previous studies did not provide a complete analysis of the advantages of the cloud enabled systems and the implementation of such systems was also not emphasized this much in the past so the study is aiming to fill up those gaps.

2. Literature review

Resource Based View Theory

According to past literature [8] and published articles [9] written by researchers, who shares their view and approaches regarding the study of cloud adoption, many journals use the word ‘Cloud Computing’[10] instead of cloud adoption technique, to more clearly recognize the function of cloud adoption within the field of sustainability production and business management, referring to supply chain performance. Influence of IT capabilities that demands the supply chain integration as well as it is based on supply chain framework. The most suitable theory that can judge appropriate foundation for research is Resource based view theory (RBV). This theory [11] develops a huge platform for to acknowledge the abilities of supply chain while using the cloud based technology that will however increase the production of products and services simultaneously. RBV is supposed to build the gaps between the firm attainability of competitive advantage and managing diverse

physical resources (e.g. ICT and technical personal). As per studies [12], cloud computing allows firms to outsource their entire information technology (IT) process which will rather benefit the business performance therefore, it will concentrate more on the core business to enhance their productivity and innovation in offering services to customers for better outcome. Ref [13] RBV also forces cloud computing capabilities to utilize the businesses efficiency while using infrastructure that is based on IT without losing focus on basic customer needs and requirements. RBV suggest that cloud adoption or cloud computing has wide spread amongst different working organizations which has struggled to grow among many well-established companies and firms due to several security and safety measures which solves privacy and security related issues for different organizations with the help of IT infrastructure. Cloud computing helps the organization and its employee to secure their personal or private data from other organization, it also helps in dealing with security or privacy challenges appropriately without facing any negative consequences. It also deals with future planning of the organizations as elaborated by the conceptual and empirical evidences given by different researchers and RBV theorists [14] regarding the implication of cloud adoption within the circumstances of supply chain management that enable the cloud adoption. RBV further explains the view of points of analysts who encourages the use of ICT investment that have a positive impact on the firm performance which has also received maximum positive results as per different literature study [15].

2.1. Cloud Adoption Relationship with Firm's Sustainability

As per past studies [16], where less literature work is being found on the study of cloud adoption and its relation with firm's sustainability, though however RBV theory through its applied empirical evidences explains the connection between cloud computing that encourages the growth of business productivity or organizational performance. ICT capabilities and ICT [17] enabled models highlights the function of cloud adoption in making an organization strong and powerful due to many essential factors like: supply chain strategy, meeting the demands of customer needs, having cross check on the products, services and on the employees, resources capability these all factors influence the positive effect over firm's sustainability and performance. Usually firms make use of all the latest technology depending upon the approaches and strategies designed by IT infrastructure because of which firms gain sustainability and likewise attain competitive advantage. If firm's or organization chooses any emerging technology it will directly benefit the affectivity and efficiency of organization itself. Cloud computing is a form of a software that is used by multiple organizations that is used as a source of service, infrastructure as a service or research platform as a service. There are several gained advantages that are attuned with the use of cloud computing instead of traditional ICT services. Advantages of IT infrastructure [18] and cloud adoption, than further leads to the attainment of sustainability in business performance, supply chain performance or firms or organization performance. Cloud adoption is based on cloud operation or computing that can be a hybrid cloud or a virtual cloud adoption both of these types work for achieving sustainability in an organization. Thus, the following hypothesis is proposed:

H1: Cloud adoption has a significant impact on Firm's sustainability

2.2. Cloud Adoption Relationship with Competitive Advantages

Empirical evidences [19] regarding the function of cloud adoption analyzes that cloud computing benefits diverse organizational functions passively linking suppliers with customers demand because many studies, believe that cloud computing process is a cost effective process which is based on on-premises investment that is significant and sufficient for the production of goods. Cloud based computing services are considered beneficial for attaining or gaining competitive advantages [20] within an organization, however if the help of IT infrastructure cloud adoption process becomes more efficient. Cloud based services are used on demand by the organization managers or by the higher authorities. Theorists regarding RBV theory [21] suggest the implications of cloud based services to enhance the computing power and its reliability which further enhances rapid deployment capability within the framework of supply chain that produces a positive impact on the competitive advantage. Competitive

advantages are gained when competition between different companies, markets or organization that are processing goods and products rises. Perhaps, due to rise in competitors and competition, there cloud capabilities and cloud technologies can be a great resource for gaining competitive advantage for the supply chain operations based on small, medium and large enterprises. Many studies elaborate the concepts regarding the use of IT infrastructure with cloud based technology that is responsible for the resources to enhance the supply chain integration of partners that will for instance create a relationship between cloud computing and competitive advantage. Moreover, many researches are used on cloud computing that are finding empirical evidences [22] regarding the impact of cloud sourcing on competitive advantage. Thus, the following hypothesis is proposed:

H2: Cloud adoption has a significant impact on competitive advantage.

2.3. Mediating Role of Cloud Enabled Supplier Integration between Cloud Adoption and Firm's sustainability

As per studies by Shee, et al. [23], that elaborates the innovation of Cloud enabled supplier integration (CESI) as a source that transformed the ways in which many organization works to attain the compatibility between the two variables like cloud adoption and firm's sustainability. Ref [24] CESI added value for operation, management, and services provided through computing. RBV theory believes that CESI is responsible for increasing the economic value of organization that further enhances the firm's sustainability due to the use of IT infrastructure and cloud computing. CESI is responsible for developing the relation to procurement, production, management, performance, distribution, storage, and retailing and after sale services that enhances the value of sustainability of an organization. Therefore, CESI encourages the involvement of multiple partners to influence business processes with the multiplicity [25] of product volume and varieties. Meanwhile, involvement of multiple partners in an outsourcing arrangement further adds to this complexity of connectivity, tracing, tracking and visibility because of which firm's sustainability is attained with the use of cloud adoption. Thus, the following hypothesis is proposed:

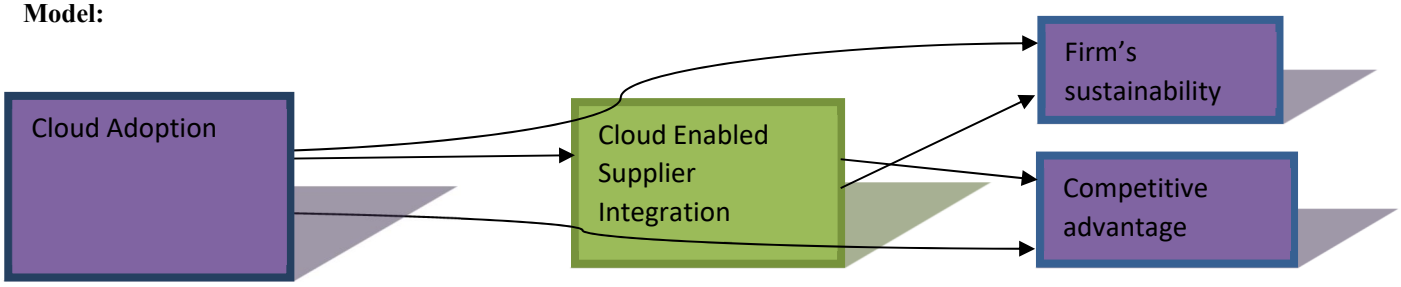
H3: CESI has a significant mediating role between the relationship of cloud adoption and firm's sustainability.

2.4. Mediating Role of Cloud Enabled Supplier Integration between Cloud Adoption and Competitive Advantage

According to literature studies [26] related to various researches, explain the role of CESI within the performance of cloud adoption and gaining of competitive advantage under the influence of It infrastructure and willingness to share information through information processing system installed within an organization. Ref [27] CESI has a huge impact on supply chain integration and supply chain management that enhances the capability of sustainability related to firms and organization. According to theoretical approach of RV theory, there is an intersection between supply chain and information system whose literature depends upon context of cloud-based technology which explores the effect of SCI on CESI which will consequently improves the performance of cloud computing on gaining completive advantages. In hyper dynamic markets which have access to regional supply chain ecosystem cloud adoption is considered as the construct in different studies to adopt or combine with ICT capabilities [28] to develop the growth and value of competitive advantage within the framework of an organization where CESI effectively and efficiently performs. CESI works along the information processes where supplier works and customer demands. CESI is divided into different factors consisting of flexibility, control, visibility and forecasting of future information and knowledge regarding the use of IT infrastructure within the framework of maintaining cloud-based adoption which further enhances the role of competitive advantage related to firm's capabilities. Thus, the following hypothesis is proposed:

H4: CESI has a significant mediating role between the relationship of cloud adoption and competitive advantage.

Model:



3. Research methodology

3.1. Population and sampling

The target population has been selected for this research study is Thailand, researcher observed the impact of cloud adoption and cloud enabled supplier integration on manufacturing sector of Thailand. As the top-rated manufacturing industries of Thailand are electronic, textile, agriculture and automobile that's why these industries have been selected as a sample of study. Moreover, these industries have well documented supply chain and they fully incorporate the supply chain in their business operations. Researcher collect the data from the managerial employees of these manufacturing industries about the impact of cloud enabled supplier integration in firm's sustainability. In sampling, the main issuing point is sample size because researcher has to be careful while selecting the sample size as (Hazen et al., 2015) reported that sample size has to be large enough while using the covariance-based approach under SEM. For this reason, researcher select the large sample size by using the (Klein, 2015) idea, according to which researcher can calculate the accurate sample size by formula number of questions*10. Researcher has been distributed questionnaire among 300 employees, whom researcher has been selected as a respondent of the study because the employees can better explain about the firm's sustainability and competitive advantages firms have been availed under the cloud adoption, 297 responses were valid.

3.2. Data collection procedures

In this research study, questionnaire has been used by researcher for the data collection of primary data. The data has been collected in numeric form, which can be analyzed statistically with different techniques. Before finalizing the questionnaire, researcher has to ensure that language must be in accordance to Thai peoples. Questionnaire originally written in English language then converted into Thai language by native speakers. Moreover, after data collection again translated into the English for the convenience of researcher in evaluation of data. Scale has been used for measurement has already been administered by other authors that's why content validity has to be ensured before implementing the questionnaire to whole sample. For this purpose, feedback has been collected from industrial practitioners and research scholars. Further, the finalized questionnaire has been distributed among the whole sample through online method.

3.3. Measurement model

In the measurement model, reliability and validity have been assessed through SPSS and AMOS. For assessment of reliability, researcher have been used two criteria such as composite reliability and Cronbach's α. According to the [22], both of these have to be greater than specific limit 0.70 because the satisfactory level of internal consistency and desirable level of items reliability have been ensured when values were greater than 0.70. Coming towards convergent validity, it has been assessed in order to examine the average variance extracted for each of the constructs. Results report that all AVE values were above 0.50 except for cloud adoption construct (0.41) and Ext_ pressure (0.47). According to [25], these values point out that most of item variations were explained by latent factor structure. Hence, the convergent validity of the constructs has been confirmed. As far as discriminant validity is concerned, it has been assessed by single criterion which states that Square root of AVE for each construct has to be greater as compared with the inter-correlation coefficients of the remaining constructs. As per [33], it indicated that latent constructs can explained more of the variations in its items than other constructs.

Common bias has been generated in the study, when common variance method has been used by respondents for evaluation of both independent and dependent variables [26]. There is a risk of common bias in this research study, as the same subjective measures used in the measurement of the variables of this study such as cloud adoption, cloud enabled supply chain integration and firm's sustainability. In order to test the common bias, Harman's single factor test has been accompanied. In this test, all the constructs have been included in order to checked whether most of the constructs accounted by one factor or not. If the not 50% of variance accounted by single factor then the common bias not existed. As per the outcomes, 76% of variance accounted by factors solution and 21% of variance accounted by single factor. Therefore, the inexistence of the common bias has been confirmed in this research study.

3.4. Hypothesis testing

For assessing the rejection or acceptance status of the hypotheses, hypothesis testing has been conducted with structure equation modeling. Structure equation modeling has been run by AMOS, covariance-based approach has been used by AMOS in order to run the SEM. Hypothesis testing has been accompanied by performing two steps, first step is to observed the direct effect in which the impact of cloud adoption on supply chain performance has been evaluated and in second step, the moderation effect has been observed such as the impact of cloud enabled supplier integration on the firm's sustainability and competitive advantage has been evaluated. After this evaluation, researcher has been reported about the acceptance or rejection status of the hypotheses.

3.5. Measures

CA was measured with the scale developed by [31], with the help of five items that were taken on a five-point Likert scale. Then CESI was assessed by the scale developed by the researcher [32] and here four items were taken on a five-point Likert scale and were assessed. FS was measured by a scale developed by [25], four items were taken and measured on a five-point Likert scale. Finally, CA was measured by the scale developed by [27] and five items were taken which were measured on a five-point Likert scale.

4. Empirical results

4.1. Demographics

This study was conducted in Thailand. This study targets the population of small, medium and large firms of Thailand. The sample was selected from these firms of 300 people, but only 297 people were respondents from which 124 respondents were male and the 173 were female. 7.7% of the respondents were graduated, post graduated were 47.8%, masters were 41.1% and others were 3.4%. The 82.2% of the people who responded were having the age between 21 and 30, 31-40 was the age range of 14.1% people. 3% respondents were between 41 and 50, and 7% were above 50 years old.

4.2. Descriptive Statistics

Table 1. Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error
CA	297	1.00	5.00	3.5589	1.11999	-.754	.141
CESI	297	1.00	5.00	3.6023	1.05982	-.903	.141
FS	297	1.00	6.33	3.3984	1.08198	-.235	.141
CMA	297	1.00	5.00	3.4302	1.10269	-.605	.141
Valid N (listwise)	297						

Above table of descriptive statistics is showing that there is no outlier in given data because maximum values are in threshold range of 5 point Likert scale as skewness value is between -1 to 1 which is threshold range of normality assumption so, the data is normal and valid, it is also valid to go for further testing.

4.3. Rotated component matrix

Table 2. Rotated Component Matrix

	Component			
	1	2	3	4
CA1			.823	
CA2			.847	
CA3			.854	
CA4			.862	
CA5			.860	
CESI1		.687		
CESI2		.766		
CESI3		.843		
CESI4		.845		
CESI5		.835		
CESI6		.815		
CESI7		.827		
CESI8		.837		
FS1				.686
FS2				.722
FS3				.767
CMA1	.837			
CMA2	.863			
CMA3	.869			
CMA4	.881			
CMA5	.880			
CMA6	.889			
CMA7	.855			
CMA8	.827			
CMA9	.818			
CMA10	.806			
CMA11	.717			
CMA12	.742			
CMA13	.729			

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
A. Rotation converged in 6 iterations.

Above table of rotated component matrix is presenting almost all the pointers are showing factor loading more than 0.7, it means all the pointers are qualify to added in further hypothesis testing, because all the factor loading is in appropriate threshold level and all are in fit and valid sequence and range. Moreover, there is no irritable loading in data shown in the RCM and data is good to go for further testing techniques.

4.4. Convergent and discriminant validity

Validity master sheet was used to settle the convergent and discriminant validity of the research model variables. Discriminate validity provided the discrimination between variables while the convergent validity was measured with the help of composite dependability and average variance extracted. Following are the results of both validities:

Table 3. Convergent and discriminant validity

	CR	AVE	MSV	Max(H)	CA	FS	CMA	CESI
CA	0.950	0.793	0.366	0.951	**0.890**			
FS	0.866	0.684	0.537	0.963	0.402	**0.827**		
CMA	0.915	0.750	0.537	0.986	0.410	0.733	**0.866**	
CESI	0.958	0.741	0.366	0.989	0.605	0.558	0.512	**0.861**

The results of convergent and discriminant validity show that the overall model is a good fit because the composite reliability of each variable is more than 70% and average variance extracted is more than 50% while the discriminant validity shows that loading of each variable discriminates from others. Every variable has maximum loading with itself as compared to with others, so these validities prove the authenticity of collected data.

4.5. CFA

Table 4. CFA

Indicators	Threshold range	Current values
CMIN/DF	Less or equal 3	2.256
GFI	Equal or greater .80	.843
CFI	Equal or greater .90	.955
IFI	Equal or greater .90	.955
RMSEA	Less or equal .08	.065

CMI is less than 3, GFI is greater than .80, CFI is greater than .90, IFI is greater than .90 and RMSEA is less than .80. all of the current values are totally as per the given range of threshold.so, the data which is given is reliable and valid for the further testing. The screenshot of CFA is given below:

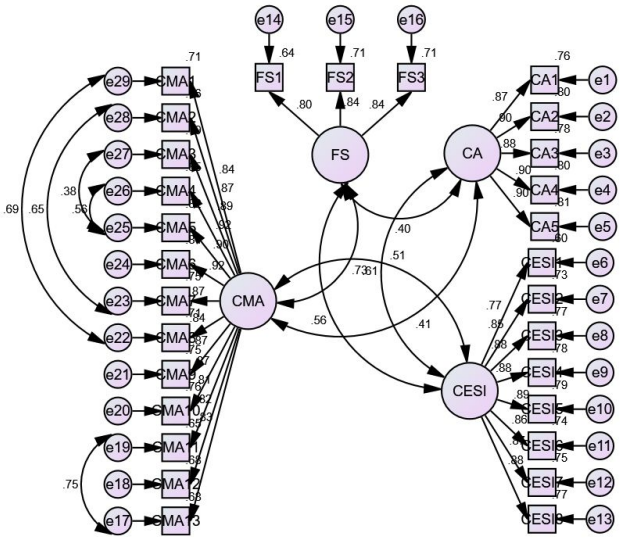


Figure 2: CFA

4.6. Structural Equation Modeling

Structural equation modeling is a multivariate regression analysis which is used mostly in primary data to settle the hypothesis of the study at the same time. SEM provides the facility of direct regression test and indirect regression test in a single structural model. Following table shows the results of structural equation modeling;

Table 5. SEM

Total effect	CA	CESI
CESI	.589***	.000
CMA	.395***	.407***
FS	.368***	.457***
Direct effect	CA	CESI
CESI	.589***	.000

Total effect	CA	CESI
CMA	.156*	.407***
FS	.099	.457***
Indirect effect	CA	CESI
CESI	.000	.000
CMA	.240**	.000
FS	.269**	.000

The structural equation model concluded that the impact of CA on FS is 36.8% and this impact is significant and important. It means the 1 % change in CA will cause almost 37% change in FS. This table is also showing that the significant and important positive impact of CA on CMA which is 39.5%. it means that 1% increase in CA will cause 39.5% increase in CMA. The impact of CA on CESI is 58.9% which is significant and positive. The impact of CESI on CA in none. The impact of CESI on FS is 45.7% which is significant. The impact of direct effect between CA and CESI is same as total effect. The impact of CA on CMA is 15.6% which is significant, and the impact of CA on FS is 1%. And the impact of CESI on CA, CMA, and FS is same as total effect. This table has shown the indirect effect also, the impact of CA on CESI is none, on CMA it is 24% and significant and positive. The impact of CA on FS is 26.9 which is also significant and positive, and CESI has no impact on CA and FS.

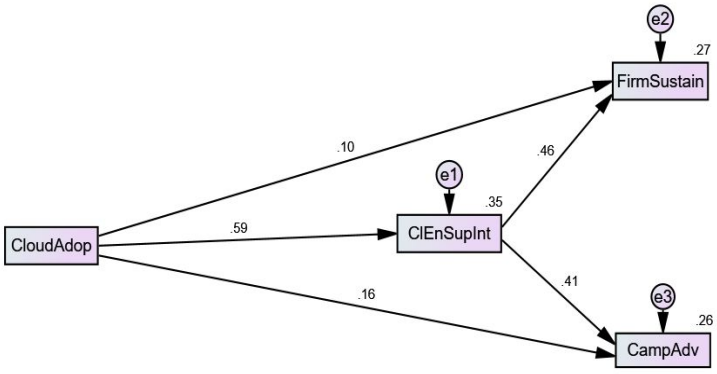


Figure 3: SEM

5. Discussion and Conclusion

5.1. Discussion Regarding the Research Work

The aim behind the conduction of this research was to know about the impact that cloud adoption (CAN) casts on firm's sustainability (FS) and competitive advantage (CA) the study also aimed to know the impact that cloud enabled supplier integration (CESI) casts as a mediating variable between these. The first hypothesis proposed in the study was that, "There is a significant impact of CAN on FS". This hypothesis is accepted and the base is the work of Khajeh-Hosseini who referred CAN as a toolkit for the firm to decrease its costs and increase its sustainability and efficiency [29]. The next hypothesis put forward was that, "CAN has a significant impact on CA", this hypothesis is accepted as Géczy also accepted that CAN increases the efficiency of a firm while being cost effective for the firm as well, this shows that implementing CAN provides the firm with an advantage that other firms do not possess, this acts as a competitive advantage for the firm. The third hypothesis proposed was that, "CESI significantly mediates between CAN and FS" this hypothesis is accepted as Poolsatitiwat stated that enabling a cloud-based system allows the firms to increase sustainability in tough environments as well and it is possible only by CAN method [16]. The fourth hypothesis proposed was that, "CESI plays a significant mediating role between CAN and CA." This hypothesis is accepted as well and the reason is that RD. Kahlenburg suggested and accepted that cloud based systems are sustainable and efficient for

the firm, the firm can work both smartly and cost effectively by choosing a method like this, these things act as a competitive advantage for the firm and differentiates the firm from other firms [17].

5.2. Conclusion of the Study

The study aimed to know about the nature of the relationship that exists between CAN and FS and the impact of CAN on CA. This study took CESI as a mediator between CAN and FS and between CAN and CA. The area that was selected for the purpose of data collection was small and medium to large organizations listed with the Chartered Institute of Logistics and Transport in Thailand. Questionnaires were filled by almost 300 respondents, 297 were valid and those resulted in the statements that CAN positively increases FS and it positively impact CA. The results also stated that CESI is a very effective and important mediator between CAN and FS and acts to increase FS. It also stated that CAN and CA are positively and significantly mediated by CESI.

5.3. Implications of the Study

The present study is providing a very good base for a very novel and least discussed topic as CAN and CESI. These variables are both quite new and important for the firms as well for facing the challenging environment these days and this study is a good to go base for the firms that want to attain competitive advantages over other competing firms. Going through this research work, firms can apply CAN in their setup so that FS and CA can be attained there as well. CAN could be included in policies of the organizations as well in order to create CA effectively.

5.4. Limitations and Future Recommendations of the Study

This study is limited in its sample selection area, future studies can be conducted by selecting a larger sample area and expanding the research area as well. Future studies can also focus on the organizations that have already implemented CAN in their systems in order to analyze the results and to see if the outcomes are the same as the results of this research work or not.

References:

[1] M. Dobrinoiu, "The Influence of Artificial Intelligence on Criminal Liability," *LESIJ-Lex ET Scientia International Journal,* vol. 26, pp. 140-147, 2019.

[2] M. Elish, "Situating methods in the magic of big data and artificial intelligence," *Communication Monographs, forthcoming,* 2017.

[3] J. Fletcher, "Deepfakes, Artificial Intelligence, and Some Kind of Dystopia: The New Faces of Online Post-Fact Performance," *Theatre Journal,* vol. 70, pp. 455-471, 2018.

[4] P. Gasser, R. Loss, and A. Reddie, "Workshop Summary Report-Assessing the Strategic Effects of Artificial Intelligence," Lawrence Livermore National Lab.(LLNL), Livermore, CA (United States)2018.

[5] R. Giménez-Figueroa, R. Martín-Rojas, and V. J. García-Morales, "Business intelligence: An innovative technological way to influence corporate entrepreneurship," *Entrepreneurship-Development Tendencies and Empirical Approach,* 2018.

[6] C. Villani, Y. Bonnet, and B. Rondepierre, *For a meaningful artificial intelligence: Towards a French and European strategy*: Conseil national du numérique, 2018.

[7] Y. Zhao and C. Liu, "The Lean Solution of Hospice Service Design in the “Internet+” Era," in *International Conference on Applied Human Factors and Ergonomics*, 2019, pp. 315-326.

[8] B. Steiner, K. Lan, J. Unterschultz, and P. Boxall, "Applying the resource-based view to alliance formation in specialized supply chains," *Journal of Strategy and Management,* vol. 10, pp. 262-292, 2017.

[9] M. A. Hitt, C. M. Carnes, and K. Xu, "A current view of resource based theory in operations management: A response to Bromiley and Rau," *Journal of Operations Management,* vol. 41, pp. 107-109, 2016.

[10] J. W. Rittinghouse and J. F. Ransome, *Cloud computing: implementation, management, and security*: CRC press, 2017.

[11] M. A. Hitt, K. Xu, and C. M. Carnes, "Resource based theory in operations management research," *Journal of Operations Management,* vol. 41, pp. 77-94, 2016.

[12] D. Sedera, S. Lokuge, V. Grover, S. Sarker, and S. Sarker, "Innovating with enterprise systems and digital platforms: A contingent resource-based theory view," *Information & Management,* vol. 53, pp. 366-379, 2016.

[13] P. Bromiley and D. Rau, "Operations management and the resource based view: Another view," *Journal of Operations Management,* vol. 41, pp. 95-106, 2016.

[14] R. A. Schulz, A. Verbeke, and C. A. Backman, "The Drivers of Corporate Climate Change Strategies and Public Policy: A New Resource-Based View Perspective," 2017.

[15] R. Dubey, A. Gunasekaran, S. J. Childe, C. Blome, and T. Papadopoulos, "Big Data and Predictive Analytics and Manufacturing Performance: Integrating Institutional Theory, Resource-Based View and Big Data Culture," *British Journal of Management,* vol. 30, pp. 341-361, 2019.

[16] N. Khan and A. Al-Yasiri, "Identifying cloud security threats to strengthen cloud computing adoption framework," *Procedia Computer Science,* vol. 94, pp. 485-490, 2016.

[17] Lynch, D., Smith, R., Provost, S., Yeigh, T., & Turner, D. (2017). The correlation between 'Teacher Readiness' and student learning improvement. International Journal of Innovation, Creativity and Change, 3(1), 1.

[18] K. Mezghani and F. Ayadi, "Factors explaining IS managers attitudes toward cloud computing adoption," *International Journal of Technology and Human Interaction (IJTHI),* vol. 12, pp. 1-20, 2016.

[19] R. A. Noe, J. R. Hollenbeck, B. Gerhart, and P. M. Wright, *Human resource management: Gaining a competitive advantage*: McGraw-Hill Education New York, NY, 2017.

[20] J. M. Namada, "Organizational learning and competitive advantage," in *Handbook of Research on Knowledge Management for Contemporary Business Environments*, ed: IGI Global, 2018, pp. 86-104.

[21] T. M. Jones, J. S. Harrison, and W. Felps, "How applying instrumental stakeholder theory can provide sustainable competitive advantage," *Academy of Management Review,* vol. 43, pp. 371-391, 2018.

[22] Malik, K., & Khan, F. N. (2013). Narcissistic Leadership at Workplace and the Degree of Employee Psychological Contract: A Comparison of Public and Private Sector Organizations in Pakistan. International Journal of Economics Business and Management Studies, 2(3), 116-127.

[23] H. Shee, S. J. Miah, L. Fairfield, and N. Pujawan, "The impact of cloud-enabled process integration on supply chain performance and firm sustainability: the moderating role of top management," *Supply Chain Management: An International Journal,* vol. 23, pp. 500-517, 2018.

[24] S. Bruque-Cámara, J. Moyano-Fuentes, and J. M. Maqueira-Marín, "Supply chain integration through community cloud: Effects on operational performance," *Journal of Purchasing and Supply Management,* vol. 22, pp. 141-153, 2016.

[25] M. Nandy, S. Lodh, and D. McAleer, "Factors Influencing Firm Sustainability Report External Assurance and the Contingent Firm Choice of External Assurance Provider," 2019.

[26] Kashif Imran, Muhammad Usman and Muhammed Nishat (2013). Banks Dividend Policy: Evidence from Pakistan. Economic Modelling, 32: 88-90.

[27] J. Chen, M. Shallcross, G. Pingali, G. Africa, and R. Childress, "A New Service Management Architecture for Enterprise Hybrid Cloud," *IEEE ISSE, October,* 2016.

[28] P. Radanliev, D. De Roure, J. R. Nurse, R. Nicolescu, M. Huth, S. Cannady, and R. M. Montalvo, "Integration of cyber security frameworks, models and approaches for building design principles for the internet-of-things in industry 4.0," 2018.

[29] H. Gangwar, H. Date, and R. Ramaswamy, "Understanding determinants of cloud computing adoption using an integrated TAM-TOE model," *Journal of Enterprise Information Management,* vol. 28, pp. 107-130, 2015.

[30] Chienwattanasook, K. & Jermsittiparsert, K. (2018a). Sustainability Related Supply Chain Risk: Causes and Consequences. International Journal of Management and Business Research, 8(4), 75-88.

[31] Chienwattanasook, K. & Jermsittiparsert, K. (2018). Sustainable Supply Chain Governance Mechanisms: Strategic Approaches to Corporate Sustainability. International Journal of Management and Business Research, 8(4), 1-12.

[32] Sutduean, J., Harakan, A., & Jermsittiparsert, K. (2019). Exploring the Relationship between Supply Chain Integration, Product Innovation, Supply Chain Performance and Firm Performance: Does Supply Chain Information Strategy Matter?. International Journal of Innovation, Creativity and Change, 5(2), 175-192.

[33] Kamran, H.W., S.B. Mohamed-Arshad, and A. Omran (2019). Country Governance, Market Concentration and Financial Market Dynamics for Banks Stability in Pakistan. *Research in World Economy,10*(2),136-146.