IMPACT OF RELATIVE ADVANTAGE AND COMPUTABILITY ON CLOUD COMPUTING ADAPTION: THE MEDIATING ROLE TOP MANAGEMENT SUPPORT AND UNIVERSITY IMAGE

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ABSTRACT

The main purpose of the current study is to examine the impact of relative advantage and compatibility on the cloud computing adaption among the Indonesian university graduates. Additionally, the study has examined the mediating role of top management support and university image. The findings revealed that Upgrading system may result is getting the work done in fast pace and helps to learn new skills. In large size institutions, it is comparatively easy to get the work done using sufficient workers who can concentrate well while working as a group. Management can suggest implementing cloud computing as it will help to reduce the workforce and equipment as most of the work will be done by cloud computing leading to reduction in cost. Subsequently, the main purpose of the firm is to increase their size and also how to execute their business proficiently and how to settle on some specific choice or decision. The organization may face issue regarding assignment coordination, and they will need to have data development to sort the things out which creates a need of new and innovative technology like cloud computing. Cloud computing for example, provide access to the data to numerous academic and non-academic individual and also to the students promptly.

Keywords: Relative Advantage, Cloud Computing, Management Support, University Image.

INTRODUCTION

In today's world, technology is one of the key aspects which has revolutionized our daily lives. The world is continuously evolving and transforming with the rapid changes and innovation in the field of technology. Additionally, the continuous technological innovation around the globe can make our lives much easier and comfortable. One of the new and innovative technology that is gaining popularity among people and is being increasingly used all around the world is cloud computing (Chetthamrongchai & Jermsittiparsert, 2019). Cloud computing is a metaphor that is used to describe networks. Cloud computing can be defined as delivering different services via internet. It is categorized into three stages i.e. hardware, software and network and their usefulness can be spread in any demanded platform (Kuo, Jhang,

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& Lin, 2018). Cloud computing can be used in various fields including education, health, government, business organizations etc. and they can use it to perceive changes that may occur directly or indirectly. In this study, cloud computing will be implemented in one of the higher education institutions (HEI) in Indonesia to analyze how it provide solution to the problems faced by the institution. Cloud computing can change the typical ways of teaching in Indonesia. According to the federal Ministry of education of Indonesia, it is mandatory for every student in HEIs to take the course related to ICT. Furthermore, most of the HEIs of Indonesia has computers or data center where they store the information regarding student, staff etc. With the implementation of cloud computing in HEIs in Indonesia, the cost of ICT infrastructure can be reduced. Power supply issue can also be resolved with the adoption of cloud computing as well. HEIs can also use cloud as their ICT infrastructure which can provide the institution with fast accessibility to data and information (Dumpit & Fernandez, 2017).

HEIs cannot put enough emphasis regarding usage and implementation of technology in the field of education. According to Ahmadov (2019), most of the students are addicted to the technology as it is the fastest way to gather information, therefore, they are more willing to use it. Furthermore, technology is not only beneficial in the field of education but it can also bring changes in field of economics, politics, and in our lives socially. Muchiri (2017) claimed that cloud computing can be used as an opportunity to provide power to the education institution to identify their weaknesses in order to make themselves better than other institutions and they can also transfer their data on the cloud making it easily accessible anywhere anytime. Cloud computing can serve as a new innovative technology to Indonesia and can help them to develop and improve their practices, processes and ideas. They can also gain benefit from cloud computing during budgeting process and for the implementation of new strategies. Cloud computing can also help the institutions to gain access to information like how many students have not paid their dues or which department has limited number of students. It provide the institution with opportunity to control the activities and make improvement where necessary to make institution more efficient. Implementation of the cloud computing is a way of making changes in the dimension of educational system and in deliverance of services to the students (Birgersson & Granath, 2018). It can help HEIs to reduce cost related to updating equipment and its implementation, infrastructure, pay for services and hiring and training of employees for the new equipment which they operate by themselves. Cloud computing is a new invention that can be used by everyone and is required to pay only for what they use. In cloud computing all the department and units of HEIs can be incorporated in one single platform and they do not need to send data or information from one place to another separately. All the units and departments have access to the information from their mobiles, personal computer or from any other devices or equipment that has been incorporated on the cloud (Shiferaw & Cerna, 2016).

Lately, from all around the world, cloud computing is getting a lot more attention from different journal, academic writers, media, and technology companies including Walmart, Oracle, and Microsoft because of the opportunities and advantages associated with it. According to IDC market and firm analysis, in 2008, the cloud computing market was $16 billion and it raises up to $42 billion in 2012 (Rastogi & Sushil, 2015).

No research has been conducted that particularly focuses on implementation of cloud computing in higher educational institutions in Indonesia. This study will attempt to conduct research on some new areas but will mainly focus on what needs to be done to implement cloud

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computing in HEIs in Indonesia. Moreover, the study will also adopt different theories and model which include technology organization environment (TOE) framework as the main theory, innovation diffusion theory, and technology acceptance model (TAM). All the above mentioned theories especially TAM has been used in many researches to analyze the behavior, willingness, and acceptance of innovation and technology (Fidan, 2016). It is difficult for an individual to research on the adoption of technology as it requires large resources to test the technology before implementing it. However, the management of HEIs can conduct investigation about cloud computing before implementing it in their system (Fidan, 2016). TOE is used as the main framework to analyze the adoption of cloud computing. TOE model is specifically used to investigate and explore the decision of management regarding cloud computing where as other models focuses on individual user (Gutierrez, Boukrami, & Lumsden, 2015).

LITERATURE REVIEW

Different scholars and researchers used different concepts to explain cloud computing. According to Sanga and Kibirige (2016), cloud computing is a flexible environment for the performance of assets that consist of different stakeholders which provide measured benefit and function for a good's particular nature. Masdari, Salehi, and Jalali (2017) on the other hand had a completely different understating of the cloud computing and provided with the entirely different definition that is, it is parallel framework which consists of collection of machines that are interconnect to one another and are provisioned rapidly. Makori (2016) further illustrated that cloud computing is a flexible technology that provides good and quality services to its clients. The opinions of the last two mentioned scholars can be considered as the scholastic approach or point of view regarding cloud computing. Additionally, National Institute of Standards and Technology (NIST) also proposed a definition which is adopted by many to model for empowering universal access to an existing pool of configurable processing assets such as system supplier communication, application exertion, store, servers, and systems. The universal definition describe cloud computing as a plan of action that transfer computing services on web in a practical and a flexible manner (Mack, Marie, & Redican, 2017).

As explained in innovation diffusion theory, relative advantage is the degree of extent to which potential adopters look at the development in a better manner as compared to the predecessors (Dutta & Omolayole, 2016). The level of relative point can be defined as the level of extent to looking at the advantages that the development may bring to the organization whereas relative preference is looking at the advantages that can be conversely utilized as a part of adopted technology (Hassan, Nasir, & Khairudin, 2017). The innovation diffusion model proposes that the relative point of interest for advancement effect the tendency of organization to gain benefit from cloud computing. Both the decision of redesign or willingness to bring change in the existing technology depends upon several elements. The perceived benefit and opportunity arising from these education institutions is one of the key components.

Taylor (2019) identified the opportunities and benefits associated with the integration of cloud computing in educational institutions. Cloud computing can be used as a tactic to change the old ways of teaching and setting new standards in education as it will help the students to explore and learn new things and gain vast amount of knowledge and information. In Indonesia, the budget allocated to the education is one billion Naira. Relative advantage of implementing cloud computing in institutions is allied with the reduction in finances and also it provides

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students and lecturers with the opportunity to connect with one another anywhere anytime. This kind of technology can bring improvement in the education system of Indonesia (Munyoka, Runhare, & Dzimiri, 2019). According to the survey conducted on cloud computing, it can provide substantial benefits to the education system which includes training and easy interactions. The HEIs may can also cloud computing benefits to bring reduction in their cost of adopting technological innovation, time elements, cost of delivering tools and others (Malik & Sattar, 2017). When it comes to business organizations, cloud computing can help to reduce cost of training of employees which are provided to them in case of implementation of new technology (Farjon, Smits, & Voogt, 2019). Therefore, taking into account IDO and prior IT reception that utilizes TOE system, it is to believe that when the educational institution acknowledges the benefits of cloud computing, they like to adopt and implement it and want to include it as a part of their policy. As mentioned above, all of the institutions are keen to adopt cloud computing in their colleges to make advancement in education system and improve the quality of education.

Computability can be defined as the extent that a new thing is comprehended and perceived as reliable based on its current quality, need of potential user and past experiences (Dutta & Omolayole, 2016). Those thoughts which are perfectly in line with existing standards and quality are usually accepted more quickly as compared to the ones that have some uncertainties. Lundholm and Torres (2017) inquired senior residents about interchanging innovation data that they utilize, how they utilize it and also what they expect from it in future. The study indicated that most of the participants of the study used the technology to perform essential tasks. Likewise, cloud computing is compatible with present environment of the adopter and is in accordance with necessities required for innovation (Dutta & Omolayole, 2016). Cloud computing also transform former IT development and operating methods. Due to lack of similarities, the head of various organizations shows uncertainty towards the capability of technology as compared to their current technology in place (Nyeko & Ogenmungu, 2017).
According to innovation diffusion theory, computability can be defined as a stage in which the invention is considered to be reliable and valuable on the basis of its qualities and urges the user to make the decision to adopt new technology (Dutta & Omolayole, 2016). Innovation diffusion theory suggest that compatibility of invention with qualities and encounters is required as well as positive correlation to adopt and implement cloud computing in educational institution. Various experts of technology have conducted studies and applied TOE model which indicates that there is increase in compatibility to adopt cloud computing as compared to old technology system. This shows that cloud computing provides organizations such as data centers or IT bases and educational institutions the opportunity to gain benefit from it (Agrawal, 2017; Taylor, 2019). Therefore, it can be said on the basis of the compatibility, that educational institutions of Indonesia are compatible with cloud computing and they can gain benefit from it. It will provide them with the opportunities to learn new skills and enhance their knowledge and research work. Many of the universities are keen to move to cloud computing as they are aware of its advantages and the benefits the institution can gain from it.

Similarly, the cloud computing is significant for educational institution that recognizes that innovative technology is right choice and it can bring positive changes and improvement in their education system (Taylor, 2019). In addition, similarities also suggests that it is less dangerous to their potential user and is appropriate innovation for the educational institution. It is

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anticipated that due to vast similarities, organizations may be persuaded to adopt cloud computing. This prediction is reliable and is drawn from the outcomes of several researches on the adoption of cloud computing in educational institutions. In these studies, it was discovered that compatibility is one of the motivation factor that drive organizations to adopt cloud computing. For example, Stieninger, Nedbal, and Wetzlinger (2018) illustrated that the organization are more inclined towards cloud computing due to compatibility of internet with organizational qualities, beliefs, and technological tools. On the other hand, Stieninger et al. (2018) provided an alternate view and claimed that the organizations are more inclined to use cloud computing due to the similarities with their current technology and standards.

Top management support is a process of considering the general ideas about adopting cloud computing, gain information regarding advantages related to it, and also about the values and benefits its implementation will bring to the organization. Zolotov, Oliveira, and Casteleyn (2018) conducted a survey on the adoption of technology and the results illustrated that top management of educational institution is responsible to control the decision regarding the adoption and implementation of cloud computing. It is recommended to top management of educational institutions to use TOE model as it will help them in any step they take towards implementing cloud computing (Asare, Alejandro, & Kang, 2016; J. Singh & Mansotra, 2019). However, it is found in many studies that top management are powerful and it is difficult to find their support regarding the decision of switching to cloud computing and get their final approval (Stieninger et al., 2018). Educational institutions need top management support for financial, human, and technical resources to make the process of switching to cloud computing smooth and easier. To make the positive environment for new technology, support and initiative is required from top management, however, they decrease the support to adopt cloud computing claiming that is a strategic decision that more needs time and thinking.

In order to implement cloud computing, the management are also required to allocate budget to human resources and specialized equipment and tools. Furthermore, they also defy the needs of user to implement the cloud computing. Therefore, it is unlike that the top management provide support to the cloud computing implementation. Top management support is needed to have access money and also special assets of the organization that are required to implement cloud computing. (Adapted from (Hassan et al., 2017). An innovation diffusion model is one of the mean through which the top management could be persuaded and to make them aware about the importance of implementing cloud computing. In HEIs, top management is responsible for adoption of technology and its utilization and administration and making decision regarding implementation of cloud computing.

Size of a firm can be defined as the number of total workers, lecturers, students, market sector, and target business size, and the capital spend on the resources by management. Senyo, Effah, and Addae (2016) further elaborated that big institutions are aware of the value of assets that can be used to fund the new technology. Therefore, most of the institutions position is that they can gain significant benefits by moving to cloud computing. According to innovation theory, the size of the organization is identified on the basis of the management that is willing to perceive and adopt any new development in technology (Dutta & Omolayole, 2016). This applies specifically to the educational institution to implement and embrace cloud computing. Similarly, using TOE model also helps the management to measure the impacts of cloud computing and encourages the authority figures to implement it.

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Stieninger et al. (2018) conducted a research in firm size and results indicated that there exist a positive correlation between number of workers and their yearly income and cloud computing. Furthermore, big organizations are more inclined towards implementing cloud computing as compared to small organizations. One of the reason behind this is that big organizations has more asset (financial and human resources) at their disposal to spend on new technology and innovation (Marra, Antonelli, & Pozzi, 2017). In addition, the management of higher education institutions should provide more technological facilities and equipment and develop technology infrastructure to perform their task rapidly and efficiently to meet their deadlines.

H1: RLAD has significant impact on the CCAD
H2: COMPAT has significant impact on the CCAD.
H3: TOPM has significant impact on the CCAD
H4: UNIM has significant impact on the CCAD
H5: RLAD has significant impact on the TOPM
H2: COMPAT has significant impact on the TOPM.
H6: RLAD has significant impact on the COMPAT
H8: COMPAT has significant impact on the COMPAT.
H9: TOPM mediates the relationship between the RLAD and CCAD
H9: TOPM mediates the relationship between the UNIM and CCAD
H9: COMPAT mediates the relationship between the RLAD and CCAD
H9: COMPAT mediates the relationship between the UNIM and CCAD

RESEARCH METHODOLOGY

One of the utmost robust technique PLS was generated by (Hair, Hult, & Ringle, 2016; Hair, Matthews, Matthews, & Sarstedt, 2017; Henseler, Hubona, & Ray, 2016; Ong & Puteh, 2017). According to the study it is a technique which is non-parametric in nature, however we can practice this technique during the investigation of large or small sample size data which is non-normal in nature (Ramayah, Cheah, & Memon, 2018; Singh & Prasad, 2018; Zahra, Hameed, Fiaz, & Basheer, 2019). The researchers in investigation of current model has worked with the Smart PLS 3.0 version for its calculation. At the same time, this software uses the graphical path modeling through the measurement inferred from other variables that are observed. In this study, the researchers have used the survey-based technique during the data gathering from the defendants. The survey was conducted with the sample of 450 questionnaires which were circulated for the data gathering between the defendants, however only 310 questionnaires were sent back out of total 450 questionnaires. 15questionnaires from the survey were exempted because the respondents had not filled these questionnaires appropriately as required. Hence, the total number of questionnaires which were appropriately use for this research work were 295, while the total response rate in this survey was estimated 65.55 percent.

Research Results

It is significant to consider the research of Henseler et al. (2016) who has suggested that the goodness-of-fit (GoF) is not suitable for the authentication of model (Hair et al., 2016;

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Hameed, Nawaz, Basheer, & Waseem, 2019). For instance, in data formed if we practice PLS path modeling the findings would show that for the model authentication goodness of fit is not suitable the appropriate statistical model, for the reason that it did not support in splitting the valid models from the models which were invalid in nature (Hair et al., 2016; Hameed, Basheer, & Anwar, 2018). However, in this respect for findings estimation the current research has practiced a two-step process such as the assessment of a structural model (SM) and the assessment of a measurement model (MM).

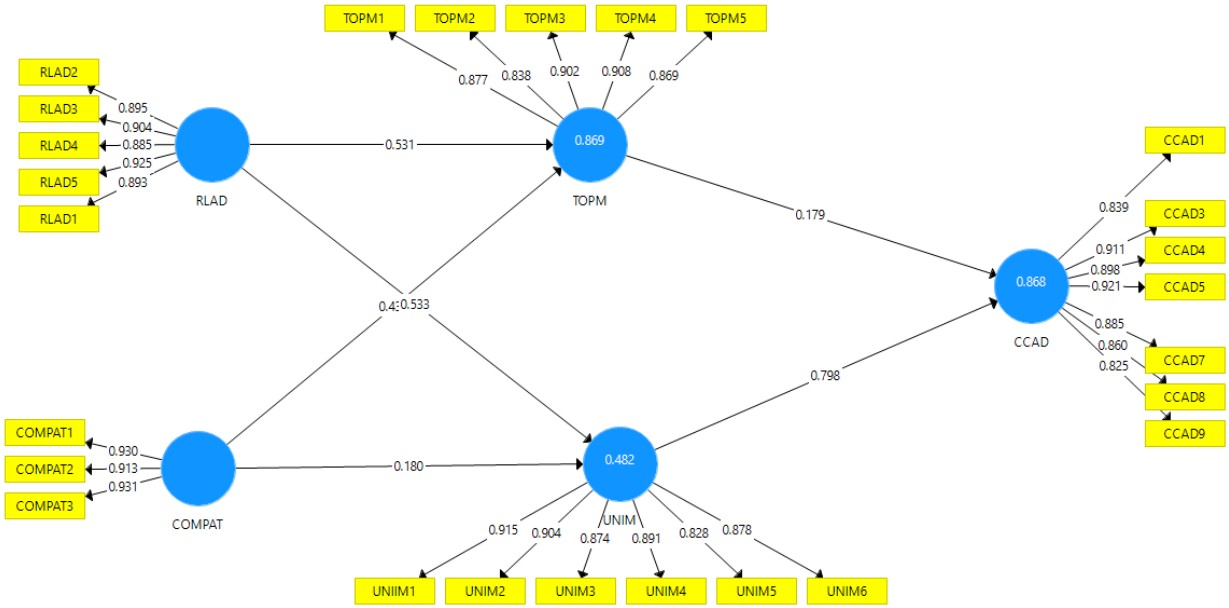

FIGURE 1
MEASUREMENT MODEL

Table 1
CROSS LOADINGS

	CCAD	COMPAT	RLAD	TOPM	UNIM
CCAD1	0.839	0.509	0.55	0.601	0.8
CCAD3	0.911	0.662	0.657	0.682	0.857
CCAD4	0.898	0.601	0.618	0.703	0.859
CCAD5	0.921	0.645	0.653	0.698	0.862
CCAD7	0.885	0.589	0.583	0.638	0.784
CCAD8	0.86	0.616	0.585	0.618	0.757
CCAD9	0.825	0.504	0.55	0.578	0.738
COMPAT1	0.647	0.93	0.83	0.861	0.615
COMPAT2	0.557	0.913	0.765	0.776	0.537
COMPAT3	0.658	0.931	0.806	0.837	0.623
RLAD1	0.611	0.81	0.893	0.813	0.595
RLAD2	0.588	0.76	0.895	0.793	0.639
RLAD3	0.592	0.792	0.904	0.817	0.595
RLAD4	0.595	0.742	0.885	0.799	0.602

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RLAD5	0.691	0.8	0.925	0.859	0.667
TOPM1	0.641	0.784	0.77	0.877	0.617
TOPM2	0.626	0.737	0.783	0.838	0.558
TOPM3	0.664	0.79	0.804	0.902	0.646
TOPM4	0.678	0.793	0.831	0.908	0.672
TOPM5	0.63	0.823	0.797	0.869	0.583
UNIIM1	0.837	0.579	0.638	0.616	0.915
UNIM2	0.834	0.571	0.619	0.622	0.904
UNIM3	0.824	0.566	0.603	0.626	0.874
UNIM4	0.814	0.595	0.626	0.646	0.891
UNIM5	0.758	0.518	0.582	0.577	0.828
UNIM6	0.815	0.564	0.576	0.62	0.878

The assessment of measurement model (MM) has included the determination of discriminant validity (DV), individual item reliability, internal consistency reliability (ICR) and convergent validity (CV) (Hair et al., 2016; Naala, Nordin, & Omar, 2017; Singh & Prasad, 2018). In the assessment of measurement model (MM) the first step was the estimation of individual item reliability which was calculated by the calculated theories from the outer loadings (Ramayah et al., 2018). For testing individual item reliability there is a rule of thumb , according to this rule the value of confined items must lie among the range of 0.5-0.7 (Basheer, Siam, Awn, & Hassan, 2019; Hair et al., 2016).

Table 2

	Cronbach's Alpha	rho_A	CR	(AVE)
CCAD	0.95	0.952	0.959	0.77
COMPAT	0.915	0.918	0.946	0.855
RLAD	0.942	0.943	0.955	0.811
TOPM	0.926	0.927	0.944	0.773
UNIM	0.943	0.944	0.955	0.778

The ICR is actually a degree at which the similar perception is calculated through various items with few precise scales. According to the managerial research the ICR hypothesis were calculated by few important estimators such as Cronbach's alpha coefficient and composite reliability coefficient (CRC). For the measurement of ICR procedures the estimator CRC was engaged. First of all other than Cronbach's alpha coefficient which was biased in very smaller amount during evaluation of reliability which were offered through CRC, while secondly on the other hand without allowing individual loading contribution it was anticipated that there was same involvement by all items in their theories (Henseler, 2018; Henseler, Ringle, & Sarstedt, 2015).

Furthermore, by Cronbach's alpha the reliability of scale could be under or over estimated. The CR deliberated that the interpretation of various loadings of indicators identical as Cronbach's α in which it is not a problem for the particular reliability coefficient was practiced. For the sake of model suitability the value of ICR must lie among the range of 0.91- 0.98

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according to the suggestion of Hair et al. (2016). Hair et al. (2016) claimed that the estimated value of competitive reliability must be more than or equal to 0.7.

The side at which the anticipated dormant theory has been actually demonstrated through item and associated with the degree of same dormant theory called as CV (Basheer, Hameed, Rashid, & Nadim, 2019; Ong & Puteh, 2017). By testing the Average Variance Extracted (AVE) of all dormant theories the value of CV has been calculated as per suggestions of researchers. Hair et al. (2016) has recommended that for every factor the value of Average Variance Extracted (AVE) must be equal or greater than 0.5.

Table 3
VALIDITY

	CCAD	COMPAT	RLAD	TOPM	UNIM
CCAD	0.878				
COMPAT	0.673	0.894			
RLAD	0.685	0.867	0.901		
TOPM	0.737	0.834	0.807	0.879	
UNIM	0.723	0.642	0.689	0.7	0.882

The level of difference among particular dormant theory and various theories called as DV (Henseler, 2018). For the evaluation of DV the Average Variance Extracted (AVE) has been practiced in the current research according to the suggestion from the researchers (Henseler et al., 2016). The DV proficient through developing the comparison among the square root of AVE and associations among the dormant theories (Henseler et al., 2016; Ong & Puteh, 2017).

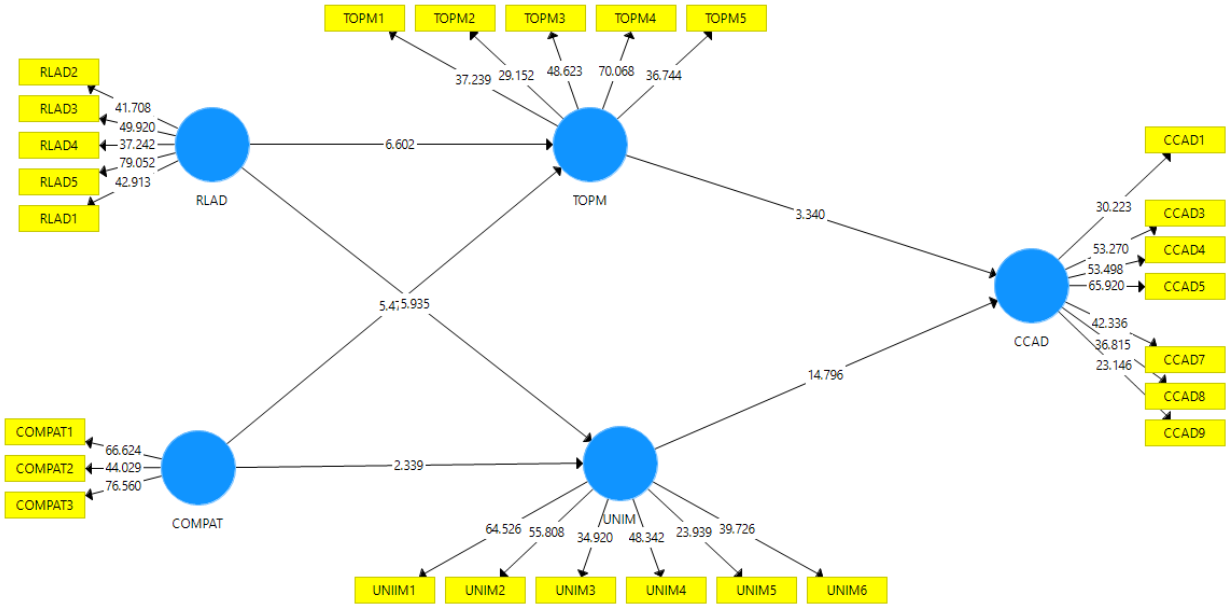

Figure 2
STRUCTURAL MODEL

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The researchers investigated the SM to test the level of R-square, predictive relevance (Q2), significance of SM, effect sizes, relevance and collinearity issues.

Table 4
DIRECT RELATIONSHIPS

	(O)	(M)	(STDEV)	(|O/STDEV|)	P Values
COMPAT -> CCAD	0.221	0.228	0.071	3.093	0.001
COMPAT -> TOPM	0.433	0.436	0.079	5.471	0
COMPAT -> UNIM	0.18	0.185	0.077	2.339	0.01
RLAD -> CCAD	0.52	0.513	0.077	6.731	0
RLAD -> TOPM	0.531	0.528	0.08	6.602	0
RLAD -> UNIM	0.533	0.529	0.09	5.935	0
TOPM -> CCAD	0.179	0.187	0.053	3.34	0
UNIM -> CCAD	0.798	0.79	0.054	14.796	0

To test the exactness of PLS evaluations the researchers practiced the boot strapping for the standard errors developments and t-statistics have also been called as non-parametric approach. However, it lets the scholars to estimate the path coefficient significance. The researchers also practiced the boot strapping method with a data sample of 5000 bootstraps for testing the significance of path coefficients (Hair et al., 2016; Hair et al., 2017; Henseler et al., 2016).

Table 5
MEDIATION

	(O)	**(M)**	**(STDEV)**	**(|O/STDEV|)**	**P Values**
COMPAT -> TOPM -> CCAD	0.077	0.082	0.031	2.514	**0.006**
RLAD -> TOPM -> CCAD	0.095	0.098	0.029	3.275	**0.001**
COMPAT -> UNIM -> CCAD	0.143	0.146	0.061	2.357	**0.009**
RLAD -> UNIM -> CCAD	0.425	0.415	0.064	6.672	**0**

The capability of anticipation of endogenous or dependent variables through the whole exogenous or independent variables is called as the coefficient of determination (R2). R-square is the estimation among the investigated items and the goodness of fit which are attained empirically with in the value limit from zero to one.

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Table 6 R SQUARE	
	R Square
CCAD	0.868
TOPM	0.869
UNIM	0.482

The researchers practiced the anticipated relevance such as scale to test through a predicted construct the relative predictive relevance on a dependent theory. In (SEM) model it highly significant for estimating the vital role of relative construct. In the current research the researchers also estimated the Q-square value with the support of blindfolding method.

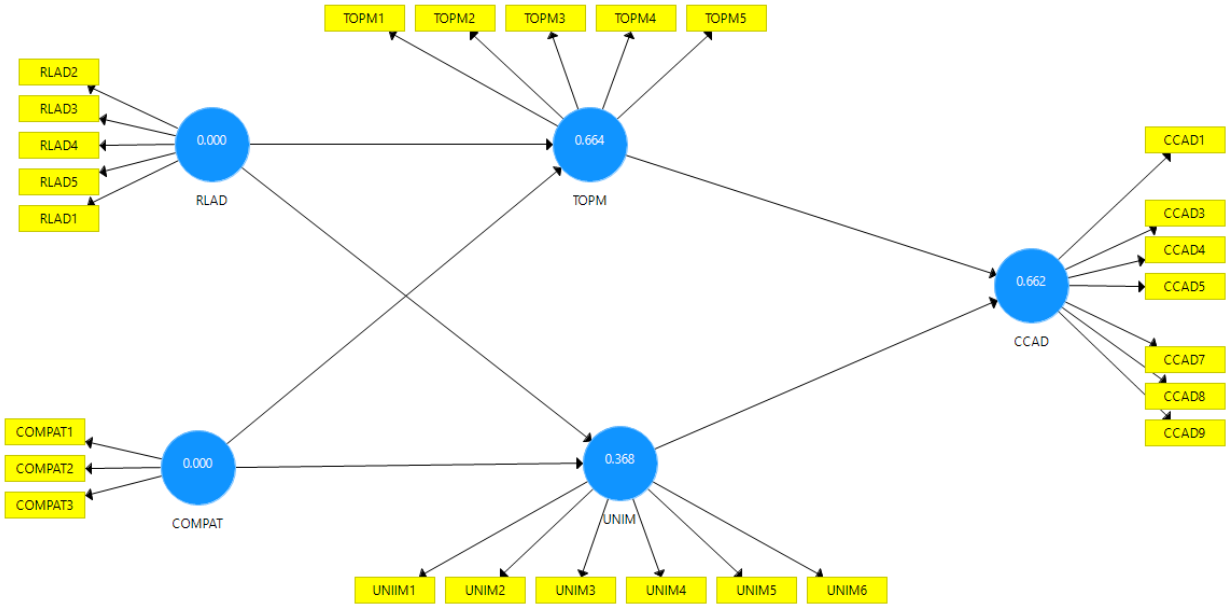

Figure 3
BLINDFOLDING

For testing the predictive relevance of theories, the researchers practiced the Cross validated redundancy approach. Due to this fact the valuation of method this approach comprises of path model, predicted eliminated data and components of structural model.

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Table 7 Q SQUARE			
	SSO	**SSE**	**Q^2 (=1-SSE/SSO)**
CCAD	1519	513.516	0.662
COMPAT	651	651	
RLAD	1085	1085	
TOPM	1085	364.303	0.664
UNIM	1302	822.449	0.368

CONCLUSIONS

According to Liu, Chan, and Yang (2018), cloud not only has ability to progress and develop the business activities but also helps to engage the six empowering agents of the business i.e. connection driven variability, covered unpredictability, market feasibility, business versatility, adaptability, cost, and environment integration. It is recommended to the companies or organization to make a decision regarding how the cloud-empowered services can be utilized in order to gain favorable and reasonable conditions in regards to some particular goal that will transform their quality of supply chain, operations and client connections.

In addition, one of the obstacle that most the organizations face is security concern due to which it result in delay in decision regarding implementing or switching to cloud computing (Pan & Chai, 2018). Many educational institutions outsource the information and data storage. Outsourcing information of the educational institution is unsafe and precarious. User of cloud consider that due to outsourcing, the information remain unprotected and any outsider can get access to the information of educational institution making cloud one of the best option to keep the data safe and secure (Ahmed, Majid, & Sharifuddin, 2016). Furthermore, by implementing cloud computing, the educational institutions can also block the sites and make the information inaccessible to certain parties or websites. Past researches on cloud computing were focused on the security demand, new development in IT and future requirements on the developing situations. Liu, Chan, and Ran (2016) suggested two plans of actions for the organizations that are ready to accept and implement cloud computing which include the new IT framework and new business action plan. Cloud computing is appropriate for small or medium level types of activities or operations (Liu et al., 2016).

With every passing day, the adoption and implementation of cloud computing is rapidly increasing. Varity of scholars from the field of education and from different organizations are suggesting that cloud computing is an appropriate new technology and claiming it to be more convenient, adaptable, and suitable for educational institutions. Several educational institutions acknowledges the fact that implementing cloud computing can be useful for cost reduction and it also provide a new way of sharing data and information (Badi, Tarhini, & Kaaf, 2017). Numerous studies were conducted to analyze the benefits that an educational institution can gain from implementing cloud computing (Mhouti, Erradi, & Nasseh, 2018; Wu & Chang, 2016) as well as efficient and better educational services (Mhouti et al., 2018). Wu and Chang (2016) conducted a research on benefits of cloud computing in relation to educational institution and the results indicated that cloud computing reduces the cost and results in increase the security of information, likelihood of assessing the information, and virtualization of information. The

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results also indicated that cloud computing can be beneficial for educational institution by implementing the cloud educational institutional model which consist of three characteristics: base (framework run on suppliers), stage (the framework focused on the improvement of supplier interface), and administration (framework on arrangements created by the suppliers). Mhouti et al. (2018) also conducted a research on cloud computing in educational institution and results illustrated that it is a technology that can be used easily and enhance the execution of activities, increase the information security, feasible for redesigning programs, enhance the data storage, and prevent the chances of doubling of information. The students and teachers also gain benefits from cloud computing as well such as online courses and exams, e-learning material, online submission of assignments, and online checking of papers and assignments.

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