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A Survey on Design and Development of Flexibility and Controlling in Modern trend using Cloud Computing

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ABSTRACT

Against the background of recent economic realities, certainly one of the bigger forces that is affecting businesses worldwide is cloud computing technology, whose advantages consist of agility, Cost savings, time to market, Competitive edge, time to capability, Flexibility, Sustainability, etc. The purpose of this study was to add to the body of knowledge that Might be implemented through researchers, IT organizations and businesses, alike to attain best results through focusing on factors of IT flexibility (connectivity, modularity, and compatibility) specific to cloud based services and solutions. The study findings provided statistical evidence that factors of IT flexibility (connectivity, modularity, and compatibility) specific to cloud computing have strong positive correlations on IT effectiveness. Also, the combination of three factors of IT flexibility, precise to cloud computing, explained 67% of the variance of IT effectiveness. The Connectivity factor predicted of IT effectiveness the most while the compatibility the less contribute to the prediction of IT effectiveness.

Keywords :- Capability, Flexibility, Sustainability.

I. INTRODUCTION

The construction industry is data intensive as Heterogeneous data are continuously generated as the project progresses. The data from different stages of the project are usually stored in silos; team server or desktop, individual desktop, laptops, smart phones, etc. Data integration is thus required for the overall project coordination because the inability to access a holistic view of data often leads to wrong decisions that could delay the project and also impact on performance and profitability of the project [1]. The traditional Information and Communication Technologies (ICT) solution is to acquire high-end capacity system to store, process and analyze data from its subcontractors. Deploying on-site solutions require a massive overhead (power, cooling, security, availability, updates) which comes with huge operational cost burden. Therefore, it is impractical to commission on- site ICT infrastructure for all projects due to the huge initial investment requirement. Besides, in-house computing provision is static in capability and usually more expensive to upgrade to meet a sudden upsurge in computing needs. The construction industry is about 90% small and medium enterprises (SME) [2] and cannot afford to invest heavily in the state-of-the-art ICT infrastructure that is a prerequisite to benefit from

the current digital innovations. Hence, construction industry is one of the least digitized industries.
Construction industry is investment intensive hence

may not be too willing to experiment with new technology and thus being observed to be slow in technology adoption. While there is a huge potential for cloud computing in the construction industry, such applications are not widespread [3]. Cloud computing technology provides affordable and scalable computing facilities using a pay as you go pricing model [4]. Hence the suitability of cloud computing functionality to the SME. As cloud computing eliminates acquisition, installation and maintenance cost of computing facilities [5], which has been a significant hindrance to to the adoption of ICT in the construction industry [2]. To assist the construction industry to adopt cloud computing technology, researchers need to expose the potential benefits of the cloud computing technology to the construction practitioners. The need to fill this knowledge gap led to the research question of this study.

Cloud Service Deployment and Consumption Models
Regardless of the delivery model utilized (SaaS, PaaS, IaaS) there are four primary ways in which cloud services are deployed (CSA Security Guidance, 2009). Cloud integrators can play a vital role in determining the right cloud path for a specific organization. Public cloud: Public clouds are provided by a designated service provider and may offer either a singletenant (dedicated) or multi-tenant (shared) operating environment with all the benefits and functionality of elasticity and the accountability/utility model of cloud. The physical infrastructure is generally owned by and managed by the designated service provider and located within the provider's data centers (offpremises). All customers share the same infrastructure pool with limited configuration, security protections, and availability variances. One of the advantages of a public cloud is that they may be larger than an enterprise cloud, and hence they provide the ability to scale seamlessly on demand. Private cloud: Private clouds are provided by an organization or their designated services and offer a single-tenant (dedicated) operating environment with all the benefits and functionality of elasticity and accountability/utility model of cloud. The private clouds aim to address concerns on data security and offer greater control, which is typically lacking in a public cloud. There are two variants of private clouds: (i) on-premise private clouds and (ii) externally hosted private clouds. The on-premise private clouds, also known as internal clouds are hosted within one's own data center. This model provides a more standardized process and protection, but is limited in aspects of size and scalability. IT departments would also need to incur the capital and operational costs for the physical resources. This is best suited for applications which

require complete control and configurability of the infrastructure and security. As the name implies, the externally hosted private clouds are hosted externally with a cloud provider in which the provider 6 Hybrid cloud: Hybrid clouds are a combination of public and private cloud offerings that allow for transitive information exchange and possibly application compatibility and portability across disparate cloud service offerings and providers utilizing standard or proprietary methodologies regardless of ownership or location. With a hybrid cloud, service providers can utilize third party cloud providers in a full or partial manner, thereby increasing the flexibility of computing. The hybrid cloud model is capable of providing on-demand, externally provisioned scale. The ability to augment a private cloud with the resources of a public cloud can be used to manage any unexpected surges in workload. Table 1: Summary of the various features of cloud deployment models Deployment Model Managed By Infrastructure Owned By Infrastructure Located At Accessible and Consumed By Public Third party provider Third party provider Off-premise Untrusted Private Organization Organization On-premise Off-premise Trusted Third

party provider Third party provider On-premise Off-premise Managed Third party provider Third party provider On-premise Trusted or Untrusted Hybrid Both organization and third party provider Both organization and third party provider Both on-premise and off-premise Trusted or Untrusted Managed cloud: Managed clouds are provided by a designated service provider and may offer either a single-tenant (dedicated) or multi-tenant (shared) operating environment with all the benefits and functionality of elasticity and the accountability/utility model of cloud. The physical infrastructure is owned by and/or physically located in the organizations' data centers with an extension of management and security control planes controlled by the designated service provider. The notion of public, private, managed and hybrid when describing cloud services really denotes the attribution of management and the availability of service to specific consumers of the services. Table 1 summarizes various features of the four cloud deployment models. When assessing the impact a particular cloud service may have on one's security posture and overall security architecture, it is necessary to classify the assets/resource/service within the context of not only its location but also its criticality and business impact as it relates to management and security. This means that an appropriate level of risk assessment is performed prior to entrusting it to the vagaries of the cloud (CSA Security Guidance, 2009). In addition, it is important to understand various tradeoffs between the various cloud service models: • Generally, SaaS provides a large amount of integrated

features built directly into the offering with the least amount of extensibility and in general a high level of security (or at least a responsibility for security on the part of the service provider). • PaaS offers less integrated features since it is designed to enable developers to build their own applications on top of the platform, and it is, therefore, more extensible than SaaS by nature. However, this extensibility features trade-offs on security features and capabilities. • IaaS provides few, if any, application-like features, and provides for enormous extensibility but generally less security capabilities and functionalities beyond protecting the infrastructure itself, since it expects operating systems, applications and contents to be managed and secured by the customers. In summary, form security perspective, in the three service models of cloud computing, the lower down the stack the cloud service provider stops, the more security capabilities and management the customer is responsible for implementing and managing themselves.

II. LITERATURE SURVEY

The literature search process of this review involved querying seven quality scholarly literature databases (AISeL, IEEE Xplore, ScienceDirect, EBSCOhost, ProQuest, Wiley online library, and ACM digital library). These databases provide access to leading IS journals and high-quality peer-reviewed IS conference publications [31]. Further, online databases are appropriate and practical sources for reviewing the lite- rature about a contemporary phenomenon such as cloud computing [10]. The search criterion was limited to the article's title to ensure the relevance of the articles. The terms used for searching all seven databases are 'cloud computing' in combination with 'adopt*' and other related terms, such as 'accept*' and 'diffus*'. This initially resulted in 94 articles in total including recurrences. An overview of the search process is provided in Table 1.

218 R.F. El-Gazzar Table 1. Literature search overview Literature data-bases Search query Search results AISeL title:"cloud computing" AND title: adopt* 15 title:" cloud computing" AND title:accept* 2 title:"cloud computing" AND title:diffus* 0 IEEE Xplore (("Document Title":"cloud computing") AND "Document Title":"adopt*") 22 (("Document Title":"cloud computing") AND "Document Title":"accept*") 2 (("Document Title":"cloud

computing") AND "Document Title":"diffus*") 1 ScienceDirect TITLE("cloud computing") and TITLE(adopt*) 6 TITLE("cloud computing") and TITLE(accept*) 0 TITLE("cloud computing") and TITLE(diffus*) 0 EBSCOhost TI "cloud computing" AND TI "adopt*" 30 TI "cloud computing" AND TI

"accept*" 0 TI "cloud computing" AND TI "diffus*" 1 ProQuest ti("cloud computing") AND ti(adopt*) 6 ti("cloud computing") AND ti(accept*) 1 ti("cloud computing") AND ti(diffus*) 0 Wiley (Online Library) "cloud computing" in Article Titles AND "adopt*" in Article Titles 1 "cloud computing" in Article Titles AND accept* in Article Titles 1 "cloud computing" in Article Titles AND diffus* in Article Titles 0 ACM (Digital Library) (Title:"cloud computing" and Title:"adopt*") 5 (Title:"cloud computing" and Title:"accept*") 1 (Title:"cloud computing" and Title:"diffus*") 0 Total 94 The practical screen involved reading the abstract of the articles to decide their re-levance to the focus of this review [30, 33]. Further, the filtering criteria involved the exclusion of recurring articles, research-in-progress articles, articles that were not written in English, articles with a focus on individuals, periodical articles published by news websites, trade journals, and magazines. These exclusion criteria delimit the sample of articles so that the literature review becomes practically manageable [33]. Eventually, this resulted in 51 articles for the classification.

III. METHODOLOGY

Research Design Study was to examine the relationship between variable of IT flexibility, specific to cloud computing: and IT effectiveness which can be measured and published. This study contributed to the knowledge about the significance of IT flexibility and its relationship with IT effectiveness especially in IT organizations within SMEs. To achieve optimal results through adoption of cloud-based services and solutions. The Research Questions Q1. To what extent, if any, does the connectivity factor of information technology flexibility, precise to cloud computing, predict information technology effectiveness inside IT SMEs? Q2. To what extent, if any, does the modularity factor of information technology flexibility, precise to cloud computing, predict information technology effectiveness inside IT SMEs? Q3. To what extent, if any, does the compatibility factor of information technology flexibility, precise to cloud computing, predict information technology effectiveness inside IT SMEs? Q4. To what extent, if any, does the combination of three factors of information technology flexibility, precise to cloud computing, predict information technology effectiveness inside IT SMEs? The study design was non-experimental and the investigation approach was quantitative correlational, which takes into account some flexibility in evaluating the relationships between the variables. With an end goal to keep the reliability and identical validity from previous study instrumentation and methods by Chebrolu, Ness, and Tallon and Kraemer, 7- point Likert type scale was used. Earlier research was

utilized as the basis for certain methods elements, construct, as a means for evaluating and verifying construct's correlation, validity, and reliability. The investigations from Tallon and Kraemer, Ness, and Pierce ,along with their survey formats, were utilized as a means to accomplish construct instrumentation and measurement. Three variables of information technology flexibility (connectivity, modularity, and compatibility) are the independent (predictor) variables, and information technology effectiveness is the dependent (outcome) variable. Existing instrument developed by Chebrolu ,which was reputed to be valid and reliable, is administrated to gather and measure the independent and dependent variables for the purpose of constructing the model for this study. In this investigation to accomplish generally construct correlation, validity, and reliability between dimensions IT flexibility and IT effectiveness. Pearson's correlation was executed to determine the

correlations between three information technology flexibility factors and information technology effectiveness. A multiple regression analysis was performed to determine the indicator power of the three indicator factors against the criterion variable. Conceptual Model This study's conceptual model is shown in Figure 1. It is expansions of Chebrolu's study, drilling down to study the impact of factors IT flexibility, specific to cloud computing on IT effectiveness. Operational Definition Of Variables The factors from previous research by Tallon and Kraemer , Ness and Chebrolu were used to measure the construct of IT effectiveness, while the factors used to measure the construct of IT flexibility were used to measure the construct of cloud computing adoption. This way of measurement assisted to make sure reliability and validity among this study and prior research. Cloud computing adoption had various survey questions that were used to assess each factor to IT effectiveness built on a 7-point Likert-type scale. The primary factors belonging to each of the three concepts on this research were as follows: IT Flexibility, the three elements are connectivity, modularity, and compatibility, specific to cloud computing. The research instrument questions to measure IT flexibility used by Tallon and Kraemer, Ness and Chebrolu. Were all built on a 7-point Likert type scale, representing ordinal data. IT Effectiveness, The main elements and the specific research instrument questions to measure the IT effectiveness construct was obtained from previous research by Chebrolu. Were all built on a 7-point Likert-type scale, representing ordinal data. This study was reliable with the earlier researchers in expressions of methodology and thus a 7-point Likert-type scale was utilized as the base for data gathered and analysis. A 7-point Likert type scale ordinal data represents data components in an ordered scale proportional to quality or size. In regression-analysis, it is verified that independent variables in the gathered data have a typical distribution before testing.

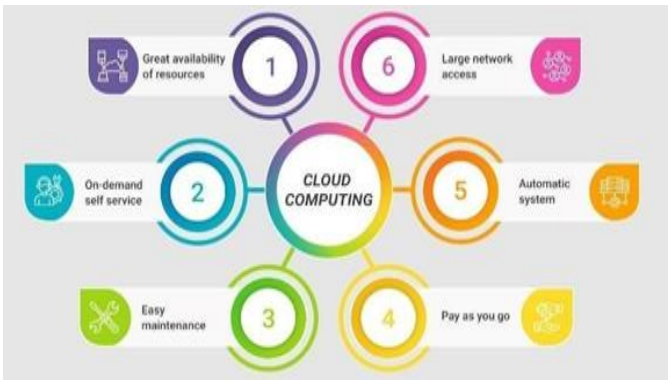

FIG 3.1

FIG 3.2

1. Seamlessly scale up/down services as demand requires;
2. Eliminate capex spending on hardware;
3. Pay for what you use (vs. having to buy the whole farm);
4. Improve business efficiency by enabling workload consolidation;
5. Increase/decrease resources as business needs change;
6. Centralize all data and applications in a single location, which reduces IT complexities and cost;
7. Securely store data remotely – it is therefore available anytime, from anywhere.

IV. RESULT

As per the experiment the modern trend having good result in the form of well flexibility and accuracy. The controlling system works good on modern trend by storing your data in one place and making it easy to retrieve at any time. We have improved it for the

better performance and user friendly accessible the results are for our favor

V. CONCLUSION

After so many years, Cloud Computing today is the beginning of "network-based computing" over Internet in force. It is the technology of the decade and is the enabling element of two totally new computing models, the Client - Cloud computing and the Terminal-Cloud computing. These new models would create whole generations of applications and business. Our prediction is that it is the beginning to the end of the dominance of desktop computing such as that with the Windows. It is also the beginning of a new Internet based service economy: the Internet centric, Web based, on demand, Cloud applications and computing economy.

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