

# Chapter 42

## Cloud Computing Adoption: Scale Development, Measurement and Validation

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### ABSTRACT

*The purpose of this article is to develop a cloud computing adoption scale for Indian manufacturing, service, and process Industries. The scale development procedure has been followed from the previous studies and is refined further for clear understanding to adopt easily. In the first step, we have conducted a qualitative study for item selection. The second step includes pilot testing of 110 responses for measurement scale purification and finally, we are validating the scale with 660 sample respondents through convergent validity and discriminant validity. The initial result showed very poor threshold values for the items “Top management support” and “Marketplace establishment” which are having a strong literature support. This measurement scale will help managers to evaluate the level of cloud adoption to increase the business performance. The study is a first time attempt to develop a validated scale for cloud adoption that can be used in Indian Industries.*

### INTRODUCTION

Cloud computing is a paradigm shift that needs to understand how to adopt a new technology. It is important to understand companies' perceptions of cloud computing and technology adoption because it can be used to determine the factors those are likely to influence the business performance (Budriene & Zalieckaite, 2012). To be competitive in the current business world, many companies need to use cloud technologies to increase their performance. Many micro businesses and SMBs are still sitting on the fence and are contemplating whether to move to or not to move to the cloud computing trend (Gupta et al., 2013). Industries normally follow developments in the technology market place to define how well associated the developments are with their own budding business strategies. The business-led adoption of cloud computing forms a further key area of which the most persistent business welfares attributed to cloud relate to the perceived occasion to extremely reduced cost and difficulty for firms (Venter &

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Whitley, 2012). Cloud computing adoption for the organization is just like a smooth innovation process. New businesses are increasingly looking into to start with cloud computing. Cloud adoption is equally being driven from the top-level organizations as well as bubbling up from the bottom level organizations. Business becomes faster, cheaper, and better when they go in for cloud adoption (Trivedi, 2013). The low costs, minimum technical expertise requirements, flexible and dynamic applications of cloud computing make it easier for technology adopters to make the switch to cloud computing. Business operations also become more agile and effective when they can scale their IT infrastructure which makes entering markets faster as well as meet customers' demands (Nkhoma & Dang, 2013).

The virtualization is the technology, which all providers employ in cloud computing, and provides abilities for resources through the network infrastructure. Moreover, instead of having only one system on a physical server, several systems with different OS (Operating System) can be run on that hardware. This is a special advantage of using cloud computing allowing sharing hardware and software, which it leads to reducing cost. The Customers only pay for what they have to use not for all other resources (Azarnik et al., 2012). The references of whether to adopt cloud services depend on the technological expertise, company's size, and corporate culture but not on the kind of process or data to be transferred (Brender & Markov, 2013). We will empirically examine the determinants of cloud adoption through the conceptual framework, which has been extensively used to explain enterprise IT adoption, and ask whether it can appropriately explain not only adoption decisions but also the modalities of adoption offered by cloud platforms. Thus, we could understand what factors can influence companies' business performance when choosing/considering cloud services from adopters' point of view and what factors will influence company choice of cloud deployment models (Hsu et al., 2014).

We did not find any existing scale for SMEs sectors from the cloud computing literature which can measure adoption rate in the developing Countries like India. Hence, the present study is a first attempt for developing Countries to generate, purify, and validate a measurement scale for cloud computing adoption in the context of the Indian manufacturing, service and process sector to complete this major research gap. The paper is organized into five major sections. Theoretical background of cloud computing adoption is presented in the first section, the problem description is in second section, scale development methodology is explained in third section, the results and discussion in fourth section and the paper concludes with directions for the future research and managerial implications.

## **LITERATURE REVIEW**

The main purpose of the literature review is to know the salient work was done previously in the area of cloud computing adoption and its usability challenges at present. It also projects the intention to adopt cloud computing and its various advantages for Industry. Opportunities and challenges are emerging for cloud providers, technology adopters, and industries from the increasing availability of low-cost cloud computing solutions. In order to determine the current state of knowledge and research, an extensive review and synthesis of the literature in cloud computing adoption had been undertaken. The literature covers various definitions of cloud computing, existing models, research gaps and factors to be considered for the Study.

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