

Chapter 3

Methodology and Approach

3.1 Introduction

The selection of the method to be adopted for any study is dependent both on the nature of the study (Noor, 2008) as well as on the nature of the phenomena to be probed (Morgan & Smircich, 1980). Based on the review of the related literature (Chapter 2) and International best practices, an effort has been made in the present study to bring together all the issues related to the review of the cloud computing ecosystem in India. The varied methods adopted for the present study are dependent on the objectives of the study. Thus, it is important to refer to the research objectives and the research questions of the present study.

3.2 Objectives of Study

As per the targets set in NTP'2012 and various initiatives of Government of India such as 'GI-Cloud' named 'Meghraj' to enable cloud services in India, the cloud computing is now assuming more importance. There is an immediate need to supplement the efforts of Government of India by increasing the private sector participation and particularly of SMEs. This requires a policy framework and establishing a conducive working environment not only to increase the confidence of prospective clients but to also encourage new cloud service providers to innovate and offer new services. In this background, the objectives of the study have been defined and are listed herewith:

- To review the present cloud computing ecosystem in India.
- To ascertain and examine the expectations of SME clients with respect to the Service Level Agreement.
- To propose measures for an increased adoption of public cloud by SME clients.

3.3 Research Questions

Main stakeholders in the adoption of cloud services in India are the cloud service providers, clients, Government of India through Department of Electronics and Information Technology (DeitY) and Department of Telecom

(DoT). In an attempt to study the present public cloud computing ecosystem in India with a view to understand the requirements of SME clients with respect to the Service Level Agreement (SLA) and to seek methodologies for an increased adoption of public cloud by SMEs, the following research questions have been delineated keeping in view the objectives of the study:

- (i) What are the expectations of SME clients with respect to the Service Level Agreement?
- (ii) What are the recommendations to overcome the challenges to adoption of cloud by SMEs in India?

3.4 Research Design

For the purpose of this study, a flexible research design has been adopted using opinion polling and qualitative analysis of the current situation. Starting from a historical background and evolution of cloud computing services, this study discusses the challenges and attempts to put forth some recommendations for successful adoption of cloud computing services by SMEs in India. Therefore, an exploratory approach has been taken in this research (Hair, Joseph, Wolfinbarger, Money, Samouel and Page, 2011).

The research design for this study comprises of:

- Primary data collection: based on the research questions formulated, a semi structured questionnaire has been prepared and administered to a sample population of SME clients through online survey.
- Secondary Data collection: The secondary data collection comprises of:
 - Review of policy documents: Important related documents and reports had been studied such as National Telecom Policy, 2012, ITU-T Recommendations and guidelines, National e-Governance Plan (NeGP), National Policy on Information Technology, 2012 (NPIT 2012), Reports of Department of Electronics and Information Technology (DeitY) (2013).
 - Websites/databases/reports: Data has also been collected from agencies such as International Telecom Union (ITU), Department of

Telecommunications (DOT), DeitY, Cloud Standards Development Organizations (SDO) and Cloud Research Organizations.

The related policy frameworks on cloud computing and Service level Agreements have been taken from the authorised Government of India (GoI) resources such as DoT and DeitY websites, and International Telecom Union (ITU) website. However, other standard Cloud Computing Standard Organizations have also been frequently referred for analysis purposes.

Using a pre-designed questionnaire (Appendix 1), information has been gathered from SME clients on cloud computing services. The survey questionnaire has been divided into three parts - Profile of the Respondent; Enterprise Profile; and Expectations from Service level Agreement and opinion for faster adoption of Cloud. The expectations of SMEs have been sought based on the Service Measurement Index (SMI) model developed by Cloud Services Measurement Initiative Consortium (CSMIC). The parameters indicating the most important hindrance for adoption of cloud and for increasing adoption of cloud have been listed based on the secondary data collection and researcher's experience. The contact with the SMEs had been established using telephone, e-mail, other social media and personal meetings in India.

Discussions were also undertaken with officials of Government of India in DeitY and DoT. However, the anonymity of all the interviewees has been ensured. The thrust had been to get an insight into those aspects of expectations of SME clients, which do not surface in the open for the reasons of measured-speak of government officials or due to the biased response of industrialists or may be because of the apathy of media to the general public.

The reference to secondary sources has been deemed equally important, in the context of the less explored theme of review of expectations of SME clients with respect to the SLA. References to secondary sources had helped the researcher to glean specific information about this topic, the context of previous

actions and ideas and its social, economic, technical effects in specific context. Thus, secondary sources provided a bigger understanding of the subject as well as its cascading effect on the related policy implementation. It also helped the researcher to debate on varied interpretations by different researchers on the similar topic for creating a bibliography to locate other important secondary sources and last but not the least helped to put forth recommendation for faster adoption of public cloud based on the prevailing claims and evidences. However, caution had to be exerted by the researcher to filter out the valid secondary resources as not all secondary sources are of equal value (Stewart and Kamis, 1993). Therefore, only those secondary sources had been referred that had offered an interpretation based on primary sources and had been written by scholars and were published by eminent university presses and referred journals. Other studies that were found to be syntheses or compilations of secondary sources were referred only very occasionally, as they would be another step removed from the actual sources. Overall an attempt has been made to study and review the present cloud computing ecosystem in the Indian context, identify and analyse the shortcomings critically and suggest recommendations for faster adoption of cloud.

3.5 Scope/ Limitations/ Delimitations

The scope of the research is to ascertain and carry out an analysis of the expectations of SME clients with respect to the Service Level Agreement based on the data and information received from the primary sources and by using the secondary sources with an objective to propose measures for increased adoption of public cloud by SMEs. However, due to the logistics constraints including paucity of time and resources, the study has been carried out based on the information received from the limited primary sources and by using the available secondary sources. Moreover, Pilot study cannot be conducted; hence refinements in any form of questionnaire subsequently were also not possible to be carried out. The following delimitations are also hereby pronounced:

- Though a large number of attributes of other aspects are relevant for examination for adoption of cloud such as privacy and security of data,

interoperability, regulatory compliance, jurisdictional issues, cross-border data flow, data location, quality of service requirements, and many other factors; this study covers only the Service Level Agreement aspect between the service provider and client.

- The study combines different cloud service providers such as IaaS, PaaS and SaaS in a single group of cloud service providers as XaaS (Anything as a Service) and segregation of service providers has not been done for study and for analysis purposes.
- The number of stakeholders who have been approached for primary data collection has been restricted to a relatively small number because of the time and resources limitation.