

UNIVERSITY OF SCIENCE AND TECHNOLOGY
COLLEGE OF GRADUATE STUDIES AND ACADEMIC
ADVANCEMENT

Faculty of Computer Science and Information Technology

Enhanced Model for Usability
based Ranking for SaaS Cloud Services

By

Salma Abdalla Elmubarak Ali

A Thesis

Submitted to the College of Graduate studies and Academic
Advancements in Partial Fulfillment of the Requirement for the Degree
of Master of Science in Information Technology

Supervisor

Dr. Adil Yousif

June 2016

Abstract

Cloud is a highly growing field that has become widely used in the past few years. The cloud service is provided by a combination of an internet application that interacts with the hardware and software of the cloud system that aims to deliver a network of virtual services accessible to users from anywhere in the world. Since each cloud service provider is distinct by the service they provide, there should be a proficient way to differentiate between services. One way to do that is by measuring the usability of these services according to what is required.

We used the ranking method to do this task. It is the process of arranging and classifying several cloud services within the cloud, then compute the relative ranking values of them based on the quality of service required by the customer and features of the cloud services. The objective of this research is to propose an enhanced ranking model to evaluate cloud services usability to help users choose the best service they need. By adding some attributes and measures, a usability based model was built by merging the attributes that have high impact from previous models.

The study has conducted an experiment to test the applicability of the proposed model using SMI cloud toolkit. The results reveal that the proposed model is a promising model.

المستخلص

الحوسبة السحابية أصبحت أحد أكثر المجالات تطوراً وإستخداماً فى السنوات الأخيرة الماضية . هذه التقنية هى خليط من تطبيقات انترنت صممت خصيصاً للتفاعل والتعامل مع لأنظمة السحابية ، والتي تهدف إلى توفير شبكة خدمات إفتراضية يستطيع المستخدم الوصول إليها من أى مكان فى العالم .

نظراً لوجود عدد كبير من مزودى الخدمات السحابية توجب إيجاد طريقة فعالة لتقييم وترتيب هذه الخدمات ومزوديهها ولقياس قابيلة الاستخدام لجأنا فى هذا البحث إلى منهجية التصنيف ، وهى منهجية تقييم تقوم على مبدأ الترتيب والتصنيف ومن ثم تقييم هذه الخدمات حسب الجودة التى يحتاجها المستخدم .

الهدف الأساسى من هذا البحث هو تقديم نموذج محسن لتقييم الخدمات السحابية المختلفة حسب سهولة استخدامها والتعامل معها ، لمساعدة المستخدمين على اختيار الخدمة الأنسب بالنسبة لهم . تم إنشاء النموذج بعد إضافة بعض الخصائص والقياسات التى كان لها تأثير كبير جدا فى النماذج السابقة .

تم إستخدام ادوات خاصة تسمى بالـ SMI Toolkit لإنشاء النموذج واختبار مدى تطبيقه عمليا. تم الحصول على نتائج واعدة تعتبر من بين أفضل النتائج الموجودة حالياً.

1.1 Overview

This chapter introduces the research work, state the problem, defines research objectives, significant and describe the thesis structure.

1.2 Problem Background

Cloud computing refers to both the applications delivered as services over the Internet and the system (hardware and software) that provide these services. The service itself is referred to as Software as a Service (SaaS). The data center hardware and software is what we will call a cloud. When a cloud is made available to the general public we call it a public cloud. The term private cloud refers to internal data centers of a business or other organization which is not available to the general public. Thus, cloud computing is the sum of SaaS and utility computing, but does not include small or medium-sized data [1].

Ranking is an approach that is used to predict the best possible service by collecting, comparing and ordering the related ascription. It's a key factor to evaluate cloud services[2].

Usability is a major condition for survival under the world of Internet. Users should be able to have an easy experience when they visit websites and use cloud service provider. If else, user will get frustrated and confused which leads directly to abandoning the service. This where the usability comes and deploy its impact [3].

1.3 Problem Statement

Enormous number of cloud providers is offering diverse number of services. Usability of these services is a critical factor for clients to determine the cloud provider that they will choose. However, determining the most usable service provider is a difficult task. There is a need for an efficient model that help clients to select the best provider based on the usability attributes and measurements.

1.4 Research Objectives

The objective of this research is to propose a enhanced usability based ranking model to measure the quality of services (QoS) provided by Software as a Service (SaaS) providers depending on cloud computing service usability characteristics.

1.5 Scope

This study was conducted to provide a ranking model to measure the usability under the quality of service (QoS) for Software as a Service (SaaS). This is done to a number of cloud service providers to determine specific values in order to distinguish the best usable service.

1.6 Thesis Structure

This thesis contains six chapters. Chapter two Gives an overall idea of cloud computing and SaaS ranking in cloud computing. Chapter three describes the research methodology. Chapter four describes the proposed enhancement model for measuring SaaS usability. Chapter five illustrates the applicability of the proposed model. Chapter six provides the Conclusion and learned lessons.

