

# The Research of Continuous Intention to Use Cloud Service

*Tung-Hsiang Chou*

*Wan-Ting Liu*

*Po-Yuan Hsieh*

**Abstract**—Enterprises in Taiwan start to consider transform producing products into providing services. On the other hand, they try to use their advantage to serve customers. For example, enterprises start to rent software from SaaS service providers, and they don't buy any software from software providers directly, they try to use service to instead buying software. Therefore, it is important that how to manage trust between SaaS service providers and customers. Our objects are to know users' behaviors that use SaaS's CRM system, and we discuss their continuous usage intention of SaaS's CRM system. Finally, this study found that Relationship Quality play an important role to influence users' satisfaction and trust of SaaS's CRM system, and high SaaS service quality could increase users' continuous usage intention.

**Keywords**—Continuous Intention Usage, CRM, SaaS, Cloud Service, Relationship Quality

## 1. Introduction

In the past, traditional enterprises both bought software packages or courtesy, or developed information systems through internal person, to satisfy enterprises information requirement, however the cost of software services and the operation cost IT department for enterprises are large to spend, especially for burden of the small and medium enterprises are heavier [1];

Hence, SaaS provided information services model through service lease, will let enterprises that according to the actual needed to use software, this way besides reduced enterprise the effectiveness of cost, and internal IT department will also develop department program development roles into the application user, to let the cost of vendor IT department is stable and easier to predict, and business processes of enterprises can be significantly reduced [2] [3] [4], therefore, enterprises will be more efficient use of cloud services, and will be save resources to odd other and core competitiveness of important work to improve the economic efficiency. For the SaaS service model in Taiwan, SaaS service applications can let enterprises save hardware and software operation costs, make enterprises to focus on strategic development, and SaaS service not only used by small and medium enterprise in Taiwan, there had many large-scale manufacturing used SaaS small-scale applications by employees, and the results showed that there can bring good benefits, thus attracted more enterprises to SaaS concerns [5].

In recent year as external and external scholars to research for cloud services increased year by year, to show service quality and cloud services had been widely attention, but service quality to the relation research of cloud CRM services continuance use intention still lacking. And relationship quality always to be regarded as enterprises and customers to development one of the key, at the same time is also to measure enterprises suitability of target levels. If enterprises can maintain a good relationship quality management, catch the other side needs, also can improve the Performance capabilities of the enterprises, and according to the literature research, found that relationship quality as medium variables can effectively reduce the leaving rate and uncertain risks. Hence this research will to join the satisfaction and trust of relationship quality into IS continuance use intention as medium variables, to design the research hypothesis, and through the collection and statistical analysis of the questionnaire to confirm the hypothesis of this research, finally to point customer to cloud CRM system continuance intention by data analysis as cloud CRM system the importance reference of

---

Tung-Hsiang Chou  
National Kaohsiung First University of  
Science and Technology  
Taiwan

Wan-Ting Liu  
National Kaohsiung First University of  
Science and Technology  
Taiwan

Po-Yuan Hsieh  
National Kaohsiung First University of  
Science and Technology  
Taiwan

direction of development.

Based on the research of motivation, the research will from cloud CRM service customer's angle, to investigate SaaS service quality to continuance intention of the customer effect in the cloud CRM service, and to analysis the degree of relationship of each dimension, these factors dimension include perceived usefulness and satisfaction and trust of the relationship quality.

## II. Literature

### A. Cloud computing service

Nearly century cloud computing is a very popular noun in IT, the concept is the continuing evolution with Internet, in 2007 formally proposed by Google, then cloud computing generated [6]. According to National Institute of Standard and Technology (NIST) definition cloud computing is concept model, with needs of user to connect necessary resources by Internet, uses the least resources management, efficient configure and implementation of publishing tasks. Besides to speed up to implement of the operations processes, cloud services reduce a lot of hardware, software, labor power, electricity and other resources to cost. In cloud computing architecture, there has three categories of service, include Infrastructure as a Service (IaaS), Platform as a Service (PaaS) and Software as a Service (SaaS)

### B. Continuous intention

In the past research found if improve customer satisfaction it can help to improve customer buying behavior again. Oliver [7] proposed Expectation Confirmation Theory also explore customer for the product or service satisfaction research, and proposed customer to buy again or continue to use the level of satisfaction will be affected its decision. Bhattacharjee [8] thought the decision of "Continuance to use intention" and customer "buy again" is similar, because after information system users use system, again use will be affected by the first time experience of using the system. This process is similar to customers to buy again will be affected by the experience of the first purchase impact. To Proposed that user think that to do something can take benefits useful help, and they will continue to carry out the behavior. Therefore, Bhattacharjee reference Oliver [7] findings proposed a Post-acceptance model of information system continuance to explore information system users for continued to use intention of products, which refers to the

continued to use intention will be affected by satisfaction with the system, and continued to use intention as a predictor and interpretation user for continued use behavior of the information system.

### C. Relationship Quality

Relationship Quality is from Relationship Marketing concept developed to discuss the influencing factors in the sales and service process through industry and customer interaction as a starting point. Relationship quality was based on the concept of quality to maintain the relationship between the both sides when industry and customers to establish long-term mutually beneficial relationship, in order to enhance the interaction between the both sides and reduce uncertainty and costs in the transaction process. Crosby et al. [9] that the relationship quality could be regarded as industry to meet customer expectations index, and showed customer for product satisfaction. When the industry and customer have a high degree of relationship quality that means customers trust industry, believe this relationship could reduce perceived risk and get to the long-term interests. In Crosby et al. [9] empirical study to explore relationship between the industry and customers, draw the Fig.1 a relationship quality model.

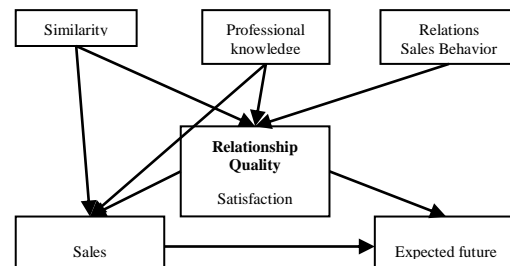


Fig.1 Relationship Quality Model

## III. Research Models and Methods

### A. Research Models

In this research, the model has three dimensions, first aspects is SaaS-Qual, to part Rapport, Responsiveness, Reliability, Flexibility, Features, and Security, use second-order statistical methods to compiled SaaS-Qual as customers measured variables to indicators to measure of the quality for service-oriented; then type of second is "relationship quality", including "Satisfaction" and "Trust", that is customers feeling after using cloud services, and before using the expected results of cloud services; the last type is user's "continued use

intention", that is after using this technology to decide whether the future will continue to use.

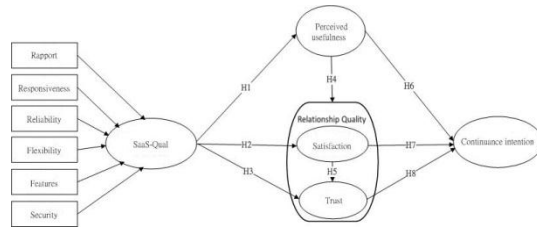


Fig.2 Research Models

## B. Research hypotheses

This section will be based on the research framework in the relationship between each dimension and proposed hypotheses for empirical research. In the research framework compiled SaaS-Qual measure the dimensions to combine IS continuance model [10], and relationship quality to focus on cloud service as purpose. Therefore, to explore the "SaaS-Qual" will affect the "perceived usefulness", "satisfaction" and "trust"; and "continued to use intention" is to be "perceived usefulness" and relationship quality in the "Satisfaction" and "trust" three dimensions affected.

This research also proposes several hypotheses in the following:

**H1:"SaaS-Qual" for the "perceived usefulness" has a positive impact on cognitive.**

**H2:"SaaS-Qual" for the "satisfaction" has a positive impact on cognitive.**

**H3:"SaaS-Qual" for the "trust" has a positive impact on cognitive.**

**H4:"perceived usefulness" for the "satisfaction" has a positive impact on cognitive.**

**H5:"Satisfaction" for the "trust" has a positive impact on cognitive.**

**H6:"perceived usefulness" for the "continued to use intention" has a positive impact on cognitive.**

**H7:"Satisfaction" for the "continued to use intention" has a positive impact on cognitive.**

**H8:"Trust" for the "continued to use intention" has a positive impact on cognitive.**

## IV. Sampling design

The research use method of questionnaire, so that the design of the questionnaire is to have higher explanation ability, you must focus on design of the questionnaire to tests and correction. In this research, to understand each group for cloud service support continuance to use intention, thus choose the object of test, including student and enterprise group, and for the pursuit the integrity of the questionnaire to use pre-test approach. Through small sample user to tests the questionnaire, and provide the ideas and opinions for the research.

The sampling design of the research is as follows:

### A. Research object and scope

The object of this research is explore after the cloud of information systems continuance to use intention, then need to collect sample questionnaire of student groups, enterprise groups and network platform for the user with relevant experience. In this research sample, student groups are focused on researching for the University Student of Information Management. In the enterprise groups are focused on using for the industry of cloud CRM services system, and can be divided into network platform and a domestic telecommunication services provided by cloud CRM customer user.

### B. Questionnaires

The research was completed formal questionnaire, will use the paper, Internet questionnaires and social networking platform in three ways, thought mail paper questionnaire to the enterprise customers and establish the questionnaire in social network platform, and explain the motivation and intent of the questionnaire, in order to subject can understand the research needs.

### C. Data analysis method

This research based on SaaS-Qual Combined with continued use of the model, and through questionnaires to test and get verification of theoretical framework. In this research will focus on recovery sample questionnaire to integration of information, and use descriptive software to analysis, to get basic information and research results for research framework proposed hypotheses to support. This research use Smart PLS (Partial Least Squares) of Structural Equation Modeling (SEM) and SPSS 20 to measurement and analysis, and use Descriptive

Analysis, Reliability Analysis, Validity Analysis, Single construct of test to analysis and verification in this software. The correlation analysis method described below:

### **1.) Descriptive Analysis**

In order to understand the sample structure in this research, we use descriptive analysis to compiled, describing and explaining the data statistical techniques, by frequency distribution table to research each sample percentage of statistics in the structure, for a single variable narrative analysis, analysis aims include sample recovery and basic information distribution.

### **2.) Reliability Analysis**

Reliability analysis is for measure the relationship between research items whether has each other to handle, and after the questionnaire recovery, through focus on measure same or similar group to get the measure quality that has achieve with consistency. Reliability analysis uses Cronbach's  $\alpha$ , and if  $\alpha$  is higher that to show consistency and stability are higher, then to express each variable that reliability of the relationship between research items. Based on Nunnally [11] to propose measurement standards, Crobancha value of 0.7 to acceptable levels.

### **3.) Validity Analysis**

The questionnaire variables of research is through domestic and foreign literature compiled to obtain, and to ensure the validity of the questionnaire, after the questionnaire design to get advice of expert advice and cloud service users and to compile and modify. So this research has a certain degree of scale content validity.

## **V. Conclusions and suggestions**

In this research, based on SaaS-Qual measurement dimension combined IS continuance model [10], this aims are investigate SaaS-Qual whether impact on relationship quality [3], and influence custom for the continued use of the cloud CRM intent. According to this research, second-order SaaS-Qual dimension analysis results indicated that rapport, responsiveness, reliability, flexibility, features, and security six items first-order dimension. After the empirical studies, it can determine SaaS-Qual six first-order dimensions. For the second-order SaaS-Qual dimension have significant and strong positive

impact. The analysis result shows the path coefficients for the highest reliability, means the dimensions of SaaS-Qual most representative capacity. The research also finds that SaaS-Qual is good confirmation of significant for the relationship quality and continuous to use has a strong influence. Thus can know cloud CRM system provider, provide customer a good SaaS-Qual environment will affect users use of cloud CRM service usage experience.

The research analysis results indicate, in the second-order dimension SaaS-Qual for the relationship between quality and continued to use have a strong impact with good significance of confirmation. SaaS-Qual for perceived usefulness, satisfaction of the relationship quality and trust are having a significant impact on the relationship; perceived usefulness for satisfaction also has a significant impact on the relationship, to show that a good SaaS-Qual affects the customer for perceived usefulness of the cloud CRM services to cloud CRM services, and also indirectly affect the customer for the cloud CRM service satisfaction. Perceived usefulness and satisfaction directed impact customer for the continued to use intention of the cloud CRM service. According to the research results showed perceived usefulness and satisfaction for the significant of the continued to use relative to other dimensions to the low. It shows the customer for the products of the continued to use intention relative to other dimensions did not strong.

According to the research results showed satisfaction and trust are affected the SaaS-Qual for continued use of the cloud CRM services to wishes will be in relationship quality. Therefore we can know cloud CRM services provider exception to provide good quality of service SaaS, must should be more create the relationship between the truth of the customer, when the customer for providers to achieve a certain level of trust, it will increase cloud CRM services continued willingness to use.

### **Acknowledgment**

This research is partially sponsored by the National Science Council grant no. NSC 101-2410-H-327-011- and 102-2410-H-327-029-MY2. We are grateful to reviewers for their informative and constructive comments.

### **References**

- [1] C. R. Yu, "A Multidimensional Scale for the

- Evaluation of Saas Service Quality,*” 於 National Taiwan University Graduate Institute of Information Management Dissertation, Taipei, 2011.
- [2] T. Kern, J. Kreijger and L. Willcocks, "Exploring ASP as sourcing strategy: theoretical perspectives, propositions for practice.," *The Journal of Strategic Information Systems*, vol. 11, no. 2, pp. 153-177, 2002.
- [3] K. R. Walsh, "Analyzing the application ASP concept: technologies, economies, and strategies.," *Communications of the ACM*, vol. 46, no. 8, pp. 103-107, 2003.
- [4] T. Cherry, *2nd Generation ASPs: SPotlight Report.*, Edina: Cherry Tree & Co, 2011.
- [5] "Next year the trend of 10 high-tech wind blowing." *Market Intelligence & Consulting institute*, 2011.
- [6] J. Fan R., H. Chen J. 且 X. Lin P., "The more there are the more opportunities the cloud," *Vision Magazine Publishers*, pp. 158-168, 2009 September.
- [7] R. L. Oliver, "A cognitive model of the antecedents and consequences of satisfaction decisions.," *Journal of marketing research*, pp. 460-469, 1980.
- [8] A. Bhattacharjee, "Understanding information systems continuance: an expectation-confirmation model," *MIS quarterly*, pp. 351-370, 2001.
- [9] L. A. Crosby, K. R. Evans and D. Cowles, "Relationship quality in services selling: an interpersonal influence perspective," *The journal of marketing*, pp. 68-81., 1990.
- [10] A. Benlian, M. Koufaris and T. Hess, "Service quality in software-as-a-service: developing the SaaS-Qual measure and examining its role in usage continuance.," *Journal of management information systems*, vol. 28, no. 3, pp. 85-126, 2011.
- [11] J. Nunnally, *Psychometric methods.*, New York: McGraw-Hill, 1978.