Examing Significant Factors and Risks Affecting the Willingness to Adopt a Cloud–Based CRM

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Abstract. Given the advantages of and significant impact that Cloud-based CRMs have had on achieving competitive edge, they are becoming the primary choice for many organizations. However, due to the growth of concerns around cloud computing, cloud services might not be adopted with as much alacrity as was expected. A variety of factors may affect the willingness to adopt a cloud-based CRM. The purpose of this study, therefore, is to explore the factors that influence the adoption of a cloud-based CRM in SME's, from the perspectives of the client organizations and users. We then propose a research model, grounded in the Resource Based View Framework (RBV), the Theory of Technology Acceptance Model (TAM2), Risks and Trust Theories. This report recommends a research methodology. It offers recommendations for practitioners and cloud service providers to effectively assist in the adoption of cloud-based CRMs in organizations.

Keywords: cloud computing, CRM, adoption, TAM, risks, trust.

1 Introduction

Although Cloud Computing has been undergoing rapid evolution and advancement, it is still an emerging and complex technology [1], and our understanding of, and regulatory guidance related to cloud computing is still limited [2]. These limitations raise significant concerns about security, privacy, performance, and trustworthiness of cloud-based applications. [3, 4]. While the cloud offers a number of advantages, until some of the risks are better understood and controlled, cloud services might not be adopted with as much alacrity as was expected [5].

Although there are studies investigating the implementation of CRM systems [6, 7], there is a lack of research in adopting cloud-based CRMs. To successfully adopt and implement a cloud-based CRM, client organizations need to have understanding about cloud computing, its characteristics, and need to take into account the risks involved when deciding to migrate their applications to the cloud. Cloud services providers also need to enhance their understanding of client users' behavior such as how they act and what factors affect their choice, in order to increase the rate of adoption.

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Having an understanding of client users' behavior during the examination phase, before a full adoption decision is made, will help cloud service providers better address potential users' concerns.

2 Literature Review

This study explores the roles of Risks relating to Tangible Resources, Intangible Resources, and Human Resources; perceived usefulness, perceived ease of use, subjective norm and Trust in the adoption of Cloud-Based CRMs. The study is informed by the Resource-Based View Framework, Risk and Trust Theories, and the Technology Acceptance Model (TAM2).

2.1 Cloud Computing

We adopt the Efraim, Linda [8] view of Cloud Computing as the general term for infrastructures that use the Internet and private networks to access, share, and deliver computing resources with minimal management effort or service provider interaction. In the cloud context, users pay for the services as an operating expense instead of the upfront capital investment [9].

Cloud computing provides several advantages, including cost reduction [4, 9], organizational agility and often competitive advantage [10, 11]. However, there is a lot of uncertainty and skepticism around the cloud that stakeholders in cloud computing (e.g. providers, consumers and regulators) should take into account, including the gap in cloud capabilities, security, and audit and control risks. The next sections examine these risks more thoroughly.

2.2 Customer Relationship Management (CRM) and Cloud-Based CRMs

Efraim, Linda [8 pg. 324] define CRM as the methodologies and software tools that automate marketing, selling, and customer services functions to manage interaction between an organization with its customers, and to leverage customer insights to acquire new customers, build greater customer loyalty, and increase profit level.

One of the biggest benefits of a cloud-based CRM is that it is easily accessible via mobile devices from any location, at any time [8 pg. 328]. In addition, cloud-based CRM allows enterprises, especially Small and Medium Enterprises (SMEs) not only to achieve cost benefits through pay-per-use, without a large upfront investment, but also to mimic their larger rivals to effectively manage and enhance customer relationship processes.

2.3 Technology Acceptance Model (TAM)

Employing the Theory of Reasoned Action (TRA) [12], TAM [13] has been widely utilized for analyzing and explaining a user's intention to adopt an information system.

The original TAM model does not incorporate the effect of the social environment on behavioral intention. Therefore, we apply TAM2 [14], which hypothesizes perceived usefulness, perceived ease of use, and subjective norm as the determinants of Usage Intention, to our conceptual research model.

We apply TAM2 to our theoretical foundation and define the constructs as follows:

Perceived usefulness, for the purpose of this paper, is defined as the degree to which an individual believes that using a cloud-based CRM would improve his or her job performance. Seven capabilities of cloud computing, namely controlled interfaces, location independence, sourcing independence, ubiquitous access, virtual business environments, addressability and traceability, and rapid elasticity [10], enable users to access the application, internal and external resources over the internet easily and seamlessly. This has made cloud-based CRMs advantageous to client organizations.

Perceived ease of use of cloud-based CRMs refers to the extent to which a user believes that using a cloud-based application would be free of effort.

As one characteristic of cloud-based applications is the ease with which to switch between service providers, the higher degree that the users can use the application and its functions to help them in daily operations without investing a lot of effort on learning how to use during the trial time, the more probability that they will be willing to adopt the application.

Subjective norm, for the purpose of this paper, is the degree to which an individual perceives that others believe he/ she should use a specific cloud-based CRM. The advantage of virtual communities and social networks is that it allows users to share and exchange ideas and opinions within communities. An individual's behavior will be reinforced by the multiple neighbors in the social network who provide positive feedback and ratings [15], especially, when subscribing to a new application or purchasing a product, so users tend to evaluate the product by examining reviews of others [16] . The following propositions follow:

P1: Perceived Usefulness will positively affect the Willingness to Adopt Cloud Based CRMs.

P2a: Perceptions of Cloud-based CRMs Ease of Use will positively affect Perceived Usefulness.

P2b: Perceptions of Cloud-based CRMs Ease of Use will positively affect the Willingness to Adopt Cloud Based CRMs.

P3: Subjective Norm will positively affect the Willingness to Adopt Cloud Based CRMs.

2.4 Trust

Trust has been regarded as the heart of relationships of all kinds [17] and a primary enabler of economic partnerships [18]. Building trust is particularly important when an activity involves uncertainty and risk [19]. In the context of cloud computing, uncertainty and risk are typically high because of the lack of standards, regulations and complexity of technology, etc. [1, 9]. This leads to a significant concern for enterprises about TRUST in cloud-based applications [20].

Antecedents of Trust

Prior research on Trust has proposed a number of trust antecedents: knowledge-based trust, institution-based trust, calculative-based trust, cognition-based trust and personality-based trust [for more details, see 21].

We consider the initial level-of-trust formation, would directly affect the organization's willingness to adopt.

Personality-based trust – Personal perception is formed based on the belief that others are reliable and well-meaning [22], resulting in a general tendency to believe to others and so trust them [23]. This disposition is especially important for new organizational relationships, where the client users are inexperienced with service providers [24].

Cognition-based trust – perception of reputation: is built on first impression rather than experiential personal interactions [23]. In the context of cloud-based CRMs, to access trustworthiness of cloud service providers, client organizations tend to base their evaluation on secondhand information provider's reputation. Reputation of providers is also particularly important when considering cloud adoption and implementation [25].

Institution-based Trust – perception of Structural Assurance: is formed from safety nets such as regulations, guarantees, legal recourse [26].

A Service-level agreement (SLA) is a negotiated contract between a cloud service provider with client organization. Cloud service providers use SLAs to boost the consumer's trust by issuing guarantees on service delivery.

Knowledge-based Trust: is formed and developed over time though the interaction between participants [21, 27]. This type of trust might be absent for the first meet between service provider and client organization. However, during the trial time, interaction and communication between parties will affect to the level of trust in each other, thus improving their behavioral intention to continue adopting the application.

Based on our argument above, and because we are using already validated measures of trust, we make the following complex proposition:

P4: Personal Perception, Perception of Reputation of a cloud-based CRM provider, Perception of Structural Assurances built into a cloud-based CRM, and Knowledge-based Trust will positively affect Trust in a cloud-based CRM provider.

Consequences of Trust

Heightened level of Trust, as a specific belief in a service provider, are associated with heightened willingness to use services supplied by that provider. Cloud computing is still in its infancy [28], and contains a certain level of complexity of technology [29] and immaturity of standards, regulations, and SLAs, thus we propose :

P5: Trust in a Cloud-based CRM Provider will positively affect the Willingness to Adopt a Cloud-based CRM.

Trust in a cloud service provider implies the belief that service provider will deliver accurate and qualified services, as expected. Users are less likely to accept unexpected failure of the system or network, and unqualified performance of service. Therefore, a service provider's subjective guarantee, through SLAs, and other elements such as the provider's reputation or customer services, during the trial time,

would bolster user's confidence. Such a guarantee is likely to increase the likelihood that the CRM application will improve users' performance in managing the customer relationship. Conversely, adopting an application from an untrustworthy service provider might result in reduced usefulness. Based on this, we propose that:

P6: Trust in a Cloud-based CRM Provider will positively affect the Perceived Usefulness of Cloud-based CRMs.

2.5 Theory of Resource Based View (RBV) as a Framework Foundation for Risk Assessment

The RBV explains the role of resources in firm performance and competitive advantage [30]. Barney [30] went on to show that to achieve sustained competitive advantage, resources must be "valuable, rare, difficult to imitate, and non-substitutable". When putting the RBV in the context of cloud computing, there are a number of organizational resources that can affect the competitiveness and performance of the firms. First, by accessing current infrastructures and using complementary capabilities from cloud providers, clients can focus on internal capabilities and core competencies to achieve competitive advantage [11]. Second, one characteristic of cloud-based applications is the ease with which to switch between service providers, and the number of options for customers has increased over time. Customers tend to seek qualified products, and if service providers cannot ensure necessary resources and capabilities, they might lose their current and potential customers into their competitors.

Therefore, the more uncertainty that affects the effectiveness of the firm's resources, the less probability that firms might achieve good performance and competitive advantage.

Salient Risks Relating to Tangible Resources in Cloud-Based CRM Adoption

Data – related risks

Migrating to cloud means that the enterprise data would be stored outside the enterprise boundary, at the cloud service provider end, and the client organization entrusts the confidentiality and integrity of its data to the cloud service provider. This raises certain concerns on how adequate a level of security the cloud service provider offers to ensure data security and prevent breaches due to security vulnerabilities in the application, cloud service provider's environment, or through malicious users [29, 31]. Currently many organizations are only willing to place noncritical applications and general data in the cloud [32]. According to an InformationWeek report [33], of those respondents using, planning to use, or considering public cloud services, 39% say they do not / will not allow their sensitive data to reside in the cloud and 31% say they do not /will not run any mission-critical applications in the cloud.

In addition, for CRMs, to provide fast response, and efficient processing services for customers, the data are retrieved from multiple resources via CDIs (Customer Data Integration). Dealing with data changes, data glitches in verification, validation,

de-duplication and merging processes also provides significant challenges for service providers [34].

However, trust in a cloud service provider, resulting from the provider's reputation and their structural assurance (e.g. SLAs), to some extent, can lessen the fear of incidents and risks related to data security and privacy. In the cloud context, cloud users face insecure application programming interfaces (APIs), malicious insiders, data breaches, data loss, and account hijacking [4, 31]. In addition, cloud-provider may be perceived to have too much power to view and potentially abuse sensitive customer data. Therefore, a provider with a good reputation and sufficient security mechanisms will provide confidence that customer data will be stored and protected against illegal access, and therefore increase the likelihood of adopting the cloud-based application.

Based on our argument above, we make the following propositions:

P7a: The Data-Related Risks will negatively affect the Willingness to Adopt Cloud Based CRMs.

P7b: Trust moderates the relationship between Data-Related Risks and the Willingness to Adopt Cloud Based CRMs.

Economic Risks

With a cloud-based application, the business risk is decreased by a lower upfront investment in IT infrastructure [3], although there is still the uncertainty of hidden risks during the time customers use the application. For example, to maximize the number of capabilities of an application, customers may have to pay more to get the advanced version [35]. The more reliable and specialized the hardware, software and services offered, the higher the price service providers would set [36].

Furthermore, with the Medium and Large size enterprises migrating their enterprise applications such as CRMs and ERPs to cloud based environments, the cost of transferring organizational data is likely to increase, especially if the organization applies the hybrid cloud deployment model where data would be stored in different distinct cloud infrastructures (e.g. private, community and public) [37]. Thus;

P8: The Economic Risks will negatively affect the Willingness to Adopt Cloud Based CRMs.

IT Infrastructure risks

IT Infrastructure risks are the possibility that the service provider may not deliver the expected level of infrastructure. That is the network infrastructure is not provided with the speed or reliability at the level expected. One positive characteristic of cloud computing is the rapid elasticity, which enables the scaling up or down of service usage, based on virtualization technology [11]. However, risks such as the unpredictable performance of virtual machines, frequent system outages, and connectivity problems, can affect all a provider's customers at once, with significant negative impacts on their business operations. [4].

IT infrastructure risks also include the risk of problems related to the integration between cloud-based applications and internal systems. The perceived IT infrastructure risks mentioned above are likely to influence the user' perception that the CRM might not perform as smoothly and seamlessly as expected. Thus;

P9: The IT Infrastructure Risks will negatively affect the Perceived Cloud-based CRM Usefulness.

Salient Risks Relating to Human Resources in Cloud-Based CRM Adoption

Technical skill risks

Technical skill risks are the possibility that lack of knowledge about cloud computing and CRM, and competence in emerging technologies, will negatively affect the ability to successfully implement cloud-based CRMs.

To effectively deal with the complexities and uncertainties associated with new technologies like cloud computing, and to ensure the smooth adoption and operation of cloud-based applications, organizations require qualified employees. A lack of professional knowledge about cloud computing, as well as information systems from members participating in the cloud based CRM deployment, would create hurdles slowing down the process of adoption [38]. Thus, the client users might need to spend more time and effort to learn how to use the application. Thus;

P10: Lower levels of Technical skill will negatively affect Perceived Ease of Use of the Cloud Based CRMs.

Managerial risks

From the psychosocial view, it is noted that IT executives might be conscious of negative consequences from adopting cloud-based applications [35]. The likelihood of successfully implementing a new system largely depends on good project management and leadership skills [39], and effective coordination and interaction with stakeholders [38]. Because cloud-based CRMs involve business process changes, integration of the new system into an existing IT infrastructure and system, and exploitation new technologies, it is necessary for technological and organization-specific knowledge of how to implement cloud solutions to operate business transactions as well as achieve business objectives [39].

The managerial risk might be reduced if there is a strong belief in the cloud-service providers. Trust can bolster the executive's optimism about the desirable consequences [21, 23], as a result, they might willing to adopt cloud-based application when they trust the service provider. We propose that managerial risk will affect the willingness of adoption of cloud-based CRMs; this proposition is moderated by Trust in a cloud-based CRM provider.

P11a: The Managerial Risks will negatively affect the Willingness to Adopt Cloud Based CRMs.

P11b: Trust moderates the relationship between Managerial Risks and the Willingness to Adopt Cloud Based CRMs.

Salient Risks Relating to Intangible Resources in Cloud-Based CRM Adoption

Strategic risk

Strategic risks include the risks that cloud-based CRM clients might be heavily dependent on the service providers and their applications. The cloud-based CRM applications may not be flexible enough to respond to changes in their business strategies and thus ensure alignment between IT and business strategies [35].

A high degree of dependence on a cloud provider may also cause vendor lock-in and business continuity issues [4, 31].

However, trust in a cloud provider, resulting from the provider's reputation and structural assurance (e.g. SLAs), to some extent, can lessen this fear. When the provider issues guarantees about data ownership, disaster recovery plans, standards, and assurances that regulations are followed, the level of trust is raised. Thus, a provider with a strong reputation can give the impression that it is able to sustain superior profit outcomes. [40].Thus;.

P12a: The Strategic Risks will negatively affect the Willingness to Adopt Cloud Based CRMs.

P12b: Trust moderates the relationship between Strategic Risks and the Willingness to Adopt Cloud Based CRMs.

Audit risk

Audit risk is the probability of there will be material misstatements in the client organization's financial statements. This can result from the lack of internal control and governance, ambiguous agreement on data ownership, and/or immature regulations and standards for cloud computing.

SAS No.107 [41] categorizes audit risk into three components: inherent risk, control risk, and detection risk. Inherent risk is possibility that a material misstatement in the client's financial statements will occur in the absence of appropriate internal control procedures. Control risk is the risk that material misstatement will not be detected and corrected by management's internal control procedures. Detection risk is the risk that the auditor will not detect material misstatement. Cloud computing places an increased burden on the auditor [2], and the lack of understanding of cloud computing in terms of technical and business aspects, as well as the risks associated with cloud computing, might lead to an increase in detection risk.

These risks can affect the Trust in cloud service providers, if they do not issue appropriate SLAs that specify the provider's responsibilities for services, data ownership and regulations and standards they would follow. Thus;

P13: Increasing level of Audit Risk will negatively affect Trust in cloud-based CRM provider.

Performance Functionality Risks

Marketing research suggested the reasons for CRM implementation are to boost the organization's ability to communicate with the customers, to learn about customer preferences in a timely manner, to achieve fast response to customers, and to analyse customer insights [42]. Put these requirements in context of cloud computing, there are the risks that the service provider will not be able to ensure seamless interoperability with home-grown applications [35], as well as with other on-demand applications on the same and different cloud platforms [37].

These risks can result the user's perception that he/she cannot perform his/her job well when he/she uses a cloud-based CRM. Thus;

P14: The Performance - Related Risks will negatively affect the Perceived Usefulness of Cloud Based CRMs.

3 Model of Cloud-Based CRM Adoption

Following from the review presented on the previous section, we propose the research model depicted in Figure 1.

4 Research Method

4.1 Conduct the Research

We seek to gather data from individual users who have commissioned a trial test of a cloud-based CRM and examination phase before deciding to fully adopt the CRM. To test this model we consider a survey-based approach is the most appropriate [see 43]. The following steps need to be taken:

1. We adopt measures from the literature for each of the constructs in the model, and operationalize them so that they can be used to gather the required data.
2. A preliminary web analysis of constructs was performed to validate the measures developed in the model. We collected user comments from 3 cloud-based CRM applications, namely Salesforce.com, Insightly, and Zoho CRM on the Apple Apps store, Google apps Marketplace, Google Play and Blackberry World. 1579 comments were collected by users who were considering trialling, or who were trialling the applications.
3. Based on the analysis of the preliminary data, we ensure all comments can be categorised by our constructs in the final questionnaire.
4. A large-scale survey would then be conducted to test our model of factors and risks involved in the adoption of a cloud-based CRM.

4.2 Questionnaire Development and Measures

The pre-validated questionnaire items were obtained from previous research on CRM, cloud computing, trust, risks, and TAM2. All items specified a seven-level Likert scale, expressed in linguistic terms: strongly disagree, moderately disagree, somewhat disagree, neutral (neither disagree nor agree), somewhat agree, moderately agree, and strongly agree.

5 Analysis of the Findings

This will be presented and discussed at the conference.

6 Implications Drawn from Analysis

This will be presented and discussed at the conference.

7 Conclusions and Limitations

This paper presents the factors and risks involved in the adoption of a cloud-based CRM. These factors and risks were derived from the analysis of research conducted into the adoption of information technology and systems, cloud computing, trust, and audit risk. From this research foundation a model was developed and presented.

This research will help provide more insights about client user behaviour toward the adoption a cloud-based CRM. This study also offers several practical implications. First, perception of risks together may inhibit the cloud-based CRM adoption. It is recommended that cloud service providers develop appropriate strategies to counter these concerns. For example, effective risk-mitigation strategies may include strong guarantees, better transparency and more consumer control of data and processes. Client users may be more willing to overlook the perceived risks if they know what is happening with their application and data, and they are confident that the service provider is trustworthy and can perform efficiently to ensure the system run smoothly.

Second, our study suggests that the cloud-based CRM adoption depends heavily on perceived usefulness, perceived ease of use and a trusting belief in the cloud service provider. By acting in a competent and honest manner, a cloud service provider can maintain high trust, resulting the willingness to adopt and retaining of users of its cloud-based CRM from organization clients.

Future studies may include other aspects that might influence the adoption such as organizational characteristics (e.g. firm size, organizational strategies, maturity of current information systems, etc.), industry characteristics (e.g. competitive intensity) and personals characteristic (e.g. gender, age, experience, etc.)

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