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# SOLUTION OF CLOUD COMPUTING FOR GROWING SMALL AND MEDIUM ENTERPRISES IN HOTEL BUSINESS

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## ABSTRACT

In the growth stages of the hotel industry, particularly for small enterprises, cloud computing presents a beacon of opportunity and efficiency. Small hotels, often constrained by limited resources and infrastructure, find in cloud computing a transformative solution to streamline operations and enhance guest experiences. Cloud-based solutions offer these establishments access to advanced technological capabilities without the burdensome costs associated with traditional IT infrastructure. From reservation management systems to customer relationship management tools, cloud computing empowers small hotels to efficiently manage their operations, improve guest interactions, and optimize resource utilization. Moreover, cloud computing enables seamless scalability, allowing small hotels to adapt to fluctuating demand and seasonal variations without the need for significant upfront investments. Additionally, cloud-based analytic provide invaluable insights into guest preferences and behavior, enabling small hoteliers to tailor their services and marketing strategies effectively. As such, in the formative stages of the hotel industry, cloud computing serves as a catalyst for innovation and growth, empowering small enterprises to compete on a level playing field while delivering exceptional guest experiences. cloud computing is revolutionizing the trajectory of small enterprises in the hotel industry's fledgling stages. By offering cost-effective solutions, enabling data-driven decision-making, and fostering collaboration, the cloud empowers small hotels to compete effectively, innovate boldly, and deliver exceptional guest experiences. As the industry continues to evolve, cloud technology will undoubtedly remain a cornerstone of success for small enterprises worldwide.

**Keywords:** Cloud Computing, SME, Hotel Business, Growth stage, Technology

## INTRODUCTION

### 1.1 Problem Statement

Small and medium-sized enterprises (SMEs) in the hotel business, particularly those at the growth stage, encounter significant challenges in effectively leveraging cloud computing technologies. Firstly, data security concerns persist as SMEs entrust sensitive guest information to cloud platforms, facing risks of data breaches and regulatory non-compliance. Secondly, limited technical expertise hampers the seamless adoption and integration of cloud solutions, hindering operational efficiency and innovation within these enterprises. Furthermore, unreliable internet connectivity and infrastructure issues impede the accessibility and performance of cloud services, disrupting critical hotel operations and customer services. Additionally, managing cloud costs poses a challenge, as SMEs struggle to optimize expenditure and navigate complex pricing models, potentially leading to budget overruns and financial strain. Moreover, vendor lock-in risks constrain flexibility and inhibit innovation, as SMEs may become overly dependent on specific cloud providers, limiting their ability to adapt

to evolving market demands. In summary, SMEs in the hotel business at the growth stage face obstacles related to data security, technical expertise, infrastructure reliability, cost management, and vendor lock-in when adopting cloud computing, hindering their growth and competitiveness in the industry.

## **1.2 Research Questions**

- (1) What problems will meet when the SME hotels in the process of informatization at their growth stage?
- (2) Which aspects can cloud computing services help growing SME hotels?
- (3) What are the differences between the 3 service models of cloud computing?
- (4) How to choose the 3 service models of cloud computing for growing SMEs hotels in their process of informatization in different situation and demand?

## **1.3 Research Objectives**

According to the above, the following research objectives of our paper are show below:

- (1) To identify what problems the growth stage SMEs will meet in the process of informatization.
- (2) To create an innovation method to select the suitable cloud service for growing SME hotels.

## **1.4 Research Hypothesis**

H1: The growing SME hotels is lacking of fund, personnel, professional informatization equipment and etc in the process of their informatization.

H2: Using cloud computing service can solve many problems for SME hotel's informatization.

H3: Different situation and demand of growing SME hotels will suit different kinds of cloud computing service models.

## **1.5 Scope of the Research**

### **1.5.1 Scope of Content**

This study explores the implementation and impact of cloud computing within small and medium-sized enterprises (SMEs) operating in the hotel industry. The scope encompasses various aspects related to cloud adoption, usage, and outcomes for SMEs at different stages of development. This study is a quantitative research, we will use questionnaires, survey and case study to conduct our research. The scope of our research will spend 4 month, we will sent questionnaires to SME hotels all over the world, using both online and offline method to collect data.

### **Sample Sampling**

Sampling for this study will employ a purposive sampling technique, targeting SMEs at growth stages of cloud adoption within the hotel industry. The sampling criteria will include factors such as the size of the enterprise, geographic location, level of technological maturity, and willingness to participate in the study.

### **1.5.3 Scope of Variable**

The dependent variable is the informatization level of growing SME hotels. And the independent variables are the problems that the growing SME hotels will meet in the process of informatization, and those variables will highly determine which cloud computing service model is the most suitable. And my research purpose to create a new method to identify the suitable cloud service for growing SME hotel's informatization is also highly depending on these variables. There are: Fund, Professional Personnel, Informatization Equipment, Systematic Management, Informatization Platform, Software Engineering, Data Sharing, Information Safety, Government Support

### **1.5.4 Scope of Time**

During 1 May 2023- 30 June 2024

### **1.6 Significance of the Research**

Cloud computing offers SMEs in the hotel industry a cost-effective and scalable solution for managing their IT infrastructure. By shifting to the cloud, these enterprises can avoid hefty upfront investments in hardware and software, reducing capital expenditure and allowing resources to be allocated more efficiently towards core business activities. And, cloud computing enhances the flexibility and agility of SMEs, enabling them to adapt quickly to changing market demands and seize new opportunities. With cloud-based applications and services, hotel businesses can scale their operations up or down as needed, respond rapidly to customer needs, and introduce innovative services to stay ahead of the competition. At the same time, the adoption of cloud computing fosters innovation and business growth for SMEs in the hotel sector. By leveraging advanced analytic, artificial intelligence, and machine learning capabilities available in the cloud, these enterprises can gain valuable insights into customer preferences, optimize their marketing strategies, and deliver personalized guest experiences, driving customer loyalty and revenue growth.

### **1.7 Expected Outcome**

The solution of implementing cloud computing for growing SMEs in the hotel business is significant as it enables cost savings, improves agility, enhances collaboration, strengthens security and compliance, and fosters innovation and growth, positioning these enterprises for long-term success in a competitive market landscape. My research is a qualitative research, I will collect and conclude the problems that the growing SME hotels will meet through the questionnaires. And then, using comparative analysis method to compare the differences between the 3 cloud computing service models according to the problems. After that, we will know which is the suitable model in different situation and demand, and to summarize an innovative method to help the SME hotels choose the best cloud service model.

## **2. LITERATURE REVIEW**

### **2.1 Theory**

#### **2.1.1 Technology Acceptance Model (TAM)**

TAM suggests that individuals' acceptance and usage of technology are determined by perceived usefulness and perceived ease of use. Applied to SMEs in the hotel industry, this model can help understand factors influencing their adoption of cloud computing, such as the perceived benefits of cost savings, scalability, and operational efficiency.

The implementation of cloud computing for growing small and medium enterprises (SMEs) in the hotel business can be effectively understood and guided by the Technology Acceptance Model (TAM). TAM is a theoretical framework that helps explain users' acceptance and adoption of new technologies based on their perceived usefulness and perceived ease of use. The Technology Acceptance Model provides a valuable framework for understanding and guiding the adoption of cloud computing solutions by growing SMEs in the hotel business. By assessing perceived usefulness, perceived ease of use, and external variables, hotel business owners and managers can effectively evaluate the potential benefits of cloud computing and make informed decisions about its adoption and implementation.

### **2.1.2 Resource-Based View (RBV)**

RBV emphasizes the strategic importance of internal resources and capabilities for achieving competitive advantage. In the context of cloud computing adoption, RBV can guide SMEs in leveraging cloud technologies as valuable resources to enhance their operational capabilities, improve service quality, and differentiate themselves from competitors.

The implementation of cloud computing for growing small and medium enterprises (SMEs) in the hotel business can be effectively analyzed through the lens of the Resource-Based View (RBV) theory. RBV emphasizes the strategic importance of internal resources and capabilities in achieving sustained competitive advantage. The Resource-Based View theory provides a valuable framework for understanding the strategic implications of cloud computing adoption for SMEs in the hotel business. By treating cloud computing as a strategic resource, developing core competencies, cultivating dynamic capabilities, and leveraging competitive advantages, SMEs can harness the full potential of cloud-based technologies to drive growth, innovation, and competitive advantage in the hospitality industry.

## **2.2 SME**

SMEs, the abbreviation of small and medium enterprises, it is the enterprise with small operation scale and lacking human and economic resources (Gerald I, Susman, 2007). The standard for defining SMEs may be revised with the time changing and condition (OECD, European Training Foundation, European Union, European Bank for Reconstruction and Development, 2015). At the same time, the definition standard of SMEs varies widely, there isn't the general international standard of SMEs. Different countries have different definitions of SMEs. Even in the same country, different industries have their own definition criteria. Most of countries define SMEs through industry sector, the number of employees and turnover figures. And most of researchers define SMEs by the number of employees (Nwankwo and Gbadamosi, 2010).

## **2.3 Hotel Business**

### **2.3.1 Definition**

The hotel industry constitutes a very important sector of the touristic infrastructure and is considered the king-pin of the tourist industry. It has been aptly said "No Hotels, No Tourism" (A. K. Ahila, 2013). It is a subdivision of the hospitality industry that specializes in providing customers with accommodation services. There are a variety of hotel types that typically can be categorized by size, function, service, and cost. Levels of service can usually be split into three options: limited-service, mid-range service, and full-service. However, some consumers may be more familiar with the star rating system, with one being the lowest rating and five being the highest. The function of some of the categories includes business, casino, spa, extended stay, bed & breakfast, and more (Statista Research Department, 2022). And from dictionary, hotel business is the business of owning, developing, constructing, leasing,

operating, managing or franchising, either directly or through a contractual arrangement with a third party, hotels having, but excluding hotels leased, as a lessee, from a real estate investment trust or other passive owner and operated on behalf of such lessee by an unaffiliated third party manager. From law, It means the business of hotel proprietor, hotel management firm or consultant.

### **2.3.2 Core Competitiveness**

There are 5 points that can enhance a hotel's core competence:

(1) Better Facilities:

Most people booking hotel for having a rest or just sleeping, so the hotels have to let the customers feel relax and comfortable. Thus, the better environment and nice facilities seems really important for reaching the demand of guests.

(2) Superior Employees Offering Exceptional Guest Service:

An experienced employee may provide more professional service, he/she knows more about the hotels and the guests, that can make the correct react more skillfully and quickly when meeting requirements and problems.

(3) More Effective Technology:

A new hotel technology can provide more successful and effective technology by reducing the discomfort in hotel organizations (Fahri Özsungur, 2022). Using effective technology can not only reduce the labor costs but also improve the degree of convenience.

(4) A Chef and Kitchen Staff with Special Knowledge and Expertise:

It's really a wonderful enjoyment to have a delicious meal and do not need to go outside, especially for the tourists who are not familiar with the tourist attraction and want to try the local food.

(5) Superior Distribution Systems (John R. Walker, Jack E. Miller, 2015):

Hotel distribution system (HDS), normally referred to by the initials HDS, is a venture of Hilton Hotels Corporation; Hyatt Hotels; Marriott Hotels; Resorts and Suites; Six Continents Hotels; Starwood Hotels; and Pegasus. According to Pegasus article, Pegasus Solutions Finalizes Technology Agreement with New Online Hotel Discount Venture HDS (n.d.). HDS plans to provide Internet sites with the ability to sell hotel rooms at net rates via direct connections to hotel central reservations system (Abraham Pizam, Judy Holcomb, 2010).

## **2.4 SMEs at the Growth Stage in Hotel Business**

From above we have a general understanding about SMEs, growth stage of enterprise life cycle and hotel business. Small and medium-sized hotels at the growth stage are the hotels have not only the universality of SMEs but also the characteristics of growth stage enterprises. So, after the development of start-up SMEs, small and medium-sized hotels begin their growth stage, they are accepted by the consumers and market, and there have great progress in many aspects. Such as: product competitiveness and brand awareness. Under this circumstance, the hotels have to concentrate on their core competitiveness to expand their operation scale and occupy the market quickly (Xu et al., 2015). So do growing SME hotels.

Below is some features of them

(1) Size:

It is defined that small sized hotels are often 3 stars with less than 60 rooms. Sigala, (2003a) also believed that 30 to 60 rooms is a good indicator for differentiating micro or family hotels from small and bigger ones, respectively. In accord with WTO, one SME hotel has below 50 rooms and it employs less than 10 persons.

(2) Location:

It is most located in marginal places, (Main,2001). Actually, these personalisation and uniqueness of lodging experiences create benefits for the tourists who spend time in SME hotels(A. Zainal, S.M. Radzi, R. Hashim, C.T. Chik, R. Abu, 2012).

(3) Core Competitiveness :

There are 7 key capabilities for SME hotels are customer focused goals, planning and control, partnering and networking, internal and external communication, achieving consistent standards, strategic workforce management and cash flow and performance measurement(Jaideep MotwaniVictor E. Sower,2006).

## **2.5 Cloud Computing**

### **2.5.1 Definition**

Cloud computing is a model which can offer needed network into a shared pool of configurable computing resource (e.g., networks, servers, storage, applications, and services)(Blessy & Kushwaha, 2023), which can be speedily configuration provided by fewest management and commutation(Ma, Zongmin, 2016).

### **2.5.2 Three Service Models**

(1) IaaS

An outsourcing model that users can rent the hardware resources (such as: CPUs, disks and etc.) to support their own manipulations. The providers which familiar by the public including: Amazon Web Services and Eucalyptus.

(2) PaaS

A model that cloud providers provide a computing platform including databases, building development environment and other relevant application servers. Users can concentrate on deploying their own applications without worry about maintenance and optimization under this infrastructure. Common PaaS providers including Windows Azure and Google App Engine.

(3) SaaS

SaaS provider offers most controls, and it has full administrative rights for its application and actions. Users don't have to deploy, maintain and update their equipment. And the end users can use the services anywhere. Popular SaaS service providers are: Google Apps and Microsoft office 365(Khosrow-Pour, Mehdi, 2014).

## **2.6 Related Research**

According to Carr (2005), its a good method to use advanced technology for SMEs, such as cloud computing. After that, Rittinghouse and Ransome (2009) explained the reason that SMEs should use cloud services is assets. They presented that SMEs have difficulties in purchasing equipment and build platform, and cloud computing can helps them. Besides the study of

Gorniak (2009) shows the reasons of cost, efficiency and security are why cloud computing can offer help to SMEs. Surendro & Fardani (2010) said that SaaS of cloud services is more fit for SMEs. At the same year, Lawrence et al. (2010) and Misra and Mondal (2010) hold, cloud computing is the better tools for SMEs comparing with bigger firm. What's more, basing on the study of Handler et al. (2012) and Rahimili (2013), cloud computing can offer different service and mode to reach the demand of users. However, Reimer et al (2015) says that the SMEs have to pay attention on the security issues when using cloud computing. As other SMEs and other hotels, the global SME hotels may facing more severe competitions. According to this situation, the SME hotels should use some advanced technologies (Vipin Nadda, Priyanka Tyagi, Malini Singh, 2022).

## **2.7 Summary**

- (1) A general knowledge about growing SME hotels and 3 cloud computing service models.
- (2) Related research support our project opinion that cloud computing can solve the growing SME hotel's problems.
- (3) Different cloud service model has their own features and suit for different situation and demand.
- (4) We have to find out an innovative method to help SME hotels to select the most suitable cloud service precisely and intuitively.
- (5) From the literature review, we conclude some features of SMEs, growth stage, hotel business and cloud computing, which are seems as our independent variables and very important for our following research, there are: Fund; Professional Personnel; Informatization Equipment; Systematic Management; Informatization Platform; Software Engineering; Data Sharing; Information Safety; Government Support;

## **3. METHODOLOGY**

### **3.1 Research Design**

This research is a qualitative research, I will collect and conclude the problems that the growing SME hotels will meet through the questionnaires. And then, using comparative analysis method to compare the differences between the 3 cloud computing service models according to the problems. After that, we will know which is the suitable model in different situation and demand, and to summarize an innovative method to help the SME hotels choose the best cloud service model.

#### **3.2.1 Survey:**

According to the literature review, we conclude some thoughts and results from previous research. We have a general learn about the problems and difficulties in different aspects that SMEs at the growth stage will meet in their informatization process. And those information are from literature, so to search the main problems that growing SME hotels will meet, we have to do further survey in practice. The advantage of survey strategy is that it's easy to acquire data and information from large amount of people without too much money (Gail Johnson, 2015). So, we will use questionnaire to find out the difficulties and problems.

#### **3.2.2 Comparative Analysis**

After achieve the result from questionnaire, we will have a knowledge about the problems will meet. And to select the best model for growth SME hotels, we have to do further research. Using comparative analysis is because the problems of growing SME hotels are not same, and the features of the three models are also not same. Comparing the 3 models

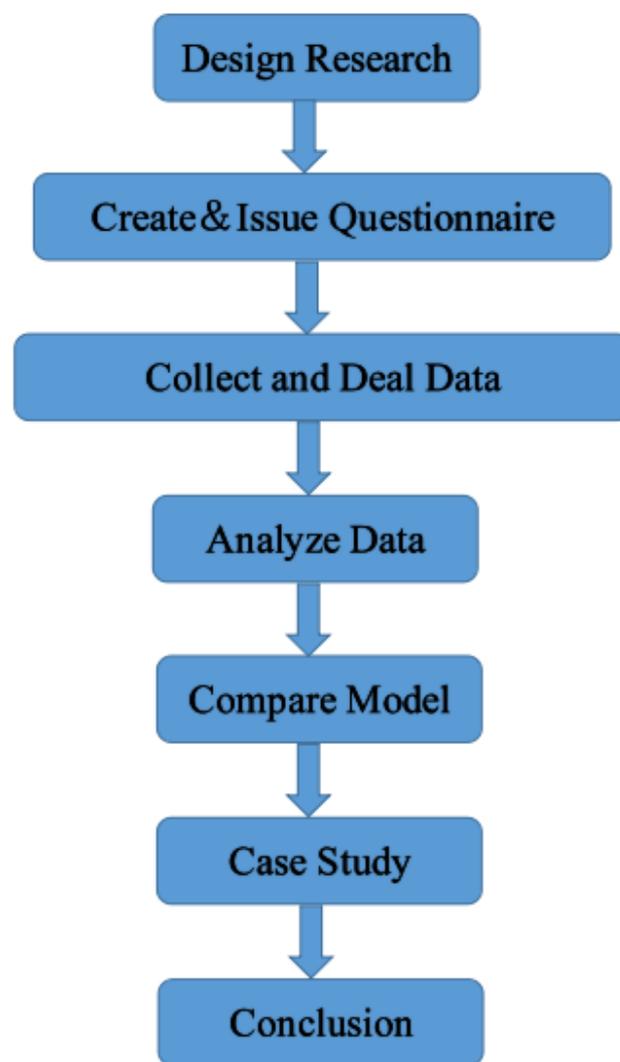
advantages, disadvantages, model of operation can choose the most suitable one for SME hotels in different problems.

### 3.2.3 Case Study

A case study is a detailed analysis of a particular individual, group, event, or situation, typically conducted over a period of time. It involves examining the subject in depth, often using multiple data sources such as interviews, observations, documents, and archival records. Case studies are commonly used in various fields such as psychology, sociology, anthropology, business, education, and medicine to explore complex phenomena, understand underlying processes, and generate insights that can inform theory, practice, or policy.

## 3.2 Research Flow

*Figure 1: Research Flow*



As the research flow, after the research design, we begin to make and issue the questionnaire. We use one month to issue the questionnaire, one month later, the questionnaire will be recycled and dealt by excel. According to the data analysis result, we can choose the best

service model for growing hotel SMEs by comparing the 3 models. Then we use a case study to prove our result. Finally, it reaches the conclusion and puts forward some suggestions for hotel SMEs at the growth stage in the process of informatization.

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