



# Service strategies of small cloud service providers: A case study of a small cloud service provider and its clients in Taiwan



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## ABSTRACT

Small enterprises play an important role in the technology innovation and economic development of most countries all over the world, particularly in Taiwan. Due to a lack of financial resources and expertise, small enterprises tend to find novel ways to utilize IT resources in order to reduce IT adoption costs, to achieve better flexibility, business agility and scalability, and to react faster to market demands. Whereas Taiwan has been promoting cloud computing to help Taiwanese enterprises adopt more effective information technologies, we found that the service strategies of small cloud service providers are individually differentiated in order to survive in the competitive cloud computing market. This paper reports a case study of a small e-learning service provider and its four clients in Taiwan. Some novel insights are revealed through this case study and recommendations are provided accordingly.

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## 1. Introduction

Cloud computing has provided enterprises with many advantages such as flexibility, scalability, business agility, and pay-as-you-go cost structure (Venters & Whitley, 2012; Sultan, 2011; Benlian & Hess, 2011; Iyer & Henderson, 2010; Buyya, Yeo, Venugopal, Broberg, & Brandic, 2009). As a result, small and medium enterprises (SMEs)<sup>1, 2</sup> are increasingly adopting cloud computing to deliver their business services and products online to extend their business markets (Repschlaeger, Ere, & Zarnekow, 2013; Perrons & Hems, 2013; Xu, Xu, & Basl, 2012). A recent report from KPMG (2012) indicates that the growth of the cloud computing industry in 2012 is mainly driven by SMEs. To boost the adoption of cloud computing, Taiwan's government has poured tremendous resources into transforming this ICT island into a cloud village (Lee et al., 2012). Because nearly 98% of enterprises in Taiwan are SMEs, the government often pays more attention to the special needs of SMEs in IT adoption. The size of enterprises in terms of employees is a determinant for the adoption decisions of IT services in Taiwan.

Also, IT adoption strategies vary considerably depending on the IT resources of an enterprise as a result of the company size. Therefore, the fact that size matters has a significant implication for the competitiveness of IT service providers, particularly small cloud service providers. In Taiwan, many small IT service providers jump on the cloud bandwagon by porting existing IT service to the cloud platform only. Fundamentally, they are still struggling with competing with larger cloud service providers. In this research, we are interested in exploring how small cloud service providers are able to compete in the fiercely competitive cloud market. To explore the service strategies of small cloud service providers in Taiwan, we investigate why and how small enterprises adopt cloud services as a first step.

On the one hand, in addition to using the popular SaaS (Software as a Service) by SMEs, an increasing number of small enterprises are also adopting PaaS (Platform as a Service) and IaaS (Infrastructure as a Service) (Sultan, 2011; Tao, Zhang, Venkatesh, Luo, & Cheng, 2011; Li et al., 2013). On the other hand, due to the intensive competition in the cloud computing market, many cloud service providers are providing tailored and flexible services to meet the specific needs and requirements of their SME clients. Therefore, to understand the competition of cloud computing in small enterprises, there is a strong need to explore the benefits and risks (Brender & Markov, 2013) involved in the service and adoption strategies of cloud-based services from both the perspectives of cloud service providers and cloud service clients (Marston, Li, Bandyopadhyay, Zhang, & Ghalsasi, 2011). We chose the e-learning industry as our "case" for this study because most of the e-learning providers and their clients are small enterprises and because, like many other

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<sup>1</sup> In Taiwan, SMEs are classified as those enterprises with less than 200 regular employees in the manufacturing, construction, mining, and quarrying industries and those enterprises with less than 100 regular employees in other industries. Micro enterprises refer to SMEs with fewer than 5 regular employees.

<sup>2</sup> The definition of small enterprises varies in different countries. We define those enterprises with less than 50 regular employees as small enterprises in view of this research context.

IT service industries, the majority of e-learning services in Taiwan have been shifting to cloud-based information services. By studying a small e-learning provider and four of its clients, we hope to gain some insights into service strategies that a small cloud service provider could use to compete with larger providers.

The rest of the paper is organized as follows. Section 2 provides some background information associated with the adoption of cloud computing in small enterprises. Section 3 compares different types of cloud services based on their purposes rather than technical details. Section 4 presents a case study with an e-learning cloud service provider and its four clients. These research subjects in our case study are all small enterprises in nature. Section 5 discusses the findings, managerial implications, and insights for cloud-based services in small enterprises. Finally, conclusions, limitations and suggestions for future studies are addressed.

## 2. Background: cloud computing for small enterprises

In practice, small enterprises face many issues in adopting new information technologies. As most small enterprises have limited human and financial resources, their IT adoption is often different from that of larger business with more resources (Sarosa & Zowghi, 2003; Lawson, Alcock, Cooper, & Burgess, 2003; Tan, Chong, Lin, & Eze, 2010; Alshamaila, Papagiannidis, & Li, 2013). Below is a brief overview of the main issues that small enterprises have to resolve for IT adoption.

### 2.1. Limited financial resources

The adoption of new information technology often requires a considerable investment of financial resources. Compared to larger enterprises, small enterprises have much less financial resources to access in adopting various technologies (Umble, Haft, & Umble, 2003). For example, many small enterprises cannot afford to purchase an ERP system (Rao, 2000; Olson and Staley, 2012), which is usually expensive. As a result, small enterprises have to be very prudent with the spending of their financial resources in IT investment and often choose less sophisticated substitute systems or software, which may cause small enterprises to compete less effectively with larger competitors. Furthermore, Sarosa and Zowghi (2003) warned that a bad IT investment decision could negatively influence the profitability of small enterprises.

### 2.2. Limited IT staff & expertise

Small enterprises are less likely to have dedicated in-house services and IT staff than larger enterprises. For example, small enterprises are usually not able to afford readily available in-house security experts to address potential security issues (Armbrust et al., 2010). Small enterprises are also less likely to have particular IT staff to train other employees to use new technologies on a regular basis (Lawson et al., 2003). Furthermore, the limited IT staff in small enterprises are typically busy supporting and maintaining existing IT infrastructure and do not have much time for developing innovative solutions to address changing business demands efficiently (He, Cernusca & Abdous, 2011).

### 2.3. Limited IT infrastructure

Compared with larger enterprises small enterprises have limited IT infrastructure to support application development. For example, small enterprises are less likely to afford dedicated, scalable, and state-of-the-art in-house computing resources such as high performance servers and storage devices. Consequently, IT staff members in small enterprises are often unable to develop and implement the business applications to meet enterprise needs due

to the insufficient support of a reliable and sufficient IT infrastructure (Umble, Haft, & Umble, 2003; Wang, He & Wang, 2012).

Because of the above issues, cloud computing frequently becomes a seemingly attractive and commercially viable solution for small enterprises (Voas & Zhang, 2009; Gupta, Seetharaman, & Raj, 2013). Several benefits of cloud computing to small enterprises are apparent (Ghormley, 2012; Sultan, 2011). First, a distinctive benefit is that cloud computing allows small enterprises to access high-end applications such as SAP software, Microsoft SharePoint, data mining, and business intelligence tools at a much lower cost (Voas & Zhang, 2009; Sultan, 2012). Second, the on-demand and pay-as-you-go cost structure of cloud computing permits small enterprises to reduce IT investment and to pay for only the software they need. Third, new applications or services can be quickly added by cloud service providers with much lower up-front costs to small enterprises. Fourth, cloud computing also lets small enterprises focus on their core business, react more quickly to changes, and to scale up and down as needed (He, Cernusca & Abdous, 2011). Fifth, cloud computing is also valuable for IT staff in small enterprises because it reduces their burden of installing, configuring, upgrading and maintaining software and applications (Leavitt, 2009). Currently, in view of these benefits, many cloud service providers such as Amazon, Cisco, and Microsoft are offering on-demand cloud services to small enterprises commercially.

Although cloud computing promises significant benefits, cloud computing also poses some challenges and risks (Armbrust et al., 2010; He, Cernusca & Abdous, 2011; Trigueros-Preciado, Pérez-González, & Solana-González, 2013). Common concerns with clouds (particularly public clouds) include:

- (1) Security (Rittinghouse & Ransome, 2009). Is the data in the cloud safe? Can we back it up and restore it easily?
- (2) Privacy (Fromholz, 2000). How can we be sure that our data is private in the cloud? Can we control how our information may be used by the vendor?
- (3) Vendor lock-in/dependency (Armbrust et al., 2010). Vendor dependency or vendor changes (bankruptcies/shutdowns/acquisitions and their consequences) are critical in IT decision including the ability to continue business operations if the vendor shuts down unexpectedly. How sustainable is a potential cloud service provider? How hard is it to move applications and data to another service provider? and
- (4) Legal/regulatory/information policy consequences (Jaeger, Lin & Grimes, 2008). Different compliance standards regulate data privacy and information security in different nations and regions. How does the use of a cloud service impact our ability to comply with various legal requirements and regulations?

## 3. Different cloud-based services for small enterprises

The competitive strategies of a company are primarily built upon the cost and the differentiation of the company's offerings (Porter, 1985). As such, the service strategies of a cloud service provider can be developed based on its service cost or service differentiation, which mostly depends on the needs of its customers (Lin & Chen, 2012; Wu, Lan, & Lee, 2011; Low, Chen, & Wu, 2011). However, there are numerous small enterprises in the world. Different small enterprises have distinctive needs, requirements, and considerations in terms of cloud adoption. Therefore, cloud service providers for small enterprises should stand in the shoes of small enterprises to address the specific needs of their clients if they want to succeed in this highly competitive market. The conventional distinction of cloud-based services based on technical implementation such as SaaS, PaaS, and IaaS is not the focus of this study. Rather,

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