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# Why do Companies Adopt or Reject SaaS? Looking at the Organizational Aspect

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# WHY DO COMPANIES ADOPT OR REJECT SAAS? LOOKING AT THE ORGANIZATIONAL CONTEXT

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## Abstract

*The aim of this paper is to investigate the influence of three organizational factors on the adoption of SaaS in Indonesian companies, namely top management support, organizational readiness, and organizational size. We conducted interviews with 15 case companies. Our results show that top management support has a positive influence on SaaS adoption, while organizational readiness and organizational size have an inverse effect. This is surprising, since it contradicts existing research on IT innovation adoption. We also found that the SaaS awareness level of our interviewees remains low, especially among the non-adopters. These findings have implications for IT service providers that want to formulate strategies to increase the intention to adopt SaaS in Indonesian companies; as well as for IT innovation researchers who have an interest in SaaS adoption in developing countries.*

*Keywords: Software as a Service, Adoption, Technology-Organization-Environment framework, Indonesia*

# 1 INTRODUCTION

In the last two decades, research has focused on the concept of Information Technology (IT) adoption (Carter et al. 2001). Various models and theories such as the Technology Acceptance Model (Davis 1989), the Diffusion of Innovation theory (Rogers 1983), and the Technology-Organization-Environment framework (Tornatzky & Fleischer 1990), have been examined to identify factors that drive and inhibit intention to adopt IT innovation at an individual or organizational level. The adoption of IT innovation has profound impacts on organizations and generally intends to contribute to the performance and growth through improvement in productivity, competitiveness, efficiency and effectiveness (Hameed & Counsell 2012; Lee & Xia 2006). As such, much research has been done to understand organizational factors that influence IT innovation adoption (i.e., Yen et al. 2013; Low et al. 2011; Jang 2010; Pearson & Grandon 2008; Ramaseshan & Kiat 2008). The Technology-Organization-Environment (TOE) framework suggested by Tornatzky and Fleischer (1990) is one of the theories used in IT innovation studies that involve organizational factors. This framework explains that the intentional adoption of IT innovation is mainly based on factors in the organizational context, its environment, as well as characteristics of the innovation technology itself (Lai et al. 2010; Kuan & Chau 2001).

Among the three contexts involved in the TOE framework, the organizational context has been widely studied by many researchers on IT adoption (i.e., Yen et al. 2013; Low et al. 2011; Jang 2010; Pearson & Grandon 2008) as some factors involved in the organizational context have been considered as determinants of innovations adoption as pointed by some scholars (Damanpour 1991). Organizational context refers to internal organization characteristics or factors which may support the adoption of IT innovation in an organization (Tornatzky & Fleischer 1990). Some of the organizational factors used in IT innovation studies such as top management support, organizational readiness, organizational size, managerial obstacles, and global scopes. Among these organizational factors, top management support, organizational readiness, and organizational size were found to be the factors that are frequently examined in the previous studies (i.e., Mangula et al. 2014; Alshamaila et al. 2012; Low et al. 2011; Khemthong & Roberts 2006; Zhu et al. 2006).

The emergence of Software as a Service (SaaS), as one of the trends in the IT industry, has attracted much interest from researchers and practitioners that seek an explanation on how this type of IT innovation is adopted in an organization. SaaS is a method where users access an application over the Internet which resides and runs at a SaaS provider's servers and can be used either for free or for a fee based on their usage (Marston et al. 2011; Wu et al. 2011; Sultan 2010; Chong & Carraro 2006). Therefore, it eliminates the need to install and run the application on the user's computer. Some examples of well-known SaaS-based applications (from here on referred to as 'SaaS') for personal use are Yahoo Mail, Gmail, Google Docs, Facebook, and Twitter; while for enterprise users, examples include ERP software such as NetSuite, and CRM software such as Salesforce.com, Oracle Siebel on Demand, and Microsoft CRM.

Since 2006, a few local providers in Indonesia have started to offer SaaS solutions for Indonesian customers. The amount of SaaS provider has been increasing since then (Mangula et al. 2012). Various SaaS applications are offered, which range from hospital information system, banking application, and email collaboration. However, the number of users of these SaaS applications remains relatively low as seen in a survey-based studies conducted by Mangula et al. (2014) and Erisman (2013). Moreover, these two studies showed that two factors of organizational context, namely top management support and organizational readiness, have no relationship with the intentional adoption of SaaS in Indonesian companies. These findings were in contrast to many IT innovation studies that confirmed that both of these organizational factors have positive relations with the adoption of IT innovation in organizations (i.e., Alshamaila et al. 2012; Jang 2010; Khemthong & Roberts 2006).

Encouraged by the findings and theories presented above, we aim to answer the following main research question: "*Why do Indonesian companies adopt or reject SaaS?*" In particular, we shed light on 1) the extend Indonesian companies are aware of SaaS, and 2) how the factors of top

management support, organizational readiness, and organizational size influence the adoption of SaaS in Indonesia.

## **2 ORGANIZATIONAL INNOVATION ADOPTION**

IT innovation adoption has always been an interesting topic for Information System (IS) scholars, since IT innovations have profound impact on organizations (Lee & Xia 2006). In this study, we use Rogers' (1983) definition of adoption, which is "a decision to make full use of an innovation as the best course of action available and rejection is a decision not to adopt an innovation". Innovation is a broad term. Damanpour (1991) for example argues that innovations can refer to new products, services, process technologies, structures, administrative systems, plans or programs.

### **2.1 Software as a Service Adoption**

Since the emergence of cloud computing in 2008, the use of the term "cloud" is metaphorical and typically points to a large pool of usable resources such as hardware and software that are easily accessible via the Internet (Lin & Chen 2012). Cloud computing is performed by customers on hardware or software that customers do not necessarily own or maintain (Wu et al. 2011), or in other words, the hardware and software resources are delivered as a *service* through Internet. Basically, there are three service models of cloud computing: Software as a Service (SaaS), Infrastructure as a Service (IaaS), and Platform as a Service (PaaS).

SaaS, as one of the cloud services, has been gaining momentum all over the world. The change to SaaS is mainly caused by its cost efficiency and promoted for Small Medium Enterprises (Lunendonk 2007) which have limited capital to invest in IT and limited internal knowledge to handle the adoption process and maintain IT resources (Sarosa 2007). In the SaaS context, applications are owned and hosted at vendors' site and, instead of installing and maintaining the applications, the customers simply access it over the Internet as the services provided by the vendors (Marston et al. 2011; Sultan 2010). Consequently, there is no cost for license purchasing and maintenance since customers only pay for the services based on their usage (Wu et al. 2011).

SaaS has been offered by a few local providers in Indonesia for almost a decade (Mangula et al. 2012). Some studies have been carried out to investigate the current situation and the factors of SaaS adoption in Indonesia (i.e., Mangula et al. 2014; Erisman 2013). These studies revealed that the adoption level of SaaS remains low, despite the relative large number of SaaS providers in Indonesia. Furthermore, they also found that top management support and organizational readiness were negatively associated with the intention to adopt SaaS.

### **2.2 Organizational Factors and IT Innovation Adoption**

The fundamental theory used in IT innovation studies is rooted in the Diffusion of Innovation (DOI) theory introduced by Rogers (1983), which provides insight into the innovation characteristics or technological factors that influence the adoption of innovation. Originally, DOI was developed for studies on innovation adoption at an individual level. However, several studies have integrated DOI with other theories and models to investigate IT innovation adoption at an organizational level. The Technology-Organization-Environment (TOE) framework is a widely accepted and utilised organizational level theory for studying different types of technological innovations, and was frequently combined with the DOI theory (e.g. Alshamaila et al. 2012; Khemthong & Roberts 2006; Low et al. 2011). This framework identifies technological, organizational, and environmental aspects that affect the intentional adoption of IT innovation in organizations (Tornatzky & Fleischer 1990). The technological aspect describes both the existing technologies in use and the emerging technologies that are relevant for an organization. Some of the technological factors include the innovation characteristics suggested by Rogers (1985) namely relative advantage, compatibility, complexity, trialability, and observability. Some authors used perceived cost and security as the technological factors. The organizational aspect refers to the

internal elements of organizations that may influence the adoption of IT innovation, such as top management support, organizational readiness, organizational size, managerial obstacles, and global scope. The environmental aspect relates to the surrounding elements in which an organization conducts its business, such as business partners, competitors, and government support.

IT innovations have impact on almost every aspect of organizational life (Fichman 2004), and are an enabler for improving organizations' competitiveness and productivity (Oliveira & Martins 2011; Ramdani & Kawalek 2007). Some scholars have indicated the primary importance of organizational factors as determinants of IT innovation adoption in organizations (Damanpour 1991). Therefore, they focused their research on which organizational factors drive or hinder the adoption of IT innovation in organizations (i.e., Yen et al. 2013; Low et al. 2011; Jang 2010; Pearson & Grandon 2008; Ramaseshan & Kiat 2008). Table 1 summarizes the results of our literature study on some TOE-based IT innovation studies and highlights the organizational factors involved in the studies. Among those factors, top management support, organizational readiness, and organizational size found to be the most frequent factors that were examined and confirmed having positive relationships with IT innovation adoption.

#	Article	Innovation	Organizational Factors													
			TMS	OR	OS	CEO ATT	CEO ISK	PTE	II	CE	PV	RA	EC	OC	BF	
1	Alam, 2009	Internet		√+												
2	Alam et al., 2011	eCommerce		√+												
3	Low et al., 2011	Cloud Computing	√ <sup>+</sup>	√	√ <sup>+</sup>											
4	Hung et al., 2010	CRM		√ <sup>+</sup>	√ <sup>+</sup>	√ <sup>+</sup>										
5	Huy and Filiatrault, 2006	eCommerce		√ <sup>+</sup>	√ <sup>+</sup>											
6	Jang, 2010	RFID	√ <sup>+</sup>	√ <sup>+</sup>												
7	Jeon et al., 2006	eBusiness		√ <sup>+</sup>	√											
8	Joe and Kim, 2004	eMarketplace		√ <sup>+</sup>	√											
9	Khemthong and Roberts, 2006	eMarketing	√	√ <sup>+</sup>	√ <sup>+</sup>	√	√									
10	Looi, 2005	eCommerce		√ <sup>+</sup>												
11	Pearson and Grandon., 2008	eCommerce	√	√ <sup>+</sup>												
12	Ramaseshan and Kiat, 2008	CRM	√ <sup>+</sup>	√												
13	Thong, 1999	IS		√+	√+					√						
14	Thong and Yap, 1995	IT			√ <sup>+</sup>					√	√					
15	Wang and Tsai, 2002	eCommerce		√+							√					
16	Yen et al., 2013	Cloud Computing	√ <sup>+</sup>	√ <sup>+</sup>								√				√
17	Alshamaila et al., 2012	Cloud Computing	√ <sup>+</sup>		√ <sup>+</sup>				√ <sup>+</sup>							
18	Pudjianto et al., 2011	eGovernment	√ <sup>+</sup>										√		√	
19	Kuan and Chau, 2001	EDI		√ <sup>+</sup>												
Total			8	16	9	2	1	1	2	1	1	1	1	1	1	1

Table 1. Organizational Factors of TOE-based Innovation Adoption Studies

\*TMS: Top Management Support; OR: Organizational Readiness; OS: Organizational Size; CEO ATT: CEO Attitude; CEO ISK: CEO IS Knowledge; PTE: Prior Technology Experience; II: Information Intensity; CE: Competitiveness of Environment; PV: Product Variety; RA: Relative Advantage; EC: Extent of Coordination; OC: Organizational Compatibility; BF: Benefits.

<sup>+</sup>The significant factors

**Top Management Support.** The adoption of new technologies in an organization or a company requires a smooth integration between the new systems and the existing ones so as to keep its core business activities running. Therefore, supports from top management are critical for creating positive environment and making sure that the necessary organizational resources include technology, financial, and IT experts, are available or ready to help the adoption processes (Wang et al. 2010). Some studies have pointed top management support as the important factor which may influence the intention to adopt IT innovations in organizations (i.e., Yen et al. 2013; Alshamaila et al. 2012; Low et al. 2011; Jang 2010). A decision-maker is very likely to be in the top management team, such as the owner of a company, IT director, IT manager, or IT supervisor. With regard to SaaS adoption, it may require several changes in business processes and activities as well as integration with the existing systems; hence, top management support and commitment are

essential to convince an entire organization about the importance of the innovation technology and influence the internal users to participate in the adoption processes (Low et al. 2011).

**Organizational Readiness.** Organizational readiness consists of financial, IT professional, and IT infrastructure aspects. Insufficient funding has been identified as a major factor that hinders IT growth in organizations, mainly in small companies that have limited capital to spend on IT investment (Kuan & Chau 2001). The IT professional aspect relates to the existence of employees who have knowledge and skills on certain IT innovations (Pudjianto et al. 2011). The IT infrastructure aspect refers to the installed network technologies and enterprise systems that provide a platform on which the innovation can be built (Low et al. 2011). When discussing SaaS, it is believed that many companies delay and tend to wait the adoption of IT innovations until they have all the required organizational resources (Yen et al. 2013).

**Organizational Size.** Some empirical studies have shown that organizational size positively affects organizations' willingness to adopt IT innovations (i.e., Khemthong & Roberts 2006; Joe & Kim 2004). Furthermore, it is often reported that large companies tend to adopt more IT innovations which mainly due to their resources readiness and flexibility to take risks (Alam et al. 2011); while for the small companies, their lack of organizational resources has hindered them from adopting new IT innovation (Hung et al. 2010). However, concerning SaaS adoption, due to the resource poverty with tight IT budgets and lack of in-house IT personnel and expertise (Alshamaila et al. 2012), some scholars argued that SaaS is especially fitting for SMEs (Lünendonk 2007). Therefore, there might be a positive relation between SMEs and intention to adopt, since SaaS is believed to reduce operational costs and provides easy maintenance (Benlian & Hess 2011).

### 3 Method

In general, the goal of our study is to investigate factors that might trigger or hinder the adoption of SaaS in Indonesian companies. More specifically, we focus on the three organizational factors of TOE framework, including top management support, organizational readiness, and organizational size. In order to have deeper analysis of the underlying factors, a qualitative interview method is deemed appropriate to be employed in this study (Lazar et al. 2010). Unit of analysis of this study is Indonesian companies that adopt or not adopt SaaS. We have two questions that we want to answer in our study:

- To what extent are Indonesian companies aware of SaaS?
- How do the factors of organizational size, top management support and organizational readiness influence the adoption of SaaS in Indonesian companies?

In the remainder of this section, we first explain how we selected the case companies of our study; then followed by describing how we collected and processed the data.

#### 3.1 Case Selection

Since we did not have a list of Indonesian companies that did or did not adopt SaaS, sampling in this study was performed by using a convenience sampling method. Some companies were selected based on recommendation from case companies in our previous study, and others were selected because we assumed they have potential to adopt SaaS. We sent a letter of permission for a total of 37 companies that vary in terms of sizes and industry types. Fifteenth companies agreed to participate in our study. The other companies rejected to be involved in our study since they did not adopt SaaS and have no knowledge on SaaS. We classified the 15 companies into two groups: the companies that adopted SaaS, and the companies that did not adopt SaaS, nor have the intention to adopt within the next three years. Table 2 displays information about the companies taking part in our study.

#### 3.2 Data Collection

Lazar et al. (2010) suggested that using semi-structured interviews in the context of an exploratory research may be the most appropriate, since it gives more room for the interviewer to ask for clarification, add questions, or follow the interviewees' comments. Therefore, to answer the

questions of our study, we used a semi-structured interview as our primary data collection method. The use of this interview method provides us with opportunity to gain additional insights and understanding on the adoption or rejection decision made by our case companies.

The interviews that were carried out lasted 30 to 90 minutes. Table 2 presents an overview of our case companies and informants. Our informants came from different management functions, including IT supervisors, IT managers, IT directors, and owners of some companies. These informants were considered as the key persons involved in the adoption decision-making process. The interviews were performed in the informants' offices.

Before starting the interview sessions, the interviewer first introduced herself and then continued by explaining the aims of the study and how the interview would be carried out. The interview topics included the company's background, the awareness level of the informants on SaaS, and the impact of the organizational factors on SaaS adoption. In order to know the informants' awareness level concerning SaaS, the interviewer first asked whether the informants had ever heard about SaaS and, if so, if they could explain what SaaS is. This first question aimed to identify SaaS awareness level of the informants. After the informants gave their own answers, the interviewer, then, explained their own SaaS definition used in this study and provided several examples of SaaS that are implemented in a corporate or personal setting. Once the informants and the interviewer have the same understanding about SaaS, the interviewer continued to the next question regarding the adoption status of SaaS in their companies.

The interviewer assured the informants that all information would be treated confidentiality. According to the informants' requests, the name of the companies could not be mentioned in our research paper and, therefore, represented in the initials of C1 (Companies 1) until C14 (see Table 2). The interviews were recorded with the permission of the informants. In order to avoid bias, the informants were given the opportunity to discuss concrete examples and stories rather than directing or suggesting them how they should answer. As soon as the interviewer finished the interview sessions, she, then, transcribed the interviews results and sent them to the informants for refinement if needed.

No.	Companies' Information				Informants' Information		
	Industry	Adoption Stage	Size	IT Staff	Job Position	Education Background	SaaS Awareness Level
C1	Health	Already adopted	SME	1	Owner	Non IT	Basic
C2	Health	No intention to adopt	Large	4	IT Manager	IT	Basic
C3	Health	No intention to adopt	Large	7	IT Manager	IT	Very Basic
C4	Health	No intention to adopt	SME	1	IT Manager	IT	Very Basic
C5	Health	No intention to adopt	Large	5	IT Manager	IT	Basic
C6	Education	No intention to adopt	SME	3	IT Manager	IT	Basic
C7	Education	No intention to adopt	SME	11	IT Manager	IT	Basic
C8	Banking	No intention to adopt	Large	7	IT Director	IT	Basic
C9	Banking	No intention to adopt	Large	3	IT Supervisor	IT	Basic
C10	Hotel	No intention to adopt	Large	2	IT Manager	IT	Very Basic
C11	Hotel	No intention to adopt	Large	3	IT Manager	IT	Very Basic
C12	News	Already adopted	Large	12	IT Manager	IT	High
C13	IT	Already adopted	Large	3	IT Supervisor	IT	Medium
C14	IT	Already adopted	SME	3	IT Supervisor	IT	Medium
C15	IT	No intention to adopt	SME	2	Owner	IT	Very Basic

Table 2. The Case Companies

### 3.3 Data Processing and Analysis

In our study, data processing was performed using a software package for qualitative data known as Nvivo version 10.0, to code the transcribed interviews. In the Nvivo, coding activity refers to

gather all data materials and link them to each theme (Mangula et al. 2012). A qualitative data analysis method was conducted to find common structures and themes from qualitative data (Lazar et al. 2010). There were four themes involved on the analysis stage which based on our list of questions above:

- SaaS awareness level
- Top management support
- Organizational readiness
- Organizational size

We used an interpretive analysis approach which starts from pre-defined categories based on interpretation of the contents of the text (Robson 2002) to identify important ideas that repeatedly arose during the interviews.

## 4 Results

All our informants indicated that the intention to adopt SaaS had a strong relationship with the current needs of the company. This was pointed out by two of our case companies which argued that SaaS adoption complied with their needs to replace their existing information system with new ones in order to support their business activities:

*“We decided to use this application since it complies with our current need that is to replace our traditional system to a new hospital information system...This application is integrated with an Electronic Data Capture facility which is also offered by the application provider.” (C1).*

*“The use of an email application in our company is very crucial, mainly to support the collaboration process between our business partners and internal users. Therefore, when the email system was down because of spam, we experienced an inconvenient situation that triggered us to adopt Gmail.” (C13).*

Some of the case companies mentioned that they did not encounter any problems with their existing information systems that have been used for several years. They would rather developing new functionalities to their existing system than adopting SaaS, as is illustrated by the following quotes:

*“Since 2000, we have been using this Hospital Information System; hence, we know the pattern of this information system to find out what our customers want. Currently, we put our focus more on the development of business intelligence functionality in this system which may help in diagnosing diseases.” (C5).*

*“The Academic Information System that we have now has already been using since 2009 in order to manage the whole academic processes in our institution. Therefore, we don’t think that we need to adopt SaaS at this moment.” (C7).*

In the following paragraphs, we provide detailed results of our interviews in terms of the influence of top management support, organizational readiness, and organizational size in triggering the intention of our case companies either to adopt or reject SaaS. We also discuss the awareness level of our informants on SaaS by grouping them into four awareness levels: very basic, basic, medium, and high.

### 4.1 SaaS Awareness Level

Before we proceed to explain the influence of the aforementioned three organizational factors on the adoption of SaaS, we first discuss the informants’ awareness level of SaaS. We classified the awareness level into four different groups: (1) very basic level, the informant has heard about cloud computing but does not know its definition; (2) basic level, the informant has heard about cloud computing and knows its definition, but never heard about SaaS; (3) medium level, the informant has heard about cloud computing and SaaS, knows the definition of cloud computing but not SaaS; and (4) high level, the informants has heard about cloud computing and SaaS, and knows the definition of both terms. With regard to these classifications, we discovered that 12 of the 15 informants were still at the basic or very basic level of SaaS awareness, as we can see in Table 2.



Most of our interviewees were aware of the cloud computing term. However, the term of SaaS was hardly ever heard before. They considered SaaS as a web-based application which is not entirely the right definition of SaaS. SaaS applications may indeed be accessed via the Internet, but more importantly, the data storage is placed on the provider's server instead of on the user's server or hard disk. Here are few of their answers:

*"Cloud computing...yes I've heard about it...SaaS is a web-based application."* (C11).

*"Yes, I did hear about cloud...I think SaaS is a web-based application."* (C10).

## **4.2 Top Management Support**

In our study, top management refers to someone or a group of people who make a decision to adopt or not to adopt SaaS and/or to allocate the necessary organizational resources to support the adoption process. A decision to adopt or reject SaaS can be made by the owner of the company, the IT director or the IT manager, as we can see from the comments below.

*"...decision to adopt this Hospital Information System was made by the owner and director of the hospital...since I am currently as the owner and have sufficient knowledge about IT, the decision was taken by myself and the director."* (C1).

*"The stakeholders or the owners are not involved on the decision making of IT innovation adoption in our company. As the head of IT department, I make the decision. I simply rejected to adopt SaaS, since I still have doubts concerning its security. [The providers] have not convinced me that SaaS is secure."* (C11).

Top management may also refer to someone who has a key role to influence all decisions taken by a decision maker. In one of our case companies, even though the IT manager has no power to make any decision regarding adoption of a new IT innovation, he has a power to influence the decision makers in his company to adopt certain IT innovations.

*"We have just developed our new Hospital Information System, hence, I do not think that we will adopt SaaS within the next few years. The decision is on the board of commissioner, I am just giving them some suggestions on IT implementation."* (C4).

For some of our case companies, decisions made by the top management were not merely based on recommendations from the internal users of the organization, such as from the IT department staff, but also influenced by the suggestions from the external organization, such as the government policies and the professional community. In our study, there were two companies that are running their business in a banking sector, which have obligation to conduct their business in accordance to the central bank of Indonesia. The nature of SaaS which places the data storage outside the customers' apparently does not comply with the regulations issued by the central bank. Therefore, it is not possible for the banking corporation to adopt SaaS, as confirmed below by one of our informant.

*"As a banking corporation, each new IT innovation that is to be adopted must comply with the regulations made by the government, such as by the central bank of Indonesia which has the authority in managing all activities and banking regulations in Indonesia."* (C8).

In another case, some of our informants explained that their top management sometime takes suggestions from their professional community as considerations before deciding to adopt a new innovation and this also applies to SaaS, which is relatively new for them. The following comments support our findings.

*"The decisions are taken by the hospital management with considering the IT department recommendations. However, they also sometime consider the suggestions from their colleagues from other hospitals."* (C3).

Accordingly, we concluded that top management support has a positive association with SaaS adoption.

### 4.3 Organizational Readiness

The readiness of a company to adopt new IT innovations can be considered in three aspects of organizational resources including financial, IT infrastructure, and IT professional. The absence of one or all of these resources is likely to prevent the company's intention to adopt the innovations. Of the 11 non-adopting companies in our study, seven of them are large companies that have been assumed as having sufficient resources to support the adoption of new IT innovations in their companies (see Table 2). However, instead of adopting SaaS, these companies chose to develop their own information systems or purchase them from an application vendor with slight modifications if necessary.

One of our case companies indicated that because of the uniqueness of their business process, they preferred to develop the system themselves, as is illustrated by the following quote.

*"Since 2009, we have moved to a new web-based Hospital Information System. We purchased it from an application vendor and made about 20% of modifications to the flow of the system and the features. The uniqueness of our information system is related with our business process that is not similar with the other hospital business processes."* (C2).

Another reason is to have control over their information system by only using on-premise applications, located on their own servers:

*"We currently use 100% on premise application. The server is placed at our company (...) thus it is always under our control. For an application with specific requirements; we prefer to develop it by ourselves."* (C8).

The obligation to use information systems that have been developed and standardized by the parent company is also one of the reasons to not adopt SaaS, as we noticed from one of our case companies.

*"For our company, it seems quite difficult to adopt SaaS since we have to follow a standard system set by the principal of our hotel group. We should have a discussion first with the stakeholders if we want to adopt any new IT innovations."* (C10).

Lastly, indeed, because of their sufficient organizational resources to develop their own system, the option to adopt SaaS was not considered important by them.

*"In 2000, we started to use a Hospital Information System that had been developed by ourselves. We do not host it at other place...we have necessary resources to develop our own information system."*

(C5).

When we take a look on one of the large companies that adopt SaaS, for example C12, the intention to adopt is related to the effectivity and efficiency of its resources utilization. Thus, the company can be more focused on running its core business activities.

*"For the long-term planning, after we did some calculations and made a comparison between maintaining our own email server or renting an email application from Google, we concluded it would be more efficient on budget spending if we choose the second option. We have 12 IT personnel and three of them were allocated for maintaining our own email server and that was not efficient. After we started using Gmail, we can be more focused on our core business activities."* (C12).

Therefore, according to the aforementioned arguments, the presence of enough financial allocation, good IT infrastructure, and IT-skilled professional, seems to be inversely associated with the adoption of SaaS for our case companies.

### 4.4 Organizational Size

The other organizational factor that we explored in this study was organizational size. As shown in table 2, of the 15 companies that participated in our study, nine were large and the others were SMEs. Two of the large companies have adopted SaaS, while the other seven did not adopt. On the other side, we noted that of the six SMEs, two of them adopted SaaS because they had expectation that such innovation will provide them with cost reduction. Therefore, their low budget to invest on

IT infrastructure and IT-skilled personnel had triggered them to adopt SaaS, as stated by one of them below.

*"We decided to adopt this new Hospital Information System since it is a web-based application, user friendly, and supported with good IT professionals. At first, we preferred to place the application server at our location, however, due to the budget restriction to purchase data storage and hire an IT professional to maintain the server, we later decided to put the system in the cloud...currently we have only one part-time IT employee." (C1).*

Consequently, we concluded that organizational size has an inverse relationship with SaaS adoption.

## **5 Discussion**

The aim of this study is to investigate the influence of three organizational factors of the TOE framework on the adoption of SaaS in Indonesian companies, namely top management support, organizational readiness, and organizational size. We will elaborate on our findings in the following paragraphs.

All of our participants indicated that the intention to adopt new IT innovations was initially triggered by the need to improve their business activities in order to increase the revenues of their companies. At this point, they started to investigate which IT innovations would fit with their situations. In order to find the best solution, the level of IT knowledge of the top management highly influenced their ability to solve their problems by adopting certain IT innovations. In our study, we found that five of the 15 companies remain at the very basic level, while seven of the overall case companies are still considered at the basic level, which mainly involved the companies that did not adopt SaaS (see table 2). These numbers might be caused by a lack of effort of the cloud providers to introduce SaaS as one of the cloud services to these companies. The providers prefer and continue to offer IaaS, since they have a good IT infrastructure in place that is ready to support their services (Mangula et al. 2012).

With regard to the factor top management support, we found that the decision makers are very crucial. Top management support is highly related with the top management's perception on SaaS, which in turn is mostly affected by the awareness level on SaaS. For example, C11 and C15 decided not to adopt SaaS since they feel insecure about SaaS data security; while C1 and C12 indicated that security was not an issue that prevented them to adopt SaaS, although they indicated that they had that issue at the first time they learned about SaaS. This can be explained by table 2, which shows that C1 and C12 have a better understanding on SaaS than C11 and C15. Therefore, the security factor, which had firstly been an obstacle for C1 and C12 to adopt SaaS, was not a big issue anymore after they had more knowledge on SaaS. Thong and Yap (1995) found that top management's characteristics, which include top management's innovativeness, attitude towards adoption of IT, and IT knowledge, have a positive relationship with the adoption of IT innovation in companies. Formation of a favorable or unfavorable attitude towards an innovation takes place before a decision to adopt is made (Rogers 1983), which basically relates with top management's knowledge about the benefits that the innovation could potentially offer (Thong 1999). Furthermore, we found that the top management's perception on SaaS was also influenced by government regulations, such as banking regulations issued by the central bank, as well as the professional community such as the hospital management community. We recognize in this a form of institutional isomorphism (Greenwood et al. 2008), in which organizations adopt similar structures and ideas due to pressure from institutionalized ideas. DiMaggio and Powell (1983) identified three isomorphic pressures: coercive, mimetic and normative. Coercive pressures come from the state or other power relationships and the banking regulations are a clear example of that. On the other hand, organizations are also pressured by mimetic forces; which means that when organizations are uncertain about which course of action to take, they will look at their peers (in this case other hospitals) and imitate their behavior.

Concerning the factor of organizational readiness, we found that the readiness of a company in terms of financial, IT infrastructure, and IT expertise, has an inverse relation with a company's willingness to adopt SaaS. This finding is in accordance to the number of non SaaS adopters in our

study that nine of eleven companies were the large companies which assumed having sufficient organizational resources to support the adoption of SaaS. This is surprising since, as we can see in table 1, most of the studies that examined this factor had asserted that it was positively related with IT innovation adoption (i.e., Hung et al. 2010; Jang 2010; Pearson & Grandon 2008). For large companies, the willingness to adopt SaaS is not only considering the price of the innovation, but also related with how they handle the risks and uncertainties connected with SaaS (Susarla et al. 2003). Large companies, usually, have more data and complex business processes. Therefore, SaaS adoption will involve major changes in organizational IT governance, which often causes employees' resistance (Heart 2010). Furthermore, SaaS requires customers' application and data placed outside their boundaries to a vendor's servers, which cause heavily dependent on the vendor and particularly worrying when core applications are at stake (Applegate et al. 1999).

In our study, organizational size is also found to have an inverse effect on the adoption of SaaS in Indonesian companies. This is mainly caused by the fact that SaaS adoption requires low investments in IT infrastructure, such as computer servers, and IT personnel for maintaining the IT operations. The small amount of data owned by the SMEs and the simple flow of the business processes were also some of their considerations to adopt SaaS. This is very interesting, since most of the IT innovation studies found that large companies will be more likely to adopt new IT innovations than SMEs because of their ability to take risks and allocate required organizational resources (i.e., Khemthong & Roberts 2006; Joe & Kim 2004). Moreover, we assume that this phenomenon might have a connection with the type of IT innovation. Previous studies have shown that using types of innovation is a useful way to identify several factors that affect the intention to adopt certain IT innovations in organizations (Damanpour 1991; Damanpour et al. 2009). This method is required since each innovation type has its own characteristics and its adoption is not affected identically by environmental and organizational factors (Damanpour & Gopalakrishnan, 1998). A type of IT innovation that needs more allocation in financial and human resources will not fit with companies that have budget limitation and lack of IT personnel.

## **6 Conclusion, Implication, and Further Research**

The organizational context of the TOE framework and its influence on the adoption of IT innovation has been extensively studied by many IS scholars. Three factors within this context, namely top management support, organizational readiness, and organizational size, were mentioned most as influencing factors in previous studies. However, other studies on SaaS adoption in Indonesia found that top management support and organizational readiness have no influence on the innovation adoption (Mangula et al. 2014; Erisman 2013). Further, they found that the number of SaaS users in Indonesia is still relatively low; while the use of this innovation has several benefits, such as low IT infrastructure and maintenance costs. In our study, we investigated three organizational factors of TOE including top management support, organizational readiness, and organizational size in their relationship with the intention to adopt SaaS. By carrying out qualitative in-depth interviews instead of a survey-based research we were able to shed light on the underlying reasons of the adoption or rejection of SaaS in Indonesian companies. Our results showed that top management support has a positive influence on SaaS adoption; while organizational readiness and organizational size were inversely associated with the intention to adopt SaaS.

Our findings have important implications for the research community on innovation adoption studies and service providers. For IS researchers, our study can be a reference to other researchers mainly who have interest on SaaS adoption in Indonesia which remains limited in the number of publication. For service providers, this study can be used to obtain more understanding on current situation of SaaS adoption, thus they can formulate better strategies to increase the level of SaaS adoption in Indonesia. They need to have a good relationship with prospective adopters, mainly the SMEs, in order to create trust and remove any vagueness surrounding this innovation in terms of data security. Finally, since most of our case companies have stressed the importance of the physical location of data centers, providers can take this point into consideration when choosing the place for their data centre.

Future research can be based on this study by considering personal characteristics of a top management. Top management plays a major role in business since he or she is the main decision maker and shapes the future of the business. The impact of the top management is even stronger in SMEs. This is because in SMEs, the top management usually also the owner of the business and important policy maker. Personal characteristics of a top management may include innovativeness, attitude toward IT innovation, IT knowledge, and cultural background. Investigating the effect of IT innovation type in differentiating the factors that trigger IT innovation adoption in a form of meta-analysis research method, could also be carried out for future studies. It is expected that this may provide more understanding on why SMEs in Indonesia, have more willing to adopt SaaS than the large companies in terms of the organizational readiness factor. Our sample was limited to one or two companies per industry sector and mostly from the large companies. Having more participants per sector and more SMEs involved in the study could better represent trends within each sector and allow for more reliable comparisons. Lastly, by utilizing the strength of qualitative interview, further research on obstacles to adopt SaaS and how to encounter them will help SaaS industry and research.

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