Abstract

Globalization era has provide us with such benefits with all the technology and business innovations, but with the high pace of competition, the ability to adapt and evolve is increasingly important and demand of creating product with the latest technology became more common, this creates a problem for system provider that offer large Enterprise software as their system, as it is inherently complex and hard to maintain. To deal with this complexity, one of the emerging concept as a solution for this is by converting the enterprise system into SaaS or “software as a service” model, as it enable financial system providers to segregate their banking package into several modules or services with high elasticity and scalability, thus makes it easier to manage. But before adopting the SaaS technology, organizations need to know what kind of changes that need to be expected, as implementing retail banking system with SaaS model can be regarded as a different business model than the traditional in-house retail system, depending of the degree of model adoption, the changes emerged may be significant and if the organization is not ready then it will do more damage than benefits. This paper is trying to provide organization a strategic view for consideration before they can adopt SaaS model for their retail banking applications and highlighting some strategic considerations of SaaS model over traditional in-house applications.

Keywords: Retail banking system; SaaS; strategic view; system adoption.

INTRODUCTION

In this globalization era with ever-changing technology and business landscape, ability to adapt and evolve is more and more needed, at some cases it is even necessary in order to survive in the industry. This is especially true for banking system vendors; if they are incapable of evolving their system then it is very possible to fall behind the other competitors and not getting a market share which needed. One expectation is the innovations of the banking products and services such as 24 hours online banking, internet banking, mobile banking, branchless banking and others which demand the system or platform to be adapted in the newest technologies and concepts existed.

Essentially, the banking system is very important for making transactions of various customers’ daily need. While using the banking system, the customers often look for the factors of convenience and ease so that the transactions could be done easily [12]. Another important point is that if the banking system is not flexible and secure, then the clients will not be satisfied with the banking system at all due to which they may even start thinking about changing banks.

Retail banking is the process which is usually known as customer banking since this process could be used for satisfying individual customers as compared to companies or other banking systems [9]. In order to get more customers and to restore their reputation with clients, banks introduced the concept of retail banking so that the individual needs and desires of customer could be satisfied. The only problem which the companies faced due to this system was that the flexibility associated with the traditional banking system.

Unfortunately, understanding an implementation of banking infrastructure and its business information systems are challenging tasks for managers, especially figuring out which IT system or department that can be converted into the cloud service, and whether or not the organization is ready for the adoption. This paper will try to highlight the strategic benefits of SaaS model, to explore
strategical inputs which must be considered before adopting SaaS technology and to provide guidelines for the retail banking organizations in a context of strategic IT management especially in retail banking.

BACKGROUND

Retail banking is basically the backbone of banking systems nowadays and is proving to be the safest source of stability and consistency. Through retail banking, the business of banks is becoming stable and secure. The clients are also more satisfied with the services being provided by the client. They feel that they are listened to and that they are important as customers for banks. The retail banking system provides immense strength to the banking system by providing them an alternative in the form of retail banking system. Fortunately, the new retail banking systems in the form of SaaS through cloud could be a better alternative for this industry because it could save the company significant resources by enabling them to implement new services in a timely manner to the clients and able to upgrade their system capabilities seamlessly as they go to solve problems. In traditional systems, deploying, enhancing and maintaining business information systems are often the hardest part inside the system’s lifecycle. Depends on the complexity of the system, SaaS adoption can cost significant amount of time and large sum of money for companies, and even more so if the size of the organization is large. Things like time frame, budget, manpower, and other resources needs to be carefully specified in the requirements to ensure the deployment of business-critical software application is going smoothly, otherwise it may create a significant risk for the organizations.

SaaS could help IT engineers and administrators to manage requirements when deploying patches and updates because of its flexibility, and it could be used as a replacement for traditional delivery model as it is built on a shared infrastructure over the internet backbone and specifically designed for modularity so it’s able to handle any complicated databases and management systems. Since the banks usually have very complicated and large database schemes including the names and other details of customers, SAAS technology could prove to be very helpful in this regard [12]. Sharon Mertz, research director at Gartner Inc. stated that after more than a decade of use, the adoption of SaaS growing in a steady pace and evolve regionally within the enterprise application markets. [4]

CONCEPT BEHIND SAAS

The basic concept behind SAAS or “Software as a Service” could be traced back to 1990s where application service providers tried to develop new alternative for selling their program, they develop a new model which enable their customers to rent the software applications instead of the traditional “buy and own” application ownership. After years of attention, there are many definitions of SaaS spread around the community ranging from simple definition such as “software deployed in a hosted, managed service and accessed through the Internet” [3], to a bit more specific one such as [5] SaaS as a “software that is owned, delivered and remotely managed either by one or more providers.”, but in order to understand the term clearly, this paper used the definition presented by U.S National Institute of Standards and Technology (NIST) as the main reference.

“SaaS or Software as a Service. Is a capability provided to the consumer by hosting the consumer’s applications running through the cloud infrastructures. The applications are accessible from various kinds of client devices either through a thin client interface, such as web browsers, or a program interface. The consumer does not directly manage or control the underlying cloud infrastructure including but not limited to network, servers, operating systems, storage, or individualized application capabilities, with limited exception of user-specific application configuration settings.” [14]

SaaS is basically a new distribution model of software where it focuses on separating the possession and ownership of software from its use. The applications are hosted and delivered over the internet through the cloud infrastructure and cloud service providers (cloud vendors), and are available for the customers to access and run for. Because it runs over internet, it is usually accessed through web-based service and users typically access from a “thin client” such as web browser or a graphical user interface (GUI), the client is primarily used only for communication and displaying incoming data, but not doing any calculations or data processing.
"With the SaaS model, all software applications are deployed and hosted inside the vendors’ premises after client’s adoption. Clients do not purchase software or infrastructure such as hardware and OS upfront, but pay for their access to the services over time." [18]

Liao and Tao[10] describe that when using SaaS the ownership of software shifts from the customer to SaaS providers and redistributed such as hardware, technology infrastructure and management, and professional services required. They also identify two different forms of SaaS service modes:

- **Provide services platform**
  Cloud service providers build SaaS platform as a basic interface for the retail applications where third party and independent software vendors (ISVs) can engaged in.

  ![Diagram of SaaS Model](image1)

  **Figure 1. SaaS Model**

- **Provide full services**
  In the second model, SaaS service providers develop their own applications and provide full-range of service such as computing infrastructure, SaaS applications, data storing and other related services.

  ![Diagram of SaaS Model](image2)

  **Figure 2. SaaS vendors providing services platform**

  ![Diagram of SaaS Model](image3)

  **Figure 3. SaaS vendors providing full services**
According to Carraro and Chong[3], SaaS can be seen as either “Line-of-business services” or “Consumer-oriented services”. The first model or the “Line-of-business SaaS services” is named because the service is offered to various size of business organizations and are very often provide large and customizable business information systems supporting the critical business processes such as finances, sales, customer relationship management. “Consumer-oriented services” is the second model where the cloud computing services is offered to the general public. From the customer perspective, there are three major risk identified when adopting SaaS: less application improvement and integration options, risk of losing business-critical data, and the probability performance related problems.” [15] And Major challenges for SaaS adoption can be boiled down into several considerations, such as security and privacy considerations [1][16][17], reliability and technical considerations [3][7][10][17], financial considerations [3][10][17], legal considerations [10][17].

The guidelines and considerations offered in this paper about SaaS for banking systems, it is expected to be applied to both SaaS model and could provide valuable input in knowing strategic benefits and limitations of SaaS model around the context of the banking system.

OVERVIEW OF RETAIL BANK BUSINESS MODEL

Retail banking, or also known as Consumer Banking is the provision of services by a bank to individual consumers and small business where the financial institutions are dealing with large number of low value transactions rather than to big entities such as companies, corporations or other banks. This is in contrast to other counterpart such as wholesale or corporate banking where the customers’ base are large, often catering multinational companies, local governments and government’s enterprise.

The retail concept itself is not new to banks but it is considered as an important and profitable market segment that offers opportunities for growth and profits. Inside retail banking, all the needs of customers are taken care in an integrated manner.

The Retail banking characteristics can be boiled down into three basic element:

- Multiple products (deposits, credit cards, insurance, investments and securities),
- Multiple channels of distribution (call center, branch, and internet) and,
- Multiple customer groups (consumer, small business, and corporate).

One of the most distinguished feature of Retail Banking products is that it is a volume driven business. Further, one of the service such as retail credit ensures that the business is spread widely amongst a large customer base unlike in the case of corporate lending, where the risk may be concentrated on a selected few plans.

STRATEGIC CONSIDERATIONS

Analyzing and evaluating whether a strategy is aligned to our organization is important, even though financial organization such as banks have similar service model to offer, but every organization may have different sales approaches, time to market strategies, competitive differentiation and geographic dispersion. So in terms of decision strategy whether it is good for SaaS adoption, one size does not fit all. However, there are five important key for considerations which every organization faces in determining whether to outsource any IT services: organization culture; core competencies; the impact on people, operations and lastly finances.

1.1. Company Culture

The success or failure of any strategy decision is dependent on the organization’s culture, such as its vision, values, norms, assumptions, beliefs and habits. According to a research of cloud computing system adoption, adoption of a new innovation are depends on companies’ culture.[2] If your company culture isn’t compatible then it can only hinders the process and decision, making the adoption process ineffective or even possibly turning the adoption into a liability. Depending on your current culture inside the company, SaaS technology can be considered as a new innovation and it is important to assess the company's stance for such innovation before adopting. Below are some questions worth considering about organization’s culture before making a decision to adopt SaaS for your retail banking:
<table>
<thead>
<tr>
<th>No.</th>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>How amenable to change is the organization culture?</td>
</tr>
<tr>
<td>2</td>
<td>Is the philosophy of the organization allows outsourcing such as adopting SaaS?</td>
</tr>
<tr>
<td>3</td>
<td>What are our views on job eliminations and layoffs?</td>
</tr>
<tr>
<td>4</td>
<td>What is our desired level of control over the bank processes?</td>
</tr>
<tr>
<td>5</td>
<td>How well does our organization leverage on the current available technology?</td>
</tr>
<tr>
<td>6</td>
<td>What is our position in the SaaS technology adoption comparing to our competitors? (innovators, early adopters, early majority, late majority, or laggards)</td>
</tr>
<tr>
<td>7</td>
<td>Is IT viewed as a deciding factor for our organization's success or is it just an expense?</td>
</tr>
</tbody>
</table>

Table 1. Company culture questions

![Rogers' Bell Curve of Technology Adoption](image)

1.2. Core competencies

Core competencies basically is an organization’s business imperatives, or in other words, the decisive things that the organization good at. Specifically in this case, it’s the capability of using certain aspect of information technology to set themselves apart from their competitors. Because applying SaaS for retail banking will need dedication and certain skills either on technical and/or organizational aspects, it is important to know our IT competency before adopting the new technology, because if we adopt the technology without competent enough to utilize it, that IT services may become a burden rather than a capability and the effort will be wasted.

Below is list of examples of IT services financial organization can use to differentiate them from the competition. However, it’s important to note that the technology itself is not the one that differentiates the organization from the competition, but it’s what the organization does with the technology.

**Examples of retail banking services that can be a differentiating force**

- Digital channels such as Internet and Mobile
- CRM - Branch Operational
- Customer experience dashboard
- Core banking service – Master Data Management
- General Ledger management
- Loans feature
- Cards
- Current and Saving account customization
- Payment methods
- Term Deposits
- Local clearing feature
- Anti-money laundering and other regulation compliance
- General security aspect for both physical and digital assets, such as storage
Before making a decision to adopt SaaS for the retail system, you can consider these questions to understand the core competencies of the organization:

<table>
<thead>
<tr>
<th>No.</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>What kind of IT Services that could provide to our organization a strategic advantage over our competitors?</td>
</tr>
<tr>
<td>2</td>
<td>Is the SaaS adoption aligned strategically as our competitive advantage to our business?</td>
</tr>
<tr>
<td>3</td>
<td>Is the adoption vital to our organization’s competitiveness?</td>
</tr>
<tr>
<td>4</td>
<td>If we adopt, does it make any difference in our business such as gaining uniqueness, differentiation, or any way that can set us apart?</td>
</tr>
<tr>
<td>5</td>
<td>Does the adoption make customers’ impression of our organization better against other competitors?</td>
</tr>
<tr>
<td>6</td>
<td>Is the SaaS adoption is an added value to our organization and worth our resources, or is it just a waste of time?</td>
</tr>
<tr>
<td>7</td>
<td>What IT services that is critical to the organization?</td>
</tr>
<tr>
<td>8</td>
<td>What IT application or services that caused us some difficulty?</td>
</tr>
<tr>
<td>9</td>
<td>What IT skills and systems do we need, but are not the core of what we do as an organization?</td>
</tr>
</tbody>
</table>

Table 2. Core competencies questions

1.3. People

According to Gartner[6], The main concerns of adopting SaaS in general are keeping up technical requirements, security, ease of integration and functionality. Although after the SaaS adoption the main stakeholder for maintenance and support will be the SaaS providers, organization will still need enough IT staff for general portfolio management in order for the system to work without problem and meet future demands, especially in the technical requirements. Previous research has shown that organizational size has noteworthy implications for IT management[11][13]. But most organization have limited IT staff to do those varied tasks and keeping up the pace, this is why it is important for organization to assess their IT staff's current expertise according to our current technology used as well as the possible technology needs in the future to better anticipate the consequence of the adoption. Organizations can consider these questions first about your IT staff as an input before deciding whether to adopt SaaS for particular retail services:

<table>
<thead>
<tr>
<th>No.</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Are we handling our IT services internally well today?</td>
</tr>
<tr>
<td>2</td>
<td>Do we have enough IT staffs / engineers to continue at this pace tomorrow?</td>
</tr>
<tr>
<td>3</td>
<td>What technologies are rapidly changing that potentially could give our staff a hard time for staying up-to-date?</td>
</tr>
<tr>
<td>4</td>
<td>What is the current condition of the technical IT expertise we need in the organization today?</td>
</tr>
<tr>
<td>5</td>
<td>How is the current availability of such expertise in the job market?</td>
</tr>
<tr>
<td>6</td>
<td>How are the trends of salary requirements for qualified IT personnel needed?</td>
</tr>
<tr>
<td>7</td>
<td>If we adopt SaaS, how would we handle the IT personnel replaced? Is it redeployed, reassigned, etc.?</td>
</tr>
</tbody>
</table>

Table 3. Internal resource readiness questions

1.4. Operational impact

The expected benefits from adopting SaaS for retail banking cannot be realized without careful management of the entire adoption process. To build an effective management effort, we need an early understanding of the SaaS impact involved in the retail banking. Important issues could arise during the development of online banking, for example, could include immature technology and shortages of specialists are important to consider[8]. Because the nature of retail banking system can be very complex, different skillsets is required to be able to manage the services well, one rule of thumb is the...
harder and more critical a service to adopt, the operational impact will be bigger after the adoption is done. Below is an illustration of operational impact on some retail banking feature.

Figure 5. Example of operational impact on several retail services

If you feel hard to assess the operational impact of adopting SaaS for certain retail service, some of these questions may help you before considering any decision:

• What is the role of that retail service in our organization?
• Is the retail service requires high availability?
• What is the impact of the retail service on our organization’s operational performance?
• Is there a possibility that our operations will suffer noticeably if this retail service is poorly implemented?
• What new technologies, such as hardware or skill expertise do we need in order to maintain and grow our business?
• What is the degree of change in the current technology? Is it occurred frequently?
• Will adopting SaaS for this retail service provide the flexibility to scale up or down?
• What are the risks and disadvantages of adopting SaaS for this service?
• How will the security be maintained?
• What trade-offs are our organization willing to accept:
  • Between High availability of service and cost?
  • Between responsiveness and cost?
  • Disaster recovery and cost?
• Do you think of any other trade-off possible?

1.5. Financial impact

Just like any other investment, any organization will naturally want to know if the adoption is a good investment and how much it will cost. Unfortunately, some advantages of adopting SaaS against traditional system may be hard to quantify, but if we consider the strategic alignment, it may outweigh the cost. For example, converting certain internal assets may add value to core competencies. Of course, we may also need to consider trade-offs between service levels and costs. Organization can consider these questions about the financial impact as part of making a decision to adopt SaaS for certain retail features:

• Can our organization afford the service levels of SaaS we want?
• What service levels is our staff provide in the moment, and at what cost?
• What IT Services can we obtain at the same or higher service levels at a cost savings by adopting SaaS?
• Is it cost-effective to increase our IT staff to meet our IT needs?
• Are we considering adopting the SaaS technology solely to save money?
• If so, what exactly is our target of ROI (Return of Investment)?
• Can SaaS adoption of the service be modified quickly and easily to meet our needs? Or is it too hard and necessary to make the systems or infrastructure in-house?
• What are the economics of traditional in-house system versus SaaS adoption?
• What are the strategic ramifications of SaaS adoption that are not so easily quantified?

1.6. Most Frequently IT service for SaaS adoption

While almost all IT function basically can be converted into SaaS counterparts (including IT management), but in case of retail banking there are some IT functions that especially common and potent for conversion.

<table>
<thead>
<tr>
<th>No.</th>
<th>Retail IT functions and services</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Application development</td>
</tr>
<tr>
<td>2.</td>
<td>Transactional accounts</td>
</tr>
<tr>
<td>3.</td>
<td>Savings accounts</td>
</tr>
<tr>
<td>4.</td>
<td>Debit cards</td>
</tr>
<tr>
<td>5.</td>
<td>ATM cards</td>
</tr>
<tr>
<td>6.</td>
<td>Credit cards</td>
</tr>
<tr>
<td>7.</td>
<td>Traveler's cheques</td>
</tr>
<tr>
<td>8.</td>
<td>Mortgages</td>
</tr>
<tr>
<td>9.</td>
<td>Home equity loans</td>
</tr>
<tr>
<td>10.</td>
<td>Personal loans</td>
</tr>
<tr>
<td>11.</td>
<td>Certificates of deposit/Term deposits</td>
</tr>
<tr>
<td>12.</td>
<td>Application maintenance and updates</td>
</tr>
<tr>
<td>13.</td>
<td>New features</td>
</tr>
<tr>
<td>14.</td>
<td>Modification to meet regulation and/or business requirements</td>
</tr>
<tr>
<td>15.</td>
<td>Application hosting service</td>
</tr>
<tr>
<td>16.</td>
<td>Database administration</td>
</tr>
<tr>
<td>17.</td>
<td>Data center operations</td>
</tr>
<tr>
<td>18.</td>
<td>Customer support</td>
</tr>
</tbody>
</table>

Table 4. Possible IT functions and services for SaaS adoption

CONCLUSION

The purpose of this study is to provide a strategic view for organization that considering SaaS adoption for their retail banking applications and highlighting some strategic considerations of SaaS model over traditional in-house applications. The paper explore the strategic values and considerations for adopting SaaS model in business organizations in five aspects; company culture, core competencies, people, operational, and financial impact. Software as a Service (SaaS) is in a rising trend and steadily draws interest from the business organizations across the world.

As in any investment decision, business and IT executives need to take a strategic analysis in order to understand and realize the potential of SaaS objectively in the context of their own organization conditions, needs and capabilities. Other than saving costs, SaaS can help business organizations to achieve competitive advantages by improving efficiency and better flexibility in the decision making but only if they understand which of their service that can potentially be converted beneficially. This paper provide some guidance and questions to help organizations to understand their position in SaaS adoption, hopefully it will be apparent whether converting certain retail functions to SaaS or not is a good business proposition for the organization. If the organization decides whether to convert certain retail service into SaaS in a firm vision, you can safely move onto the next step for actually adopting SaaS, such as choosing appropriate SaaS provider. Similar to hiring a new employee, it is necessary to investigate service providers available and determine their suitability as the business partner, and this paper can help you to reach the decision.
References


