

Implementation plan for an ERP system

Case study: A.N.C Co.,Ltd

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<p>Abstract:</p> <p>A.N.C Co, Ltd faced problems associated with supply chain and customer relationship management which were directly linked to their logistic operation. These problems were due to a lack of an efficient system for managing information and data. Therefore, it was imperative to embark on an extensive study to answer questions concerning A.N.C's readiness to operate an ERP system and which ERP system is suitable to adopt. This study also addresses the company's requirements to choose a partner to implement the system. To achieve this goal, the study collects data through individual interviews, group focused interviews and through self-observation based on current theories and case studies specific to logistic operations. By considering the organization's needs against the features provided by the two systems, monolith ERP and SaaS, the later was selected as the most suitable for A.N.C. Company employees suggested useful recommendations related to system features in terms of orders management, semi-automated scheduling, and information updating as well as warehouse management. In addition, A.N.C Co, Ltd managers and staff had a chance to assess their weaknesses as well as additional factors connected to selecting a suitable partner during CSFs (critical success factors) assessment for a successful project. Four potential ERP implementation partners chosen for further consideration were Oracle Viet Nam, IBM Viet Nam, FPT and Long Van.</p>	
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1 RESEARCH TOPIC

1.1 Introduction

A.N.C Co, Ltd is a middle-size Vietnamese company which provides logistics solutions in different industries. It offers transportation services in over 1,000 ports all around the globe. Today, A.N.C has developed a network of four logistics centers in some of the most important ports in Vietnam (Ho Chi Minh, Hai Phong and Da Nang) with almost 100 permanent employees and three warehouses each of which covers approximately 10,000 square meters. The company has an automobile team that has grown over time. The team currently contains up to 8 trucks and 18 trailers enabling them to provide full-package logistics solutions for their customers.

The company has reached a transportation capacity of approximately 500 tons per week, which makes it one of the leading master forwarders in Viet Nam. However, the organization experiences tremendous problems when it comes to the management of its vast customer and vendor profiles, transaction records as well as tracking cargo documentation among other factors. Therefore, A.N.C Co, Ltd is in need of a complete system not only to organize information but also to effectively remain relevant in the industry. Currently, data is managed through different applications integrated with each other. Therefore, the company uses a simple data storage system. As a result, the available data is not able to fully support the company's business operations. In addition, there is less flexibility for updating it to ensure consistency, which seriously affects company operations, especially in case of accidents.

From the above statements, it is apparent that A.N.C Co, Ltd operation department requires a system that will not only be concerned with customer relationship management (CRM), supply chain management (SCM), warehousing control, but also human resource management if the organization wants to see synchronization across the systems and real-time updated data. Furthermore, it is imperative to have a complete Enterprise Resources Planning system (ERPs). However, the monolith ERP system with full-scale implementation is too costly (in HR training, facilities updates, and system license) and

time-consuming. As a result, the organization needs a system that is well simplified for easier implementation process and requires lower upfront investments.

1.2 Research aim

A successful ERP system implementation is critical for A.N.C's development at the moment. The system would assist many of the company's departments such as sales services, customer management, and warehousing, etc. to access real-time data. Moreover, the system needs to demonstrate the ability to integrate successfully with different infrastructures with reasonable costs and bridge implementation process.

Nowadays, there are many types of ERP systems on the market. Each system has its own pros and cons. Therefore, the focus of this research is to determine the most suitable ERP system with all its critical factors and necessary processes for A.N.C's operation. The theoretical section will provide a general overview of different ERP systems and analyze how those differences would affect systems functions. However, there is a discrepancy in the current theories and practice over the best ERP system an organization should use. Therefore, the practical part of the research will follow a step-by-step process to select the best ERP based on both the already existing theories as well as results and risks evaluated along the project. The final aim is to examine how ready A.N.C Co, Ltd is in terms of its ability to acquire and adopt to a new system. It will also recommend suitable ERP vendors and partners who are capable to successfully conduct such system implementation.

1.3 Research questions

The research will answer the following three questions:

- Which are the important logistics processes that an ERP system needs to support at A.N.C?
- What CSFs does A.N.C Co.,Ltd need for successful ERP implementation?
- What ERP partner and vendor should be selected?

1.4 Focus and limitations

This research focuses on assessing the company's readiness to adopt a new ERP system and choosing a partner to successfully implement the system for the operation department of A.N.C. Co, Ltd (including services sales - customers relationship – customs clearance – warehouse/trucking departments). This thesis does not discuss the phases such as how to maintain and update the system or develop other functions for financial departments. The research is also limited to SMEs operating in B2B logistics in Viet Nam.

1.5 Structure of the study

The introduction section presents relevant background information, research purpose, and questions, as well as focus and limitations. Research methods explain how the research will be conducted. The research will be conducted through a survey using questions, interviews, and observations. Literature review introduces general knowledge on ERP system and the principles of conducting a successful ERP system. Case study section (divided into subsections) demonstrates the results of the process according to the theory. The findings are then aggregated to deliver a set of final solution. Finally, the conclusion will summarize this study, and give appropriate suggestions for further research.

2 OVERVIEW OF ERP SYSTEMS

2.1 A brief overview of ERPs

Wallace and Kremzar (2001) defined that enterprise resources planning (ERP) refers to the set of management tools that can be used to keep supply and demand balanced by integrating customers and suppliers to develop a complete supply chain. Wallace and Kremzar argued that this is crucial when it comes to decision making within an organization because such tools set would raise the level of cross-functional integration involving manufacturing, marketing, sales, purchasing, logistics, human resources, R&D operations and the finance department. Therefore, the ERP system allows an organiza-

tion to have high productivity in providing high-level customer services while, at the same time, reduce inventories costs, and foster efficient use of e-commerce (Castellina 2013, p. 252).

There has been an evolution of ERP following the development of computer software and hardware systems during the recent decades. In 1960, a vast number of firms developed their own system for centralized inventory management using inventory control packages. As an outcome, there was a development of material requirements planning (MRP) in the 1970s. This was to meet the requests for product schedule planning management (Chunye et al. 2010, p. 274). From that point, the next manufacturing resources planning (MRP II) was introduced as an upgraded version of MRP in the 80s to improve manufacturing processes by synchronizing materials planning for production with specific requirements. The late 1980s and early 1990s saw the official appearance of ERP with the integration of every feature discovered in IC, MRP and MRP II. As a result, organizations were able to provide visibility, accessibility, and consistency in their business operations (Dubey and Wagle 2007, p. 152). ERP vendors extended it with add-on functions on (CRM) and (SCM) during the 1990s (Rashid et al., 2002)

However, to implement a completed ERP system, an enterprise has to adopt specific requirements. For example, it would be essential to re-engineer the entire business processes to make sure that they fit in the system's architecture. This can potentially drive their focus from other critical activities or damage their core competitiveness (Ehie and Madsen 2005, p. 548). Moreover, to redesign and adopt the process, businesses have to share sensitive information with the chosen ERP vendor and implementation partner. Other factors such as high switching costs and extensive training requirements are also barriers to adopting ERP systems (Cfo-insight.com, 2012) (Gupta, Seetharaman, and Raj 2013, p. 261). This has fostered the growth of global information technology outsourcing to meet the enterprises' need. Global outsourcing provides low-cost services with extensions. It allows companies to have access to some of the most critically specialized services and technical skills that aid in the creation of a "pre-integrated suite" of software applications (Lin, Hsu and Ting 2006, p. 261). It also ensures that companies have the muscles to respond to numerous IT shortages that emerge from business globalization. Among the current outsourcing trends, cloud computing is emerging as "a

flexible and highly scalable technology platform for an organization's business operations" (Subhankar Dhar, 2012). Two most common ERP systems are:

- The monolith ERP that has the installation done on the customers' own IT infrastructure and has its software licensed for a particular number of users. (Castellina, 2011)
- The second ERP is Software as a Service (SaaS) which is currently the highest level of cloud computing technology delivered over the web. It comes with a broad set of applications for individuals as well as enterprises such as online office applications or email hosting, SCM or even ERP. (Subhankar Dhar, 2012)

2.2 The monolith ERP vs. Cloud computing: The new information system

In annual research for Abereen, Castellina demonstrated that organizations are more concerned with SaaS and cloud computing models than the traditional on-premise monolith ERP models. However, those are not the only considerations as there are other models with better features. (Castellina 2011, p. 534)

Research published recently by Safari et al. (2015) investigated the influential factors of SaaS implementation. The findings from that research support the importance of adopting SaaS as the results are based on various literature theories. It brought broader insights in issues related to the cost and management of SaaS, allowing in-depth understanding of SaaS technology adoption. Safari et al. applied the characteristics of TOE (Technology, Organization, and Environment) and DOI (diffusion of innovation) as main research models for their research. TOE framework is built based on the contexts of technical, organizational and environmental aspects that help to assess the organizational level of innovation for adopting SaaS (Tornatzky et al., 1990).

The technical aspects consist of five attributes developed from Roger's DOI (1995).

- **Relative advantage** refers to the benefit that innovation can deliver compared to existing technology (Roger, 1995). SaaS results in the benefit of license cost saving in comparison to the pay-per-use model (Chunye et al. 2010, p. 248).

This is also associated with qualified IT resources hired from giant vendors via the Internet.

- **Compatibility** refers to the ability to adapt to current technology based on the values, experiences and potential needs of the organization (Roger 1995, p. 252).
- **Complexity** is the ability to be understood by organizations for acceptance (Roger 1995, p. 242). SaaS is explained as the internet-based interfaces with interactions mostly in Web 2.0. As it is new, people need time to gain good understanding of it.
- **Trialability** refers to the ability to have the new technology tested by users before actual adoption (Roger, 1995). Even though organizations have their own in-house IT system, their decision can still be affected by experiences from trial of new technics (Alshamaila et al. 2013, p. 413). Therefore, many SaaS vendors such as Salesforce CRM and Google SaaS offer a 30-day trial for customer persuasion (Safari et al. 2015, p. 242).
- **Observability** refers to innovations that help reduce visibility uncertainty and increase adoption rate from the organizations (Roger 1995, p. 556).
- In addition to Roger's DOI model, Safari et al. supplemented the theory with 2 additional features on **security** and **privacy** for technological consideration. It is most concerned with availability of information, confidentiality, and integrity involving protecting and preventing false manipulation of information (Stine et al. 2008, p. 321). As a result, in the service level agreement (Linthicum 2009, p. 351), SaaS vendors have to ensure that their system can manage threats to personal and sensitive data in case of broken authentication (Stine et al. 2008, p. 631).

The efficiency of SaaS is affected by the internal factors of an organization. This can be investigated by looking at the following factors:

- **Sharing and collaboration culture** demonstrates the ability to share information and work together with other teammates. In an SaaS context, it means that the system allows people to work and share their process directly via web browsers with minimum IT investments (Lin and Chen, 2012).

- SaaS can benefit organizations lacking of **IT resources** (hardware and software structure). However, if the organization already has built up its own sophisticated IT system, it is not recommended to move to SaaS because of high switching cost (Misra and Mondal, 2011).

The environmental context denotes the reaction of external factors on SaaS adoption:

- **Competitive pressure** mentions the competition between companies for research, development and innovations (Vives, 2005).
- **Social influence** refers to the basic concept of an agent and a target defined by Rhoads (1997). When a particular company adopts SaaS technology, both the public and competitors would assess their choice and following results (Wu 2011, p. 183).

All the factors mentioned above were tested by binomial statistical test using SPSS software by Safari et al. (2015). The result is presented in *Figure 1*, illustrating the order of importance in terms of the factors that should be considered when an organization needs to adopt SaaS. They include observability, privacy, and security, relative advantage, collaboration culture, sharing, social influence, compatibility, competitive pressure, and social influence (Holland, Light and Gibson 1999, p. 273).

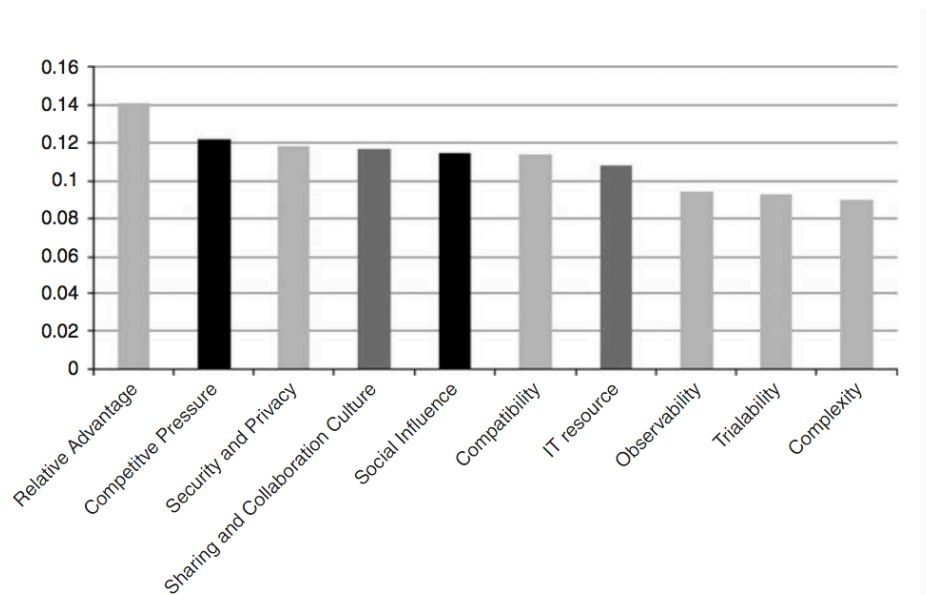


Figure 1 The ranking of the criteria or factor to be considered in SaaS adoption (source: Safari et al., 2015)

2.3 The differences between monolith ERP and SaaS/CC

The main difference between an On-premise ERP system and a SaaS-ERP is their customization ability according to the client's needs. Such difference can be expressed with the simple metaphor of buying a house. People can buy land and then build a house according to their preferences. Alternatively, they can buy a pre-built apartment where most features are pre-defined, and some are commonly shared among the building's residents (Sun, Ni and Lam, 2015, p. 517). SaaS-ERP is restricted in customization capacity since many customers share the same basic platform. Therefore, a SaaS-ERP system usually costs less than an on-promise ERP system (Björn and Andrea 2015, p. 64). In an article published in 2015, Link and Back explained and compared details with respect to the differences between these two types of systems. The general differences relate to business factors associated with cost and technicality, for instance, maintenance (Esteves and Pastor 2001, p. 8).

Other factors link to the model-based operation and functions, for example, is the ability of the system to be customized according to the needs of the clients. This is crucial, as it will significantly contribute towards giving a holistic view of ERP related to particular advantages (Jeol 2008, p. 281). The paragraphs below discuss differences between the two types of ERP system according to Björn Link and Andrea Back. The full table of comparison can be found in *Appendix A. A.N.C considerations on ERP system types*.

2.3.1 System costs of ownership

The first difference can be realized by looking at **pricing** between on-premiere ERP and SaaS. SaaS has only monthly subscription fee while on-premiere ERP costs include license fee, installing, maintaining and updating fees. Moreover, on-premiere ERP is also associated with extra investments on infrastructures such as server, operating system, and database (O'Leary 2000, p. 242). The second difference can be identified by looking at **liquidity**, which is the entry cost for the system. While on-premiere ERP is associated with high risks of capital shortage due to large upfront investment. SaaS has advantage of lower entry cost (Peffer, Gengler and Tuunanen 2003, p. 53).

Another dissimilarity can be determined by focusing on the differences in **total costs** needed to run the systems. For SaaS, the cost only includes variable cost per month based on number of users, disk space or CPU power, etc. In contrast, on-premiere ERP requires a one-time license fee, annual maintenance fee (15-20% license fee), internal infrastructure cost and service fee (Pinto and Slevin 1987, p. 27). After counting for all criteria costs, the accurate comparison can be made to assess the differences in terms of costs to establish and operate the system.

2.3.2 Operation, hardware and software maintenance/updates

It is essential for companies to have the **IT professional** to support system operations. For on-premiere ERP, companies need IT professionals to act timely on updating the system as well as maintaining it (Oredo and Njihia 2014, p. 284) because the system is often located within an organization. On the other hand, SaaS system only needs Internet access for such purposes as the infrastructure is located at the provider's site and installations, as well as other related services are provided via the Internet only (Rashid, Hossain and Patrick 2002, p. 632).

Due to the same reason, SaaS providers offer full-services related to infrastructure and operations. The SaaS customers are able to get along with new **technology updated** with less internal efforts (Rogers 2010, p. 612) as this is conducted by SaaS provider. With on-premiere ERP, customers are more likely to have problems because the system updates can occur several times per year and they have to update the system themselves. Furthermore, these changes are associated with high costs in terms of both money and time to upgrade the entire system at once (Shukla, Agarwal and Shukla 2012, p. 341). If on-premiere customers choose to update only some important parts, the outdated ones can be incompatible with the rest of system, which results in possible failures of the system.

In addition, **data backup** is another important factor for ERP system. A good SaaS ERP vendor can provide high standard backup services, which is often critical and a prerequisite, because customer's data is managed and controlled by SaaS vendor (Sternad, Gradisar and Bobek 2011, p. 284). However, for a monolith ERP system, it is the cus-

customer's responsibility, more specifically - the internal IT experts, to control data because customers are the only ones who define and operate all the set-ups and standards.

2.3.3 Initiation and implementation

The term **trialability** means the ability to test a product. While SaaS providers allow customers to test their products through demo account freely without charges, on-premise ERP does not allow the customers to check the system configuration before ERP vendor/implementation partner engages in designing and implementing demo trial, which usually takes months (Barker 2003, p. 272). SaaS ERP system has advantages in terms of **deploy time** as compared to monolith ERP. Monolith ERP takes months for installation and setup, while SaaS ERP is always designed beforehand by provider and readily usable after account registering.

Initiation and implementation of the ERP system can also be assessed by taking into account **pre-configuration**, which is the default settings required for any ERP models to work immediately. SaaS ERP outweighs monolith ERP in this aspect (Dhar 2012, p. 110). However, SaaS pre-configuration does not always fit perfectly with customers' business procedures. For both models of ERP, a similar effort is required for adjusting and transferring customer's data into the new system.

Last but not least, initiation and implementation differences can be determined by focusing on **training**. This is an important element, as it will guarantee the smooth operation for the system. Most of the times, the SaaS developers provide standard products. Therefore, training methods of web videos and web learning lessons can be applied (Sun, Ni and Lam 2015, p. 40). For on-premise ERP, because the system is designed according to customer's needs, traditional training with group contact lessons is dominated.

2.3.4 Flexibility and changeability

Monolith ERP always allows full loading capacity, especially where there is **resource variability** while SaaS ERP provides limited resources according to customer's purchase. In terms of **contractual binding**, in monolith ERP, vendors provide customers

with different modules and complex offers (Gulledge and Simon 2005, p. 362). Moreover, they usually require at least one-year contract. In contrast, SaaS ERP providers offer pre-configured sets of modules with fixed price and monthly contract. Moreover, SaaS ERP is more flexible in terms of **ubiquity** because it is built with web technologies and it allows access from various platforms including mobile devices (Bhatti 2005, p. 212). Monolith ERP system does not support external access via the Internet and mobile devices.

2.3.5 Configurability, customization and adaptation

SaaS ERP system limits customizable configuration options and interfaces because the system is standardized and is also shared among different customers (Tornatzky, Fleischer and Chakrabarti 1990, p. 261). In contrast, on-premiere ERP provides flexible customization options for clients, but it comes along with configuration costs.

2.3.6 Security

Monolith ERP system allows the customers to have total control over the application and backup data (Tornatzky, Fleischer and Chakrabarti 1990, p. 261). On the other hand, in SaaS ERP, the vendors conduct system control, which enables them to safeguard data with newest technologies and backup system.

2.3.7 Characteristics and dependencies on operation modes

There exists a difference between SaaS and monolith ERP regarding cost. In SaaS ERP, **cost certainty** is more sustainable with SaaS ERP as the cost is calculated based on monthly subscription only (Tornatzky, Fleischer and Chakrabarti 1990, p. 261). For monolith ERP, besides basic costs of purchase, hidden costs can involve extra services such as hardware malfunction or incident maintenance.

In addition, monolith ERP has more stable **performance rate** and less Internet-**depending** than SaaS ERP because it is not based on Internet connection (Vives 2005, p. 362). The stronger the Internet access is, the faster SaaS ERP operates.

With regard to the **scope of service** offered by both systems, monolith ERP has better capacity to provide fully enhanced solutions than SaaS ERP because this is still a newly developed system. Some of SaaS ERP's functions can still be under construction.

Lastly, SaaS ERP is less **stable**. In case of errors, it can affect more seriously than monolith ERP; but it can also be recovered faster due to its robust applications and centralized management (Wallace and Kremzar 2002, p. 468). On the contrary, monolith ERP would suffer for an extended period as professionals from ERP vendor may take a long time to check and control the system due to its complexity.

3 ERP IMPLEMENTATION PROCESS AND CRITICAL SUCCESS FACTORS (CSFS)

3.1 ERP implementation process

According to (O'Leary 2000), two primary approaches/strategies can be used to conduct the ERP implementation process. They include big bang and phased approach. The big bang approach can be deployed to old ERP system when incorporating a whole new systems at once. The phased approach involved a step-by-step replacement of an old system. This strategy requires the division of resources and extensive attention when performing the replacement while at the same time keeping up operation (O'Leary 2000, p. 490). There are risks placed on continuous re-allocation of resources for different purposes during the project periods.

Sun et al. (2015) demonstrated 5-step theory for ERP implementation stages. They cover all factors to be considered for organizational readiness and ensuring successful setup of the organization infrastructure, training the users and testing the system before actual process commences (Live run) (Sun et al. 2015, p. 247) .

1. **ERP organizational readiness** refers to the assessment of the organizational readiness for implementation process in terms of resources and management capabilities. This should be achieved by identifying critical success factors (CSFs) from in-depth analyses/assessment on key performance indicators (KPIs) for each CSF. The result of KPIs assessment would identify the gaps between or-

ganization current state and its readiness for the implementation of ERP (Wu 2011, p. 384).

2. **ERP selection** is the state when an organization needs to choose an appropriate ERP package and an implementation partner/vendor. At this point, an organization has to identify their own requirements and the expectations of their customers as well as business partners (Tan and Kim 2015, p. 432). Moreover, it is imperative to examine the product roadmaps, functionality of the entire system, ERP vendors, and capability of the local partner to support implementation. All of these are essential aspects that should be taken into consideration. After conducting the reviews, a negotiation process is needed to finalize terms and conditions, as well as recommendations, which are then taken to the boards of director for final decision (Tan and Kim 2015, p. 432).
3. **ERP implementation**: This is a stage where the organization needs to blueprint the identified requirements. In addition, at this stage, the company assesses the whole business processes to determine whether or not they should be redesigned to meet the needs of the implementation (Xin and Levina 2008, p. 372). Furthermore, at this point the system configuration, testing, training of the users and installation should be completed.
4. **ERP final preparation**: this is a stage that requires an organization to consider tasks linked to the stress and integration testing procedure aimed at confirming the capabilities of the available hardware. At the same time, tests are conducted to determine the recoverability and ability of the system to manage a disaster in case of unexpected incidents (Xin and Levina 2008, p. 372). This should confirm its capability before and after the occurrence of such accidents. Other factors to consider include evaluation and confirmation with respect to the functionality of the system by the users and the completeness of the training to equip users with operability of the system. Lastly, it is critical to check if the organization has a cut-over plan to proceed to the live-run stage (Xin and Levina 2008, p. 372).
5. **ERP live-run** is a stage that encompasses the assessment of the system's performance through constant follow-ups and customer feedbacks. This allows identification of areas that need continuous improvements. Moreover, it is also worth considering two possible plans either a system upgrade with supplemen-

tary features or system retirement i.e. to be replaced with another system (Bryman 2015, p. 472).

3.2 ERP implementation stages and CSFs

Sun et al. (2015) explained the five stages of ERP implementation that concern adoption, implementation, using and maintenance of ERP system. As the process contains several small steps, it implies a need to assess different stages involved in the implementation procedure to guarantee a well-integrated system with no faults from the first stage until the end. Apart from Sun et al. (2015), other scholars did agree with the same point. For example, Esteves (2004) associated his ERP implementation stages with a set of twenty-three critical success factors (CSFs) to follow-up in every stage for identification of any interferences from unexpected issues. Following with CSFs, Esteves developed a systematic framework that contains the key performance indicators (KPIs) to support CSFs assessment. Lin et al. (2006) outlined balanced scorecard that can be applied on estimating the effectiveness of ERP system used within an organization once the live stage commences. On the other hand, Wei et al. (2008) provided a comprehensive list of performance indicators based on the objectives of implementing ERP. These indicators also measure the contribution that ERP generates for the company after live-run. Sun et al. (2015) developed a set of CSFs for their five-stage ERP implementation process and their results are demonstrated below. The full list of KPIs for CSFs assessment can be found in *Appendix B*.

ERP stages	CSFs (number of KPIs)
1. Organizational readiness assessment	Top management support (4) Effective communication (4) Right employee quality (3) Change management (3)
2. ERP selection	Sufficient financial budget (1) Contract management (2) Right quality compliance (1) Identification of customer needs (2) Balanced evaluation team (3) ERP and implementation partner's capability (10) Vendor management (3) Sufficient evaluation resources (2)
3. ERP implementation	Implementation cost (2) Project management with sufficient resources (2) Identification of customer needs (1) Balanced implementation team and top management support (4) Effective implementation skill set (6) Sufficient training resources and change management (2) Effective communication (3)
4. ERP final preparation	Sufficient maintenance budget (2) Financial cut-off plan (1) System quality assurance (2) System administration and recovery plan (3) Well system protection (2) IT and data management (2) ERP support and training (3) Performance monitoring (3)
5. ERP live-run	ERP cost and benefits control (3) Traceable operation cost (2) Periodic system performance review (2) Positive customer satisfaction (5) System operation efficiency (5) Employee productivity and satisfaction (3) Effective learning environment (3)

Table 1 Classification of CSFs into the ERP implementation stages (H. Sun et al., 2015)

4 RESEARCH METHODS

The literature part covers results from various authors about ERP system with respect to how it works and influences on business intelligence application, implementation process as well as some of the fundamental success factors (Aloini, Dulmin and Mininno 2007, p. 362). The case study records the results obtained from applying the theories. Primary data is obtained using a qualitative method, as it is the most suitable for this kind of paper.

4.1 Qualitative research

Qualitative research method is used to get a deeper understanding by answering “why” and “how” questions with minimum efforts in collecting and comparing numeric data as compared to quantitative method (Etuarte, 2014, p. 386). In fact, qualitative research is more concerned with a description of a phenomenon than quantification of the data collected (Bryman 2012, p. 631). The research uses a small sample size that provides more focus (Braddock et al. 1995, p. 311). According to Nelson, Thomas, and Silverman (2011), there are three major methods that can be used to collect qualitative data, including:

- Interview: This is a face-to-face discussion method with highly structured open-ended questions in a conversational format. The study uses the same questionnaires for all participants.
- Focus group: This form of a group interview with selective interviewees is chosen purposely for the current research study (Wei, Liou and Lee, 2008, p. 372).
- Observation focuses: It is a method that entails what can be observed and involves taking notes.

This thesis focuses on effective implementation of ERP system and looks into how different aspects of particular ERP systems can affect its overall operation. Qualitative method is most helpful in solving the research questions, as it helps provide in-depth answers from a focused small group of people who manage and directly use the system after implementation (Wei, Liou and Lee, 2008, p. 372).

4.2 Data collection

The data was collected from individual interviews; a group focused interview and observations. All observations were recorded on paper for later analysis. The interviews were semi-structurally designed with open-ended questions that allowed interviewees to express their opinions freely (Wei, Liou and Lee, 2008, p. 372). They were conducted as face-to-face, via emails and communication tools such as Google Hangouts, Skype, etc. The interviews were conducted in Vietnamese because this is the language that both interviewer and interviewees speak most fluently.

- The company portfolio provided the information about its business operation activities. This includes A.N.C Co. Ltd's strategic development plan, and records on operational figures.
- The company portfolio describes the working processes of the operation departments. Furthermore, observations were made within a 5-month internship in all operation departments at A.N.C. Co., Ltd.
- Interviewers collected information about expected features of an ERP system through interviews. Individual interviews were conducted during the 5-month internship with each employee at the company.
- The CSFs analysis was conducted from the observations and interviews involved different levels of users (mostly the managerial level).
- Evaluation of ERP vendors and implementation partners were conducted in two distinct methods: ERP vendors and implementation partners' portfolio review and interviews.
- Besides portfolio reviews, interviews and observation, several meetings were conducted to verify and discuss the information collected to prevent misunderstanding between participants.

4.3 Reliability

Data collection was varied, but not different from the three traditional methods used to carry out qualitative research (documents, interview, and observation). Moreover, there are four important parts regarding data collection: the information gathered related to

A.N.C in terms of its working processes, ERP system features, CSFs analysis, and ERP vendors/implementation partners.

- Data on of A.N.C's working processes was the easiest to be collected. However, the processes are considered confidential for A.N.C, it was impossible to access/record through electronic forms (emails, fax, etc.). The organization only allowed face-to-face meetings for discussion related to the processes. Individual interviews within 5-month internship provided a detailed understanding of the company's operation processes.
- There were various opinions regarding the desired features of ERP systems. Firstly, it was evident that employees at A.N.C were the end-users of the system, so their opinions were considered the most important and possibly the most practical (Wallace and Kremzar 2002, p. 384). However, at the time of the interviews, these individuals had little knowledge of ERP system. Therefore, it was challenging because this required explaining what ERP system is and how it improves working capacity comprehensively. After clarifying how ERP system would influence company's operation, the employees were in a position to answer the interview question providing important information about the organization expectation of the ERP system.
- CSFs analysis was conducted through observation and interviews. The observation notes collected from the individuals in the 5-month internship were analyzed according to KPIs by observer. Besides that, various small discussions with different managers and supervisors were held to clarify the differences according to their understanding of ERP and why different key factors have to be assessed for CSFs. This was crucial because each department had different usages and understanding of the applications of ERP. Participants were given time to prepare and a focused group interview including the CEO, managers, and supervisors was conducted. They discussed, analyzed, and provided details to derive a comprehensive conclusion about CSFs from their own viewpoints. The results from these discussions were compared with that from observer analysis. It was found out that the focused group interview gave more detailed and multi-dimensional results than those obtained from observation.

- Information about ERP vendors and implementation partners in Viet Nam was extremely hard to collect in details. There was a lot of information on these areas, but it was not up to date. Moreover, it was difficult to come up with pricing figures for comparison because they were mostly based on discussions held privately among the parties. Furthermore, it seemed that different customers had different prices although their products were the same. Various calls and face-to-face discussions were conducted to collect sufficient information.

5 CASE STUDY: A.N.C CO., LTD

The case study contains of three main part, each part answers one research question accordingly.

- Which are the important logistics processes that an ERP system needs to support at A.N.C?
- What CSFs does A.N.C Co.,Ltd need for successful ERP implementation?
- What ERP partner and vendor should be selected?

5.1 A.N.C Co., Ltd: facts, figures and operation processes

5.1.1 Operation processes

In general, logistics solutions can be provided in the form of several transportation processes. Each logistics companies have their own service processes that are developed suitably to meet specific terms and conditions as well as contracts entered with associated organizations (Dubey and Wagle 2007, p. 286). A general process can be described as in *Figure 2 Factors contributing in logistics services*:

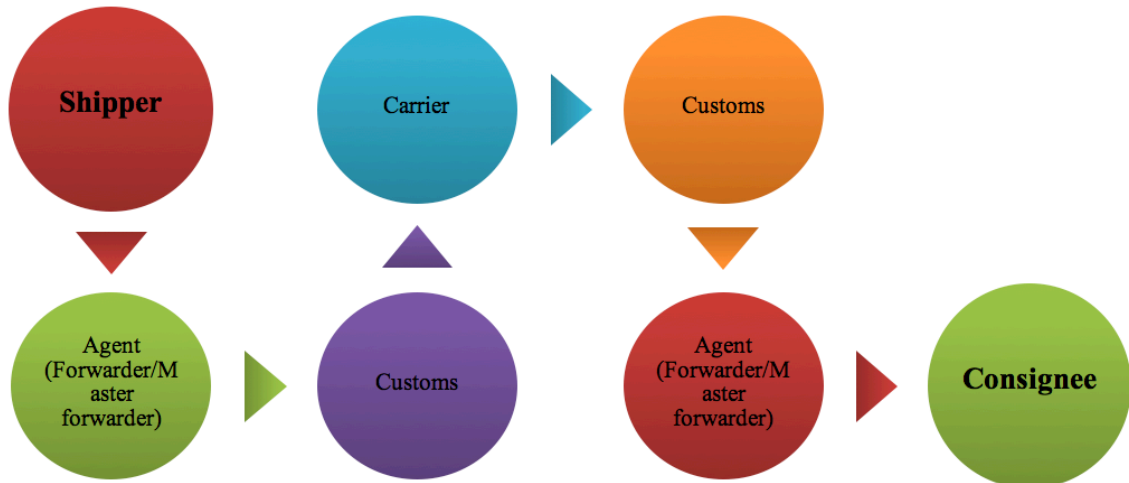


Figure 2 Factors contributing in logistics services

5.1.1.1 Exporting process

Material flow

The process begins with Material flow. This is where the cargoes are sent to A.N.C Co, Ltd warehouse in carrier's loading port. Then the cargoes are transported to an overseas agent's warehouse before they are delivered to consignee's assigned places. During the period before receiving or after releasing cargoes of the carrier, if the customs has any suspicions about the origin or legality of cargoes, the goods are inspected for exporting documents or quality among other issues. However, it is noteworthy that this could lead to a delay in transit time.

Information flow

Positive dimension

The first one is a positive dimension and this is where a shipper sends booking note to A.N.C. Co, Ltd. The shipper sends shipping instruction to the organization for confirmation. After that, A.N.C connects with overseas agent to check whether they can handle the shipment. If possible, A.N.C delivers shipping order to the carrier. The carrier sends notice and related documents to the overseas agent when cargoes arrive; the other-side agent sends delivery order and corresponding documents to the consignee.

Inverse dimension

The other thing to consider during information flow is inverse dimension. This is when A.N.C Co, Ltd sends draft bill to the shipper. After draft bill is confirmed, the company sends final bill to the shipper. The carrier sends carrying bill to A.N.C about the shipment booked. When the cargoes arrive at the destination port, the oversea agent sends a notice of receiving cargo to the carrier and A.N.C Co, Ltd. The other-side agent notifies A.N.C when consignee takes delivery order from them.

Capital flow

The next step involved in exporting process deals with the capital flow where the shipper or assigned consignee pays A.N. C Co, Ltd. The company then pays the carrier and other-side agent the required amount. However, the organization may enter into a contract that leads to liabilities. Their payments can be postponed until the end of the month. If there is any situations in which the shipment is cancelled, shipper or consignee, depending on the INCOTERM agreed on at the beginning of the contract, pays all costs and fees involved in handling the situation.

Return flow

The other step involves return flow. In the case of interference in shipment, all cargoes are delayed. It means that they will need to be stored in warehouse or stuffing place and wait to be processed again. However, if they must be returned to departing port, A.N.C Co, Ltd and the oversea agent will be in charge of the return. If the shipper agrees to take their cargoes back, the shipper or consignee will pay an extra fee depending on the INCOTERM agreed. In other cases, A.N.C Co, Ltd or their other side agent is responsible for all costs and keep cargoes as their own stocks according to the agreement between them.

5.1.1.2 Importing process

For importing services, A.N.C plays a similar role as their oversea agent in the exporting process. There is no difference in the flows of material, capital, and return. However, the information and material flow have some changes, as the role is different for A.N.C Co, Ltd in the importing process.

Information flow

Positive dimension:

Information flow involves both positive and inverse dimensions. Positive dimension is when A.N.C Co, Ltd customer team receives documentations from their abroad agent about the incoming shipment. The agent has to check with the customs team about any regulations applied to the type of cargo and handle manifest files to customs' online system for registering. The documents should contain detailed information on all goods in the containers, shipment routes and other relevant documents. The whole process should take from one to three days depending on the type of cargoes (FCL or LCL) and customs' inspection decision. Afterwards, A.N.C Co, Ltd informs the consignee to pick-up delivery order and receive their cargoes as well as any related certificates.

Inverse dimension:

Regarding inverse dimension, it is noteworthy that even though A.N.C and its oversea agency have proper understanding about shipments between different ports as well as restrictions, there are still cases where the organization experiences extra costs due to changes in regulations or local charges. On the event of such a scenario, the company first checks the documents, to certify that they are legally transited. Then, they have to reconfirm with customs or port officers to submit additional documents or required fees as soon as possible. Otherwise, the company experiences loss in case the goods are returned or improperly disposed. Moreover, A.N.C has a responsibility in informing their partner agency when the customs clearance is finished; delivery order is published and when the cargoes' releasing is completed.

Material flow

Material flow concerns clearance decisions. As mentioned above, the customs team handles the documents at the port for customs clearance decision. As soon as the decision is made to confirm if the cargoes need inspecting or not, the warehouse team arranges trucks for transportation. If the customs decides to check, the cargoes are transported to the loading port where they will be inspected.

5.1.2 Expected ERP system features

From the above information, it is evident that the employees at A.N. C Co. Ltd would be the final users of the system. Therefore, they are in the best position to indicate the desired features of the ERP system. To guarantee that every employee participated, the interview method was applied. Individual interviews were conducted during interviewer's 5-month internship at the organization. The internship ensured that interviewer has sufficient knowledge about the organization's operations. All employees were given the same questionnaire. The full list of questions can be found in *Appendix D. Questions for expected ERP system features*.

5.1.2.1 Risks according to employees' opinions

Many of the employees admitted that there are always risks in every step of their operation processes. Because procedures' comprehensive understanding and information on the system are needed to eliminate misunderstanding, communication between the company and external parties is at high risk. An effective data information system is essential for such communication processes. According to observation, such a system is not widely used in Viet Nam. This is because of the high upfront cost and the lack of fundamental infrastructures. In A.N.C Co, Ltd, it is evident that flow of information is not strictly controlled due to lack of such a system.

Data input from different business platforms is achieved through several steps leading to unnecessary time consumption and waste of human resources. The process also exposes to errors because of data repetition. At the same time, the output data is always insufficient, which could be described as unusable for reporting and decision-making.

Moreover, data is uploaded via an internal network allowing people to access it through internal hubs, but the accessibility cannot be synchronized with mobile devices. Only internal hubs are allowed to access, which is highly recommended as it could prevent information to be leaked to competitors. However, this leads to substantial hindrance when it comes to the usage and exchange of information as well as co-operation among different apartments.

In addition, data storage is in paper form, which required spaces and people hardly have time to check because most employees have to spend time for inputting data, updating them in minutes, printing them out and bringing them to info room. Only in cases of matter happening, they would try to look for those paper again, which is even more lingering.

5.1.2.2 Suggestions to eliminate risks

First, the company's managers need to improve the current working process in terms of how teams are integrated. They need to pay attention to formal processes involved in conducting logistics services. This is because the organization is experiencing problems that emerge from how their data is organized and managed. As a result, the suggestions will focus not only on organizing data source for operation but also on how the process is controlled.

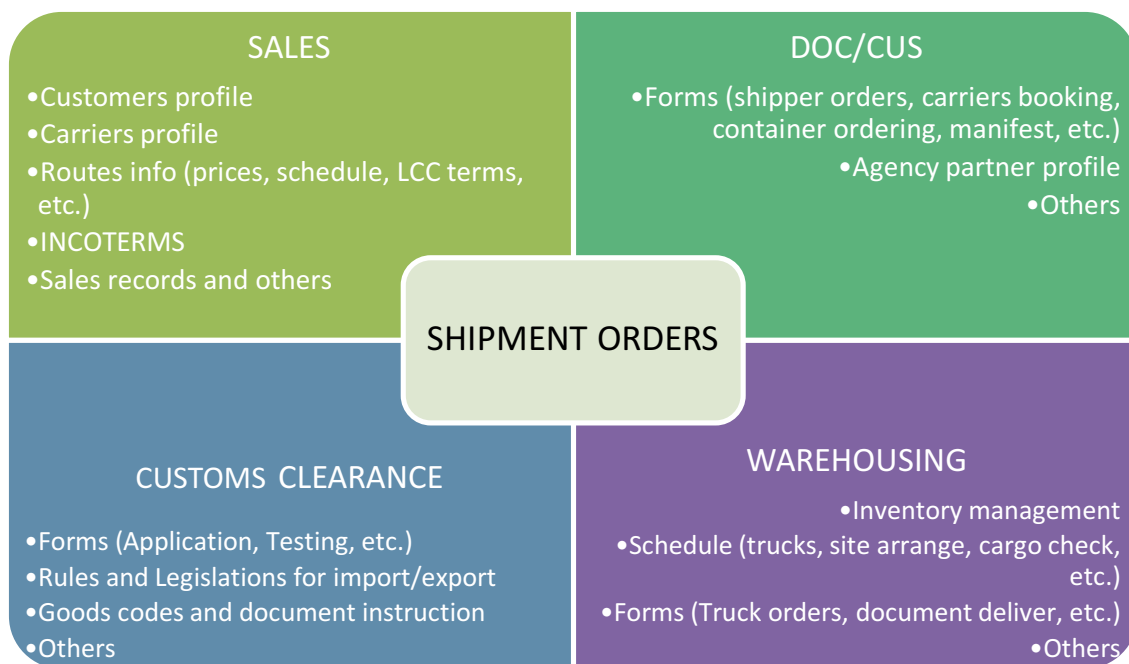


Figure 3 Components of successful shipment (Misra and Mondal 2011)

In fact, a successful import/export shipment requires the participation of all departments as they have different responsibilities, none of which can be ignored during a shipment's chain of actions. For example, the sales department has responsibilities to create and maintain relationship with customers as well as the carriers. This department is the main and direct contact point with them. Moreover, they also need intensive information

about trading routes to discuss with carriers and customers. This is important as it paves the way in which A.N.C Co, Ltd can gain higher profit. Documentation and customer teams cover most of the paperwork ranging from booking operation with carriers, customers, to booking for containers and sites. Customs clearance does work with customs and legislation requirements. This can be taken as the most time-consuming process (3-7 days depending on the type of goods) because Vietnamese governance office's working capacity is not high enough to cover all application forms. Warehouse/trucking comprises of several stages ranging from transportation, storage, and document processing between customer and carrier involved in shipments. Even though actual transportation is often conducted within one day, all teams are commonly under huge pressure to ensure that documents and containers are delivered on time. Furthermore, the organization needs careful planning because traffics in Viet Nam is highly unpredictable and this becomes a huge problem even for people with experiences in transportation industry.

From the interviews with employees working in different departments of A.N.C, there are various recommendations attained from their opinions about the expected features of the new system. The result is listed in *Appendix C. Expected ERP system features*. Preliminary discussions with potential partners confirmed the system features in order to develop effective operation management procedures, semi-automated scheduling and ensure that information is updated on time and warehousing activities are well managed.

Orders management, semi-automated scheduling and information updated

For proper orders management, semi-automated scheduling and information update, the structure involves basic components of the system and should also take into account how to connect them to each other. In theory, the profiles of the involved parties, such as customers, organization personnel (including co-loaders, foreign agencies, trading companies, etc.), routes, ports information will need to be marked with different IDs set. This is important as it will allow teams to use the data effectively. As the information has distinctive tags, it will enable the concerned personnel to put it in specific tables matching specific profiles. For example, information on oversea agency would be easily inserted into agency table. Whenever this information is needed in any tables or forms, the user would insert only the key ID and they will get the necessary information ap-

pearing in desired format. These IDs will play a central role in minimizing the amount of repetition of information input. Hence, mistakes by mistyping or not updated info could be avoided. Moreover, the key ID saves times as files can be accessed easily in case of accidents. The ID associated with shipment will help individuals to track back on how the orders were handled, by whom, when, and where as well as timeline. The main key ID is defined simply according to the specific date which the orders occurred and ended with a code that denotes the customer. Consequently, these IDs are the most important part that needs proper protection. It is suggested that information, after being inserted, is limited to read-only property while editing right is reserved only for specific users who have the authority to do so.

The other innovative suggestion is to adopt BoP, a function developed from BoM. BoM is a term used in the management of business involved in manufacturing. BoM stands for 'Bill of Materials'. It provides a list of raw materials, sub-assemblies, intermediate assemblies, sub-components, parts and their corresponding quantity. A BoM is designed based on the product design, ordering, manufacturing and maintenance information. It helps companies to predict and gather necessary components. It can be described as the formula, recipe, or list of ingredients required for manufacture. Based on the same theory, BoP (Bill of Processes) is a set of necessary components of a process that can be utilized to handle import and export orders. Each standard process will be programmed to contain steps guides and preliminary timelines (time of conduct), important forms required, positive/inverse contacting with related parties and notices on checking for information updating weekly/every two weeks. The process ID is the key for process to be applied. For example, when customers and documentation teams book order, the information would be used to create an order file, with main order ID. The process ID is applied to set up work flow, a detailed checklist and timeline, which would then be added to the assigned employees' schedule so they can control the work load and arrange priorities. It also prevents missing of tasks in peak seasons when workload could be two or three times higher than normal time.

Another important factor involves the forms to be prepared and handed to other parties in the business process. As there are several forms to be filled in and sent to different departments as well as organizations, it is commendable to handle them in different process or operation designs. With such a system in place, the forms would be filled auto-

matically once an order ID has been established. These forms would be printed out from the system and signed by authorized managers. Also, the file can be presented electronically once they are approved by the managers. Then employees can use electronic signature and business trademark to do so. It would save time and solve the problem of waiting for the documents to be approved as there is often time lag particularly when the managers are on business trips or other delays, which can cause a significant loss to the enterprise.

Warehousing management

With respect to warehousing management, it is worth noting that the warehouse logistics of service providers is different from that of a manufacturer. For a service provider, the operation does not really involve warehousing, it is more of a transportation hub in port. This is because cargoes go in and out all the time and only denied cargoes are stored in a warehouse for more than three days. In most cases of LCL shipments, warehouse is just a place for cargoes to get packed in standard size. They are then transported directly to carrier's site at delivery port. FCL containers are usually transported directly to carrier's site. Only in sudden cases of delay, the goods stay at the warehouse overnight. With this characteristic, warehousing staffs are more concerned with packaging and site schedule arrangements. As a result, items registration causes higher risk than leftover goods. This issue affects A.N. C Co, Ltd as careless registration easily leads to duplication of cargoes and problems associated with shipping wrong cargoes. These issues have been experienced several times. Moreover, the increasing amount of leftover goods means more available space is taken by non-profitable goods while they could have been utilized to generate more profits with sub-services such as warehouse renting.

To solve that, it is imperative for the organization to have barcode scanning. This method is cheap and easy to use. The company needs only the code and code scanner. With current technology, scanning can be made through a smartphone. In an export shipment, it can be implemented such that when the order is created in the system, a barcode for that ID can be created as well. This barcode is sent to the shipper together with confirmation of shipment of the order. When shipper sends cargoes to the warehouse, receiving staff can check item ID by scanning the code, then they can add information regard-

ing the time in which items are received, status of the goods received and get confirmation signature from shipper. The statement of received can also be added by camera from any mobile devices connecting in the system. Once the cargoes receiving is confirmed by warehousing team, documentation and customer staffs can immediately handle it and send a confirmation email to the shipper without calling. The same information can be sent to the site staffs. If they have more than 50 cargoes going in and out in one day, it would waste too much time, energy as well as money for those calls. Besides that, a barcode can improve control over leftover cargoes. A paper register can be lost, but information saved in the system can be checked any time. The stock clearance can be conducted quarterly and a list of unsupportive partners can be checked regularly for suitable adjustments in business relationship management.

5.2 CSFs analysis for successful adaptation

Based on the theoretical part related to critical success factors (CSFs), the results from Sun et al. article in 2015 clarify the essential process in more details of the five stages of ERP application process. They explain five stages of ERP implementation as an important consideration when making a decision on the adoption, implementation, usage, and maintenance of ERP system. They also provide key performing indicators to be considered during the process.

This research will focus on two stages only: assessing organizational readiness and selection of ERP system for ERP implementation. As a consequence, the CSFs analysis is only reflected on the first two stages of ERP implementation. The full list of KPIs for CSFs of assessment can be found in *Appendix B*.

The CSFs analysis was conducted alongside the observations and interviews attained from different levels of users (mostly the managerial level). The observation notes from the 5-month internship were analyzed according to key performing factors to be assessed. After that, various small discussions with different managers and supervisors were held to clarify the meanings and why different key performing factors have to be assessed for CSFs. This is because each department has different meanings and applications with CSFs. People were given time to prepare and join a focused group interview including the CEOs, managers and supervisors. The list of questions is not presented as

a questionnaire, but instead followed the list of key performing factors for stage 1 and stage 2 in *Appendix B*. The information was discussed from the viewpoints of their work experiences. Their discussion result was more detailed and multi-dimensional than from observation. The result of focused group interview is presented in paragraphs below. For easy follow-up, each discussed point was given noted with ID according to ID presented in *Appendix B*.

In general, the assessment of key performance indicators provided a clear understanding of preparation for the project. Based on the information collected, it is evident that A.N.C Co, Ltd managers and staffs have an opportunity to assess themselves as well as consider all factors that may influence the selection of an appropriate partner. From self-assessment, they were able to identify several weaknesses that affect business operations. This is important because the organization is lacked of strategic development plan for their employees and even an understanding of themselves. Moreover, they decided to find a partner for conducting an ERP system with a clear set of expectations for a potential partner. In addition, although they were aware that they need to have sufficient solutions to cope with changes in business structure during and after ERP implementation, they need consultancy for an active plan of actions from experts.

5.2.1 Organizational readiness support

Sun et al. (2015) elaborated their meaning of organizational readiness in four different categories consisting of effective communication strategy, employee quality, support from top management and change management. In each group, they demonstrated different factors to point out major focuses of the subject.

5.2.1.1 Top management support

(11a) The top management at A.N.C had been concerning a lot for the project in almost one year. However, none of them had sufficient knowledge on such system and the other business expanding projects took much of their time and efforts during the year. They would appreciate and support the ERP project in both capital and human investment, if there is help from specialist.

(11b, 11c) For issues concerning employee, factors about cooperation between departments and clarification in duties had always been their priority so the procedures were appropriately organized.

(11d) On another hand, they admitted that they had paid little attention to the development of their workers, in both career planning and employees' development support. This can be proven by looking some of the issues, for example, the high rate turnover. Moreover, most of them have only the basic skills required for their position and only a few have advanced skills and knowledge in some specific fields. The managers concluded that their employees need a clear development plan before implementation of the ERP system.

5.2.1.2 Effective communication

Effective communication is a key factor outlined by Sun et al. (2015) as it can strongly affect the outcome of the project. It also results in a business environment rich in information and effective feedback mechanism as well as unity to develop the business from the employees. Sun et al. believe that these factors would support each other to create a sustainable working environment for the team.

(12a) A.N.C Co, Ltd confirmed that many individuals (including supervisors and some managers) in the organization lacks management skills, a clear business vision, and management of working culture. Furthermore, it is noted that there is a divergence in the managing strategy of different teams such as warehouse/trucking as well as customs clearance when compared to other teams. Warehouse/trucking and custom clearance team are not situated at a specific location as other teams as they move between many locations, the management of these team is different from that of others. However, all team leaders confirm that a suitable info system with real-time information could be a considerable support to them. The warehouse/trucking team seriously discussed how such a system could improve their capacity and accuracy. They suggested that their capacity can increase if they are allowed to access the info system by mobile devices also.

(12b) In addition to particular influence from the management level, company managers also highly appreciated the contribution the system will make in terms of ~~enriching~~

~~operations and~~ ensuring effective information flow. They believed that better organized information would enhance the accuracy of operation. They also admitted the need for effective working capacity from all the teams in terms of cooperation and improvement of working processes.

(12c, 12d) In addition, they admitted that they had a new technique to monitor performance. By doing this, the employees would have a chance to carry out self-assessment based on results attained from weekly work records. Employees could spend a few hours per week discussing issues and problems. Employees considered this as the best ways to conduct assessment when compared to assessment carried out by the supervisors or managers. The supervisors only play a role in guiding the self-assessment. By applying this method, they are able to create a cooperative and learning environment equally for every member of all groups. Each person has equal chances to share their thoughts and experiences as well as review their efforts.

5.2.1.3 Right employee quality

From the view of HR (human resource management), successful implementation of ERP faces three major challenges:

- The top company managers have insufficient knowledge about ERP
- The project managers are inexperienced in ERP implementation
- Training and skills need to be developed for project management

(13a) Concerning the above issues, even the top manager at A.N.C Co, Ltd admitted that they know little about such important system. They knew about ERP but did not understand how to successfully implement the process. **(13b)** They only recognized the importance and influences of ERP system on competitiveness through successful implementation of bigger enterprises in the industry. There was a lack of sufficient knowledge due to limited development and resources on these topics in Viet Nam. The research and implementation plan for the system was postponed for almost one year because of those. **(13c)** Moreover, because the company has no ERP expert, they need to hire an experienced ERP consultant to be the project leader.

5.2.1.4 Change management

(14a) A.N.C's managers all agreed that the company was not ready for a change in terms of ERP implementation. This is reflected in the organization's personnel, capital, and IT resources. The organization employees admitted that they were excited while at the same time worried about the influences that the ERP implementation project would bring. This was totally new to most of them; some even had not heard about this kind of system before. They were concerned with the reduced working rate, as it would take time to get used to working with the system. They were worried that it would bring problems related to reading and writing because many of them are not competent in using English. The HR manager suggested that they would establish a development plan for employees, which would include ensuring that they obtain required skills and training for effective use of the system.

Moreover, about the necessary capital resources for urgent recuperation of cases, the management level hesitates in investing a lot for a trial that could lead to vast changes in both their operation and business records. Business in industrial logistics services is highly competitive with several pressures on accuracy and action rate. One delayed moment could lead to huge loss in credits and branding. As a result, they demanded the trial plan to be prepared in most details to minimize any losses. If possible, they would prefer any trial without interfering normal business operations, structure and probably even their current IT system.

(14c) The CEO expressed high interests in SaaS ERP during the discussion and so did other managers. According to them, SaaS could eliminate issues associated with the investment and fits their needs as well as expectations. If the final ERP could be built on SaaS, their current IT resources could partly adapt to the infrastructure requirements and they were ready to invest in this sense.

(14b) As mentioned above, A.N.C Co, Ltd expects that the new ERP system would not interfere with their current working procedures. Therefore, the ERP vendor should develop suggestions for improvements for the organization to consider and begin trials.

5.2.2 ERP selection

The ERP selection process covers various considerations of the company's expectations on potential ERP vendors. It includes concerns about the business relationship between two parties and specified requirements on ERP vendors to be investigated before conducting the project. In addition, before starting considering criteria when choosing an ERP vendor and an implementation partner, a short summary of the ERP market was introduced to the company managers.

The ERPs market in Viet Nam is not so competitive for ERP vendors because most of ERPs providers in the market are resellers. Oracle Viet Nam is the only direct ERPs vendor that has its office physically located there. Therefore, a potential partner for A.N.C would be a reseller, who at the same time to be implementation partner to conduct the system. Moreover, the ERP system chosen by the implementation partner must be suitable for the company needs. Secondly, the implementation partner must have the ability to carry out the plan and provide supporting services after implementation is complete.

5.2.2.1 *Contract management; Sufficient financial budget*

(21a, 21b) A contract agreement is the first things that A.N.C Co, Ltd would consider. They believed that a clearly discussed plan of preparation and implementation would improve the quality of the project and the accuracy of calculating return on investment (ROI). Moreover, it amalgamated the steps and conditions among different partners in an attempt to ensure the provision and maintenance for the most suitable systems. The company managers agreed that a clear contract with ROI would be their first choice.

(22a) To put the system into effect, it needs consideration of license, maintenance, consultancy, administration, hardware investment and cost associated with the network to be adopted. The company expected that the costs offered by the selected partner would cover all costs that would occur during the project and following services. Moreover, a trial without interfering with the current working process of the company operation would be a plus point.

5.2.2.2 Identification of customer needs; Balanced evaluation team and Right quality compliance

(24a) After several discussions, employees from A.N.C., Ltd had a clear view of what they need based on their working positions and work situations. The details can be referenced from section 5.3.1.2 and *Appendix C. Expected ERP system features*. Company managers expected that the mentioned needs could be carefully evaluated and discussed during the project, especially issues listed in section 5.3.1.2 because they are prioritized in normal operation. **(23a)** However, the project must be consistent with ethics and other policies of company operation as well as legislations.

(24b) When being asked about the possibility to have an e-business environment, the company managers were hesitant, mostly because of their strategy. As different customers would receive different promotions and supports from A.N.C, their pricing strategy could be affected if they are no longer possible to identify the person/organization who are asking for their product price on website. Also, advantage regarding special pricing deals is one of their strengths. If those pricing deals are released for other competitors, their business can seriously be affected. However, they would discuss about that possibility with the implementation partner. If the vendor could suggest suitable solutions for their pricing problem, they would appreciate that.

(25a, 25b, 25c) For matters concerning evaluation team, A.N.C would provide with participants from both system users and management team. Others members of evaluation team, especially people with specific expertise about the system, shall be from the implementation partner side. About the need of having an external ERP consultant, A.N.C CEO mentioned that they would decide it when the ERP implementation partner is identified.

5.2.2.3 ERP and implementation partner's capability, Vendor management and Sufficient evaluation resources

(26a-d, 26f-g, 26j) As mentioned from the beginning, employees from A.N.C have common weaknesses that their English and specific knowledge about ERP is limited. As a result, the company would require a partner with local and, if possible, international creditability in logistics industry practices and legislation. Moreover, A.N,C services

require 24/7 customer support so support/ maintenance services 24/7 from ERP implementation partner is definitely an advantage in case of system breakdown. However, the most prioritized point is that the system must be suitable for running on different systems and database securely so A.N.C can conduct a long-term investment for IT infrastructure upgrade instead of paying immediately for complete new IT system and negatively influencing the capital source for business operation.

(26e, 26h, 28 a-b) A.N.C managers group also emphasized the importance to fill in the gap between their current working process and new practices of the industry while securing the information confidentiality of company. They expected that they could receive more than just a system to run with this project. They hoped that it can benefit their employees with knowledge in services tools appliance and raise awareness about an international language to compete in global market. If possible, they wished their IT team could follow and study about the program along side with the experts from implementation partner so that they could act on their own in case of incidents.

(26i, 27a-b) Beside that, they referred to one important matter about the financial aspect of the project. Because this would be a long-term project lasting for several months and the configuration could be fixed for several times, A.N.C requires implementation partner to have deep understanding about logistics norms and commitments on financial support. This is one of the foundations for establishing a long-term relationship between the two companies. **(27c)** Beside that, A.N.C had considered a lot for preparation of change management before the project. They deeply understand the influences of such changes to the whole business operation and how hard it is to control those influences. They expected the same efforts from their potential partner and even more because they would put all important business information on the partner's storage; any changes regarding business structure of the partner would reflect directly on A.N.C operation.

5.3 Evaluation of potential ERP vendors/implementation partners

Based on the discussions with the company as well as an assessment from critical success factors checks list of stage 1 and 2, company managers had some imagination on which type of ERP system and what to focus on when choosing a partner. They had de-

veloped a set of criteria to be considered concerning which type of ERP system to select and what to assess about a potential partner.

5.3.1 Type of ERP system to choose

This part focuses on helping A.N.C to identify what kind of ERP system could be suitable for the project. Top managers of the company (CEO and managers) were invited to a focused group interview. They were asked to give opinions about different characteristics of the two ERP modes (Monolith ERP and SaaS ERP) and give point (+ or -) to those characteristic. The chosen model would be the model with higher amount of + characteristics.

In literature review section 3.3, the differences between the two ERP systems, the monolith ERP and SaaS/Cloud Computing, were clearly defined and differentiated. These differences were discussed with the company and added in *Appendix A. A.N.C considerations on ERP system types*.

Among the 20 characteristics mentioned above, SaaS has advantages over the monolith system in 13 characteristics while the monolith ERP only scores in four areas. Three characteristics were not assessed by the company. As a result, SaaS is chosen as the main type of ERP for conducting.

5.3.2 Criteria to assess about a potential partner

This part investigates ERP vendors and implementation partners to identify three to four final partners. Two methods, portfolio review and interviews, were applied to collect information. A system of three filters was applied to eliminate the amount of samples. This report stops at filter level two because filter three can only be discussed between A.N.C and the ERP partner. Any regarding information is considered as confidential.

From section 5.2.2 about criteria to consider when choosing an ERP vendor/implementation partner, it is concluded that the suitable partner is an implementation partner who has already the connection with aiming ERP system vendor while securing capabilities as listed below:

- | | |
|---|--|
| ▪ Location in Viet Nam | ▪ Ability for customization |
| ▪ Providing SaaS | ▪ Recommendations for new updates and technique innovation |
| ▪ Reputation in logistics industry | ▪ Training provided |
| ▪ Clear prices for budgeting | ▪ Strong financial base |
| ▪ Experiences with local/global legislation | ▪ Possible long-term relationship establishment |
| ▪ Compliance with ethics and legislations | ▪ Clear contract discussion |
| ▪ ERP expert as consultant | ▪ Detailed authorization and security |
| ▪ 24/7 services support | ▪ Experiences with change management |
| ▪ Run on different hardware system and database | |

There are several ERP implementation companies in Vietnam. However, different companies focus in different industries and they have clear target customer groups. As a result, criteria about **location in Viet Nam**, **providing SaaS** and **reputation in logistics industries** were chosen as the first filter.

Only ERP implementation partners responding to criteria in filter one can be assessed in filter two. Details on filter two assessment can be found in *Table 2 ERP partners evaluation*. From information illustrated in *Table 2*, it is concluded that there are four potential candidates for cooperation. Information regarding these providers is as below:

- Oracle Vietnam: Oracle offers a comprehensive and fully integrated stack of cloud applications, platform services, and engineered systems. clear price set and highly supportive services are their strengths.
- FPT: FPT Information System (FPT IS) is a member of the FPT Corporation, with 10 subsidiaries and a joint venture in Vietnam. The company has also established representative companies in Singapore, Laos, Cambodia and the US. They specialize in software application, ERP, IT services, as well as systems integration. FPT is the formal partner in Vietnamese market for ERP vendors such as CyberPower, Salesforce, Microsoft Azure, SAP, etc.
- LongVan: Corporation System Solutions Long Van is one of the pioneer company in Vietnam specializing in the development of applications based on cloud computing

technology. Long Van has been partner with leading ERP vendors: NetApp, VMware, Cisco, etc. Long Van has two main offices in the South and the North of Viet Nam, Central Engineering office and Data centre. They are ready with 24/7/365 customer support.

- IBM Vietnam: The local brand of IBM in Vietnamese market. Provide products and solutions for conducting ERP system on cloud computing with clear price set and highly supportive services.

As the method decided to evaluate ERP vendors and implementation partners was to use information from companies' portfolio and interviews as supplement, it eliminated abilities for investigating more on issues regarding **clear contracts discussion, authorization & security**, and **experiences with change management** because these issues can only be discussed during contract discussion between organizations participating in the project. These points would be emphasized as filter three during individual discussion with four mentioned partners.

	Original ERP vendor	Clear price set	Experience/ Comply with ethics and legislation	ERP expert as consultant	24/7 services support	Different hardware and database workable	Customization allowance	Upgrade update	Training provide	Strong financial base	Long-term relationship ability
Oracle Viet Nam	X	X	X	X	X	X	X	X	X	X	X
FPT			X	X	X	X	X	X	X	X	X
HR BOSS Viet Nam			X	X		X		X		X	X
Softline Viet Nam			X	X		X		X		X	X
Accenture Viet Nam			X	X	X	X	X	X		X	X
Cisco Viet Nam			X	X		X	X	X		X	X
Ciber Viet Nam			X	X	X	X	X	X		X	X
Northern Star		X	X	X	X	X	X	X			X
Long Van			X	X	X	X	X	X	X		X
IBM Viet Nam	X		X	X		X	X	X	X	X	X

Table 2 ERP partners evaluation

6 CONCLUSION AND FURTHER RESEARCH SUGGESTION

The aim of the research was to assess the readiness of A.N.C Co, Ltd to acquire an ERP system and identify potential ERP implementation partners to guarantee the success of the implementation process. The theoretical part provided a general overview of different ERP systems and analyzed how those differences would affect systems functions. Moreover, it clarified critical factors and the necessary process when choosing a suitable ERP system as well as implementation partners for A.N.C Co, Ltd operation departments. The practical part of the research followed a systematic process demonstrated in theories, as well as results and risks evaluated throughout the process.

As indicated in the introduction of this study, A.N.C Co, Ltd faces problems associated with supply chain and customer relationship management. These problems are directly linked to the logistic operation of the organization. Furthermore, the organization lacks an efficient system for managing information and data. As a consequence, it was determined that the organization needs an ERP system to meet these needs. Therefore, it has been imperative to embark on an extensive study to identify a suitable ERP system that A.N.C Co, Ltd might adopt. The two major proposed systems include monolith ERP and SaaS. By considering the organization's needs and advantages exhibited by these two systems, SaaS has been selected as the most suitable for company logistic operation management. The research answered the following three questions:

- Which are the important logistics processes that an ERP system needs to support at A.N.C?
- What are CSFs should A.N.C consider for successful ERP implementation?
- What ERP partner and vendor should be chosen?

The report demonstrates that the company's managers appreciate their current working process and teams as the major determinant of the success in their logistics services business. The study finds that most of the problems come from how the organization's data is organized and managed. As a result, the suggestions focus only on organizing data sources for operations and how the process can be managed effectively. The interviews with employees working in different departments at A.N.C Co, Ltd provided some useful recommendations for consideration based on their opinions about the fea-

tures expected of the new system. These related to system features in terms of orders management, semi-automated scheduling, and information updating as well as warehouse management.

Based on key performance indicators, the CSFs assessment provided a clear understanding of preparations needed for the successful implementation of the project. In addition, A.N.C Co, Ltd managers and staff had an opportunity for self-assessment and evaluating other additional factors related to all concerns when selecting a suitable partner. They were able to realize their weaknesses and areas where strategic development plans were lacking, especially when related to employees. The weak areas of organization were reflected in terms of the skills and knowledge that individuals possess. Moreover, as there was no expert inside the company, it was decided to find an external partner to conduct the ERP system. In addition, they were aware that they needed to have sufficient solutions to cope with changes in business structure, but there was no active plan of action, and consultation with experts was needed at the time of assessment. However, a clear set of requirements to filter potential candidates for a final ERP implementation partner were defined after the CSFs analysis.

Four potential ERP implementation partners, Oracle Viet Nam, IBM Viet Nam, FPT and Long Van, were chosen for further consideration. Further discussion regarding issues such as clear contract discussion, authorization, and security, as well as experiences of managing change, was emphasized by a large number of the interviewees, providing the organization with ways in which ERP project management can be made a success.

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APPENDIX A. A.N.C CO., LTD CONSIDERATIONS ON ERP SYSTEM TYPES

Features		Monolith ERP	SaaS/Cloud Computing	A.N.C opinions and score (+): prefer (-) : not prefer
Cost/total cost of ownership				
	Pricing	Cost of license, installing, maintaining and updating. Extra cost of infrastructure (server, operating system and database) investment.	Monthly subscription renting fee	Costs for infrastructure investment need minimizing. Monolith ERP (-) SaaS (+)
	Liquidity	High origin cost. Risk of capital shortage.	Low cost of entry. Preserve liquidity for other's investment. (Shukla et al., 2012; Xin and Levina, 2008):	Monolith ERP (-) SaaS (+)
	Cost differences	One-time license fee Annual maintenance fee (~15-20% license fee) Service fee Internal infrastructure cost	Only one transparent variable (based on users amount, space, cpu-power, etc.) cost per month	In short-term, SaaS is a better choice. In long-term, monolith ERP secures more on info and cost. Company focus in short-term trial first. Monolith ERP (-) SaaS (+)
Operation, hardware and software maintenance, updates				
	IT personnel	IT professionals	No IT professionals	Monolith ERP (-) SaaS (+)
	Update interval and constraint	Slow update for high cost of each updated instance	Update with newest version (technics, features, functionalities) incrementally	Monolith ERP (-) SaaS (+)

	Backup	The reliability and safety standards depend on customer's internal IT. High cost of own setup	High backup standard from skilled vendors. Price included in monthly fee	Monolith ERP (-) SaaS (+)
Initiation and implementation				
	Trialability	Test after conduct of selection and evaluation process	Test immediately with demo account.	Need testing to decide if suitable to continue Monolith ERP (-) SaaS (+)
	Time of conduct	Several months for set up system	5 minutes to sign up access account	Monolith ERP (-) SaaS (+)
	Pre-configuration	Work immediately with the system	Work immediately with the system, more automatic functions	Monolith ERP (-) SaaS (+)
	Preliminary project and migration (to fit standard system to customers' procedures)	The same effort	The same effort	
	Training	Traditional individual and group contact lessons predominated	Self-training via web videos or web learning lessons anytime	Monolith ERP (+) SaaS (-)
Flexibility and changeability				
	Resource variability	Peak-load capacity all the time	Scalable resources adjusted with price depending on economic situation	Monolith ERP (-) SaaS (+)
	Contractual binding	Modules selected separately Complex choices mix At least one year contract	Modules package offers with no choice/changes and fixed price. Simplified decisions making Monthly duration contract	They can not decide which one is better. SaaS has advantages on prices as they prioritize. It need discussing with vendor.
	Ubiquity (Standardized access)	Access from outside Internet or by mobile devices is restricted	Standardized and built on web technologies	Monolith ERP is more secured but mobility is restricted. They pre-

		Possibility to employ VPN and client software	Allow location-independence access from outside Internet or mobile devices	fer security better than mobility. Monolith ERP (+) SaaS (-)
Configurability, customization and adaption		Highly customized but any adaptation can be a source of problems High customization/configuration costs	Limited configuration options and interfaces due to shared features	Both have pros and cons. Need discussing with vendor.
Security		Control over the application and back-up data Threat of in-house data theft	Loss control over the application and data stored on back-up system. However, they may be more well-guarded than if the organizations do it themselves. Latest technologies can be installed incrementally	Experts do work better. The control of data and backup need carefully discussing in contract. Monolith ERP (-) SaaS (+)
Characteristics and dependencies on operation modes				
	Cost certainty	Costs are unpredictable due to hardware malfunction, extra maintenance expenses...	Costs are predictable due to subscription characteristic	Predictable costs make better capital planning. Monolith ERP (-) SaaS (+)
	Performance and dependencies	Independence of ERP provider. Hence, the timing of system replacement can be planned effectively	OS-independent, possibility to reduce performance Highly depend on Internet speed and ERP provider	It's extremely important to react as fast as possible for customers despite time. Monolith ERP (+) SaaS (-)
	Service scope	Full service scope	Scope and functionalities may be unlimited or still under construction	Monolith ERP (+) SaaS (-)
	Stability	More vulnerable to error and failure May take longer time to fix	Lower probability of error and downtime due to professional and install maintenance	Monolith ERP (-) SaaS (+)

APPENDIX B. CSFS AND KPIS OF PERFORMANCE MEASUREMENT FOR ERP IMPLEMENTATION

ERP CSFs		ID	Key performance indicators (KPIs)
Stage 1 : Organizational readiness support			
	Top management support	11a	Top management support exists in the strategic investment projects
		11b	Cross-department cooperation is smooth and effective
		11c	Clear roles and responsibilities
		11d	Every staff member has a career development plan
	Effective communication	12a	The goals and objectives for implementing a new ERP system are clear among the top and middle management
		12b	There are information-rich ecosystems inside the company
		12c	There are accountability mechanisms that monitor performance and provide system members with useful, ongoing feedback
		12d	Learning activities (such as adopting ISO or Six Sigma) are effective
	Right employee quality	13a	Management (CEO, COO, Directors) has ERP project knowledge or experience
		13b	Learning and new skills development is encouraged by management
		13c	The ERP project manager of the company has adequate ERP project experience
	Change management	14a	Change management has been well prepared in the organization
		14b	The organization's structure and business processes are open to changes
		14c	Sufficient IT resources for business requirement changes
Stage 2: ERP selection			
	Contract management	21a	The vendor and implementation partner have a clear benefit proposal with an ROI plan
		21b	Sound contract management caters to the ERP vendor and implementation partner
	Sufficient financial budget	22a	The cost of ERP implementation is under budget and includes the package license, maintenance, consulting, administration, hardware and network costs
	Right quality compliance	23a	The ERP system has green and safety compliance functions in the manufacturing modules
	Identification of customer needs	24a	The vendor, ERP package and implementation partner know how to response to all customers and partner requests
		24b	The candidate ERP system can provide e-business capability
	Balanced evaluation	25a	The evaluation team involves both management and user

	team	25b	representatives Top management support with clear and unambiguous authority exists in the evaluation team
		25c	An external ERP consultant is involved in the evaluation team
	ERP and implementation partner's capability	26a	There is a local reference of the same industry for both the vendor and implementation partner
		26b	Global and local maintenance and 7 days/24 hour support are provided
		26c	The system runs on different operating systems and databases
		26d	The hardware and infrastructure are low cost to increase system performance
		26e	The ERP package and implementation partner bridge the gap between the existing business/operations flows with best practices of specific industries
		26f	The package has a detailed authorization and security system
		26g	The ERP implementation partner has a local ERP-certified consulting team with implementation, help desk and maintenance services offerings
		26h	The system is easily self-maintained and customized
		26i	The ERP vendor and implementation partner have strong financial structure
		26j	The ERP package and implementation partners are capable of delivering local and international legislation and best practices of specific industries
	Vendor management	27a	The vendor and implementation partner understand the company culture and industrial norms
		27b	The vendor and implementation partner will build a long-term partnership with the company
		27c	The implementation partner has the change management capability for organization readiness in the event of new operation flow deployment by the new ERP system
	Sufficient evaluation resources	28a	The vendor/partner provides training on using ERP systems to different levels of end-users with sufficient documentation
		28b	There is internal provision of sufficient resources for ERP evaluation
Stage 3: ERP implementation			
	Implementation cost	31a	A fixed implementation cost model is vital to the ERP project
		31b	Financial funding is properly distributed during the different implementation phases
	Project management with sufficient resources	32a	A contingency budget for over-run ERP implementation is available
		32b	Project management with sufficient resources and planning is well organized

	Identification of customer needs	33a	External customers' requirements and internal needs are well covered in the ERP implementation
	Balanced implementation team + Top management support	34a	The functional department heads are involved in ERP team or fully support their subordinates during implementation
		34b	The ERP implementation team is well balanced with business and ERP user
		34c	There is top management support of the change management and resources
		34d	The external consultant work harmonizes with the internal staff in the implementation team
	Effective implementation skill set	35a	The implementation team can bridge the gap between the existing work flow and new ERP business practice by appropriate change management in the organization
		35b	Implementation is fully supported by the top management
		35c	System integration and stress tests with real data have been conducted successfully
		35d	The implementation team is responsible and supportive during the implementation period
		35e	Customization is limited to a certain extent (at most 30%)
		35f	The scope and goals are clearly identified by implementation team
	Sufficient training resources + Change management	36a	Key user training during implementation is effective
		36b	The organization is well trained to accept the changes for the best practices of specific industries from the new ERP system
	Effective communication	37a	An ERP quality circle is formed for promoting ERP capability and improving ERP quality in the company
		37b	There are well-established, open and accessible communication infrastructures inside the company
		37c	Most employees share the organization's vision and mission
Stage 4: ERP final preparation			
	Sufficient maintenance budget	41a	Sufficient system maintenance cost has been reserved
		41b	The outsourcing of the IT data centre has been planned for the ERP on-going support to minimise the operational running cost
	Financial cut-off plan	42a	The financial cut-off plan has already been considered in the ERP cut-off plan, for example, the timing of peak season, so as not to affect the company's financial book record and business effects
	System quality assurance	43a	A user acceptance test has been signed for all system testing, including loaded, integration, and stress testing
		43b	The external partner/customer has an e-business connection with the ERP system
	System administration	44a	The system administration procedure for supporting the

	tion and recovery plan	44b 44c	ERP system is ready Both manual and automatic failover procedures have been developed for ERP system failure The ERP disaster recovery plan has been tested successfully to minimise the down time and business interruption, should the ERP system accidentally fail
	Well system protection	45a 45b	Fast backup and recovery has been implemented in the infrastructure design No single point of failure exists in the system infrastructure
	IT and data management	46a 46b	The cut-off plan, including the data migration plan, has been tested ready for the ERP go-live Sufficient resources have been invested in IT infrastructure, including networks, servers and storage with well-managed integrated software
	ERP support and training	47a 47b 47c	The ERP help desk has been well established for providing efficient end-user support The users are effectively trained in ERP knowledge using multiple channels (manual, formal training and personal help) Both management and workers clearly understand the benefits of ERP
	Performance monitoring	48a 48b 48c	Employees have ongoing/sustained ERP learning opportunities There are accountability mechanisms that monitor performance and provide system members with useful, ongoing feedback Change readiness is clear among employees (cross-trained on alternative tasks, ability to communicate, disperse workforce, trust level of management)
Stage 5: ERP live-run			
	ERP cost and benefits control	51a 51b 51c	The ROI of the ERP project is satisfied The ERP project is on-time, on-cost and of an acceptable quality The ERP operating cost has been kept in reduction continuously
	Traceable operation cost	52a 52b	The decrease in manufacturing costs after the ERP project is acceptable All of the costs are traceable in the company
	Periodic system performance review	53a 53b	Performance metrics are periodically defined for business objective changes The ERP system is periodically reviewed to ensure that all or most of the customer requirements are met
	Positive customer satisfaction	54a 54b 54c	Customer satisfaction after the ERP project improves Product pricing and quality after the ERP project is acceptable to the customer Product maintenance service after the ERP project is acceptable to the customer

		54d	Product delivery lead time after the ERP project is acceptable to the customer
		54e	Product time to market after the ERP project is shortened
	System operations efficiency	55a	The material inventory after the ERP project is low
		55b	The production throughput after the ERP project is satisfied
		55c	The ERP system performance and maintenance are acceptable
	Employee productivity and satisfaction	56a	The decision-making system improves after the ERP implementation
		56b	Employee productivity improves after the ERP implementation
		56c	Employees enjoy the new efficient operation flow generated by the ERP best practices in that industry
	Effective learning environment	57a	The ERP business objectives are well communicated in the organization
		57b	ERP adoption is encouraged with re-enforcement from the ERP help desk support
		57c	ERP training and change management continues within the company

APPENDIX C. EXPECTED ERP SYSTEM FEATURES

DEPARTMENTS	ID	FEATURES
DOC-CUS-SALES	1a	Automatically add and synchronize input information to the system. Especially noticed on: <ul style="list-style-type: none"> ▪ MSDS cargoes, which contain goods considered as “dangerous”; ▪ LCC, vessels schedule and set of rules for different destinations’ documents as they change times to times; ▪ Closing time notice from carriers for sending container to the ship; ▪ Time/address/method for important documents delivery; ▪ Orders assigned to doc/cus, inland trucking and warehousing departments
	1b	Automatically send confirmation letter, including booking info and pictures if possible, to shipper/consignee/other-side agency when info is updated in the system
	1c	Auto update orders and cargos statements everyday for the all teams (doc/cus, sales, customs clearance and trucking/warehousing) as they can have general views on the situation and make on-time decision with duels coming
	1d	3D version of current containers' cargo arrangement based on the size, weights, cbm (+-10% recommending and allow adjusting by user) and notices added. Notice is set up and added by the program writer. (Adding notice: un-stackable, fragile, oversized, overweight, etc.)
	1e	Manager’s approval for conducting through check box and color mark
	1f	Auto check-list and remind according to data input and calendar timeline.
	1g	Calculating presumed margin based on costs adding by sales-docs + customs clearance + trucking + incurring costs
	1h	Add ANC standard process checking
CUSTOMS CLEARANCE AND TRUCKING/ WAREHOUSING	2a	Folder on government legislation update
	2b	Adding personal payments or deposits for sites (link with accountings)
	2c	Auto adding required documents and certificates based on HS code
	2d	For each required documents, update process, related documents, instructions on applying, places and time of process, government instruction on acquiring.
	2e	Adding orders from sales coordinator
	2f	Recommend persons to go to different destinations based on the missions assigned (with details of address, maps direction and recommending routes, average time spending)
	2g	Update and reminding of updating markets prices of trucking services

APPENDIX D. QUESTIONS FOR EXPECTED ERP SYSTEM FEATURES

1. What is your name?
2. How old are you?
3. How long have you been working at A.N.C?
4. What is your working position at A.N.C?
5. Which department are you working at?
6. Can you describe your tasks at work?
7. In your opinion, how efficient are you at work? Score 1-5 and explain why?
8. What do you think interesting about your current work?
9. What are difficulties about your current work?
10. How have you deal with mentioned above difficulties?
11. How do you think about the tools you are using now? How have them supported your work?
12. Identify the pros and cons of the tools using SWOT analysis from your points of view
13. If you can design the tools on your own, which functions do you want to be added?