

# IMPLEMENTATION STRATEGIES FOR ERP ADAPTATION IN MALAYSIAN SME AGRICULTURAL SECTOR

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## ABSTRACT

Small and Medium-sized Enterprises (SMEs) are swiftly emerging. For SMEs to be competitive and survive in this challenging time, it is innovative and creative to contract out simple tasks and focus on complex activities. SMEs in Malaysia play a dynamic and active role in inspiring entrepreneurship, nurturing economic activities, and creating job opportunities. The government of Malaysia introduced the Small and Medium Industries Development Corporation (SMIDEC) to help SMEs develop and enhance their services by providing training and support. Enterprise Resource Planning (ERP) is well-known business process management software which allows businesses to integrate various automated mode processes related to technology, financial, services, and human resources. In Malaysia, ERP adaptation in SMEs shows quite a slow-moving pace, as there are issues to be addressed, and usually, ERP is required to be customized to fit with the SMEs' operation. Unfortunately for Agricultural SMEs in Malaysia, this sector seems to be unheeded by business IT firms since various specifications were not well-matched with the standard operating procedure (SOP), making the deliberation of the ERP system even perilous. This research aimed to identify the contributing factors to ERP adaptation failure in SMEs of the Malaysia Agriculture sector using mixed models. Firstly, a list of questions was sent to Agro companies' employees to get feedback on their existing ERP systems. Commonly, these questions asked in the initial stage of system evaluation for ERPs. Results were gathered and translated to rating tables and comments. The ratings and suggestions were then established and presented to three experts who are top-level managers of three different top agro companies in Malaysia, which practice various types of ERP systems. Based on the discussion with the experts, six implementation strategies were proposed and concluded for the purpose to reduce the risk in the ERP adaptation for the Malaysian SME Agriculture Industry. These implementation strategies will assist the SMEs in the Agriculture Industry in ensuring the ERP system adaptation process's efficiency and effectiveness.

**Keywords:** ERP, ERP Adaptation, Failure ERP Adaptation Factors, Agricultural SME, Malaysia SME

## 1. INTRODUCTION

Over the past decade, the advancement of Enterprise Resource Planning (ERP) systems has been among the most important advancements and developments in Information Infrastructure (II) [1] and also in the field of business information systems [2-4]. ERP systems' primary purposes are to perform as system integrators and connectors. All distinct business entities have similar data and information, backing all the numerous related functions and presented as the profits collectively with the ERP adaptation and utilization [5]. Solely, the advantages and benefits of technology majorly come from

organizational revolutions, namely fresh and innovative business processes, administrative configuration and structure, and work procedures [6-9]. Simultaneously, the technology has provided assistance in combining executive and practical activities on a worldwide-scale evaluation of work practices that leads to positive organizational advancement [7].

ERP systems implementation and adaptation have always been considered a challenging and high-end organizational investigation and experiment [7-8, 10]. Since the past, ERP systems' adaptation has been described as probably the world's most massive

business change experiment and the most extensive change project in cost and time for the organization in their history [2]. Reference should be highlighted to the case by Nestlé in order to give a notable example of the expenses and time frames related to implementing an ERP system. By the end of 2003, the company had spent US\$ 500 million for implementing an ERP system. The project began in 1997, and it carries on until 2000 as the global parent company has determined to continue the adaptation into a world-wide solution [11].

One of the targets many companies had endeavored to achieve was a regulated, standardized, and homogenous business or organization information system and information infrastructure. Looking at the results, it inferred that the predicted design was never successful. For example, due to changes and pressure in the organization from the internal and external perspective, Complex II has been developed [1]. Nevertheless, the vital concerns and issues rooted originally in approaching large-scale consolidated systems continued to be unresolved. Organizational accountability still becomes the main issue for the Managers to endeavor professionally while customers were still trailing for the solitary global partner.

Inconsistencies and irregularities in the process were lurking across the entire enterprise. Even though having befitting and suitable coordination, production, and logistics might have been well ordered and organized [9].

Subsequently, this made many companies focus on finding innovative approaches to reorganize coordination and collaboration among clients, business units, and suppliers. In various industries, there have been very promising advantages being reported in integrating the extended value chain.

Business processes integration provides advantages to many organizations in offering better value and quality in terms of information, services, and products to customers and suppliers. Based on these various benefits and advantages, the whole value chain has received positive feedback and improved quality.

Various fields along the business processes such as planning, transaction, and even scheduling have been positively affected with greater efficiency steered by the forward and backward [12].

Nevertheless, the statistics reveal that even well-operated contemporary companies are not entirely involved with their descendants and antecedents throughout the value chain in numerous circumstances.

For the past few decades, the whole world has witnessed and impacted by the dramatic ICT transition and evolution. SMEs are also affected by the modernization impact that pushed them to pursue the advancement of ICT technologies. It changes and modifies the way companies doing business and making decisions. ICT affects each fragment of the value chain of doing business.

Nowadays, in managing the supply chain efficiently, it is impossible to do so without ICT implementation [13]. The capability to suitably and accurately integrate the Information System (IS) is the definite significant feature that the company depends on to guarantee profit [14]. Subsequently, the growth and advancement of II; which become essential for geographically dissemination value chains, is attainable now; during past decades, the advances in ICT; especially ERP systems, have been established as the basic and the ground for world-wide incorporation moves and initiatives.

In establishing the combination and integration of the extended and comprehensive value chain, ICT is considered as the most essential groundwork [13]. ERP systems adaptation and IS integration redirect strategic decisions related to integration in the extended value chain. Accordingly, integration initiatives reflect the engagement with respective involved parties.

The ICT usage and implementation in any organization basically depend on various factors such as the nature of the business, the size of the company, the management decision and view, internal and external pressure and technological advancement, government policy, and others. Furthermore, the implementation of ICT may differ between large companies compared to small and medium-sized enterprises as they are more resilient and capable of making a significant investment in ICT. SMEs usually will have the implementation gradually and on a small scale depending on the company's situation and environment. In the current situation, the SMEs' ICT implementation challenges have affected the competitiveness and development of these small businesses [15 - 19].

It is well-known to business organizations that ERP system adaptation has become the root of most successful and effective business operations. The adaptation of ERP systems is a continuous and ongoing process due to the excessive and dynamic market situation and businesses that always require real-time information available at any business entity. In order to implement an ERP system, it requires a very tedious and holistic preparation and also reliable resources. For SMEs in Malaysia, which are very dynamic and have different characteristics and requirements, there is no ERP that can fit all SMEs in Malaysia. For this reason, the process of exploring, evaluating, and deploying an ERP system becomes vital, especially for the local SMEs that are new to it [16].

This paper introduces the ERP conception and further discusses the adaptation in SMEs generally. Furthermore, it also describes the nature of ERP adaptation and adaptation, especially for Malaysia's agriculture industry. Primarily, this paper will identify the failure factor in ERP adaptation in SMEs of Malaysia Agriculture. Next, based on the determined failure factors' findings, suggestions of ERP adaptation in SMEs Agriculture in Malaysia with minimum risk were discussed with experts from Malaysia SME Agriculture Industry. The suggestions of the implementation strategies will be highlighted and discussed at the end of the paper.

## 2. BACKGROUND STUDY

Current processes and expansion in supply chains are far more diverse and dynamic compared to a decade ago. Various operation processes are required to be involved and took into consideration, such as complex business functions between multiple departments; updated, precise, and real-time information; critical and reliable relationship with upstream and downstream. Even though many business organizations have proven ERP system adaptation to be the utmost solution for business integration, it also becomes one of the costly mistakes for many others. As reported by [2], ERP system adaptation's journey has impacted many organizations with prolongs timelines, challenge, high cost, and an enormous burden on business timeline and resources.

Based on previous research, approximately 66-70 percent of the ERP adaptation ventures have been found to be unsuccessful in obtaining their main adaptation aims [20-24]. From the literature of ERP implementation, it can be concluded that

the adaptation disaster and failure are common experiences even for projects with the most proper planning, resources, support, and circumstances [16, 25].

The literature on ERP adaptation or adaptation is so massive, wide-ranging, and extensive [26-27]. It covers various areas such as detailed and explicit methods in analyzing ERP requirements [28]; assessment of risk management in implementing ERP systems [17]; consideration of the impact and relevancy of local factor and cultural characteristics [16, 29]; issues related during the pre-adaptation phase [30]; and among the most important area is the critical success factors [31-33]. Simultaneously, as the current literature is enormous and diverse, the focus on a better understanding of ERP adaptation failure is highly essential. In order to escalate the probabilities of prospect effective and successful adaptation or implementation, it is vital for the company to certainly understand the integrity of the process involved and any possible sources of implementation failures.

At the beginning of ERP development, the primary purpose of the ERP system is to forecast and manage material requirements only. Even with various implementation complications and costly, ERP that was previously established for inventory management and control purposes only; has evolved and matured tremendously into inclusive and comprehensive advanced technology software. The ERP system can presently carry out complex tasks and handle various organization activities that provide them with a complete integration specification and characteristic. Based on the listing in Fortune 500 companies, it shows that almost all company has implemented ERP systems extensively and comprehensively [34].

Many companies are challenged with problems related to organizational failure in ICT coordination caused by the use of legacy systems; in order to tackle this problem, ERP systems are usually being retained and affianced [35]. Commonly, legacy systems' primary purpose is to develop long-process solutions that are actually very challenging to maintain and sustain [36]. Especially with the current advancement and dynamic progress in the value chain and business information system, the legacy system functions are not relevant and can be obsolete.

From the past and current studies, it has been asserted that by uniting and combining some recognized and renowned SOPs from different and various industries with positive records which own comparable process flow in divisions such as HR or Finance with data flow across different departments of an organization could be the base of an innovative ERP system with improved affiliation and synchronization between the collected data and information. The adaptation of the precise and accurate ERP systems offer various advantages and benefits to the organization such as clear and effective communication; provide reduction of cost and time; quick and immediate process transaction, improvement and enhancement of operation performance, improved finance control management, better and straightforward web interfaces, and effective customer service [37].

In this section, some reviews on the literature related to this topic were gathered. The literature conducts a series of issues such as ERP definition, ERP in business and its success and failure attributes, SMEs in general and SMEs of Malaysia in particular, Agriculture SMEs, and the risks of ERP adaptations in agro companies.

This research shows the rank of adaptation of a successful ERP system, which helps companies directly and coordinates all the business functions within their borders. This research aims at the agricultural small and medium-sized enterprises (SMEs) whose headcount or turnover falls below certain limits. According to the Small and Medium Industries Development Corporation (SMIDEC) in Malaysia; in relation to services and different sectors, the definition of SMEs is the firms with sale turnovers limited to RM 20 million or lower or with a number of maximum of 75 full-time employees. In those agriculture SMEs that entail manufacturing sections, the sales turnover does not exceed RM50 million, or the number of full-time employees does not exceed 200.

Agriculture SMEs area in Malaysia has been picked to be the targeted activities of this research due to this area's need to combine their resources and stay aggressive and customer-oriented in the era of globalization. The reviews affirmed that Malaysian SMEs are incredibly cautious and dawdling in ERP adaptation. The literature and study discussed some of the risks which avert and stop the SMEs to kick start the adaptation of these systems into their business flow. Among the risk and problems being highlighted are

the lacks of ICT awareness in SMEs, lack of skilled workers, minimal capital, management dilemma on investing in high technology products, and high cost in venturing for new technology [8, 15-19].

Things are totally different in the Agriculture Industry, especially SMEs. In the Agriculture sector, it is exceptionally demanding and challenging to have the inventories standardized and homogenous based on various restrictions. In terms of designing the warehouse, especially for ERP implementation, many complicated issues are involved; the volatile amount of harvest and the inability to estimate and forecast the amount the farmers could make give massive limitations to this inventory procedure. Based on this, it requires a precise and exact understanding of the whole environment and situations in an agriculture company's daily operation to design a beneficial system for them.

Even though the Agriculture Sector produces mostly short-lived products, it is still possible to have an accurate and precise administration for the warehouse or even the inventory. In this case, the ERP system could solely act as a practical part of the cost-saving of stored short-lived products with a precise timeline. Furthermore, additional advantages that ERP could bring to this sector is the clearness and transparency to the complete operation of the entire process as it saves time in preparation, documentation, and communication so it could cut and save the time for the whole process from order input to inventory and finally to shipping and dispatch [38].

It is acknowledged that in the agriculture sector, the implementation of the ERP system has been anticipated to be incomplete and very limited [8]. Principally, a basic and conventional ERP is incompetent to accomplish as expected when implemented in a sector with a dynamic and vibrant demand for logistic and production settings [31, 39-40]. For example, Agricultural Sector particularly in the SMEs category is principally an industry that is highly dependent on biological processes such as the growth of a plant, soil and fertilizer measures that extremely impacted with various uncertainties [41 – 42].

For this reason, it is suggested that this type of dynamic sector venture into customized ERP system but this is seen to be a waste for the organization as this sector required very basic ERP

system features. On-the-shelf ERP System seems to be quite conceivable for Agriculture Sector but the rigidity of the systems to be amended and altered for particular needs of the industry to fit its functionality will restrain the full-functionality of the system. This provides great dilemma towards the industry in adapting the system successfully.

Previously, for the ERP vendors, Agriculture Industry was not a significance sector to concentrate and focus on developing the tailored and custom-made features that are required and essentials [8]. This trend began to change over the past years, the ERP suppliers started to acknowledge and recognized the high needs of customization adaptability in the Agriculture Industry and this brings to the establishment of ERP II. Due to many limitations and the dynamic nature of the Agriculture sector, it is very difficult to have the inventories homogenous and standardized. Among the encompassed issues and factors that make this sector vibrant are irregular quantity of agricultural product and moreover the incompetence to determine the quantity and volume of the product produced by the agronomists [8, 15-16]. This is part of the example that affects the process in designing the inventory and warehousing requirement in the ERP system.

Among the features that have been introduced for the ERP system are open-source based, service-oriented or web-based which capable to fulfill the explicit requirements of ERP for many dynamic sectors such as the Agriculture sector. In order to develop an effective ERP system for this sector, a clear-cut understanding of environments and SOPs in a day-to-day procedure and operations of any agro company is extremely required [8, 43]. ERP system is capable to effectively manage the warehouse or inventory of this sector with cost saving approach even though the products are mostly short-lived [8, 43]. Numerous studies on ERP framework practice in various types of SMEs has validated that ERP framework amendment and modification are reasonable and acceptable for specific associations, with framework flexibility being among the most convincing ERP choice criteria in SMEs [44 – 45]. Furthermore, a few researchers have additionally report examples and instances of ERP implementation in SMEs [46 – 48].

Often changes or expelling the business process could then incapacitate and weaken the organizations especially for SMEs; ERP

implementation should study and focus on the current entire business process to prevent changes that impact the quality and the organizations [47]. For China SMEs, Liang et al. [29] recommended a thorough inquiry and exploration on vendor practices is one of the approaches in enhancing the success rate of the ERP implementation process. They also suggested that the ERP framework should have flexibility at any stage of the operations without redesigning the business process.

While Olsen and Sætre [49] have suggested that for SMEs, the best option to guarantee success in ERP implementation is to for the full in-house ERP. This is supported by Olson and Staley [50] which proposed that the Open-Source type of ERP system is sensible and suits the SMEs as it provides the essential flexibility and easy to custom made through various changes in the programming code.

In this manner, previous study and exploration on ERP in SMEs shows a prerequisite to adjust to the current business forms for vital apprehensions [44, 48]. Be that as it may, there is still uncommon research on ERP framework customization focusing on the needs of SMEs. It can be concluded that for SMEs, the purpose of ERP customization is to really understand and recognized the requirement needed by the SMEs. This can be done through a thorough investigation throughout the while business process of the SMEs.

For the Agriculture Sector in Malaysia, the current status of ERP adaptation shows some resistance due to various issues such as choosing the correct and relevant module, the complexity of functions, cost, ICT readiness, management involvement, the possibility of a mismatch between ERP system with the SOPs of the company and others [8]. It is the time for at least a proper model or suggestions being made, particularly for Malaysia's agriculture sector in trying to discover the suitable approach that will well-fit the sector's operational and nature.

### 3. RESEARCH METHODOLOGY

The exploration of the research in this paper is conceded in four phases: (i) Preliminary Analysis: the analysis of current literature review; (ii) preparation of questionnaire for data collection; (iii) data analysis and evaluation based on the questionnaire; (iv) thorough and comprehensive

structured interviews with the experts from the Malaysia Agriculture to discuss the output of the analysis and relevant suggestions.

The literature review analysis involved the assessment and exploration on ERP, SMEs in Malaysia, and their readiness for adaptation and practice of systems and ERP to outline the current situation of the ERP implementation. There will be a conduction of literature to prepare a comprehensive idea about the agriculture industry and its modern management followed by some preliminary research within the industry itself in Malaysia through platforms and forums they speak about industry trends or their needs, the relevant issues then were analyzed and a short survey was passed to them to state more details on their needs of ICT and management. The result of this survey defined the problem statement and the objective of this research was conveyed and some research methods were chosen and agreed.

The next step was preparing a theoretical questionnaire for data collection from semi- experts or users in the industry. The questionnaire was conducted based on SAP pre-info collection for ERP adaptation and formed in a way that results could be evaluated. It was to identify the failure factors systematically in ERP systems adaptation. The causes could be obstacles and obstructions that depressingly affect adaptation or may lead to a confidently jeopardizing process. As the basis of the questionnaire, the well-accepted theory of Rogers [51] on the adoption of innovations was selected. Then, based on the current literature analysis, the most significant factors that influence ERP adaptation were listed and identified.

For the third phase, quantitative data is collected through a survey based on the developed questionnaire in the previous phase, which is a list of preliminary common questions ERP vendors use to collect data by users and know their expectations from the system and based on the answers the designed system will be introduced. The collected data would be analyzed to evaluate the questionnaire's results for better analytics and generate an outcome for the topic. Further, it would be in the form of statistical data and descriptive method. Based on the outcome of data analyzing and statics, the failure factors gained from result

will be discussed with experts of the industry with successful rate of ERP adaptation to evaluate the suggestion and recommendations proposed.

In the final phase, the interviews with the expert of Agro related companies that have implemented ERP were conducted as a case study segment. This interview involved three experts from different companies that have experience with the adaptation of the ERP system. Based on the questionnaire results, a list of the most and least highlighted points for critical failure factors was prepared in-depth semi-structured interviews with those key people who have comprehensive experience and overview in the ERP selection procedures and the whole adaptation process. The list of implementation strategies recommended from the previous phase was discussed thoroughly in this phase. Finally, a list of implementation strategy that has been agreed by the experts is proposed in this research as a guideline for Agriculture Sector in implementing ERP system.

#### 4. RESULTS AND ANALYSIS

This section concentrated on the studies and analysis of the gathered data from all the methods applied. Dynamic data analysis in this research has two sections. Firstly, descriptive analyses of data discuss the generated data via graphs and tables to better understand the complete collected information and turn them into a rating table for the second phase of data collection. The second method uses the quantitative analysis of data is a list of suggestions made from the interviews and discussed back with the same experts to evaluate whether those suggestions are valid to improve the success rate of a system.

##### 4.1 QUESTIONNAIRE ANALYSIS

The result of the distributed questionnaire is being analyzed one by one in order to prepare the questions for the second phase of data collection and observation. Table 1 shows the percentage of jobs title.

Table 1 Respondent's Job Title

Job Title	Frequency	Percentage
Consultant	18	26%
Chief Executive Officer	5	7%
Chief Technology Officer	8	12%
IT Manager/ Internet Specialist/ Programmer/ Database Administrator	12	18%
Project Manager	7	10%
HR Manager	6	9%
Finance Manager	7	10%
Other	5	7%

Out of the 68 participants in the questionnaire, the majority were Head of Departments (about 27%), followed by IT professionals (18%). It's worth mentioning that "Head of Departments" in this case refers to high but not top-level manager where are in direct contact with system user who is mainly executives and worker. Being the subject matter experts, their input provides additional credibility to the information gathered.

Table 2 shows the department that is using the current ERP system. From the table, it can be seen that among the 68 participants, the IT Department appears to be the most common initiator of ERP system adoption by a high margin. Senior management is the second initiator of system consideration in those companies. Other departments such as HR, Consultants (which refer to business guides or IT vendors), and Warehousing are relatively common, making up between 9% and 13%. Among all, the Finance Department is the least to initiate ERP adoption, making up only 3% of the entire group.

Table Error! No text of specified style in document.2 Department Using The ERP System

Department Adopting ERP System	Frequency	Percentage
IT Department	36	40%
Senior Management	22	25%
Finance Department	3	3%
Third party - Consultant	8	9%
HR Department	12	13%
Other	8	9%

Based on this, the result can conclude that ERP adoption is often initiated by departments where the system will be most utilized. The fact that ERP directly addresses discomfort points faced by those business units encourages them to lead and

seek ERP adoption in their company. Noticing Senior Management as the second initiator of adaptation, Shows the willingness and trust in ICT and how ERP has the potential to provide significant improvements to their company's efficiency and productivity, lowering overall costs.

The fact that the Finance Department was the least likely to initiate the adoption of ERP is surprising; seeing how ERP can provide significant improvements to their workflow and its efficiency and productivity, the lack of change-resistance is seen in this report.

Also, the benefits that mid to low-level users noticed were questioned and analyzed; users were allowed to pick more than one option as an answer. Table 3 shows the graph of the benefits of ERP systems depicted by the company. As seen, the most common benefits realized by the adoption of ERP systems in the participating companies are, in descending order: Overall productivity increase (26%) reduction in cycle time (24%), followed by a decrease in levels of inventory (17%). Return on investment came at the bottom of the list at (4%). This is a surprising outcome since ERP solutions typically promise a high return on investment. Further research has to be conducted to uncover the reasons behind these negative results.

Table 3 ERP Benefits By SME Employees

The benefit of ERP System	Frequency	Percentage
Led to supplier and customer satisfaction	20	7%
Increase overall productivity	37	18%
Reduced cycle time	34	31%
Reduced inventory levels	24	26%
Reduced headcount	21	4%
Return on investment	6	7%

In Section 4 of the questionnaire, the managerial problems were questioned to investigate the failure influencers from this angle. Multiple answers were allowed to choose. Table 4 shows the ERP critical issues that contribute to the problems in using ERP efficiently.

Table 4 ERP Critical Management Issues

What managerial problems, if any, were faced during and/or after the ERP implementation?	Frequency	Percentage
Project cost overrun	17	17%
Project delays	18	18%
Conflicts with business strategy	13	13%
Employee resistance to change	21	21%
Conflicts with Consultants	13	13%
Internal conflicts	15	15%
Conflict with vendors	5	5%

Employee resistance to change was the number one managerial problem listed by the participants (26%). Other factors that were high on the list are conflicts with the project delays, cost overruns, and business strategy each comprising an average of 17% of the total. Disputes with vendors came out at the bottom of the list, with only (5%).

This indicates that when implementing an ERP system, a lot of focus has to be put into aspects of cultural change at the company, in order to minimize resistance from staff members. Employees are key stakeholders, and it is necessary to communicate with and educate them on the new system before it is implemented. Providing adequate training is another essential factor that can reduce their resistance to change. It is equally important to have acceptable project management practices are in place in order to ensure that the project is completed on time, without budgetary issues or delays.

Next, in Section 5 of the questionnaire, the technical profile is being assessed thoroughly. Although not all the participants were entirely in the technical field, their opinions were asked on what they face as a frequent communication problem with the application. Multiple answers were allowed to choose. Table 5 reports the technical problem encountered in the ERP System.

Table 5 Technical Problem Of ERP System

What technical problems, if any, were encountered during or after the ERP implementation?	Frequency	%
Integration with existing systems	29	25%
Integration with other applications	10	9%
Integration with new business software	5	4%
Data migration	28	25%
Customization	31	27%
Security	11	10%

Out of all the technical issues faced by participants during or after the adaptation of their ERP system, the top three were Customization, Integration with Existing Systems, and Data Migration, each making up about 28-31% of all technical problems, or 88% in total. However, a common concern, integration with other applications, came out at the bottom of the list, with only 5% of the participants facing those problems.

In section 6, questions related to organization problems were highlighted. Participants were asked to state the facts that directly affect their experience, or they find it critical to cause poor experience in ERP. Table 6 shows the responses of the company toward the impact of organization problems in ERP implementation.

Table 6 Organizational Problems

Redesigning business processes to fit software	18	11%
Organisational commitment to change	18	11%
Integration with software	19	12%
Adequate internal expertise	24	15%
Adequate mix of internal and external human resources	5	3%
Sufficient standardisation and discipline	12	8%
Avoiding technical bottlenecks	11	7%
Avoiding conflict with business strategy	7	4%
Clearly stating scope of project	17	11%
Clearly stating project timeline	11	7%
Assigning role/responsibilities for functional areas	17	11%
Sum	159	100%

The incompatibility of internal and external human resource workflow came to attention in this section with 24% of rating. The next three places belong to software integration, business flow re-engineering, and the organization's commitment to make the change with 19 and 18%.



Unclear project scope and timeline follows the concern with 17% of the whole.

While section 7 is based on the functional profile of the ERP usage in the company. Table 7 shows the result of the respondent. Respondents were asked to share the points where they find it hard to practice or make the work more complicated when it comes to ERP usage. Multiple options were allowed to choose.

Table 7. Functional Profile

Preliminary business analysis	16	11%
Fit between software and business processes	11	7%
Aligning project objectives and strategic business goal	7	5%
Training and reskilling	35	23%
Acknowledging change management	21	14%
Obtaining full time commitment of users	19	13%
Dealing with organisational resistance	11	7%
Effective communications	24	16%
Justifying project expectation and objectives	6	4%
Sum	150	100%

As observed, lack of training or insufficient knowledge on the system operation is the main reason users show restriction to use or find ERP systems challenging to work with (35%). In comparison, this system's communication stands at second place (24%), not far away from change management that refers to business process re-engineering according to the ERP system's requirements.

In the end, users had to state the frequency of problem facing while using these systems to find the final stand of ERP in the eyes of users. Table 8 shows the frequency of the issues faced by the company, and the evaluation is based on the Lickert scale of 5.

Table 8 Frequency Of Problems

Frequency Of problems with the application	Almost all the time (1)	Frequently (2)	Sometimes (3)	A few times (4)	Almost never (5)	Total	Score
IT Department	0	2	2	8	1	13	3.6
Senior Management	1	2	1	1	0	5	2.4
Finance Department	0	2	8	3	2	15	3.3
Third party - Consultant	2	2	4	5	0	13	2.9
HR Department	0	1	8	2	1	10	3.3
Warehouse	0	1	7	3	1	12	3.3
Total	3	10	28	22	5	68	3.2

While Figure 1 shows the overall evaluation for the adaptation of the ERP system in the company.

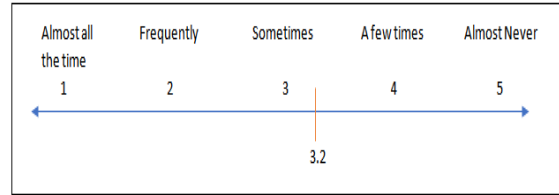


Figure 1 Overall score of ERP System

From the tables and figure above, it is evident all departments have faced problems with their ERP systems at a somewhat similar frequency. The average score is 3.2, which is considered as "sometimes".

From the result of analysis on gained data of questionnaires, there were seven failure factors which held the highest number of attentions:

- IT infrastructure
- System training and knowledge transfer
- Over-reliance on heavy customization
- High turnover rate of project team members
- Business process re-engineering
- User's resistance to change
- ERP system misfit

In the next process, these identified failure factors will be shared and discussed with the experts from the Agro companies in order to acquire suggestions on implementing the ERP successfully.

#### 4.2 EXPERT REVIEW

Based on the seven identified failure factors, the conclusion of the findings are as follow:

- It shows that training is the primary concern and issue to the top management for a new system adaptation, both employee and employer referred to this as a failure factor of a system.
- IT infrastructure has the second place as failure fact for all the three experts, which somehow states that although different models provide different services, the skeleton of available ERP models is not entirely satisfying to Malaysia's agriculture industry.
- Both Cloud base and in house system experts revealed that they do not much rely on customization while off-the-shelf user gave it a rate of 4. It has a very close relationship with the plug-ins they can add to their system's base upon need.

- User resistance had the lowest rate for in-house ERP users. It comes with the fact that when the system is designed specifically for a business, it pretty much follows the current business model with –probably – some adjustment. In contrast, the other two models are fixed, and users must make a suitable adjustment to the workflow .

The experts were given a choice to rank these failure factors from a range of 1 to 5, yet it shows that what makes end-users know as an issue in ERP systems is what the project managers or business owners believe in. The ranks are no less than two, so all these factors had been considered to overcome the risk of ERP failure.

For the second interview with three experts, the identified failure factors were taken back to all the literature found and discussed before and in conclusions. The interview questions conducted in the end had a format of suggestions to evaluate but open to debate. These experts have analyzed and evaluated the suggestions thoroughly through interviews. The experts also evaluate and comment on the quality as well as the validity of the research contribution. All selected companies are well known, successful players in the industry. However, they have had diverse approaches towards ERP implementation.

In spite of the positive outcome all businesses have achieved through their own individual experiences of ERP as a whole, the companies have endured certain complications. The lists of pre-suggestions were as below:

- The specification of the ERP system must be described in details, thorough and clear based on the company's requirements, scope and related SOPs.
- Full support and high involvement from the top management throughout the implementation process.
- Reliable budget and schedule planning are required to minimize the negative impact of the implementation progress.
- The selection of a consulting associate play a very important role in ensuring the success of the ERP adaptation project.
- All resources in the company should be fully utilized in supporting the adaptation process.
- For SMEs company, focus or consideration should be made to off the

shelf services ERP as it also provides service to cover technical issues and updates which is very essential.

Based on the determined failure factors and the discussion on the above suggestions with three experts; six implementation strategies were proposed explicitly for Malaysia's agricultural sector. The common decision and conclusion accomplished based on the interviews indicate that the appropriate customization will push to a positive result as far as these suggestions are being considered thoroughly. Adaptation problems might still transpire, but it can be at a very minimum level. The six implementation strategies that have been concluded in order to attain less hassle ERP adaptation are as follows:

- The integration between a company's unique specifications must be aligned accurately with the ERP scope or capability. In order to achieve the accurate alignment between them, a detailed function of the company SOPs need to be thoroughly analyzed, and the matching type of ERP software are unavoidable. The same procedures need to be done for the system's usability too.
- The most important aspect is to have full and strong support from the whole management team. At the initial stage, cost and the timeline of the project is decided, this where top management should be fully involved to understand the whole adaptation process. For the rest of the adaptation stage, support from management will ensure proper and comprehensive training, good project planning and smooth transition between them.
- Furthermore, the management also must plan and push for a very detailed pre and post system adaptation in all stages involving all resources and team members.
- In order to overcome or reduce another failure fact of ERP adaptation which is over expectation; a practical and rational plan and also investment should be projected to minimize the negative effects of the system. A reasonable and satisfying point can be established as the benchmark of the system progress and performance.
- For a smaller company such as Agro based industry, the accurate consultation is one

of the success factors in ERP adaptation. It is advisable for the company to have the precise and expert guide in leading them for an effective progress and successful choice.

- For successful and fault-free adaptation, it is suggested for the organization's resources to be completely utilized. The obligation to the system updates must be a part of SOP and the staff's Key Result Area (KRA) and the new technology must be introduced and accepted with less or no resistance.

## 5. CONCLUSION

This paper has intended to detect the complications associated with the ERP adaptation specifically for Agriculture industry. Based on the current literature and practices, ERP adaptation in the agriculture sector is still lacking and seemed to be disregarded.

Agriculture SMEs area in Malaysia has been picked to be the targeted activities of this research due the need of this area to combine their resources and stay aggressive and customer-oriented in the era of globalization. For years, agriculture-based companies are not the perfect aim for the ERP vendors as they usually operate on a fixed and static workflow process. Even though, ERP system has been very positive and effective in covering the hassles of dynamic changes in the supply chains and business processes but the implementation of ERP in the agriculture sector is still very minor.

So, a constant and comprehensive act to apprehend, edit and communicate business information throughout the supply chain in the Agriculture sector is still highly essential in ensuring the effectiveness of the business process. Since ERP is the best candidate and there are various challenges in the implementation process, this research has tried to explore the possible strategy mainly for the Agriculture sector in Malaysia.

Additionally, this research has endeavored to explore those difficulties and complications satisfactory enough to determine whether it can be resolve by minor variations and modifications or it need to be entirely restored and revamped. Interestingly, Malaysia has been the main place for abundant SMEs which contribute to the agricultural sector as an outcome of its exclusive geographic position and rich natural resources. Conversely, in terms of reclamation, SMEs are deficiency high

capability. Consequently, it is crucial to decrease and minimize the possibility of adaptation failure.

According to the analysis of the survey towards the agro-based companies in Malaysia, seven failure factors have been detected which are:

- IT infrastructure.
- System training and knowledge transfer.
- Over-reliance on heavy customization.
- High turnover rate of project team members.
- Business process re-engineering.
- User's resistance to change.
- ERP system misfit.

Based on these failure factors combined with the related suggestions concluded from the literature, the proposed suggestion of implementation strategies were presented to three industry experts. From the proposed suggestions, six implementation strategies have been outlined as a recommendation and basic guideline for the Malaysia SME agriculture sector company to adopt diligently in order for them to successfully adapt the ERP system in their business. Within this research, some issues were raised, which can be further investigated. As a topic with a high risk of failure, ERP will still remain a topic to be explored and studied. The gap between systems' theoretical plans and its practicality has to be discussed over and over since the implementation will always exist. Nevertheless, this work can contribute to a new pathway towards systems' perfection as an opportunity for researchers to further evolve ERP systems design, development and implementation.

Researchers have to be conscious that real practical situations can differ from the technical perspective of a system's design. Some of the suggestions and recommendations gained through both stages of this research are offered as follow:

- The real-time implementation with less complexity and low costs is needed for the ERP system regardless of the type.
- A mixture of cloud, and off-the-shelf ERPs with higher flexibility of customization per each industry and also each business could rise up the success rate of ERP software in general.
- The specified focus on found and analyzed failure factors and development of a system where concerns are considered.

Based on this findings and its future consideration, the ERP system adaptation especially for Agriculture Industry in Malaysia still have plenty of opportunity for advancement and a potential area to

be explored in details and thoroughly. This will further assist this industry to get the full positive benefits of the ERP system in their daily operations.

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