

# Determinants of Successful Implementation of SAP in Malaysia

<sup>1</sup>Siti Khalidah Mohd Yusoff\*, <sup>1</sup>S.M. Ferdous Azam

<sup>1</sup>Management and Science University

\*Corresponding: [khalidah@msu.edu.my](mailto:khalidah@msu.edu.my)

## ABSTRACT

SAP was created in Walldorf, Germany in 1972. It stands for Data processing systems, applications, and products. The main advantage of using SAP as your company's ERP system is that SAP has a very high level of integration between its individual applications that ensures data consistency across the entire system and the company itself. This paper gives brief guidelines what organization should consider when they planned to implement SAP ERP in their business. The study focused to analyze the factors that effect on the implementation of SAP. For analyzing the factors that place effects, some variables like, project preparation, technology selection has been elected in this study. While on the basis of such variables data has also been collected to analyze the influence. Regression and correlation analysis has been performed in this study, where the results were significant in context of relationships and influence between them.

**Keywords:** Germany, data processing, integration, applications, company, SAP.

## Correspondence:

Siti Khalidah Mohd Yusoff  
Management and Science University  
Corresponding author: [khalidah@msu.edu.my](mailto:khalidah@msu.edu.my)

## INTRODUCTION

Being competitive in business has become more complex; making the use of a better system like SAP ERP an excellent solution, as it is a system that integrates all business units such as planning/controlling, purchasing and financing. SAP ERP is the most renowned program launched in Malaysia recently. Almost all of the articles concerning SAP ERP highlight similar advantages and disadvantages of the system. Pros of ERP creates a more productive work environment, making it easier for employees to do their job which leads to productivity (Parr, Shanks, & Darke, 1999; Nguyen et al., 2019; Nikhashemi et al., 2013; Pathiratne et al., 2018; Seneviratne et al., 2019; Tarofder et al., 2019). Vendors have prior experience and skills on how to properly build and execute an ERP. Return on Investment program and drawbacks can take too long to be considered profitable. Implementing SAP ERP runs a project risk. System success depends entirely on how the employees embrace and use the system. Employees need to be trained on how to use the system on an ongoing basis and it is also important for companies to ensure data integrity is protected. SAP has undergone a number of enhancements from SAP R/1, SAP R/2, SAP R/3, SAP ERP and the latest from SAP HANA. By implementing SAP an organization will improve the visibility and control of its business operations in real time.

According to (Gargeya & Brady, 2005) it is no easy task to implement the ERP systems. ERP systems are complex and extensive by their very nature; therefore, they warrant careful planning and execution to ensure their successful implementation (Gargeya & Brady, 2005). In one research completed in 2012 by Pierre Audoin Consultant (PAC), they suggest that a well-run team of SAP projects should work to implement the following: A comprehensive repository of all changes, each change should have a single traceable history from request through impact analysis to development, testing, implementation and manufacturing, a set of application versions, capable of allowing instant recurrence, detailed correlation between problems and

changes, 'single source of truth' about who made what changes and when. Impartial figures showing the productivity and precision of the work of the employees, Developing nation organizations such as Malaysia face various obstacles in adopting technologies and programs, including a shortage of human and financial capital to sustain such initiatives (Abdelghaffar & Azim, 2010). Nevertheless, the Malaysian Government's dedication to technology infrastructure growth can be seen from the 2006-2020 Malaysian Industrial Master Plan, which also coincides with the country's 2020 vision (Abdelghaffar & Azim, 2010). Malaysian companies will take this opportunity to use the government-built technology infrastructure to grow their business and maintain their competitive edge in the marketplace.

This study is about the SAP system which has become popular among organizations in Malaysia. The SAP system monitors and controls in one system all business units like planning, purchasing and financing. Whilst the advantages of the system are highlighted in many advertising mediums, many organizations still experience problems especially during the system implementation stages. This study will identify the problems encountered by a number of selected companies during ERP implementation. It will also identify the major causes of these problems by conducting a study among Malaysian Companies on what their preferences were when they decided to adopt an ERP system. Successful market organizations understand the value of technology when it comes to working effectively and preserving their competitive advantage (Xu, Nord, Brown & Nord 2002). As a result of SAP giving many advantages that result in overall business improvements and costs being utilized effectively many organizations in Malaysia have implanted SAP into their operational and management processes; however not all organization in Malaysia can afford to implement SAP. By completion of this research study an understanding of why these companies can't afford to implement the SAP system; as well as identifying the factors as to why some of

the companies failed to implement the system will be determined (Kim & Oh, 2002).

The SAP system offers comprehensive functionality to an organization in one system; however, there is a requirement to customize the system according to the organizations' specific needs. The general objective for this study is to understand the problems encountered when companies implement the SAP ERP system. The specific objectives of this study are as follows; to identify the problems encountered by the selected Malaysian Companies during ERP implementation, to identify the major causes of these problems, to determine if there is a co-relationship between competence of the SAP partners and the problems, to develop a framework that minimizes problems associated with the implementation of the SAP ERP system (Kerr, 2008).

SYABAS has been designated by the State and Federal Governments under the privatization principle to develop and enhance the water supply network and services in the state of Selangor. "For the first time, the University of Malaya would provide a common center where varieties of race, religion and economic interest could mingle in joint endeavors ... For a University of Malaya must inevitably realize that Malaya is a university." "EON Auto mart also pro This research will specifically focus on the problems faced by Syarikat Bekalan Air Selangor (SYABAS), University of Malaya and EON Berhad (EdaranOtomotif Nasional) during the implementation of the SAP system and why some organizations are not willing to use the system vides after sales This research will help organization's gain an understanding of the problems they will face before they implement the system, allowing them to prepare the solutions to overcome the problems. They will also gain an understanding of the advantages for their organization associated with the use of the SAP system (Gable & Stewart, 1999).

#### LITERATURE REVIEW

The SAP system was established in June 1972 and was known by five former IBM engineers in Mannheim Baden-Württemberg Baden-Württemberg as System Analysis and Software Creation. They later modified it to Framework, Applications and Products in Data Processing or Data Processing (SAP) Frameworks, Applications and Products. It is a complex system which combines all functions within one software package to meet the demands of medium and small business (Holland & Light, 1999). From the SAP website the system features included: Accounting and financials – this module in the system combines all the transactional and operational data which then gives an accurate financial statement for the whole company, sales and service – This module assists a company to monitor their costs and manage their purchasing flow. Since SAP ERP is integrated into all business functions within one system, an organization has access to real time information, which helps them to make informed decisions and control the operation of the organization; reducing costs by maintaining just one system. It allows all levels of the organization to share information between the different business units, which improves the capabilities and information transparency of the organization (Nah, Islam, & Tan 2007). The increase in business trends due to globalization, mergers and acquisitions requires companies to be able to control and coordinate ever more remote operating units (Amoako-Gyampah, 2004).

The system is a standard package; this means that if a user has a problem with SAP ERP they can search for a solution

via the internet as users from different organizations use the same system. At Dow Corning, a Director in Europe suggested that the SAP product would be a quick and effective way to achieve global discipline and an integrated common system (Ross, 1999). Implementing ERP packages won't necessarily reconcile communication issues or improve communication capabilities. Increased potential for contact might not be a positive thing anyway (Mandal & Gunasekaran, 2003). Problems will arise when an organization blindly adopts the ERP packages because the technology may not fit the organization environment. Therefore, the problem of finding someone who knows about the SAP ERP software packages will be reduced by the problem of acquiring the skill base. Adopting SAP ERP may discourage vendors from providing upgrades; upgrades may also be so extensive that they require a base of customer software developers. Organizing users share the same information from the same system; this means they can access accurate and immediate information anywhere in the world as long as they have access to the SAP ERP system. Since SAP ERP is information from the process in real time, users can obtain the organization's current information and status. SAP ERP offers continuity, visibility and consistent flow of information within the organization; this helps increase efficiency of business processes and improves competitive advantage of an organization.

Implementing ERP is not a technology, but rather a project for people (Ram, Corkindale & Wu, 2013). Thus, the role of users in the implementation of the ERP System cannot be defined as user involvement (Dagher & Kuzic, 2011) as "the psychological state of the individual and the importance and personal relevance of a system to a user." It was noted that user participation / involvement is always important in defining the needs and implementing the ERP systems (Salih & Doll, 2013).

The description of each phase is as follows: project preparation – examples would be; set goals and objectives, project budget and time scales, identify the maturity level of a company. The involvement of project preparation was highlighted in research done by Zainal AriffinHasibuan and GedeRasbenDantes (Upadhyay, Jahyanan & Dan, 2011). This plays the most important role in evaluating the performance of ERP implementation (66.40 per cent). Culture Readiness – It's also important to know if the culture of the organizations is ready to change because if potential customers offer a negative answer to the new program it will impact the implementation of SAP ERP. Culture readiness has an impact of up to 47.30% in determining the success of ERP implementation.

This activity has a 52.20 percent role in determining the successful implementation of ERP. Donovan (1999) conducted a risk management assessment to identify the preparedness required to face unwanted events. Good planning and systematic risk management adoption are crucial to completing projects on time, in-budget and meeting all requirements. According to (Federici, 2009), adequate IT infrastructure, hardware and networking is critical to the successful implementation of ERP systems. It plays a role of up to 38.40 percent in determining ERP implementation success. Strong ERP Product-determined through the process of product selection. A strong ERP product plays a role of 55.40 percent in determining ERP implementation success. Project formulation-covers the business plan to be used in implementation / development. There are so many software/IT systems in the market to cater for the needs of the user who is seeking an efficient and inexpensive system to run their businesses

operations and management. When comparing SAP (which provides a comprehensive solution for all levels of business), with other software/IT systems, the need to purchase a variety of packages to meet the businesses requirement needs to be considered as not all systems can integrate the business needs. Simply; some company's products may need to use additional/different kinds of packages to cater for the different business functions e.g. Accounting, Sales and Purchase and Human Resource Management. When using different systems/packages, organization will need to hire different and additional types of consultant for each system/package and its maintenance requirements (Nicolaou, 2004).

**Loss of privacy:** Due to the system integration capability and improved methods of collecting productivity data, some degree of privacy loss for employees may occur when you implement a new IT system. **More decision-making authority:** Integration can question current power structures and the existence of some senior positions within an organization. Although most IT systems are placed in place to encourage more integrated data-based decision-making, those who were able to make more centralized decisions under the previous framework could be at risk. Work conducted by GoenSeo 2013 at the Massachusetts Institute of Technology (MIT) in Cambridge, Massachusetts and the multinational engineering firm ENGCO highlighted the same challenges encountered when implementing SAP ERP in the university or business setting. (Garg & Garg, 2014) defined change resistance as: "Behavior intended to protect an individual from the effects of actual or imagined change." Another researcher (Dezdar & Ainin, 2011) defined resistance as: "Employee behavior seeking to challenge, disrupt or reverse prevailing assumptions, discourses and power relationships (Dezdar & Ainin, 2011) suggests that resistance can be viewed from two different angles, such as attitudinal and behavioral responses to change.

Implementation of an ERP system is a change and resistance to change is of human nature. Change management is seen as a critical aspect for successful implementation of the ERP system (Nah, Zuckweiler, & Lee-Shang Lau, 2003). Management of change shortages may seem a hindrance to successful implementation of ERP. Education of users is important for effective change management (Wong & Tein, 2003). This aspect is a primary concern for organizations participating in the implementation of the ERP program (Wong & Tein, 2003). Researchers identified resistance to change as a major problem faced by organizations during implementation of the ERP and often led to disputes between stakeholders (Gwillim, Dovey, & Wieder, 2005). Carefully managing the changes to business processes is required to overcome resistance (Gwillim et al., 2005).

Culture is a collection of common beliefs in a country or group where a person lives. It is learning culture; it cannot be inherited (Peslak, Subramanian, & Clayton, 2008). Hence culture imposes on a society rules, values and practices. Hofstede (Peslak et al., 2008) argues at cultural level that there are four elements which can be used to identify differences between one country and another (Plant & Willcocks, 2007). ERP software packages which manage and automate business processes across organizational functions and locations cost millions of dollars to purchase, multiple times as much to implement, and require disruptive organizational change (Plant & Willcocks, 2007). The complexity of ERP systems results in huge learning curve and changes in behavior for users (Plant & Willcocks, 2007). This results in low acceptance if

there is no training program, and curbs project progress. This means re-skilling users in the use of specific application modules in new technology, and training.

A company's key users should not only be experts in the processes of the company but should also have awareness and knowledge of the specific branch's information systems. Users involved can decrease their resistance to the potential use of the ERP system, especially if users feel they are the people who choose and make the decisions (Stanciu & Tinca, 2013). The successful implementation of the SAP ERP will be influenced by various factors such as maturity level of organizations, implementation approach, cultural organizations, business processes of an organization and management commitment (Stanciu & Tinca, 2013). There should be two types of communication: Inward to the project team, and Outward to the entire organization. Giving understanding and approval to implementation is important. This is also necessary to exchange information between project team members and to convey the outcomes and established priorities to the rest of the company. The flow of business practices needed can be developed by a SAP ERP provider after consulting with their client. ERP systems are built to best practice standards for the specific industry, and all processes in a company must conform to the ERP model in order to be successfully installed.

Data precision is an absolute prerequisite for proper functioning of an ERP device. The availability and timeliness of accurate data is a basic necessity for the efficiency of an ERP system (Stanciu & Tinca, 2013). According to (Dagher & Kuzic, 2011), program developers and managers should concentrate rather than focus on customer satisfaction than on designing better systems. Quality Assurance is essential; it should be established in the early stages of ERP implementation to avoid subsequent erroneous results and costly corrections (Dagher & Kuzic, 2011). The implementation of SAP ERP has become very popular in organizations like those highlighted in this chapter. The implementation of SAP ERP provides advantages for the organization using the system through its global use and the benefits of its own website allowing effective communication with and between users. Introduction of a new system into an organization involves all the workforce and management working as a team to ensure successful implementation of the SAP ERP system.

H1: There is a significant relationship between project preparation and SAP implementation success.

H2: There is a significant relationship between technology selection and SAP implementation success.

H3: There is a significant relationship between project formulation and SAP implementation success

## METHODS

The conceptual structure is the basis upon which the entire research project was developed. Logically it explains, elaborates and establishes the network of associations among all the variables important to the study. The diagram illustrates the relationship between independent and dependent variables under which the theories can be easily postulated and allows the complex situation to be clearly understood. Such models are composed of three factors which affect the implementation of the SAP project.

**Figure 1: The Research Model**

This work needs to define SAP's effective implementation with the related attributes of project planning, selection of technology, project implementation, implementation creation and deployment. The proposed research framework for this study and each of the variables has a specific effect on the determinant factor which could contribute to the implementation of SAP performance. The purpose of this study is to understand what problems were experienced by SAP users and vendors during the implementation stage within three Malaysian Companies and to identify the major causes of these problems. This research also helped to determine if there was a co-relationship between competence of the SAP partners and the problems. The three major Malaysian companies selected are; Syarikat Bekalan Air Selangor Berhad (Syabas), University Malaya (UM) and Edaran Otomotif Berhad (EON Berhad). These three major government linked companies (GLC) are very important in Malaysia. This study will there for focus on Syarikat Bekalan Air Selangor (SYABAS) who have currently implemented SAP ERP but users still struggle to operate it. The study examines The University of Malaya issues and problems since they implemented SAP ERP and then EON Berhad who implemented SAP quite some time ago but the performance results remain inconsistent. In this research data was collected by the use of an online survey tool called Survey Monkey; questions were prepared online and distributed to target respondents via email.

**ANALYSIS**

**Table 1: Correlation between all variables**

Correlations						
		SP	TS	PF	ID	DT
SI S	Pearson Correlation	-.227**	.630**	.352**	.619**	.596**
	Sig. (2-tailed)	.027	.000	.000	.000	.000
	N	71	71	71	71	71
**. Correlation is significant at the 0.01 level (2-tailed).						
*. Correlation is significant at the 0.05 level (2-tailed).						

The results show that there is a significant value between these two dimensions as the p value is smaller than the meaningful value (p = 0.027 which is < 0.05). The results revealed that there are 2.7 percent of respondents who did not agree that SAP implementation success impacts on project preparation. This is simply because the low correlation as a correlation coefficient between these two dimensions is at (r=-0.227). The results revealed that there is a positive relationship between the two dimensions as the p value is smaller than the significant value, (p=0.000 which is <0.05) and correlation coefficient stand at (r=0.630) and is considered a moderate high correlation. The results reveal that there is a positive correlation between these two dimensions with the results for the p value smaller than the significant value, (p = 0.000 which is < 0.05). However, there is a low correlation between these two dimension as the correlation coefficient is (f=0.352). The results state that there is a significant value between these two dimensions as the p value is smaller than the significant value, (p=0.000 which < 0.05). In addition, there is a moderate high correlation between these two dimensions, as the coefficient of correlation is (0.619). There's a strong link between effective delivery and implementation of SAP with a meaningful value of 0.000 that is < 0.05. There is a moderate correlation between these two dimensions, since the coefficient of correlation is (0.596). As a conclusion of the results of the hypothesis testing, project preparation, selection of technologies, project formulation and implementation development all have a significant influence on the success of SAP implementation.

The model summary shows that the R correlation of five independent variables, Project Preparation (PP), Technology Selection (TS) and Project Formulation (PF) with the dependent variable SAP Implementation Success, is equal to 0.729. After inter-correlation, R square is generated - actually the square of R (0.729)<sup>2</sup>. That means 72.9 percent of the five independent variables have an impact on the variable dependent. In other words, the independent variables explained 72.9 per cent of the variance in the SAP Implementation Success. Based on the rule of thumb this regression analysis did not explain the remaining 27.1 percent.

**Table 2: Regression analysis on Model Summary**

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F	df1	df2	Sig.
1	.729	.532	.506	.50874	.532	2.02	5	6	.000

	9					2			
	a					5			
a. Predictors: (Constant), DT, SP, PF, ID, TS									

The table of ANOVA reveals that the value of F is 20.225 and is at the relevant point of 0.000. This finding shows that the five independent variables substantially affected 72.9 per cent of variance (R-square) in SAP Implementation Performance.

**Table 3: Regression Analysis of ANOVA test**

ANOVA						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	26.173	5	5.235	20.225	.000 <sup>a</sup>
	Residual	23.035	89	.259		
	Total	49.208	94			
a. Predictors: (Constant), DT, SP, PF, ID, TS						
b. Dependent Variable: SIS						

The five independent variables explain 78.2 percent of the variance in SAP Implementation Success. The results from the table show that the Beta of Project Preparation (PP) is 0.47; Technology Selection (TS) is 0.282; Project Formulation (PF) is 0.116. It means that every 1 percent increase of independent variable will be affected by the Beta for each variable. Based on the results, Technology Selection and Deployment have the highest impact on SAP Implementation Success. The results show that Project Preparation has the least impact on SAP Implementation Success. While Deployment has a moderate score and Project Formulation a low score. In addition, Technology Selection and Deployment p value score is less than 0.05 (p=0.032- technology selection, p=0.01 - deployment) and is a significant predictors of SAP Implementation Success. Others, such as Project Preparation (p=0.545), Project Formulation (p=0.161) and Implementation Development (p=0.156) are not predictors of SAP Implementation Success.

**Table 4: Regression Analysis Result of Coefficient Test**

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error			
1	(Constant)	.013	.577		.023	.982
	SP	-.060	.098	-.047	-.607	.545

	TS	.374	.171	.282	2.180	.032
	PF	.158	.112	.116	1.413	.161
a. Dependent Variable: SIS						

The five (5) factors proposed earlier have been tested. Using a sample of 95 respondents, data was obtained from selected respondents within Syarikat Bekalan Air Selangor Berhad (Syabas), tested the five (5) factors proposed earlier. Data from selected respondents within Syarikat Bekalan Air Selangor Berhad (Syabas), University of Malaya (UM) and Edaran Otomotif Berhad (EON Berhad) were obtained using a sample of 95 respondents; all companies are located in Kuala Lumpur. The main goal was to look at the strength of Project Preparation (PP), Technology Selection (TS) and Project Formulation (PF).

**DISCUSSIONS AND CONCLUSIONS**

This study examined the relationship between project preparation, selection of technology, project formulation, implementation development, and deployment to successful implementation of SAP. Successfully, the results of this study provided empirical evidence of the relationship between project preparation, technology selection, project formulation, implementation development, and successful implementation of SAP deployment. The results of this research provide a very useful insight into service improvement opportunities. In the correlations results, among the five (5) dimensions that were stated as factors influencing SAP implementation success, project preparation had a correlation coefficient = -0.227. In terms of project preparation, this refers to the project preparation that stimulates' SAP implementation success by low correlation. The respondents scored technology selection at a correlation coefficient of 0.630, which is considered good and represents a high moderate correlation between both variables. Most respondents believe that the technology selection impact on SAP implementation success is higher when they believe several technology selection options are available; this especially true when the SAP system is associated with the success predictors in determining SAP implementation success. The main contributions of the current research include providing a reliable and valid questionnaire that is suitable for service measurement in SAP implementation. Currently there are only a few papers to be found regarding SAP implementation success in Malaysia, the current research provides updated, important insights and implications for the SAP implementation manager's consideration. In conclusion, the result of this research not only contributes to the existing knowledge regarding SAP implementation but also provides useful suggestions and insights for improving the SAP services in Malaysia. Regarding the methods of analysis, the present work uses only the quantitative form, where questionnaires are used for data collection. Research of this nature may benefit from a more comprehensive process, as it requires subjectivity in views, expectations and feelings towards positive implementation of SAP, and these values were not completely captured by the questionnaire approach. In this research, only five elements of the independent variable were investigated, the researcher feels that there

are still other elements that can be added to the variables in order to improve future research.

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