**Analysis Of SAP Implementation In Human Capital Management Division Using Tove Boe Model In Banking Sector (Case Study: PT. Bank Mandiri, Tbk)**

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 **Abstract.** PT. Bank Mandiri is one of the State-owned Enterprise’s financial services in term of asset, loan, and deposit. In its operational activities, PT. Bank Mandiri has decided to adopt SAP software running for approximately 10 years. There are several modules implemented, which are SAP Financial Accounting (FI) and Controlling (CO), SAP Customer Relationship Management (CRM), and SAP Human Resources (HR). The aim of this research was to determine the impact of SAP software implementation on the employees of Human Capital Management (HCM) Division. The model used to analyze the impact of SAP implementation was Tove Boe Model. The analysis result was based on the research and investigation conducted through interview and questionnaire. The test result processed by using SPSS and SmartPLS program indicated that there were 3 hypotheses accepted and 1 hypothesis rejected. there was no significant relationship between the Perceived Competence (PC) variable and Perceived Usefulness (PU) variable.

1. **Introduction**

The Information and Communication Technologies (ICT) development lately is so rapid that it is able to lead to a good and directed lifestyle in which it has the potential to improve the efficiency and effectiveness of the work done. The advancing industrial world surely gains great support from the ICT development. There are many enterprises having received benefits from the utilization of ICT in the sector of agriculture, mining, banking, manufacture, construction, commerce, and etc. As one of the biggest banks in Indonesia, PT. Bank Mandiri is also affected by ICT development. Currently, Bank Mandiri has applied ERP concept which functions to achieve the enterprise’s visions and missions at ease [10].

 PT. Bank Mandiri, Tbk is a bank formed from the combination of four banks of the Indonesian government, namely Bank Bumi Daya (BBD), Bank Dagang Negara (BDN), Bank Ekspor Impor Indonesia (Bank Exim), and Bank Pembangunan Indonesia (Bapindo). Those four national banks have formed the history of Indonesian banking world development, and each of them has played an important role in the economic development of Indonesia. PT. Bank Mandiri was founded through the restructuration program on October 2nd, 1998.

 Based on the result of the interview with one of the employees of Bank Mandiri, it was revealed that PT. Bank Mandiri has long applied SAP for more than 10 years. There are several SAP modules applied by PT. Bank Mandiri, namely SAP Human Resource (HR), SAP Financial and Controlling (FICO), and SAP Customer Relationship Management (CRM). The main thing considered by PT. Bank Mandiri in implementing SAP was the guarantee provided, namely protection and liability of the enterprise’s data stored in the SAP database. As an enterprise long applying ERP-based system, it is possible that Bank Mandiri has received positive benefits and good experiences of SAP. In this research, therefore the study aim to determine the impact of SAP implementation on the performance of the employees of Human Capital Management (HCM) division in Bank Mandiri by using Tove Boe Model. So, this research could provide a description for other organizations in determining the factors which are able to support the employees’ performance in utilizing SAP.

 The research goals variable in this research was Perceived Usefulness or the employees’ performance level in utilizing SAP, particularly in the HCM division in PT. Bank Mandiri, Tbk. The research was conducted on the HCM division because it functioned to develop the approach strategy to manage the Human Resources (HR) so that the enterprise’s visions and missions can be achieved. It means that HR is the most important and strategic factor in an enterprise. Thus, the result of this research is expected to be able to provide great benefits to enterprises and to determine the employees’ performance level as well as the factors which are able to improve the performance of the employees in HCM division in PT. Bank Mandiri in utilizing SAP. Tove Boe Model was used because it could elaborate on the factors which could support the employees’ performance in utilizing an information system, in which this model was closely related to the aim of this research. This research is expected to be able to provide recommendation in improving the performance or support in the form of idea or concept that could be developed and required in PT. Bank Mandiri, Tbk.

1. **Basic Theory**

*2.1 Enterprise Resource Planning (ERP)*

Enterprise Resource Planning is a cross-functional integrated software which can reengineer the business processes such as manufacturing process, finance, human resources, production, and other business processes of an organization or company to improve its level of efficiency, agility, and profitability. Enterprise Resource Planning is a system which helps to manage business processes in an integrated entity such as marketing, production, purchasing, and accounting. In addition, it stores all transactions in a database used by the company and provides the management of reporting tools [8]. Enterprise Resource Planning is a solution of integrated software used to execute company resources in which ERP integrates all departments and functions of the company into one computer system which is able to serve the needs of each department [2].

From several definitions of ERP according to experts above, it can be concluded that Enterprise Resource Planning is an integrated and automated information system that is used to manage all company resources in a computer system in which information is presented in real-time and fit to the company’s needs. Therefore, the resource needed can be maximized and it can make the company decide the right decision more easily.

*2.2 Research Model of Tove Boe*

In this study, the researchers used Tove Boe Model. Tove Boe Model is a model which analyzes and learns in case of whatever factors that can improve someone’s work performance. This model is a combination of several acceptance models. The models used by the researchers were Perceived Competence variable from Self Determination Theory (SDT), Goal of Harmony from Principal-Agent Theory (PAT), Confirmation from Expectation Confirmation Theory (ECT), and Perceived Ease of Use and Perceived Usefulness variable originating from the Technology Acceptance Model (TAM) [4].

Self Determination Theory (SDT) is a theory of human motivation and personality which involves the tendency of a person’s innate growth and innate psychological needs. SDT focuses on how far individuals are motivated to behave in which the choice to behave is determined by themselves without any interference from others. SDT was formally introduced and accepted as a healthy empirical theory in the middle of 1980s. The research applying SDT to various fields of social psychology has increased rapidly since the 2000s [6]. Expectation Confirmation Theory (ECT) is a cognitive theory which attempts to explain the satisfaction of post-purchase or post-adoption of an information system. The level of satisfaction toward the information system is able to influence the interest to implement the information system completely [3]. Principal-Agent Theory (PAT) assumes that individuals act in their own interests. Consequently, if someone is able to achieve his main motivation, he will produce comfort in his work in order to produce a goal of harmony [7]. Technology Acceptance Model (TAM) is an information system theory which explains how the users can receive or use an information system. In fact, the main factors that influence individuals in receiving an information system are Perceived Ease of Use and Perceived Usefulness [5].

Then, each variable can be explained as follows [4]:

1. Perceived Competence is how far individual achievement, knowledge, and skill.
2. The Goal of Harmony is how far the comfort level in doing a job.
3. Perceived Ease of Use is how far the people’s perception that by using an information system, their work will be able to be facilitated.
4. Confirmation is how far the information system performance which is recently used compared to the information system which is previously used.
5. Perceived Usefulness is how far the people’s perception that by using an information system, their work performance will be able to be improved.



**Figure 1.** The structure of Tove Boe Model.

|  |  |  |
| --- | --- | --- |
| H1 | : | Competency level (Perceived Competence) of the employee in using SAP system has positive impacts to the work performance (Perceived Usefulness)  |
| H2 | : | Comfort level (Goal of Harmony) of the employee in using the SAP system has positive impacts to the work performance (Perceived Usefulness) |
| H3  | : | Convenience level (Perceived Ease of Use) of the employee in using SAP system has positive impacts to the work performance (Perceived Usefulness) |
| H4 | : | Performance level (confirmation) of SAP system has positive impacts to the work performance (Perceived Usefulness). |

Based on the picture above, the researcher developed the research hypothesis as follows:

1. **Data Analysis**

In this stage, the researcher conducted Determination Coefficient Test, Partial Test (T-Test), and Path Coefficients Test. Determination coefficient (adjusted R2) was used to identify the influence of independent variables simultaneously to the dependent variables. The determinant coefficient ranged from zero to one (0 ≤ R2 ≤ 1). It means that if R2 = 0, there is no correlation between the independent variables and the dependent variables. If the adjusted R2 is greater (close to 1), the influence of independent variables to dependent variables is stronger, and if the R2 adjusted is lesser (close to zero), the influence of independent variables to dependent variables is also lesser [11]. Partial test was used to prove the influence between each independent variables and dependent variables. To conduct the partial test, the researcher compared tCount and tTable in two-tailed hypothesis test with the significance level of 0.05 [11]. According to the experts [9], Path Coefficient is used to analyze the relationship pattern among variables with its goal to determine in what extent the independent variables influence the dependent variables. To identify the value of Path Coefficient, the researcher used Bootstrapping calculation by using SmartPLS program.

The following is the structure of Tove Boe model which is the output of SmartPLS program:



**Figure 2.** The Result of Path Coefficient Test.

Based on the research conducted, some test results showed in the table were obtained which were used to determine whether or not the hypothesis was accepted.

**Table 1.** The Result of SEM Test.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Path | β | t Statistic | R2 | Hypothesis/Supported |
| PC 🡪 PU | -0,053 | 0,420 | 0,767 | H1 / No |
| GH 🡪 PU | 0,531 | 3,685 | H2 / Yes |
| PEU 🡪 PU | 0,256 | 0,126 | H3 / Yes |
| Con🡪 PU | 0.273 | 2,167 | H3 / Yes |

Based on the test result in the table above, the hypothesis test results can be determined as follows:

1. Hypothesis 1: Level of Competence (Perceived Competence) of the Employee in using SAP system had positive influences on Job Performance (Perceived Usefulness).

Perceived Competence had the path coefficient value (β) of -0.053 and t Statistic of 0.420 in which the t Statistic value was lesser than the t Table value (2.024). Therefore, hypothesis 1 was rejected. This rejection indicated that the level of competence (Perceived Competence) of the Employee had no positive influence on Perceived Usefulness in using SAP. It indicated that the level of competence (Perceived Competence) of an employee in using SAP (Perceived Usefulness) did not influence his/her job performance.

1. Hypothesis 2: Comfort Level (Goal of Harmony) of the employee in using SAP had positive influence on Job Performance (Perceived Usefulness).

The Goal of Harmony had the path coefficient value (β) of 0.531 and has t Statistic value of 3.685, in which the t Statistic value was greater than the t Table value (2.024). As a result, hypothesis 2 was accepted. This acceptance indicated that the comfort level (Goal of Harmony) of the Employee had positive influence and significance toward Perceived Usefulness in using SAP. It means the comfort level (Goal of Harmony) of the employee in using SAP (Perceived Usefulness) could improve their job performance.

1. Hypothesis 3: Level of Ease (Perceived Ease of Use) of the Employee in using SAP system had positive influence on Job Performance (Perceived Usefulness).

Perceived Ease of Use had the path coefficient value (β) of 0.256 and has the t Statistic value of 0.126, in which t Statistic value was lesser than t Table value (2.024). Therefore, hypothesis 3 was accepted. This acceptance indicated that Perceived Ease of Use of the Employee had positive influence toward Perceived Usefulness in using SAP. It indicated that level of ease (Perceived Ease of Use) of the employee in using SAP (Perceived Usefulness) could improve their job performance.

1. Hypothesis 4: The performance level of SAP system (Confirmation) had a positive impact to the employees’ performance (Perceived Usefulness).

The confirmation had a path coefficient (β) value of 0.237 and the t Statistic value of 2.167, in which the t Statistic value was greater than t Table value (2.024). Therefore, it could be stated that hypothesis 3 was accepted. The acceptance of hypothesis 3 indicated that Confirmation is positively and significantly influential to the Perceived Usefulness of using SAP. It means the Performance level (confirmation) of a good SAP system can improve the employees’ performance (Perceived Usefulness).

1. **Conclusion**

Based on the statement above, the researcher carried out a result related to the impact of SAP implementation in Human Capital Management (HCM) Division in PT. Bank Mandiri, Tbk by using Model Tove Boe which was SAP. It was proven that it can improve the Perceived Usefulness or employees’ performance. The researcher found that there were variables used as support on perceived Usefulness and employees’ performance. The researcher found that there were several variables that could be used to improve employees’ performance of PT. Bank Mandiri, such as one’s level of convenience on using SAP (variable Goal of Harmony), the more comfortable an employee gets on using SAP, the higher the employee’s performance becomes. The next one was the level of simplicity on using SAP (Variable Perceived Ease of Use), the easier an employee gets on using SAP, the higher the employee’s performance becomes.

The next one is the performance of SAP (Variable Confirmation), the better the SAP performance is, the better the employees’ performance becomes. Another result found by the researcher was that the level of knowledge and competence of the employees of PT. Bank Mandiri does not always affect the employees’ performance. It could be seen from the test result that there was no significant relationship between the Perceived Competence (PC) variable and Perceived Usefulness (PU) variable.

1. **References**

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