# Users Evaluation on the Effectiveness of Enterprise System in Jabatan Akauntan Negara Malaysia (JANM)

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## ABSTRACT

Several organizations had reported success and significant gains resulting from Enterprise System (ES) implementation. In the literature, the term ES is also refers to Enterprise Resource Planning (ERP). It is an integrated system development to meet the needs of internal departments in an organization (Strong & Volkoff, 2010). In this study, Jabatan Akauntan Negara has been chosen as the research setting to evaluate the effectiveness of ERP System from the users' perspectives in supporting learning, productivity and decision making. In this context of study, the ERP System adopted in Jabatan Akauntan Negara Malaysia (JANM) is the Government Financial and Management Accounting System (GFMAS). The Enterprise System Success (ESS) Model developed by Sedera et al. (2004) was used in this study to measure the effectiveness of ERP System in JANM in supporting learning, productivity and decision making. The results showed that 78.3% of the respondents perceived that the ERP System in JANM is effective and a reliable system for learning, improving productivity and supporting decision making. The findings are important to get a better understanding about the ERP System and how it may bring benefits to the organization.

**Keywords:** Enterprise System, Enterprise Resource Planning, implementation, effectiveness, individual impact.

## INTRODUCTION

In the information system literature, the terms Enterprise System (ES) and Enterprise Resource Planning (ERP) are synonyms and used interchangeably. It refers to an integrated system development to meet the need of internal departments in an organization (Strong & Volkoff, 2010). The ES or ERP,

is deployed by many organizations to enhance their business process.

Despite the fact that several organizations reported success and significant gains resulting from enterprise system implementation, however many others encounter substantial losses (Gable et al., 2006). Therefore, it is important for organisations to conduct evaluation after ES is implemented in order to achieve organisational goals.

There are many factors that can be evaluated in reviewing the impact of ES implementation, but evaluating the overall impact of ES is preferred. The overall impact refers to the successfulness or effectiveness of the ES in enhancing organizational goals (Markus & Tanis, 2000). In the Information System literature, Grover et al. (2003) defined the term "success" synonymously with effectiveness, and agreed with Thong et al. (1994) when they specified the effectiveness of an ES as the extent to which an ES actually contributes to achieving organizational goals.

Considering the extensive need of the ES evaluation, the research area of ES effectiveness became most essential for IT practitioners. Gable et al. (2003) explored on the diffusion of ERP as one of the ES in the region and discussed on their adoption success in firms. They discovered the issues of ERP success by sampling the views of private firms in two countries in the region. Besides that, Shang and Seddon (2002) reveal on the benefits of ES from the business perspectives. Another good research was focusing on the impact of Knowledge Integration (KI) on ES (Zakaria, 2011).

The study was done to understand the influence of KI effectiveness among ES end-users and operational success of the ES. There are also research done focusing on the assessment of ERP from users' perspectives; such as a case study to measure the success in ERP implementation from the technical and user perspectives (Al-Mudimigh et al, 2011). The author has pertinent reason to choose or select those perspectives; because the ERP System implementation can only be successful if both technical and end-users are satisfied, as they are playing major roles in the business

operations.

Further, it was found in the Information System literature that there are many evaluation models used to evaluate the effectiveness of ES or ERP. The first model developed by DeLone et al. (1992) in their studies on integrated view of IS Success concept. The model has been tested by many researchers and it was found as having some limitations because the model focuses on specific ERP characteristics (Gable; Sedera & Chan, 2003). Due to these limitations, another model was developed by Gable et al. (2006) known as ERP System Success (ESS) model. The ESS Model has been built based on literature review and exploratory survey to meet the ERP characteristics (Zach, 2010). The ESS model has been further validated by Sedera et al. (2004) for construct validity.

In this study, the ESS Model (Sedera et al. (2004) is used to evaluate the effectiveness of ERP System in an organization. Jabatan Akauntan Negara Malaysia (JANM) has been chosen as the research setting to evaluate the effectiveness of ERP System. The ERP System in JANM is the Government Financial and Management Accounting System (GFMAS). The ESS model has been employed in a number of studies confirming its relevance and validity (Gable et al., 2006). The ESS model offers an exhaustive measurement technique of ES system success (Sedera et al, 2004) and is widely used to find opinions different levels of users and how they prioritize their satisfaction in using ES in their organization.

## LITERATURE REVIEW

### Individual Impact & Effectiveness

In the international literature on IS, individual impact encompasses impacts on individual in organization who uses the information system (Sedera & Darshana 2006). In this study, individual impact is the consequences to an individual when using ERP System in organization. Individual impact includes better understanding of the system, improving users' job productivity, and changing the decision maker's perception of the usefulness of the system (DeLone & McLean, 1992).

On the other hand, effectiveness in this study is about pursuing the overall success of the ERP System implementation from users' perception, which in turn, contributes to the daily productivities. Effectiveness refers to the success of utilization of such systems to enhance organizational goals. In the information system literature, Grover et al., (1996) and Summer (2000) defined the term "success" as having a similar meaning with "effectiveness". In addition, Thong et al. (1994) further added that effectiveness is also about the extent to which an information system actually contributes to achieving organizational goals.

**Enterprise System (ES) & Enterprise Resource Planning (ERP)**

Technology plays a major role in today's business environment. One of the latest technologies demanded by many organizations is Enterprise System (ES). ES is defined as an integration of software and application packages, using computerized data to support business process and to produce business reports and data (Markus, Petrie, & Axline, 2001). ES is known as a complex comprehensive software, designed to integrate business processes and functions. It presented a holistic view of a business by permitting the sharing of common data and practices in a real-time environment (Davenport, 2000; Markus & Tanis, 2000). Davenport (1998) stated that businesses globally are adopting ES for a variety of reasons, including legacy systems replacement, cost reductions and faster information transactions, among others. Seems like ES implementation continues to grow everywhere despite the difficulties and risks encountered by organizations when they accept and implement these systems (Davis, 2005).

A good ES should have a central database that will enable data retrieval for various departments or branches from all over the world. Figure 1 shows the Anatomy of ES (Davenport, 1998). When new data is entered in one place, all related information should be updated automatically. Moreover, ES facilitate integrations between departments and allow information sharing. Internal departments will be able to use various data simultaneously without any interruption and delay as well.

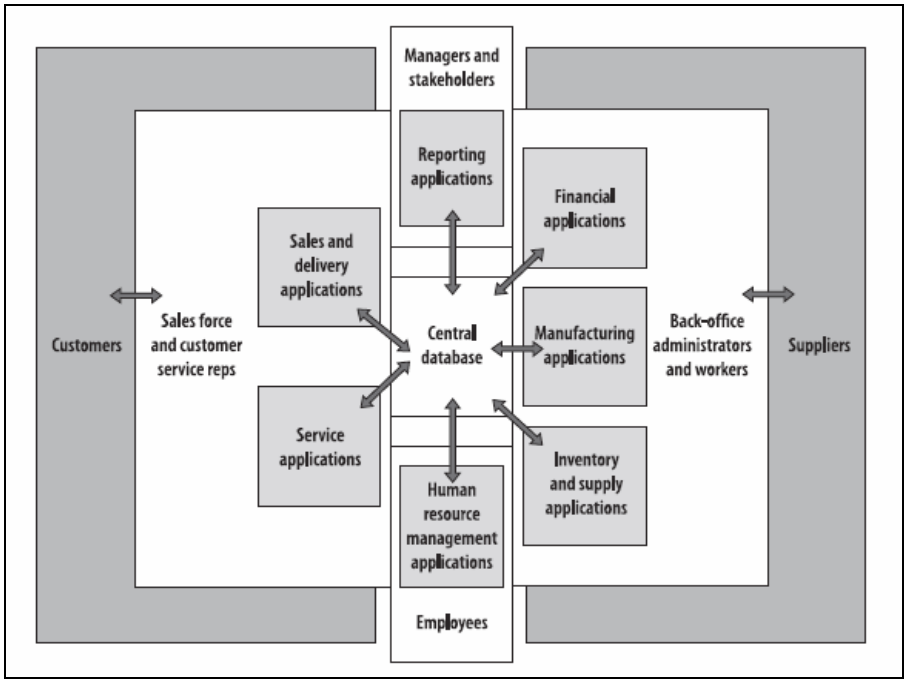


***Figure 1 Anatomy of Enterprise System***

ES usually used by enterprises with large scale systems, that consisting of integrated packages such as, ERP, CRM and SCM. ERP is always being the top ranked packages on demand in today's markets. In an effort to develop global operations, many corporations are implementing global information systems such as ERP System. This integrated system, provides an increased level of support to the core business processes (Hawking, 2007). Furthermore, it integrates the entire organization which consists of internal and external management information (Albadri & Abdallah, 2009). Seddon (1997) explained that ERP System serves many industries to automate their operations in supply chain management, inventory control, manufacturing scheduling and production, sales support, customer relationship management, financial and cost accounting, human resources and other data oriented management process. However, maintaining performance of the ERP System is a real challenge and perceived to be

success in every organization (Albadri et al., 2009).

**Significant of ERP System Evaluation**

There are several studies emphasized on the needs of ERP evaluation although the perspective of evaluation varies. As highlighted by Ehie and Madsen (2005), the evaluation of ERP system is important to identify critical issues particularly after the implementation. In addition, this evaluation may provide valuable clues to help project managers to improve the chances of success (Wong & Tien, 2007). In the Information System literature, many models had been proposed to explain ERP System success. The ERP System success is often interchangeable with the terms such as effectiveness or performance. Because there was no specific model that can be used to measure ERP System effectiveness, many researchers have argued for the use of comprehensive measures (Wixom, 2006). In a study by Wixom (2006), the ERP System success has been investigated in two main research streams: user acceptance and user satisfaction. However, according to Petter et al. (2008), acceptance is not equivalent to success for the reason that once an ERP system is implemented in an organization, the employees are often required to use the system, regardless whether they accepted the systems or not. Because of that, user acceptance does not provide a relevant information about the success of the ERP System.

On the other hand, the first integrated study on ERP System success was done by DeLone et al. (1992). Based on

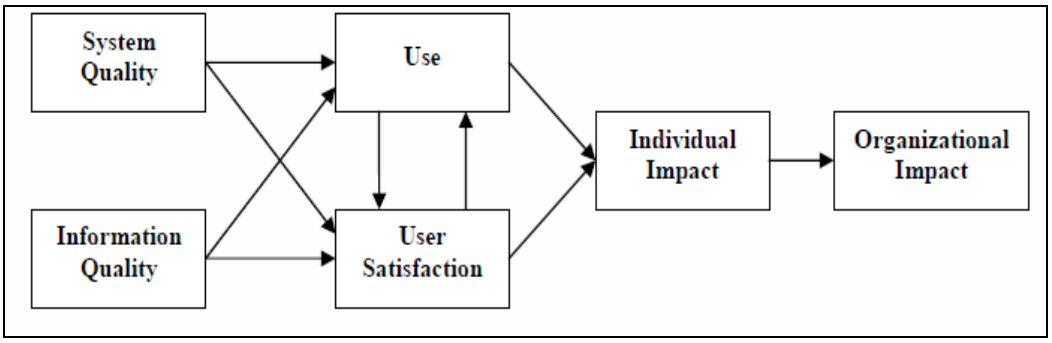


***Figure 2 D&M Model (DeLone et al., 1992)***

the literature, the authors developed a model called D&M Model that integrates six categories of ERP System success: systems quality, information quality, use, user satisfaction, individual impact, and organizational impact (See Figure 2).

Other researchers explained that the models developed for measuring ERP System success as found in the literature were developed in a traditional context and were not entirely appropriate for measuring ERP System success (Gable et. al 2003). Gable et al. (2003) than develop a specific measurement model called ERP System Success measurement model. The model has been built based on literature review and exploratory survey. It has four dimensions: information quality, system quality, individual impact, and organizational impact. The researchers emphasized that the model does not propose any causality effects between the dimensions, but it is purely a measurement model for assessing the ERP System success.

The model by Gable et al. (2003) has been further validated by Sedera et al. (2004). Some items have been added to provide stronger construct validity. Specifically, the number of items in each dimension are as follows: information quality (6), system quality (9), individual impact (4), and organizational impact (8).

For the purpose of this study, the ESS Model by Sedera et al. (2004) was used to measure the effectiveness of ERP System. The model has been chosen to measure the levels of acceptance and importance of the ERP System in the organization.

**Research Design**

The research design is showed in Figure 3. It started with a preliminary study of JANM as an organization, conducting literature review, collecting and analysing data and finally report writing.

In this study, a case study method is chosen because the investigation will focus on the current state problem and to gain insights of JANM employees as the ERP System users. According to Gable (1994), a case study method is suitable for a study to investigate the problem in a natural setting and to understand the process in general. Therefore, a case study method is suitable to evaluate the effectiveness of

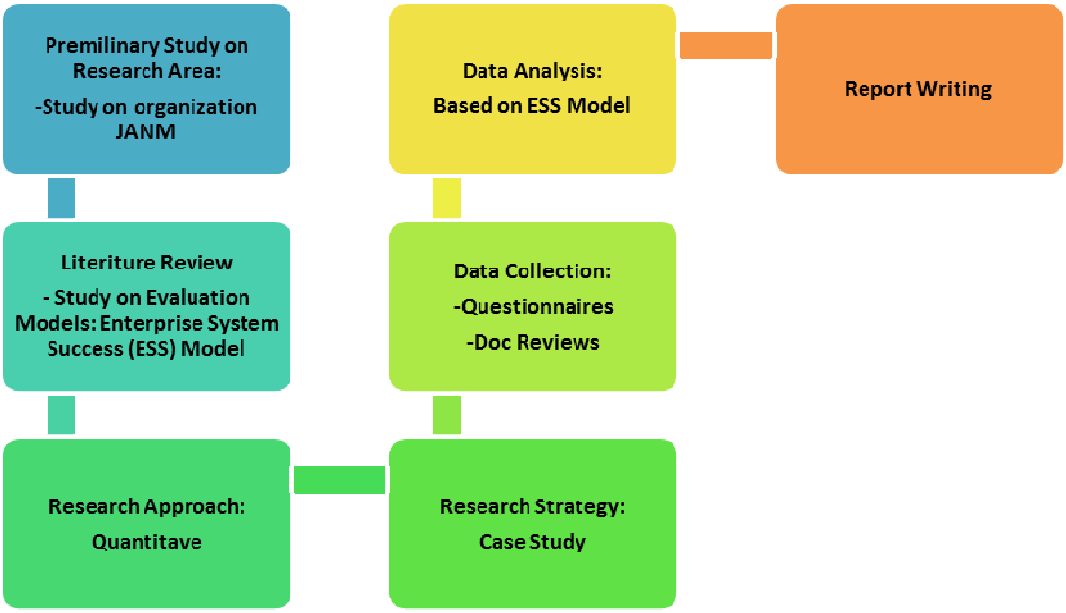


***Figure 3: Research Design***

ERP System in JANM.

## Data Collection

First, the data was collected through document review. Selected documents related with ERP System implementation were reviewed prior to the year 2005. Specifically, among the documents reviewed were JANM Reengineering Documents (2003), JANM Inception Report Volume 1-BPR Stream and Volume 2-Technical Stream (2003). The documents were supplied by JANM. In the process of reviewing these documents, some limitations were discovered such as limited access on several classified information and the delay in getting the approval from the department concern. These limitations slightly delayed the data collection phase; however the historical information obtained were useful for this study.

In addition, data was also collected through survey. Survey questionnaires were administered to JANM ERP System users as respondents. The purpose of this survey was to gather the perceptions regarding ERP System effectiveness in JANM. The questionnaire was developed based on literature review. The questionnaires

were divided into four dimensions and every dimension consists of questions to derive the outcome to develop the overall users' perceptions or impact in using ERP System.

The questionnaire was designed using a 5-point, Likert-type scale (See Appendix: Survey Form). Brace (2004), recommended to use a 5-point Likert scale for most survey settings because it typically gives sufficient perception and is easily understood by survey participants. For each question, the respondents were asked to rate the extent they agree or disagree to each items.

Overall, 149 questionnaires were distributed and 106 respondents had responded, representing approximately 73% returned rate. The good response rate obtained because the researcher personally administered the questionnaire and collected them upon completion. The respondents were from different positions, including top management, application users, IT responsible persons and end-users.

The data were then analysed using Statistical Program for Social Science (SPSS) software, version 15. The results were presented in tabular and graphical forms to enhance understanding of the results.

## The ESS Model

Enterprise System Success (ESS) Model was used in this study to evaluate the ERP System (See Figure 4). As mentioned earlier, the model has been found valid in a number of studies

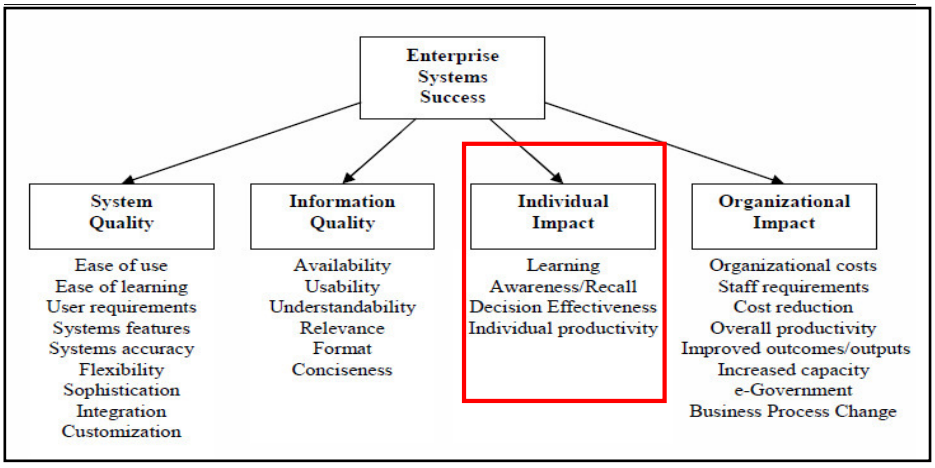


***Figure 4 T e ESS Model***

(Chung, 2007; Gable et al., 2003; Zach, 2010). In this research, only the third dimension "individual Impact" is used throughout this evaluation (See Figure 4). As the research area is focusing on the users' perspectives, therefore, the individual impact dimension is much more relevant. Individual impact measures the extent to which the ERP system has influenced the capabilities and effectiveness of workers (Zach, 2010). There were 4 items involved to measure Learning, Awareness/Recall, Decision Effectiveness and Individual Productivity. According to Igbaria and Tan (1997), 'Learning' item is to measure the extent users familiar with the ERP system; 'Awareness/Recall' as the second item in the model to measure the extent users are aware about the system effectiveness in securing their data; the third item related with 'Decision Effectiveness' to examine the extent ERP System supports in decision making. Finally the last item is related with 'Individual Productivity' to measure the extent users feel the ERP System impacts their work productivity.

## ANALYSIS AND FINDINGS

The data obtained from the survey were analyzed using Statistical Program for Social Science (SPSS) software. In order to get basic identification of the JANM employees, the demographic category questions were asked to retrieve details on gender, age, designation levels and years of working experience in JANM. Descriptive statistics were used to profile the sample. Statistical analyses of participants' responses provide information on the research questions and led to an identification of the basic details of the employees which are essential for the research topic. The findings are presented below.

### Gender

In terms of Gender, 28.30% of the respondents were male and 71.70% were female. The results are presented in Table 1 below.

***Table 1: Gender***

| Description | | Frequency | Percent |
|---|---|---|---|
| Gender | Male | 30 | 28.30% |
| | Female | 76 | 71.70% |

### Age and Years of Work Experience

In terms of age and years of work experience, the results showed that 43.40% of the respondents were in the range of 31 to 40 years whereas more

than 80% of the respondents had less than 10 years of work experience. The results are presented in Table 2 below.

***Table 2: Age and Years of Work Experience***

| Description | | Frequency | Percent |
|---|---|---|---|
| Age | 20 - 30 years | 35 | 33.0% |
| | 31 - 40 years | 46 | 43.40% |
| | 41 - 50 years | 17 | 16.00% |
| | 51 - 60 years | 8 | 7.50% |
| Years Working in JANM | Less than 5 years | 43 | 40.60% |
| | 5 - 10 years | 45 | 42.50% |
| | More than 10 years | 18 | 17.00% |

## Designation Level

The results showed that 15.10% of the respondents were at managerial positions, 34% administrators and 50.90% were the end-users. The levels were identified based on positions and job scope of each individual (see Table 3).

***Table 3 Designation Level***

| Description | | Frequency | Percent |
|---|---|---|---|
| Designation | Management | 16 | 15.10% |
| | Administrator | 36 | 34.00% |
| | End-users | 54 | 50.90% |

## Personal Opinion

The second part of the questionnaire asked for the overall opinion from the users regarding the ERP System. The results showed that 87% of the respondents 'agree or strongly agree' that the ERP System is suitable for JANM (See Figure 5). It is an indication that users are satisfied with the overall quality of the ERP system. In addition, the results also showed that the ERP System is capable to provide the required information .

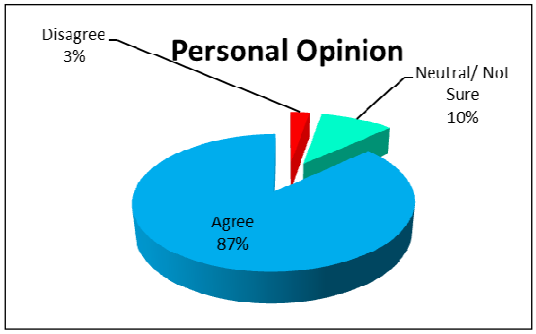


***Figure 5 Personal Opinion***

However, when the researcher further analysed by looking at different levels of users, the percentage for 'disagree and neutral opinion' were quite a concern (see Figure 6). This perhaps due to some users found the ERP system is not well-suited to their daily work.

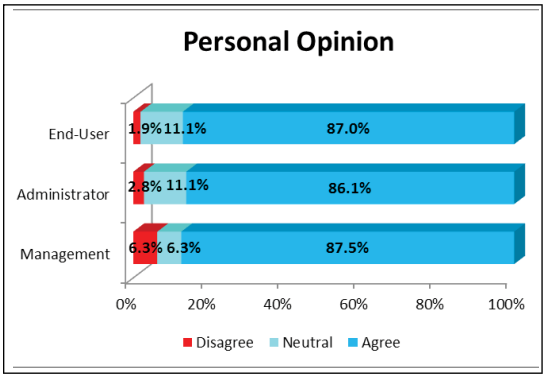


***Figure 6 Personal Opinion from Users' Perspectives***

## Individual Impact on Learning

As mentioned earlier, the individual impact on learning measures the extent users are familiar with the ERP System. The results revealed that learning using the ERP system is not a problem. 76% of the respondents agreed that ERP system is certainly easy to be learned and basically user friendly (See Figure 7). Users were provided with basic training and were given a user manual to assist them in using the ERP System.

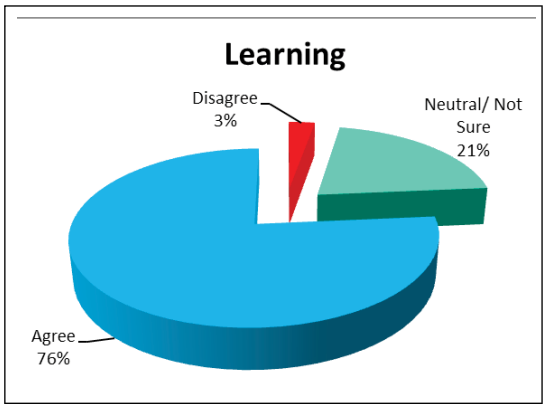


***Figure 7 Individual Impact on Learning***

Further analysis showed that, adapting learning was much easier by the management when 87.5% of the respondents from this group had agreed (see Figure 8). This is probably due to management are the direct users of ERP System for planning and decision making, thus learning is essential for them and they have to learn fast.

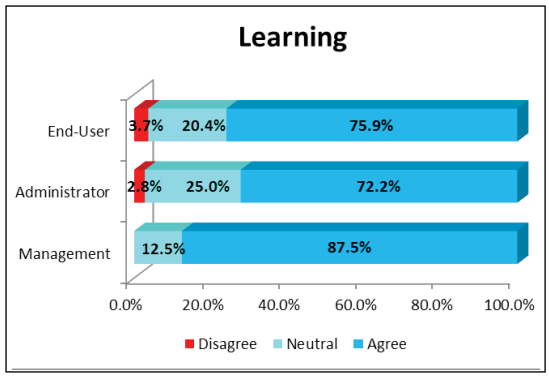


***Figure 8 Learning from Users' Perspectives***

## Individual Impact on Awareness

In this study, individual impact on awareness is to measure the extent respondents are aware of the effectiveness of the system in securing their data. The reliability of the system is important to measure the overall effectiveness of ERP System. In Figure 9, 81% of the respondents strongly agreed that they were satisfied with the security features. They were very sure that the ERP System is safe and they

were not worried on any data security issues. The high percentage shows that the ERP System is reliable in data protection.

On the other hand, only 1% of the respondents had strongly disagreed on security awareness. To explore further on the disagreement, Figure 10 determined that respondents who 'disagree' were belong to administrator's level. Probably this disagreement was based on their own experiences conducting data retrieval via the ERP System. Even though this percentage is minimal, yet this issue should be a concern to the organization to investigate further whether the data security.

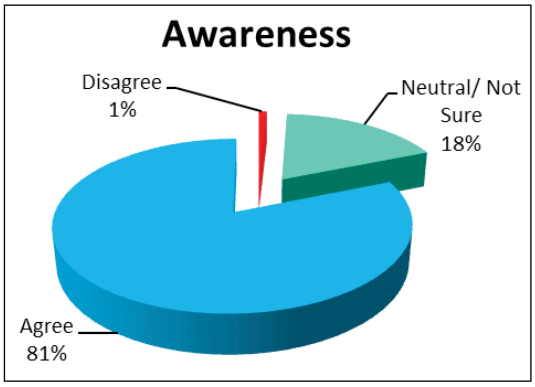


*Figure 9 Individual Impact on Awareness*

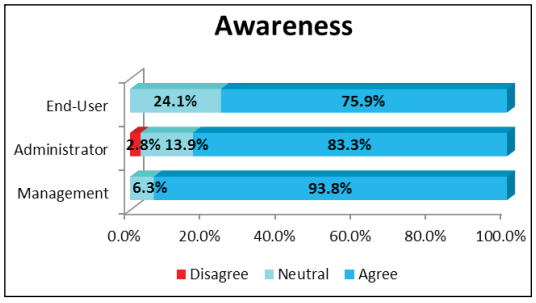


*Figure 10 Awareness from Users' Perspectives*

## Individual Impact on Decision Effectiveness

Decision effectiveness is an important factor to be examined among the ERP System users. In this study, decision effectiveness will measure the extent ERP System is used as a tool in decision making. Based on Figure 11, 79% of the respondents had 'agree and strongly agree' on the ability of the ERP System to assist in decision making. It is an indication that the ERP System is able to provide correct and error free information for decision making.

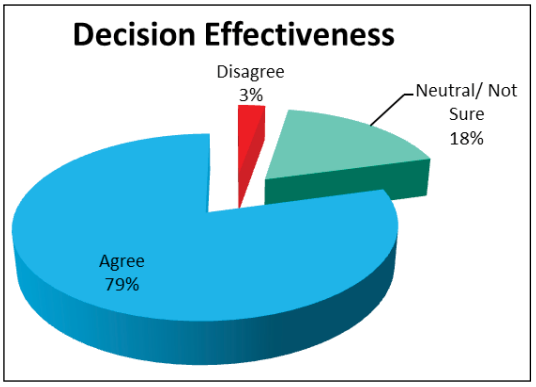


*Figure 11 Individual Impact on Decision Effectiveness*

Further analysis showed that 3% of the respondents 'disagree' and while another 18% 'neutral'. One plausible reason for this result is that, the users and administrators are not directly involved in decision making process.

## Individual Impact on Productivity

In this study, individual productivity refers to the extent an individual employee applies his or her talents on the job. The results showed that, 78% of the respondents 'strongly agree' and 'agree' that the ERP System did increase their productivity (see Figure 12). However, 21% of the respondents were not really sure on this matter. This could be that the respondents might be new to JANM and were still not familiar in using the ERP System. This scenario is supported by the demographic results on the Years of Work Experience. A high percentage of respondents with less than 5 years of work experience might be a plausible reason.

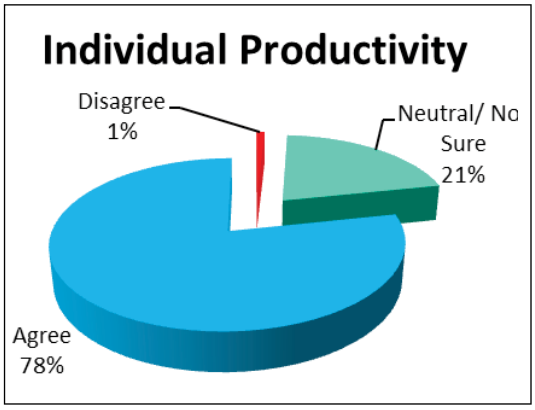


***Figure 12 Individual Impact on Productivity***

Further analysis also showed that 2.8% of the respondents that belong to administrators indicated that productivity is not affected by the ERP System alone (see Figure 13). For example, a number of administrators using ERP System as part of their job scope but at the same time, they need to fulfill other tasks using other tools such as 'Netbackup Software' for backup and restore activities.

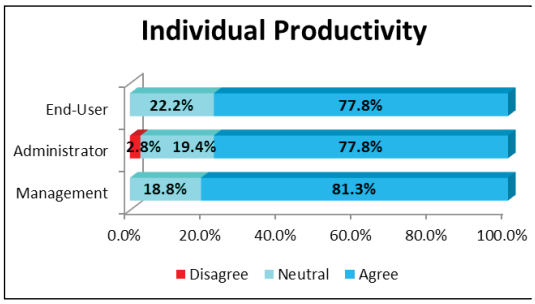


***Figure 13 Individual Productivity from Users' Perspectives***

## CONCLUSION

The effectiveness of ERP System measured in this study focused on the users who played an important role in the success of ERP System. Majority of users agreed that the ERP System (GFMAS) is effective in supporting their daily tasks. The ERP System performed well and produced positive impact to almost all users in JANM. Further, the ERP system is found valid, can be reliable and secured. Thus, this study proves that the ERP System is actually effective in supporting learning, improve productivity and decision making.

Continuous learning via training is recommended for the betterment in the ERP System implementation. Continuous learning via training is important to overcome any issues in using the ERP System. In order to facilitate learning, it is suggested that learning class is to be conducted in a small number of participants. It is critical to ensure the end-users have the ability to learn the necessary knowledge and skills, apply them on the job, which in turn, will improve their productivity and job performance.

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## APPENDIX A: SURVEY FORM

**Master of Science (MSc.) Information Technology**

**Research Title:**

**"Users Evaluation on the Effectiveness of Enterprise System in Jabatan Akauntan Negara Malaysia (JANM), Putrajaya"**

This survey is conducted for the purpose of accomplishment on Masters Research. The objective of this research is to retrieve information on the effectiveness of GFMAS system usage in Jabatan Akauntan Negara Malaysia from the users' perspectives. The responses will assist Jabatan Akauntan Negara Malaysia in focusing raised issues among users' and the management can overcome and optimized the usage of ERP in particular area.

Therefore, your participation in this research would greatly appreciate. There is essentially no risk when participating in the survey; your responses will remain confidential and will not be tracked or identified when reporting data.

Thank you in advance for your participation.

**A Submission for Information Technology Project (SYS 798)**

**General Particulars:**

**Gender: ☐Male ☐Female** **Department/Unit:**

**Years working in JANM:** **Module of GFMAS:**

**Designation/Position:** _____ ☐Management ☐Administrator ☐End-User

**Age: ☐20-30 ☐31-40 ☐41-50 ☐51-60**

**Survey Questions:**

**Please tick the best answer based on your experience using GFMAS system at Jabatan Akauntan Negara Malaysia, Putrajaya. (If you are not the direct user of GFMAS, you may also answer these questions based on your personal view/opinion).**

**1=Strongly Disagree 2= Disagree 3=Neither/Not Sure 4= Agree 5=Strongly Agree**

| No. | Questions | Tick One Best Answer | | | | |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| 1. | I think the overall quality of our GFMAS system is very good. | | | | | |
| 2. | The scope of our GFMAS system is well matched with our company's needs. | | | | | |
| 3. | Overall, I am very satisfied with the GFMAS system. | | | | | |
| 4. | I have no difficulty in exporting data from the GFMAS system to other systems or software I currently use. (eg; e-SPKB, Veritas Net ackup, Webmethod, etc.) | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 5. | I find the GFMAS system easy to use. | | | | | |
| 6. | I find it easy to get the GFMAS system to do what I want it to do for my daily task. | | | | | |
| 7. | My interaction with the GFMAS system is clear and understandable. | | | | | |
| 8. | All function icons can be found easily. I think it is easy to use the functionalities in GFMAS System. | | | | | |
| 9. | Usability of the GFMAS System features is simple and fast to learn. | | | | | |
| 10. | The screen of the GFMAS System is easy to remember and fast to get familiar of its transaction flow. | | | | | |
| 11. | I do not worry about data loss when I use the GFMAS system. | | | | | |
| 12. | Only authorized personnel can retrieve data from GFMAS. Hence, I think the GFMAS system is very reliable. | | | | | |
| 13. | Using the GFMAS system improves my performance. | | | | | |
| 14. | Using the GFMAS system improves my productivity. | | | | | |
| 15. | Using the GFMAS system improves my effectiveness. | | | | | |
| 16. | Overall, using the GFMAS system is very useful in my job. | | | | | |
| 17. | With the GFMAS system, I do not need to do “repetitive work” again. | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 18. | The functionality of the GFMAS software our company is using is very good. | | | | | |
| 19. | The GFMAS system covers our necessary business functions very well. | | | | | |
| 20. | The quality of the output I get from the GFMAS system is high. | | | | | |
| 21. | I have no problem with the quality of the GFMAS system's output. | | | | | |
| 22. | The GFMAS system covers our necessary business functions very well. | | | | | |
| 23. | The GFMAS system can help me make effective decisions. | | | | | |
| 24. | The GFMAS system enables data sharing with other departments. | | | | | |
| 25. | I can make decision on my working based on information available in GFMAS system. | | | | | |
| 26. | GFMAS system gives me overall view of my subordinates' works. | | | | | |
| 27. | The management reports from the GFMAS system are very useful. | | | | | |
| 28. | Data and reports from GFMAS really help my team to assist in any discussions | | | | | |
| 29. | Data and reports from GFMAS really help me and my team to make decision for any particular situation. | | | | | |

## APPENDIX B: QUESTIONNAIRES SOURCES

| No | Item | Questions | Source/Author |
|---|---|---|---|
| | | | |
| | **Personal Opinion** | I think the overall quality of our GFMAS system is very good. | Chung, B. _2007_. "An analysis of success and failure factors for ERP Systems in engineering and construction firms." Thesis, Univ. of Maryland, College Park, Md. |
| | | The scope of our GFMAS system is well matched with our company's needs. | |
| | | Overall, I am very satisfied with the GFMAS system. | DeLone, W. H., and McLean, E. R. (1992) |
| | | | |
| 1 | **Learning** | I have no difficulty in exporting data from the GFMAS system to other systems or software I currently use. | Chung, B. _2007_. "An analysis of success and failure factors for ERP Systems in engineering and construction firms." Thesis, Univ. of Maryland, College Park, Md. |
| | | I find the GFMAS system easy to use. | Davis, F. D. _1989_. "Perceived usefulness, perceived ease of use, and user acceptance of information technology." MIS Q., 13_3_, 318–340. |
| | | I find it easy to get the GFMAS system to do what I want it to do for my daily task. | Venkatesh, V., and Davis, F. D. _2000_. "A theoretical extension of the technology acceptance model: Four longitudinal field studies." Manage. Sci., 46_2_, 186–204. |
| | | My interaction with the GFMAS system is clear and understandable. | |

| | | | |
|---|---|---|---|
| | | All function icons can be found easily. I think it is easy to use the functionalities in GFMAS System. | Ferratt, T. W., Ahire, S., and De, P. _2006_. "Achieving success in large projects: Implications from a study of ERP implementations." Interfaces, 36_5_, 458–469. |
| | | Usability of the GFMAS System features is simple and fast to learn. | Sage,"Improving ERP Usability: How Intuitive ERP Drives Productivity, Improves ROI and Enhances Collaboration", White Paper, 2011. |
| | | The screen of the GFMAS System are easy to remember and fast to get familiar of its transaction flow | |
| | | | |
| **2** | **Awareness** | I do not worry about data loss when I use the GFMAS system. | Chung, B. _2007_. "An analysis of success and failure factors for ERP Systems in engineering and construction firms." Thesis, Univ. of Maryland, College Park, Md. |
| | | Only authorized personnel can retrieve data from GFMAS. Hence, I think the GFMAS system is very reliable. | |
| | | | |
| **3** | **Individual Productivity** | Using the GFMAS system improves my performance | Davis, F. D. _1989_. "Perceived usefulness, perceived ease of use, and user acceptance of information technology." MIS Q., 13_3_, 318–340. |
| | | Using the GFMAS system improves my productivity. | Venkatesh, V., and Davis, F. D. _2000_. "A theoretical extension of the technology acceptance model: Four longitudinal field studies." Manage. Sci., 46_2_, 186–204. |
| | | Using the GFMAS system improves my effe tiveness | |

| | | | |
|---|---|---|---|
| | | Overall, using the GFMAS system is very useful in my job. | |
| | | With the GFMAS system, I do not need to do "repetitive work" again. | DeLone, W. H., and McLean, E. R. _1992_. "Information systems success: The quest for the dependent variable." Information Systems Research, 3_1_, 60–95. |
| | | The functionality of the GFMAS software our company is using is very good | Ferratt, T. W., Ahire, S., and De, P. _2006_. "Achieving success in large projects: Implications from a study of ERP implementations." Interfaces, 36_5_, 458–469. |
| | | The GFMAS system covers our necessary business functions very well | |
| | | The quality of the output I get from the GFMAS system is high. | Venkatesh, V., and Davis, F. D. _2000_. "A theoretical extension of the technology acceptance model: Four longitudinal field studies." Manage. Sci., 46_2_, 186–204. |
| | | I have no problem with the quality of the GFMAS system's output. | |
| | | The GFMAS system covers our necessary business functions very well. | Ferratt, T. W., Ahire, S., and De, P. _2006_. "Achieving success in large projects: Implications from a study of ERP implementations." Interfaces, 36_5_, 458–469. |

| | | | |
|---|---|---|---|
| | | The GFMAS system can help me make effective decisions. | DeLone, W. H., and McLean, E. R. _1992_. "Information systems |

| | | | |
|---|---|---|---|
| 4 | **Decision Effectiveness** | The GFMAS system able data sharing with other departments | success: The quest for the dependent variable." *Information Systems Research,* 3_1_, 60–95. |
| | | I can make decision on my working based on information available in GFMAS system. | |
| | | GFMAS system gives me overall view of my subordinates' works. | |
| | | The management reports from the GFMAS system are very useful. | Venkatesh, V., and Davis, F. D. _2000_. "A theoretical extension of the technology acceptance model: Four longitudinal field studies." Manage. Sci., 46_2_, 186–204. |
| | | Data and reports from GFMAS really help my team to assist in any discussions. | |
| | | Data and reports from GFMAS really help me and my team to make decision for any particular situation. | |