Assessment on the Implementation of SAP Asset Management (A Case Study at PT. X)

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Abstract

A good and efficient implementation of an enterprise asset management system may improve asset data management effectiveness and reduce difficulties in maintaining an enterprise-scale asset data. PT. X implemented the SAP Enterprise Asset Management (EAM) module to improve the corporation's ability to deal with a large-scale asset data, as it offers end-to-end solution for an enterprise. This study observed the implementation of SAP EAM at PT. X, and assessed the effectiveness, efficiency, and users' satisfaction on the performance of the system. The assessment was performed by a paper-based survey on the employees who operates the SAP EAM module. Twenty six anonymous responses were collected and analyzed with descriptive statistics. The results show that on the 1 to 5 scale, the SAP AM module implementation effectiveness was rated at 4.28, efficiency was rated at 4.36, and the satisfaction on the system performance was rated at 4.26. This confirmed that the SAP AM module implementation facilitated a better asset management data and business processes at PT. X.

Keywords: SAP Asset Management, implementation, effectiveness, efficiency, satisfaction.

1. Introduction

Enterprise-scale corporations have their own challenges in managing and administering their daily transactions in various organizational functions due to the highly intensive and large-scale operation. Asset transactions management is among many of their important daily transactions as they should monitor their assets movements to understand their current state of asset values. A proper and sufficient tracking of asset transactions should be able to improve the corporations' accuracy of their asset values. An enterprise-scale asset information system such as one that is offered by SAP corporations can offer the proper and sufficient features in order to satisfy the need to improve accuracy and validity of the assets data in a corporation.

PT. X is one of the largest public corporations in the telecommunication industry in Indonesia. Currently, PT. X's shares have been traded in the world stock exchanges such as Indonesian Stock Exchange (Bursa Efek Indonesia), New York Stock Exchange (NYSE), London Stock Exchange (LSE) and Public Offering Without Listing (POWL) in Japan*[1]*. PT. X's services include domestic and international telecommunication services with physical network, wireless network of Code Division Multiple Access (CDMA) and Global System for Mobile Communication (GSM). In addition, it also provides multimedia contents and applications for education as well as for business. In a whole, PT.X provides a complete range of services in a portfolio of Telecommunication, Information, Media, Edutainment, and Services (TIMES). Although it primarily serves large corporations, currently, PT. X is committed to develop many of its products towards small to medium enterprises to improve Indonesian welfare in general*[1]*.

As a public organization, PT.X must follow the regulations and laws in the country. Reporting of assets in numerous physical locations are not only challenging, but also overwhelming if it was not accompanied by stable and reliable system. PT. X declared that it needed an integrated information system to support its daily operation and annual reporting to be able to provide accurate status to the public *[1]*.

Although PT.X had begun implementing SAP R/3 modules since 2000, the SAP Asset Management modules had not been implemented until 2010. According to the audit performed on the internal control on the fixed assets in 2006 and 2007, PT.X was in a crucial need to overcome a significant deficiency in asset control. One of the many problems was the inability to follow the Financial Accounting Statements Standards no. 17 rev. 2007

about Fix Assets accounting *[1]*. Thus, PT. X had decided to move to a more stable, reliable, and standardized Enterprise Asset Management (EAM) system offered by the SAP Corporation (http://www.sap.com) in 2010. This paper will provide the assessment on the implementation of the EAM system based on interviews as well as a survey conducted for the EAM system users after the completion of the implementation and full utilization of the EAM module by March 2013 (2 years and 5 months post the implementation).

2. ERP and SAP asset management module

SAP Corporation provides applications which provide a complete solution for enterprise-scale corporations. Such applications can be considered as an Enterprise Resource Planning (ERP) software. An ERP software is an integrated software package to provide complete integrations towards the enterprise-scale data in an enterprise information system *[3]*. All business processes can be coordinated and integrated in an integrated database in order to coordinate activities and communications among numerous departments.

There three important factors which will support the implementation of an ERP software in a corporations are the support from top management, well-prepared implementation team, and clear project goals *[4]*. In most cases, these three factors can promote the success of an ERP software, as the changes required in this implementation should be enterprise-wide and will involve possibly hundreds or thousands of departments regardless the module to be implemented. Thus, an important part of the implementation also includes a proper preparation of not only the system in general, but also a change management for all levels of employees from the top management to the floor-level employees who serve end customers in the system *[5]*.

Among the many modules offered by SAP Corporation, SAP Asset Management (AM) module has been used as a module to monitor and manage assets in an integrated manner with the financial accounting module *[6]*. This particular module can facilitate data movements on assets among many other modules in SAP Systems*[6]*. For example, when raw materials are purchased, the transactions will be posted in the Material Management (MM) module, which will then automatically post the transactions on asset purchase in the Asset Management module. When a fixed-asset is purchased or produced, any invoices, goods receipts, and withdrawals from the warehouse posted in the MM module can also be posted automatically onto the AM module. Further, transactions in the Plant Maintenance (PM) which will have to be settled into the AM module can be posted in both AA and PM modules simultaneously. This capability provides tremendous benefits for any enterprises to better monitor and control their assets as a whole corporation.

3. Asset management at PT. X

Prior to implementing the EAM module at PT.X, there are several significant problems which caused its internal control on asset existence to be ineffective. Previously, PT.X's asset records have not followed the Financial Accounting Statements Standards no. 17 rev. 2007 about Fix Assets accounting and the asset recording system has not been able to support the enterprise operations fully. The asset information were scattered in many units of organization, and were not integrated with the other information system modules used.

The AM module was implemented among the other three other modules: Project System (PS)*[7]*, Material Management (MM)*[8]*, and Plant Maintenance (PM)*[8]*. The EAM module was meant to optimize several asset management functions*[1]*:

a. Adding or building assets that will be integrated with the existing equipments.
b. Automating asset capitalization with itemized components details.
c. Monitoring of asset movements.
d. Retiring assets.
e. Reevaluating and adjusting assets.
f. Determining insurance value based on the history of assets.

It was expected that the implementation of AM module at PT.X couldprovide the following benefits *[1]*:

1. Better integrated asset monitoring.
2. Standardized asset management which follows the international reporting standard.
3. More efficient asset planning.
4. Better compliance to the Financial Accounting Statements Standards no. 17 rev. 2007 standards.
5. Easier and simpler asset management.

All these rationales will be the base of the assessment of the implementation of SAP AM module.

4. Research method

This research employed an exploratory investigation using a survey method on the users of the SAP AM module in March 2013, 2 years and 5 months after the implementation of the SAP EAM module. The survey was conducted at PT.X using a written questionnaire towards all 26 users of the SAP AM module post the implementation. There were 26 questions in the questionnaire which include 8 questions to assess the effectiveness of the system, 8 questions to assess the efficiency of the system, and

10 questions to assess the user satisfaction over the system performance. Likert-scale responses were used in the questionnaire with score 5 as strongly agree, 4 as agree, 3 as slightly agree, 2 as slightly disagree, 1 as disagree, and 0 as strongly disagree. The survey was conducted anonymously and reported in integrated manner to ensure the confidentiality of the participants. All participants returned the questionnaire completely, and the results were presented using descriptive statistics.

5. Results and discussions

The following section will explain the summary of the results collected from the survey.

A. Effectiveness of the system

The effectiveness of the system was assessed by the following measures:

1. The ability to produce information accurately.
2. The completeness and sufficiency of the information.
3. The improvement in asset data reporting and posting of transactions.
4. The ease of monitoring and management of assets.
5. The ability to manage data in a more orderly manner.
6. The integration and interconnectivity of the modules for real-time data coordination.
7. The ability to provide solutions from the existing problem.
8. The ability to support the company's vision and mission.

The responses were tabulated and the means for each item were computed. The following points summarize the results from the tabulations detailed in AppendixA:

1. The majority of users (50.0%) were strongly agree that the SAP EAMproduced accurate information, and only a small number of users (3.8%) stated disagree to it.
2. The majority of users (46.2%) stated they agree that the SAP EAMproduced the data completeness that they need, although there were a small number of users (3.8%) stated disagree.
3. The majority of users (46.2%) stated they strongly agree that the SAP EAM improve the reporting and posting of transactions, and only a small number of users (3.8%) stated disagree.
4. The majority of users (53.8%) stated they strongly agree that the SAP EAM improve the ease to monitor and manage assets, and only few (11.5%) stated slightly disagree.
5. The majority of users (46.2%) stated they agree that SAP EAM can organize data better, in more orderly manner, and only a small number (3.8%) slightly disagree with this measure.
6. The majority of users (46.2%) stated agree that the SAP EAM can integrate modules connected with all data, although a small number of users (3.8%) stated only slightly agree with it.
7. The majority of users (46.2%) stated strongly agree that SAP EAM can provide solutions to existing problems, although there were a small number of users (7.7%) slightly agree and slightly disagree.
8. The majority of users (65.4%) stated strongly agree that SAP EAM support the mission and vision attainment, although there were a small number of users (3.8%) stated disagree.

Figure 1 shows the comparisons of the average scores of each efficiency measures as assessed by the participants from all participants.

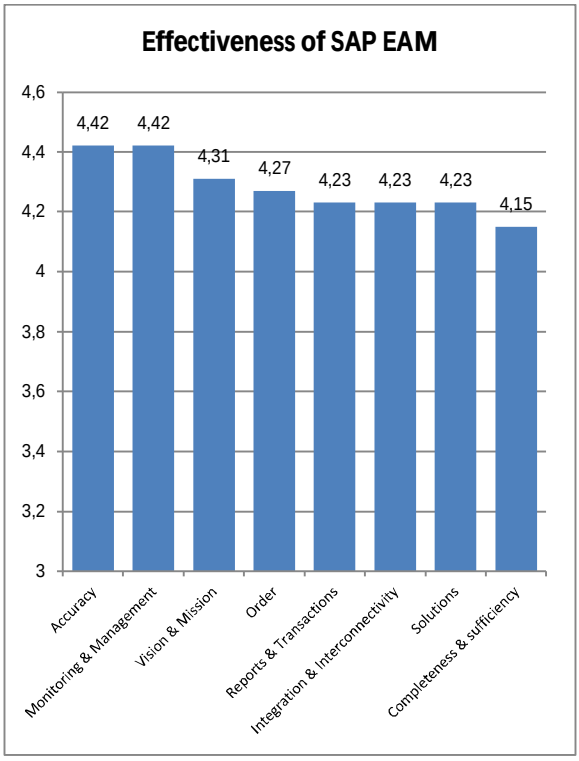

Figure1: Comparisons of Average Scores on the System Effectiveness

Figure 1 shows that the users expressed their agreement (average score of 4.42) that the SAP EAM provided the information needed accurately and ease the monitoring and management of assets. The next highest average score (4.31) came from the

agreement that SAP EAM supported the attainment of mission and vision of the company. Although the lowest among all effectiveness measures appeared in the completeness and sufficiency of data (average score of 4.15), the average score was still considered high. An average of 4.28 for all effectiveness measures combined expressed an agreement that the implementation of SAP EAM module had supported the effectiveness of the system.

B. Efficiency of the system

The efficiency of the systems was assessed on the ability of the SAP EAM in the following abilities:

1. Improve speed in data processing.
2. Speed up the reports and postings completion.
3. Reduce mistakes in reports and postings creations.
4. Increase decision making processes.
5. Improve the ease to control and monitor EAM module in real time.
6. Reduce errors in data synchronization.
7. Improve ease in system configuration.
8. Reduce manual management system in order to increase efficiency.

The responses were tabulated and the means for each item were computed. The following points summarize the results from the tabulations detailed in Appendix B:

1. The majority of users (50.0%) agreed that SAP EAM improve the speed in data processing although a few (7.7%) only slightly agree to this statement.
2. The majority of users (50.0%) strongly agreed that SAP EAM sped up the completion of reports and transaction postings, although quite a large portion (19.2%) only stated slightly agreed.
3. The majority of users (65.4%) agreed that SAP EAM reduced the mistakes in reporting and posting transactions, and only a few (3.8%) slightly disagreed.
4. The majority of users (53.8%) strongly agreed that SAP EAM can be used to support decision makings although few (7.7%) stated slightly disagree.
5. The majority of users (46.2%) strongly agreed that the SAP EAM improve the ease to control and monitor EAM module in real time, and only few (7.7%) stated slightly disagree.
6. The majority of users (57.7%) strongly agreed that SAP EAM minimize data synchronization mistakes and very few (3.8%) stated disagree.
7. The majority of users (65.4%) strongly agreed that the SAP EAM provides ease in system configuration, although few users (7.7%) stated slightly agree.
8. The majority of users (65.4%) strongly agreed that the SAP EAM improved the efficiency of the system in comparisons to the previous manual system, although few (7.7%) stated slightly agree.

Figure 2 shows that the users agreed that SAP EAM provides ease in system configurations (average score of 4.58). The same level of agreement (average score of 4.58) was evidenced in the ability to transform the manual system to be a more efficient system. The next highest average came from the agreement that the SAP EAM can be used to promote faster decision making (average score of 4.38). The lowest score of all efficiency measures (average score of 4.15) came from the agreement on the ability of SAP EAM to reduce mistakes in reporting and posting transactions. An average of 4.36 for all efficiency measures combined expressed an agreement that the implementation of SAP EAM module had supported the efficiency of the system.

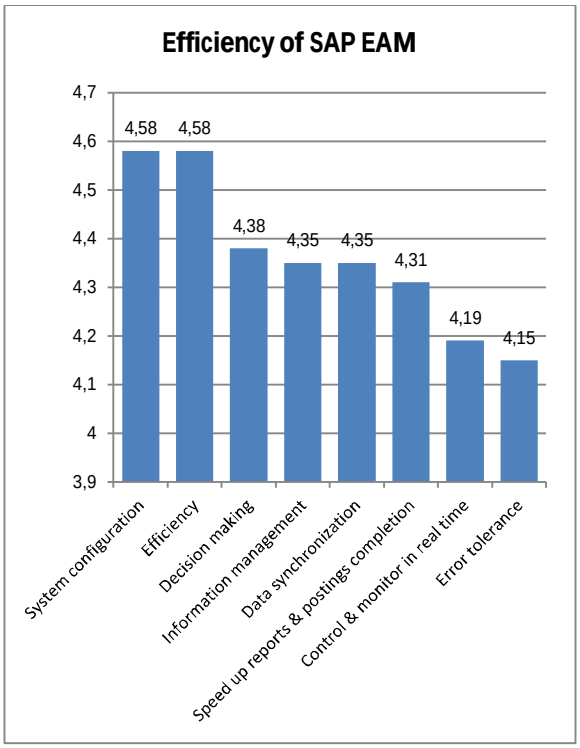

Figure 2: Comparisons of Average Scores on the System Efficiency

C. Satisfaction on system performance

The users were asked to assesstheir satisfaction on the SAP EAM system performance by referring to the following measures:

1. Compliance of SAP business system with the corporation's business processes.
2. The process when the SAP EAM was launched.

3. Decision making performed using this system.
4. The functionality of the system to complete tasks.
5. Ease to access and operate system.
6. Speed in data processing.
7. The ability of the system to ease and speed up reporting tasks.
8. The accuracy and promptness of the data provided.
9. Features provided within the SAP EAM.
10. The ability to satisfy users' needs.

The responses were tabulated and the means for each item were computed. The following points summarize the results from the tabulations detailed in Appendix C:

1. The majority of users (46.2%) strongly agreed that they satisfy over the compliance of the systems to their existing business processes. Only few were slightly disagree (3.8%).
2. The majority of users (46.2%) agreed that they satisfy on the EAM launching process and only few (11.5%) stated slightly agree.
3. The majority of users (50.0%) stated strongly agree that they satisfy on the decision making based on the SAP EAM system although few (11.5%) were only slightly agree.
4. The majority of users (42.3%) strongly agreed that they satisfy with the ability of SAP EAM to complete tasks, although very few (3.8%) stated disagree.
5. The majority of users (46.2%) agreed that they satisfy over the ease of access and operation of the system, although there were few (3.8%) stated strongly disagree.
6. The majority of users (50.0%) strongly agreed that they satisfy on the data processing speed, although few (3.8%) stated slightly disagree.
7. The majority of users (50.0%) strongly agreed that they satisfy on the ease and speed in creating reports, although few (3.8%) stated disagree.
8. The majority of users (50.0%) strongly agreed that they satisfy over the system ability and speed to provide accurate information, and only few (3.8%) were slightly disagree.
9. The majority of users (50.0%) agreed that they satisfy over the features provided by the SAP EAM module, although few (11.5%) were slightly agree.
10. The majority of users (65.4%) strongly agreed that the users were satisfy on the ability of SAP EAM to satisfy users' needs although few (3.8%) stated disagree.

Figure 3 shows that the highest average was on the agreement that SAP EAM can satisfy users' needs (average score of 4.50). The next highest was the satisfaction on the decision making assisted by the SAP EAM (average score of 4.38). The lowest score in satisfaction measures was on the ease to access and operate the system (average score of 4.04). An average of 4.26 for the satisfaction measures combined expressed an agreement that the implementation of SAP EAM module had provided satisfaction to the users.

D. Comparisons of effectiveness, efficiency, and satisfaction

To compare the results from each section, the following Figure 4shows comparisons of the overall average scores on the SAP EAM systems overall performance in terms of effectiveness, efficiency and users' satisfaction.

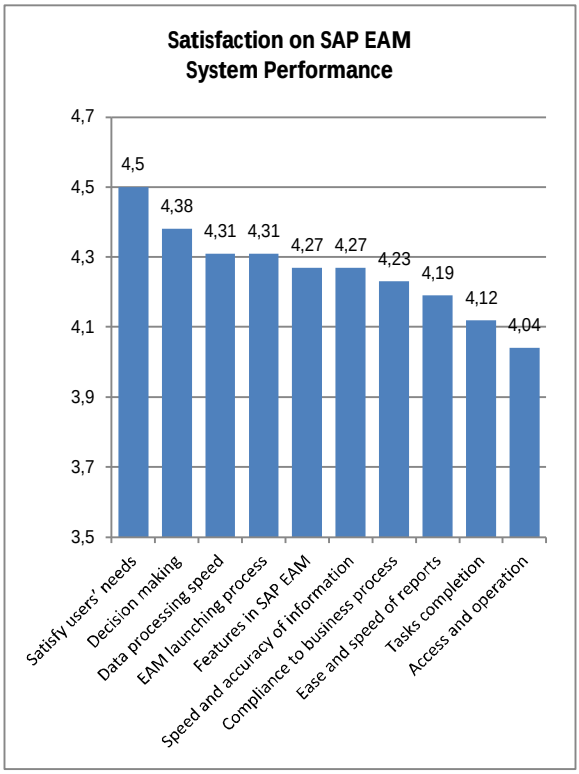

Figure 3: Comparisons of User Satisfaction on System Performance

Figure 4 shows each average score on all items within each measure. Based on the graph, the average scores of the effectiveness, efficiency, and satisfaction were close to one another. When ranked from the highest to the lowest, efficiency was scored the highest (4.36), effectiveness was scored in the middle (4.28) and the users' satisfaction was scored

the lowest (4.26). Overall, this shows a positive performance as each of the combined scores within each category was higher than 4.00. We may conclude that the SAP EAM were efficient, effective, and satisfying in comparisons to the legacy system owned by PT.X. Despite the high scores, PT.X should continuously improve its system performance in order to benefit the corporation in the longer term.

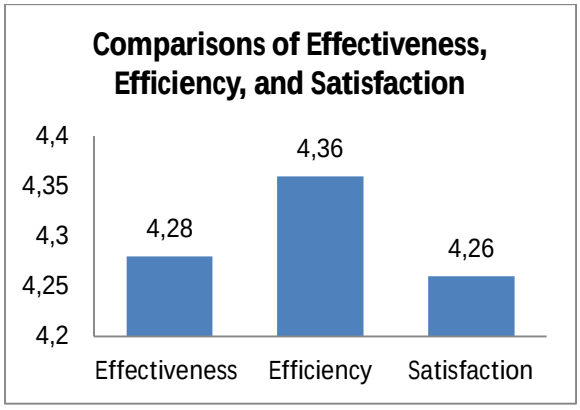

Figure 4: Comparisons of Effectiveness, Efficiency, and Satisfaction

6. Conclusion and Recommendation

The research had suggested several conclusions and recommendations.

A. Conclusion

The following conclusions were evidenced from this investigation:

1. The lowest score within the effectiveness measures, the ability of the SAP EAM in producing complete information should be the focus for future improvement in the asset management at PT.X. Several examples of such effort would be to have the users reviewing the data entered prior to posting these data to reduce errors and ensure completeness of all fields.
2. The lowest score in terms of the SAP EAM efficiency was the ability to reduce errors in creating reports and posting transactions. To ensure better process in the future, users should be more meticulous in inputting data as requested by the systems, and review it thoroughly in order to avoid mistakes.
3. In terms of the users' satisfaction on the SAP EAM system, the lowest was the ease to access and operate system. The enterprise-scale application itself is a complex application, which requires more users training in order to familiarize their tasks to input data. Thus, PT.X should place more importance on familiarizing and training the users to use the system properly.

B. Recommendation

Several recommendations are as follows:

1. Future processes to plan, purchase, maintain and manage assets should be prioritized and adjusted with the data and information needed by the system to smooth out the daily transactions.
2. Encourage users to review their data input at least once prior to posting the transactions.
3. Minimize human error from data entry by having proper familiarization and training as needed.

Finally, similar research can be performed on different modules of SAP enterprise application in the future in order to confirm the current findings as well as to compare whether there are improvements in the future.

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Appendices

Appendix A. Summary of Responses on the Effectiveness Measures

ID	Statements	Percentage (%)						Avg. Scores
	The SAP Enterprise Asset Management provides…	Strongly Agree	Agree	Slightly Agree	Slightly Disagree	Disagree	Strongly Disagree	
1	theability to produce information accurately.	50.0	46.2	0.0	3.8	0.0	0.0	4.42
2	the completeness and sufficiency of the information.	38.5	46.2	11.5	0.0	3.8	0.0	4.15
3	the improvement in asset data reporting and posting of transactions.	46.2	38.5	11.5	0.0	3.8	0.0	4.23
4	the ease of monitoring and management of assets.	53.8	34.6	11.5	0.0	0.0	0.0	4.42
5	the ability to manage data in a more orderly manner.	42.3	46.2	7.7	3.8	0.0	0.0	4.27
6	the integration and interconnectivity of the modules for real-time data coordination.	42.3	46.2	3.8	7.7	0.0	0.0	4.23
7	the ability to provide solutions from the existing problem.	46.2	38.5	7.7	7.7	0.0	0.0	4.23
8	the ability to support the company's vision and mission.	65.4	15.4	7.7	7.7	3.8	0.0	4.31

Note: n=26.

Appendix B. Summary of Responses on the Efficiency Measures

ID	Statements	Percentages (%)						Avg. Scores
	The SAP Enterprise Asset Management could…	Strongly Agree	Agree	Slightly Agree	Slightly Disagree	Disagree	Strongly Disagree	
1	improve speed in data processing.	42.3	50.0	7.7	0.0	0.0	0.0	4.35
2	speed up the reports and postings completion.	50.0	30.8	19.2	0.0	0.0	0.0	4.31
3	reduce mistakes in reports and postings creations.	26.9	65.4	3.8	3.8	0.0	0.0	4.15
4	increase decision making processes.	53.8	38.5	0.0	7.7	0.0	0.0	4.38
5	improve the ease to control and monitor EAM module in real time.	46.2	34.6	11.5	7.7	0.0	0.0	4.19
6	reduce errors in data synchronization.	57.7	30.8	3.8	3.8	3.8	0.0	4.35
7	improve ease in system configuration.	65.4	26.9	7.7	0.0	0.0	0.0	4.58
8	reduce manual management system in order to increase efficiency.	65.4	26.9	7.7	0.0	0.0	0.0	4.58

Note: n=26.

Appendix C. Summary of Responses on the Efficiency Measures

ID	Statements	Percentages (%)						Avg. Scores
	Please state your agreement level that you are satisfied with each of these items below:	Strongly Agree	Agree	Slightly Agree	Slightly Disagree	Disagree	Strongly Disagree	
1	Compliance of SAP business system with the corporation's business processes.	46.2	34.6	15.4	3.8	0.0	0.0	4.23
2	The process when the SAP EAM was launched.	42.3	46.2	11.5	0.0	0.0	0.0	4.31
3	Decision making performed using this system.	50.0	38.5	11.5	0.0	0.0	0.0	4.38
4	The functionality of the system to complete tasks.	42.3	42.3	3.8	7.7	3.8	0.0	4.12
5	Ease to access and operate system.	38.5	46.2	3.8	7.7	0.0	3.8	4.04
6	Speed in data processing.	50.0	34.6	11.5	3.8	0.0	0.0	4.31
7	The ability of the system to ease and speed up reporting tasks.	42.3	42.3	11.5	0.0	3.8	0.0	4.19
8	The accuracy and promptness of the data provided.	50.0	30.8	15.4	3.8	0.0	0.0	4.27
9	Features provided within the SAP EAM.	38.5	50.0	11.5	0.0	0.0	0.0	4.27
10	The ability to satisfy users' needs.	65.4	26.9	3.8	0.0	3.8	0.0	4.50

Note: n=26.