Performance Evaluation of Systems Managed File Transfer In Banking Industry Using IT Balanced Scorecard

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***Abstract*— Enormous file exchange in enterprise company is a common thing especially in financial company. The use and implementation of Managed File Transfer (MFT) system in company should bring a big perfomance and security impact for IT Division internally or externally. Succesful rate, perfomance rate, and supporting factor became the root cause of this research. Within this research, we know all the key-factor of perfomance measurement of MFT system and give us a blueprint about the perfomance measurement itself. This research will evaluate the perfomance of MFT system using concept of IT Balanced Scorecard (IT BSC) that have 4 perspective which will be the reference to collect data, evaluate data, and do a factor analysis using the data from the questioner. The result of factor analysis generating 4 new factor that have an important role in the MFT system level performance in the company such as System Securities, Business Support from MFT System, System Weaknesses, and System User's Comfortable.**

Keywords : ***Perfomance evaluation, Managed File Transfer (MFT), IT Balanced Scorecard (IT BSC).***

I. INTRODUCTION

In the development of a country's economy, the financial sector is one of the main parts must be considered. Banks are key actors in the financial sector in supporting economic growth. The development of the banking business became the benchmark and public attention to this economic growth, especially banks which are state-owned. In addition, the main function of the banking business is as a place to accommodate and distribute the funds among institutions and individuals with the aim of turning the wheels of the economy within a country.

In the last few years (as in the figure 1.), the IT department at the Banking Company had entrusted one of their focus into a system that manages the exchange process/delivery and security of the data confidential and important. Exchange/data transmission can occur based on the will of the user (user-based), or based on the needs of the particular system (systems-based)[1]. The Company adopted the method of sending data that can be fully managed commonly known by the term managed file transfer (MFT) presented by Anglano[2]. Secure Transport software. By implementing MFT Secure Transport system in almost all exchange lines/shipment data that is important, Banking Company has complete control of the path, security, and report on data transmitted/received.

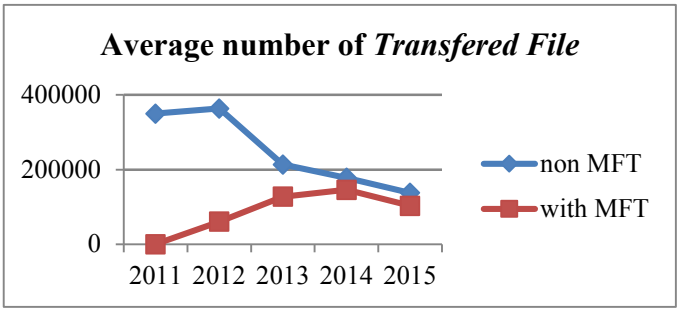

Fig 1. Average number of Transfered Files per year
Source : Company Data Recap (2015)

Based on the graph in Figure 2. which is a representation of the MFT system success rate in performing his duties at the company, it appears that there is still a gap that has yet to be fulfilled optimally. The lack of success rate of the MFT system significantly from year to year lead the IT division of company needs to work extra in the monitoring process of the exchange of data/files is done by the MFT system that has been applied to this. This is certainly a direct impact on business processes, especially the business processes that require data exchange system-to-system, GXS[3].

The slow growth rate of success MFT system is also the basis of researchers to evaluate the performance of the MFT system that already exists in C. Evaluation of the performance itself will be focused on the direct users of existing MFT system first before extended to the indirect users or those who just received the results of Company the exchange of files that occurs. This evaluation also aimed to determine the factors supporting the MFT system performance along with the impact that the officials of Company can determine further decisions on the utilization of the MFT systems, Arsan[4].

An assessment or evaluation of the performance of a system can be done by various methods such as measurement of Key Performance Indicator (KPI)[5], Six-Sigma methods, methods of IT Balanced Scorecard (IT-BSC), and methods of other

methods. Evaluate performance at Company will approach IT Balanced Scorecard method where researchers can describe the relationship/harmony between the vision of the company and the company's business processes with IT growth towards a more comprehensive and balanced/proportional[6]. This study will focus discusses the performance evaluation system that has been applied MFT Company for approximately 3 years using the IT Balanced Scorecard.

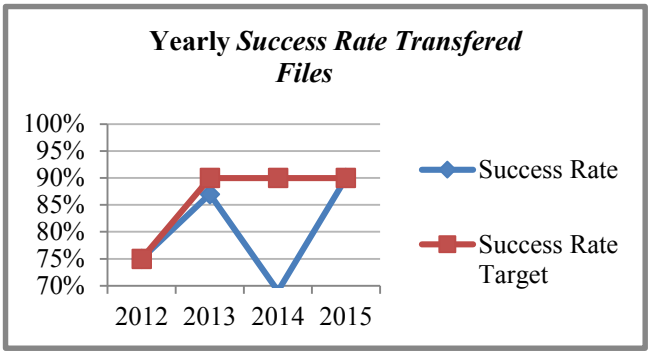

Fig. 2. Average Success Rate Transfered Files per year
Source : Company Data Recap (2015)

II. METHODOLOGY

The concept of balanced scorecard proposed by Kaplan and Norton can be applied to the IT function. Application and development is carried out by Van Grembergen and produces what is known as the IT Balanced Scorecard[7].

In a survey on corporate governance, Martin says that the corporate governance offer section with the ways in the which suppliers of finance assure Themselves of getting a return on their investment[8]. Based on the revelation of the world of information technology in the enterprise also received some form of a question such as How to top-management ensures CIO and IT team delivering business value for the company?[9], How top-management exercise control on the CIO and IT team?[10], Or How can management ensure top-CIO and IT team did not invest the existing resources into projects that bad?[11].

In answering the questions, the methodology as IT Balance Scorecard is expected to provide measurement and management systems that support IT governance processes and align business with IT[12].

As with traditional Balanced Scorecard belonging to Kaplan and Norton (1992), IT Balanced Scorecard by Van Grembergen (2000) also has four perspectives approach used:

1. Contributions perspectives of the Business or Company (Business/Corporate Contribution Perspective)

   IT performance evaluation through the viewpoint of the chief executive and by taking the business value of IT investments that can be given to the business/company.

2. Perspective User Perspective (User Orientation Perspective)

   IT performance evaluation through the viewpoint of the users of IT systems associated with the functionality of the existing system.

3. Perspective Operational Excellence (Operational Excellence Perspective)

   IT performance evaluation through the viewpoint of the effectiveness and operational efficiency of existing IT systems to support business processes that run the company.

4. Perspective Perspective Future (Future Orientation Perspective)

   IT performance evaluation through the perspective of how an IT position itself in the future in addressing business needs continue to evolve along with the quality of services provided in support of business processes.

This research is a case study to resolve problems or issues faced by companies, researchers identified the problems faced by a meeting with the leadership of the company's IT division. Researchers build research instruments of the indicator which refers to the four perspectives included in the concept of IT Balanced Scorecard to determine all the possibilities that exist for evaluating system performance MFT. Mechanical collection and data analysis are also adapted to the conditions in which the company based on the obtained sample used purposive sampling technique and then analyzed. Next, the researchers will construct a questionnaire based on the indicators of early indicators that exist as well as the questionnaire distributed at a predetermined sampling. After the data collected, researchers will conduct a factor analysis of the questionnaire. Furthermore, researchers drew the conclusion that there is a factor analysis and provide advice on the best for the MFT system performance problems that occur in the Company.

III. RESULTS AND DISCUSSION

Based on test validity and reliability of 26 the questions by using Cronbach's alpha and using SPSS 18, researchers gain coefficient alpha of 0.928. From these results it can be concluded that the value of the data from all of the variables used is reliable.

In the factor analysis, the researchers take measurements variant on all factors which are using Eigen values greater than 1. By using Eigen values than 1 has formed 6 (six) new factor of the analysis results with the cumulative result of the extraction variant of 82.71%. This value is obtained from the sum percentage of the overall variance components as follows:

Table 1. Cumulative value per Extraction Factor

Extraction Number	Cumulative %
6	82, 71
5	78, 31
4	72, 89
3	64, 20
2	54, 99

Source : Research Analysis (2015)

Based on these data, the authors continued analysis by extracting a factor until the remaining 4 (four) factors to which factors have a better and decent distribution with cumulative score of 72.88% for further analysis because it has met the criteria.

After knowing the form factor is 4, then make determinations of each independent variable will be entered into each factor by looking at the table Component Matrix of output results SPSS 18 is used. Once that is done the rotation of the independent variables. Determining variable to a particular factor by the magnitude of correlation between variable factors, that is, to which the correlation is greater. Thus the new factor, which is made up of indicators collected, among others:

The new first Factor (X_1) is Security System MFT, as represented of colaborations:

1. Delivery of data by using encryption influence on system performance compared with no encryption[13].
2. The issue of the security of the data circulating in the digital and global world as the era of the cloud (cloud) is now a matter that should receive special attention from the company[14].
3. A management controls are necessary to ensure that the data/file received exactly the same as the data/files that have been designated as what is sent, or data/files which are located on the delivery system.
4. Controlled delivery system files (MFT) provides the ability to track the entire process of delivery along with authenticity[15].
5. There are many companies or divisions of companies who do not heed the compliance of the process of sending an information/data/files and prefer to use a public sharing such as Dropbox or use email for sending data.
6. An integrated system capable of providing complete and accurate information so output appropriate information useful in the work of the user[16].
7. Use file systems delivery manager can reduce the burden of hidden costs and increase the chances of the company to increase its revenues.
8. Utilization compression feature generates a significant acceleration of the process of sending files.

The new second Factor (X_2) is Business Support System in the MFT, as represented of colaborations:

1. Utilization of ICT in organizations even companies sometimes be an additional burden in running the business so that the customer should be charged.
2. Ease of access to information needed to effectively and efficiently be a significant key in producing exceptional quality of service.
3. This level of integration of the ICT and process controls can be a business advantage aspire to total quality and business excellence
4. Visibility of the entire business process to the file exchange process is the basis for the company responsible for the corporate governance there[17].
5. In order to maintain control and compliance companies should be able to provide a complete record of information related to who is accessing data/files and also what to do when such access.
6. The integration process almost always involves a file transfer, a process that, if not handled properly can delay the project or cause the implementation of operational failure or even loss.

The new third Factor (X_3) is MFT Systems Weaknesses, as represented of colaborations:

1. Organizations need reliable information systems that enable analysis and access to the right information to make effective decisions.
2. Ease of learning to a new system is able to add its own motivation for employees to use[18].
3. Usage-based automated information systems in the enterprise can improve the efficiency and effectiveness of communication in organizations that help in the decision.
4. Use of ICT such as the Internet in running business processes can increase productivity levels and employee performance.
5. Utilization of specific protocols typically have an influence at the time of moving large amounts of data or files.
6. Centralized management approach helps companies to focus on learning and management systems.

The new forth Factor (X_4) is MFT Systems Comfortable Usage, as represented of colaborations:

1. Professional training in a company can influence the level of turnover of employees.
2. ICT Strategy, vision, and mission has become an important part of the company's business strategy.
3. Users of the system are more satisfied using a system that has a higher effectiveness compared to a system less effective.
4. Process automation in the enterprise can improve security and reduce human error.
5. Implementation of an application supporting the running process of sending data to increase efficiency, especially for large amounts of data.
6. Data integrity can be met with the use of a specific protocol to improve security at the file delivery process.

After a thorough analysis of the factors, it was found that there is a data reduction where there is a proper screening process components into new indicators and factors. Factors used to evaluate the performance of the MFT system formed from the results of factor analysis is the safety factor MFT systems, IT support the business, ability/capability of the system, as well as the convenience of using MFT system. To know more dominant factor of four factors above, it must be done regression between these factors with the level of understanding of respondents to the MFT system in a company that has been obtained from the questionnaire.

After doing the regression will get down to the value of each factor to perform the calculation model as follows:

$$Y = B_0 + A_1 X_1 + A_2 X_2 + A_3 X_3 + A_4 X_4 \quad \ldots\ldots\ldots\ldots\ldots \quad (1)$$

With the values obtained from the regression of these factors with the understanding of the respondents, the results obtained values as follows:

$$B_0 = 6.697$$
$$A_1 = 0.135$$
$$A_2 = 0.006$$
$$A_3 = -0.384$$
$$A_4 = 0.128$$

So as to built a model of the MFT system performance evaluation results as follows:

$$Y = 6{,}697 + 0{,}135\ X_1 + 0{,}006\ X_2 - 0{,}384\ X_3 + 0{,}128\ X_4$$

With ranges:

$$-2{,}338 \leq X_1 \leq 1{,}546$$
$$-2{,}063 \leq X_2 \leq 2{,}017$$
$$-1{,}742 \leq X_3 \leq 2{,}388$$
$$-2{,}054 \leq X_4 \leq 1{,}155$$

From the model above, it can be described MFT system performance evaluation model as shown below figure 3:

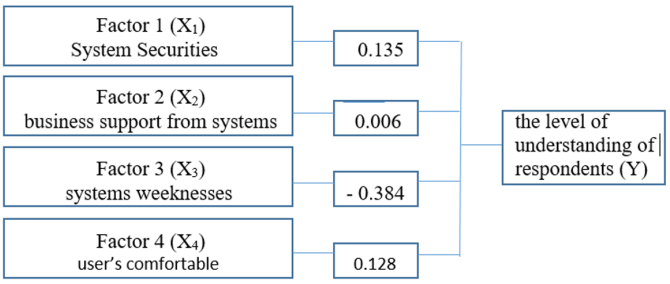

Figure 3. Factors Values Used in Evaluation System MFT

Source: Research Data Processing (2016)

From the above model, the first component (X_1) are interpreted as "Threat Systems MFT" positive value 0.135. This means improvement and special attention to the factors X_1 will have a positive impact on the level of understanding of respondents to the system so that it can improve the performance of the MFT system as well. X_1 factors influenced by indicators indicators associated with factors of safety, as in figure 3. These factors include indicators of security measures such as encryption of data, control data flow, regulation of data flow, motion tracking data, and so greatly affect system performance MFT itself, where if these indicators increased (positive movement) then the users will experience increased understanding of the function of the actual MFT system and assess that the system works in accordance with the existing IT strategic direction and eventually also affect system performance and user and IT division of the company in general.

Description of the managerial implications, based on the minimum and maximum values of each factor is found, it will obtain the value of evaluation as follows Table 2.

In the table above can be seen in the user's understanding of the evaluation using the application systems:

1. The current conditions, where there is no change in either addition or subtraction on new factors were found, so the evaluation of the value of understanding the use of the application system has a value of 6,697 if quantified the user's understanding of the application system is currently sufficient.
2. A minimum condition, in which all factors were found to decrease from the current state to look at their lowest point, so the evaluation value of the user's understanding of the system and the value system performance MFT and has a value of 6,775 then if quantified understanding at the highest point to be good or very good compared to current conditions.
3. The maximum condition, in which all factors were found to be increased from the current state to see its highest point, so the evaluation value of the user's understanding of the system and the value system performance MFT and has a value of 6,337 then if quantified understanding of users of the system to be bad or very bad in comparison with the current conditions.
4. The extreme conditions, where all the negative factors were found to be lowered to the minimum point of the current conditions and found to be negative factors that increased the maximum at its highest point, so the evaluation value of the user's understanding of the system and the value system performance MFT and has a value of 5,224 then if quantified understanding users of the system to be bad or very bad compared to current conditions.
5. The ideal conditions, all factors were found to positively enhanced the maximum at its highest point, and found to be negative factors derived from the current state to the minimum point, so the evaluation value of the user's understanding of the system and the value system performance MFT and has a value of 7,887 then if quantified understanding at the highest point to be good or very good compared with the current conditions.

Table 2. SimulationValue of Performance Evaluation

Simulation	Y	B_0	X_1	X_2	X_3	X_4
Current	6,697	6,697	0	0	0	0
Minimum	6,775	6,697	– 2,338	– 2,063	– 1,742	– 2,054
Maximum	6,337	6,697	1,546	2,017	2,295	2,350
Extreme	5,224	6,697	– 2,338	– 2,063	2,295	– 2,054
Ideal	7,888	6,697	1,546	2,017	– 1,742	2,350

Source: Research Data Processing (2016)

IV. CONCLUSION

Based on research by the factors that affect system performance levels MFT, among others: Security Systems, Support Systems in Business, Systems Weaknesses, and Comfortable Systems Usage.

regulatory compliance and operational costs. Then factor "in the MFT System Support Business" consisting of indicators ease of data access, integration and control of business processes, business process visibility, recording and controlling system, the integration of data transfer. A further factor "MFT System Weaknesses" which consisted of a quick indicator of response and system reliability, ease to learn, decision-making, increased productivity, a special protocol, and centralized systems approach. The last factor is the "Comfort Using MFT System" consisting of professional training indicators, support the IT strategy, user satisfaction, automation systems, the efficiency of IT resources, and integration of data processing systems.

Models are formed from the discovery of new factors on the performance evaluation of the MFT system by entering the value of the influence of these factors, it will be found an evaluation model as follows:

$$Y = 6{,}697 + 0{,}135\ X_1 + 0{,}006\ X_2 - 0{,}384\ X_3 + 0{,}128\ X_4$$

With ranges:

$$-2{,}338 \le X_1 \le 1{,}546$$

$$-2{,}063 \le X_2 \le 2{,}017$$

$$-1{,}742 \le X_3 \le 2{,}388$$

$$-2{,}054 \le X_4 \le 1{,}155$$

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At the factors found above, there are indicators of supporters who formed the occurrence of these factors, namely "Security System MFT" consisting of indicator data encryption, data compression, security of data traffic, control flow and data types, tracking the flow of data, the accuracy of the process,

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