OPTIMAZING ACCOUNTING INFORMATION SYSTEM BY USING SIX SIGMA DMAIC METHOD TO GET FINANCIAL BENEFIT (CASE STUDY PT. PHILIPS INDONESIA - SURABAYA)

[1]Nanik Kustiningsih

STIE Mahardhika Surabaya
INDONESIA

Email : [1]nanik.kustiningsih001@gmail.com

ABSTRAK

This research aims to optimazing accounting information systems in order to get soft saving on a manufacturing business in the field of payment information system that occur in the Surabaya region, especially at PT. PHILIPS INDONESIA which is now using the information system which is very nice but it is not used optimally, in practice there are still many transactions still use the data manually, the numbers of documents used resulted in the process did not run effectively and efficiently. this research aims to analyze the computerized information system for the payment of the invoice that still uses a manual transaction.

This research used six sigma DMAIC Methods. DMAIC is a cycle of improvement based on performance data, which not only can be applied to the improvement of the quality but can be applied also in cost savings and can be used to enhance, optimize and stabilize the design and business processes of the company, from this study are expected this information system is used to its full potential get cost of avoidance saving as well as their better control on the payment cycle and the procedures to be standardized and of the financial will avoid the losses that are not supposed to happen (cost of avoidance), as well as cost savings.

Key words : Accounting Information System, Six sigma, soft saving

INTRODUCTION

Nowadays business players in Indonesia are increasingly aware of the changing business patterns of information systems that exist along with the rapid progress of information technology. In the increasingly fierce industrial world competition, companies must be able to survive and compete with similar companies. Therefore, companies will be better if adopting a system that has been proven to have benefits for the companySix sigma is a method of improving quality and process by using structured tools and statistical measurement. At first this method was applied by Motorolla in 1985 and managed to bring huge profits for the company. The success of Motorolla applying six sigmase to bring great profits to make six sigmaterus developed in recent years. General Electric, Boeing, Ford, Toyota, Bank of America and Allied Signals are examples of companies that follow Motorolla's trail to implement six sigma.PT. Philips Indonesia, a multinational electronics company that has a vision to become a global player in the leading lighting business (lighting), including Indonesia. As a market leader, the company is also always innovate with the vision to be the best in class (best in their class/level on lighting business)PT. Philips Indonesia with a wide range of operational activities have had already a system and is very good that is ERP-SAP but in operational practice the activities or transactions are still done manually performed by suppliers who do not use PO

(Purchase order) are:Supplier related to the distribution or import-export activities (shipping liner, forwarders, shipping)2. The bill payment from the government (PLN, PDAM, Telkom, etc.)3. Other - Other (Hotels, etc.)4. Unexpected (hospitals, pharmacies, laboratories, etc.)
The project background of this research was triggered by :1. The number of manual transactions2. The existence of double invoicing / billing from suppliers3. The existence of cost of avoidance savng4. delay / long process of document to the finance section5. The high cost of the 3rd party (outsourcing)

Researchers focused research on number of suppliers who use manual transaction, in this study the authors limited to point no. 1 supplier related to distribution activities or suppier related to exports and imports (shipping liner, forwarders, shipping) which is **under global agreement)**

Although it has become a market leader, with the distribution to 225 destination countries and 1656 transactions and has 27 vendors, but in the process of transactions there is still a process done manually where it potentially leads to inefficient processes in terms of costs incurred or mistakes in transactions Resulting in a loss to the company. The purpose of this research is to examine the application of Six Sigma method to minimize invoices without PO or improve manual payment payment process by using PO flow and its suitability.

LITERATURE REVIEW

2.1 Accounting Information System

Accounting Information System is a functional information system underlying other functional information systems such as financial information systems, marketing information systems, production information systems and human resource information systems. Other information systems require financial data from accounting information systems.

This can indicate that if a company that will build a management information system, it is advisable to build an accounting information system first. Important functions formed by SIA in an organization include: Collecting and storing data about activities and transactions. Processing data becomes into information that can be used in decision making process. Precise control of the assets of the organization

2.2 Six Sigma

Six sigma is a method or technique of dramatic quality control and enhancement applied by the Motorola company since 1986, which is a new breakthrough in the field of quality management. The principle of Motorola's six sigma control and enhancement quality is able to respond to the challenges commonly faced in the industry, and Motorola proved for 10 years after the implementation of the six sigma concept has been able to achieve 3.4 DPMO quality level (Defect per Million Opportunities - Failure per million opportunities) (Gasper, 2002)

2.3 Six Sigma Improvement Model

In Six Sigma there is a 5 phase cycle of DMAIC (Define, Measure, Analyze, Improve, Control) which is a continuous improvement process towards the target of six sigma. DMAIC is systematically based on knowledge and facts. DMAIC is a closed-loop process that eliminates unproductive process steps, often focusing on measuring new measurements and applying technology for quality improvement toward a six sigma target. Some level of sigma attainment:

Tabel 1. Tabel *konversiSix sigma* sederhana.

Sigma	***Yield***	***DPMO***
1-*Sigma*	31,0%	691.462 (Sangattidakkompetitif)
2-*Sigma*	69,2%	308.538 (rata rataindustriIndonesia)
3-*Sigma*	93,3%	66.807
4-*Sigma*	99,4%	6.210 (rata rataindustriUSA)
5-*Sigma*	99,97%	230
6-*Sigma*	99,99966 %	3,4 (industrikelasdunia)

Source : Vincent Gasperz (2002)

RESEARCH METHODS

The type of research used by the authors is descriptive qualitative research and tend to use analysis and further highlight the process and meaning where the DMAIC method used as the basis in this study. The operational steps of DMAIC are as follows:Stage Define (D), this stage is the stage where this is the first step in starting a six sigma project. In this stage it is necessary to define some matters relating to the criteria of selecting a research object and identifying the problem as a Project back groundPhase Measure (M), this stage is the second operational step in Six Sigma project which includes Measurement and Set-up target where the tools used are Primary Metric and Secondary Metric and Pareto diagramAnalyze Stage, this stage is the third stage in the DMAIC cycle. At this stage in doing data analysis and identify the cause of the problem by brainstorming with the company where the tools used are 5 WhyImprove Stage, Once the root of the problem is known, then the next step is to perform corrective action planning to overcome or prevent the occurrence of problems that become the focus of Six Sigma project. In brief the focus of this Improve phase is the Implementation PO Flow and Improvement actionStage Control, This stage is the last operational stage in Six Sigma project. At this stage will be made a system control mechanism to control every transaction process so that inefficient activities can be minimized, while this phase includes the standardization of the efficiency and culture of the organization. The roadmap of Six Sigma project which is used as the basis in this research is as follows:

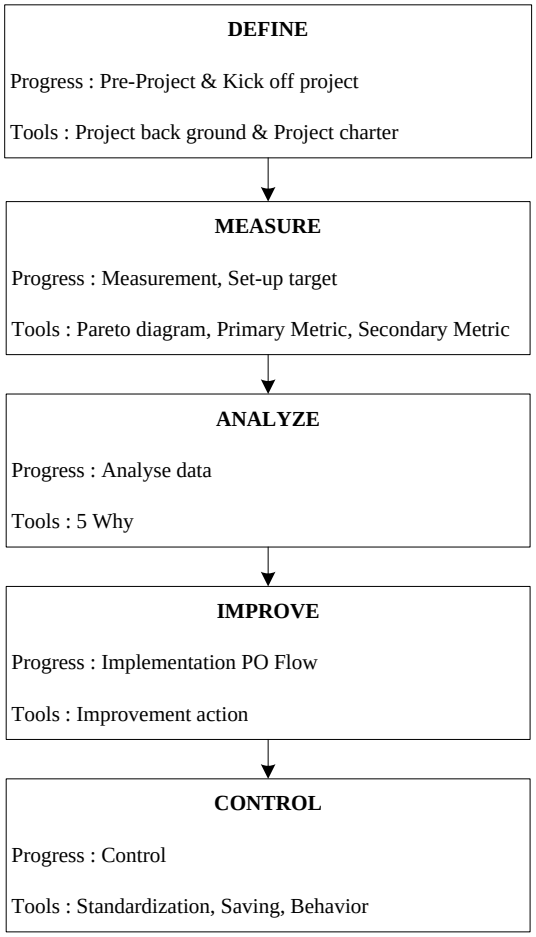


Figure 1. *Roadmap*Six Sigma project
Source : Team Six Sigma

RESULT AND DISCUSSION

Fase Define

At this stage the problem is defined as the six Sigma project. The purpose of this project is to minimize invoices without POs. It aims to reduce the risk of double payment (due to double invoice) by using 3 paths to match SAP to get better suitability and control. The focus of this project is to minimize the number of manual payment requests by 30% In December 2015. The goal of this project is to replace the current manual requisition creation with the standard PO according to flow (SAP) and become easier and to reduce the number Payment requisition manually per month. The benefits of this project are Conformity, avoid double payment and cost savings and reduce costs on the charge invoice and also the first project in APAC

Fase Measure

Based on data obtained from January to July 2015 for the amount of manual payment requisition (Invoice Without PO) then tabulated with target KPI which became the focus of Six Sigma project. The result of tabulation which is Primary metric as project trigger can be presented in the following picture:

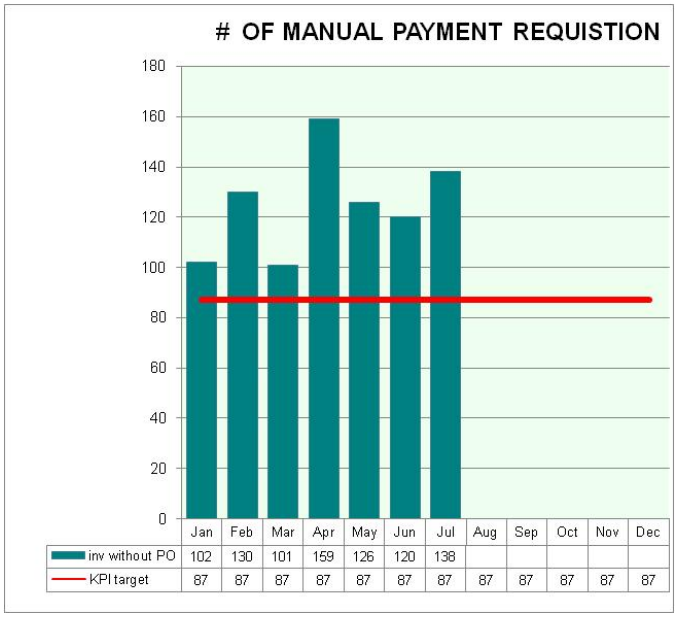


Figure 2. *Invoice Without* PO vs KPI target
Source : Data Processed

While the number of non PO vendors from january to july month which tabulated KPI target which is Secondary metric which also as trigger of project can be presented in the following picture:

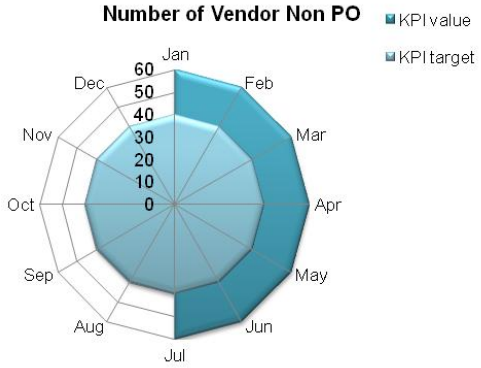


Figure 3. Vendor non PO vs KPI target
Source : Data diolah

The number of problems that occur for Non PO Supplier include several things consisting of distribution cost of 27 suppliers, *Government* Bill as many as 8 suppliers, Unpredictable as many as 9 suppliers and Other as many as 16 suppliers. Based on these calculations, the distribution cost is the Opportunity Improvement and the biggest problem that must be resolved immediately, because based on pareto law when 80% problem is solved then the remaining 20% will finish by itself. The graph of the problem that occurs for Supplier non PO is as follows:

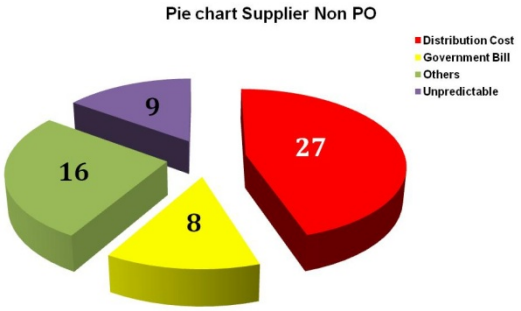


Figure 4. Grafik Supplier Non PO
Source : Data diolah

Fase Analyze

Based on phase of measure distribution cost become focus because the impact is dominant (27 supplier). From the results of Brainstorming with 5 way tools to find the root cause of Manual payment requisition in Philips Surabaya, the results obtained are a mapping from the root of the problem and the answer. The mapping is as follows:

Tabel 2. *Mapping Tools 5 Way*

Problem	Why-1	Why-2	Why-3
Difficulties of apply PO by system (1)	NO support from vendor	No one vendor under global agreement use PO	No Vendor socialization on implementation PR/PO process
Alot of Manual payment requisition (2)	SAP system not accommodate	data not maintenance in SAP	No12 NC created in SAP system
High cost charges of Infosys (3)	More expensive compare to using PO by system	complexity of account to be fill & mistake by human error	Alot of manual activities process
Late Payment (4)	Late Approval	Late submission	More time consuming for manual check / ensure correctness of paper work
Double Payment (4)	Double Invoice	Supporting document in copy	Lack control process
Not compliance (5)	High risk of loss money	Less control	All vendor in manual transaction (PR/PO process not implemented yet)

Source : Data Processed

Fase Improve

After the root of the problem is known, the next step is to do a corrective action plan to overcome or prevent the problem that becomes the focus of Six Sigma project. At this stage is a

mapping of the Action Plan where it is used as a basis for improving the process. The mapping can be presented in the following table:

Tabel 3. ***Mapping Action Plan***

No	Problem	Potential Root Cause	Action
1	Difficulties of apply PO by system	No Vendor socialization on implementation PR/PO process	Vendor socialization
2	Alot of Manual payment requisition	No12 NC created in SAP system	Material master upload in system by create 12 NC per destination in SAP
3	High cost charges of Infosys	Alot of manual activities process	Define posibility to simplify the process (using PR/PO)
4	Late Payment/ double payment	Lack control process/ More time consuming for manual check / ensure correctness of paper work	Involving all key parties to handle all process end to end customer
5	Not compliance	All vendor in manual transaction (PR/PO process not implemented yet)	PO implementation

Source : Data Processed

Based on table 4.2, known problems of the object of research, the root cause of the problem and its action plan. The details of each Action plan are as follows

- *Vendor Sosialiation*

Prior to the socialization, Vendors were not aware of the PR / PO process. After the Vendor's socialization is fully aware of the PR / PO process. Socialization is done by holding a meeting agenda with vendors. The target for vendor socialization is achieved which can be realized in October 2015 and the benefits obtained are the vendor is very aware with the program.

- *Material master upload in system*

Prior to the Six Sigma project there was no barcode for 12 NC, Code No Dept and No Account in SAP, this is because the code has not been uploaded. Or in other words Optimise the accounting information sistem by material master upload in the system

Figure 5. N*o output Purchase Record* before the barcode 12 NC uploaded
Source :*Output SAP*

As after the Six Sigma project is implemented and The barcode (12 NC), Departement Code and Account are created in accounting information system ERP_SAP , the output of the purchase record is as follows:

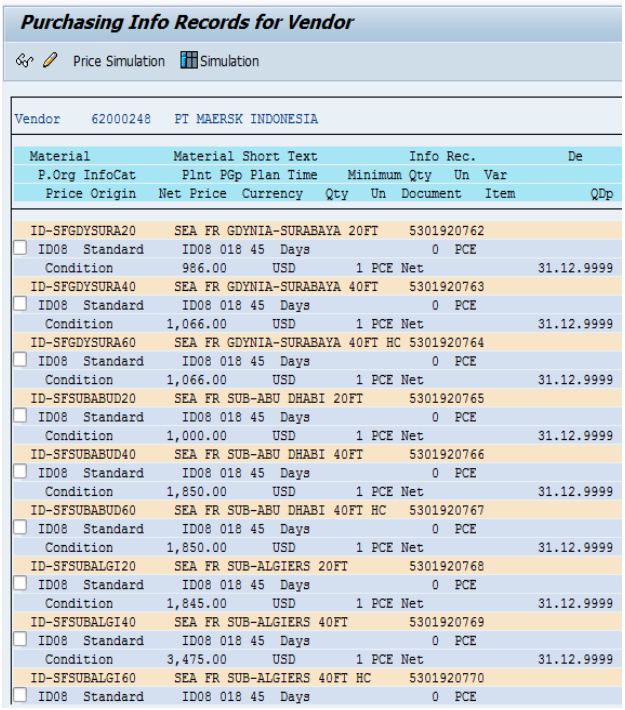


Figure 6. *output Purchase Record* available in the system after 12 NC uploaded
Source :*Output SAP*

The target for master uploaded in system material is achieved which can be realized in October 2015 and the benefit is the data well recorded in ERP_SAP information system

- *Number of Manual Payment of Requisition*

Prior to the run of its Six Sigma project many processes are running manually causing the charge invoice is high enough. Once on its run the Six Sigma project, the process becomes more Simple, robust process and better control. The benefits of this Action plan is to reduce cost and documents to be more concise. The target for the Number of Manual Payment of Requisition is achieved which can be realized in November 2015 and the benefits are cost reduction and concise documents.

- *End to End process, from customer to customer*

Before the Six Sigma flow project involves only Supply Chain and only the F & A departments, this is still lacking in terms of involvement and monitoring. The flow is as follows:

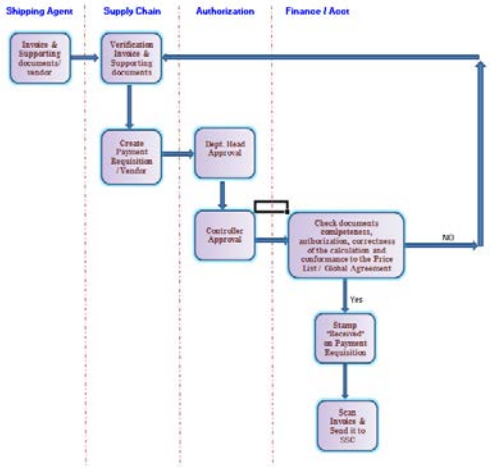
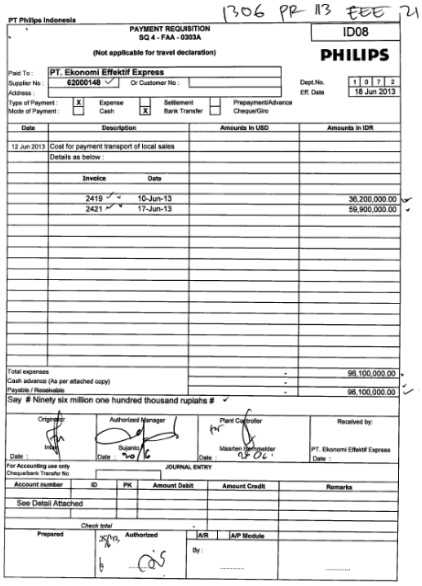


Figure 7. *Flow End to End customer to customer*after project Implemented
Source : Data Processed

The target for End to End process, from customer to customer is achieved where it can be realized in November 2015 and the benefit is reducing the risk of double invoice

- *PO Implementation*

Prior to implementing the project, payment is handled via manual payment request. The form of payment form is as follows:



PT Philips Indonesia

PAYMENT REQUISITION
SQ 4 - FAA - 0303A
(Not applicable for travel declaration)

ID08

PHILIPS

Paid To : PT. Ekonomi Effektif Express
Supplier No : 62000148 Or Customer No :
Address :
Dept.No. 1072
Eff. Date 18 Jun 2013
Type of Payment : X Expense / Settlement / Prepayment/Advance
Mode of Payment : Cash X Bank Transfer Cheque/Giro

Date	Description	Amounts in USD	Amounts in IDR
12 Jun 2013	Cost for payment transport of local sales		
	Details as below :		
	Invoice / Date		
	2418 10-Jun-13		36,200,000.00
	2421 17-Jun-13		59,900,000.00
Total expenses		-	96,100,000.00
Cash advance (As per attached copy)		-	
Payable / Receivable		-	96,100,000.00

Say # Ninety six million one hundred thousand rupiahs #

Originator / Authorized Manager / Plant Controller / Received by:
Date :
PT. Ekonomi Effektif Express

For Accounting use only — JOURNAL ENTRY

Account number	ID	PK	Amount Debit	Amount Credit	Remarks
See Detail Attached					

Check total

Prepared / Authorized / A/R / A/P Module

Figure 8. Manual payment requisition by excel
Source : Data sekunder

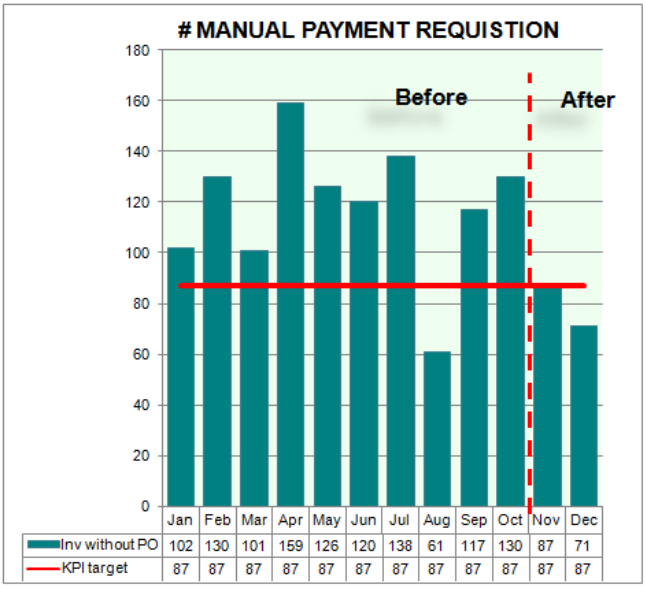
After the Six Sigma project is implemented, the payment is handled through 3 ways of matching or matching between PO, receipt of goods and receipt of invoice. The form of payment form is as follows:

Figure 9. Purchase Order form after project
Source: Data Processed

The target for PO Implementation is achieved where it can be realized in November 2015 and the benefits are suitability with standard form PO and reduce risk on double invoice

Fase Control

The control stage is the most important step because it is a repeat of unwanted processes where the benefits of continuous improvement must be obtained. In this section a control plan is made to the process. To ensure consistent PO procedures and formats are implemented consistently, the project team regularly conducts evaluations and discussions on the performance of processes that are the object of the Six Sigma project. The procedure is finally standardized into a detailed and standard documentation so that it really becomes an important grip for every transaction. Included is a flow chart diagram that after the improvement becomes more timelines but reduces the potential problem because the flow is too simple. Finally, the performance of the Six Sigma team shows the results achieved until December 2015 that is achievement of 47% where the expected target is 30%. The results are summarized in the scorecard graph as shown in the following figure:



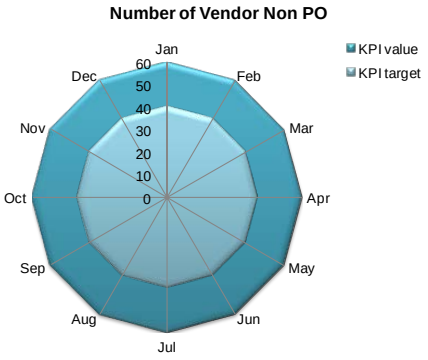


Figure 10. Scorecard Grapht till Desember 2015

Financial Benefit obtained with the implementation of Six Sigma project are:A) Eliminate Double invoice / Payment for 508 K EURB) There is a saving on infosys charges of 2 K EURC) Intangible Benefit (compliance and better control)D) The first pioneer project in the Asia Pacific region (compared to other philips branches)E) Standarization and Learning process

CONCLUSION

Based on the data that has been analyzed along with the discussion that has been described in the previous chapter, the authors draw the following conclusions:1. Distribution cost is an Opportunity Improvement because it is the biggest problem compared to other problems.2. Difficulty applying PO by system is because No socialization to Vendor about implementation of PR / PO process. As for the action plan related to this is the socialization of vendors3. The large number of Manual payment requisition is because there is no 12 NC code available in the SAP system. As for the action plan related to this is to upload 12 NC on the master material in SAP system.4. The high cost of invoice charge is due to the number of manual process activities. As for the action plan related to this is to determine the possibility to simplify the process (using PR / PO)5. Late payment / double payment is due to Lack of control process / More time required to verify / verify work paper correctness manually. As for the action plan related to this is Involving all the major parties to handle all the process end to end customer6. Incorrect payment form is due to most of distribution supplier in manual transactions (PR / PO process not yet implemented). As for the action plan related to this is the implementation of PO

6. Suggestions From the results of the discussion and conclusions from research, can be stated the key to the success of the Six Sigma project is consistent with corrective action. The advice given by the researcher is to continuously improve the quality of operating system and transaction information by focusing on financial benefit, to achieve the company vision in undergoing competitive competition. One effort to improve the quality of operating system and transaction information focused on financial benefit are the continues improvement in this research.

REFERENCES

Breyfogle III, Forrest W. 2003. *Implementing Six Sigma: Smarter Solutions Using Statistical Methods* 2 nd ed. John Wiley & Sons

Evans, Lindsay. 2007. Pengantar Six Sigma : *An Introduction to Six Sigma and Process Improvement*, SalembaEmpat, Jakarta.

Federico, Mary, and Renee Beaty. 2004. Rath& Strong's Six Sigma Team Pocket Guide. McGraw-Hill

Gaspersz Vincent. 2008, The*Execeutive Guide To Implementing Lean Six Sigma*, GramediaPustakaUtama

George, *Michael L., Rowlands, David, Price, Mark and John Maxey*. 2005. The Lean Six Sigma Pocket Tool Book. McGraw-Hill.

Gitlow, PhD., *Howard S., and David M. Levine, Ph.D. 2005. Six Sigma for Green Belts and Champions*. Prentice Hall.

Hendradi C.Tri.2007. Statistik Six Sigma dengan Minitab : PanduanCerdasInisiatifKualitas 6 Sigma, Penerbit ANDI, Yogyakarta

Hidayat, Anang. 2009. Strategi Six Sigma. PT Elex Media Komputindo. Jakarta

"KunalGanguly. 2012. *Improvement Process For Rolling MillThrough The Dmaic Six Sigma Approach*". International Journal

Pande, Neumann, Roland R.Eavanagh.2002. The Six Sigma Way Bagaimana GE, Motorola & Perusahaan TerkenalLainnyaMengasahKinerjaMereka. ANDI. Yogyakarta

Pande, Pete dan Larry Holpp. 2005. *What is Six Sigma* (BerpikirCepat Six Sigma), Penerbit Andi, Yogyakarta.

Pande, Peter S., Neuman Robert P, dan Roland R. Cavanagh. 2002. *The Six Sigma Way: Team Fieldbook, An Implementation Guide for Process Improvement Teams*. McGraw-Hill.

Pete & Holpp.2002. *What Is Six Sigma*. ANDI. Yogyakarta

Singgih S. 2007. *Total Quality Management* (TQM) dan*Six Sigma*, Elex Media Komputindo, Jakarta.

Stagliano, A.A., 2004. *Rath& Strong's Six Sigma Advanced Tools Pocket Guide*. Penerbit Andi, Yogyakarta.

Stagliano, Agustine A. 2004. *Rath& Strong's Six Sigma Advance Tools Pocket Guide*. McGraw-Hill, 2004.

Thomas Pyzdek. 2002, *Six Sigma Handbook*, PenerbitSalemba