



Digital Economy Transformation Stock Warehouse PT. Terminal Petikemas Surabaya

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ABSTRACT

Digital transformation which is part of the digital economy can be interpreted as a process of utilizing existing digital technologies such as virtualization technology, mobile computing, cloud computing, integration of all systems in the organization and so on. The application of digital transformation will have a positive impact, namely providing many benefits for the organization and a negative impact, namely often adopting new trends in the development of organizational human resource skills/skills. The digital transformation in the inventory section that is currently running is an update table in providing services and supporting loading and unloading services for container terminals in accordance with international standards effectively, efficiently and with optimal results. Archives stored in digital form can be in the form of images, sound, video, writing or others that can be used as data in binary form, can be processed in computer programs and stored in digital data storage media. Digital transformation of the electronic filing system at the PT. Terminal Petikemas Surabaya using the Maximo System, which is a software application released by IBM where the Maximo function is to manage or it can also be said about time and care for an asset, so that it can work and work as it should, cost efficiency, effectiveness and optimize performance of the asset

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INTRODUCTION

From information on Indonesia's Vision 2045, ten world megatrends, and President Joko Widodo's direction regarding the focus of future Indonesian research development, PT Terminal Petikemas Surabaya (PT TPS) made changes in the field of archiving inventory warehouse services to become digital. In today's era, logistics plays an important role in a supply chain. Along with the opening of the global market, it will open up opportunities for companies to develop their business both domestically and abroad. PT Terminal Petikemas Surabaya with the motto "Trusted Terminal with Excellent Service" means that Surabaya Container Terminal as a container terminal that deals with service buyers, both domestic and foreign, must become a company; reliable and trustworthy. Equipment reliability depends on the maintenance team in performing maintenance on the equipment. Maintenance can run if the availability of spare parts, oil, grease, and other supporting materials is available in the Inventory section. Therefore, the role of Inventory is very vital in this

business process. A good inventory is an inventory that is able to provide information about the availability of goods, speed in providing services to users and guaranteeing the necessary needs.

According to Verhoef et al (2019) digital transformation consists of 3 phases, including digitization, digitization, and digital transformation. Digitization is the act of converting analog information into digital information, digitization describes how information technology or digital technology can be used to transform existing business processes, whereas digital transformation is a broad enterprise-wide phenomenon where the company's core business model changes through the use of digital technology.

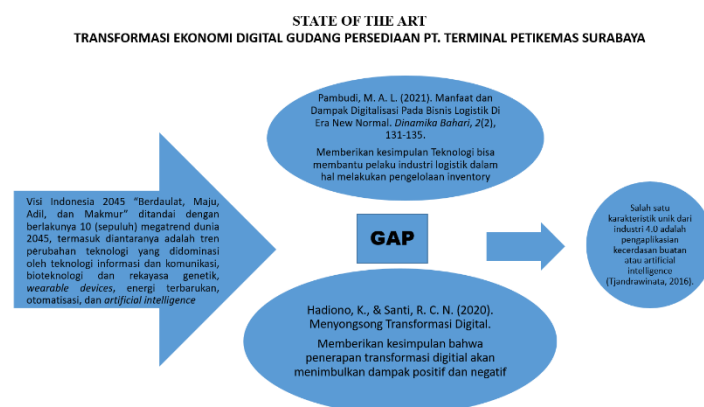


Figure 1. State of The Art

In accordance with the Book for the Implementation of Research and Community Service, Revised Edition XIII 2021 and Referring to the Directives of President Joko Widodo regarding the development of Indonesian research in the future, accommodation focused on research with a green economy, blue economy, digital economy, tourism and health where the digital economy or economy is based on computing technology digital technology which includes digital transformation, development of artificial intelligence to software engineering, is a concept that will change the way people live, including industrial, government, and managerial mechanisms in general.

Based on this background, the researchers took the research title "Digital Economic Transformation of Inventory Warehouses at PT Terminal Petikemas Surabaya". The specific purpose of this research is to find out the transformation of digital archives as a support for administrative activities, evidence of accountability, sources of information and communication vehicles that can be traced when needed at any time in the implementation of Issuing Materials / retrieval of goods at the PT Terminal Petikemas Surabaya.

METHOD

This research method uses purposive sampling with a qualitative approach which parses or analyzes as well as clearly describes the data obtained from observations, documentation, focused discussions and direct interviews with resource persons/informants in the field using words and using existing theories as a basis for drawing conclusions. conclusion with theory. The data analysis technique used to analyze the data that has been collected is the Miles model analysis technique and the Huberman model (Moleong, 2013). This model includes three main components, namely: data reduction, data presentation, and drawing conclusions.

Qualitative descriptive research aims to clearly describe the problem being studied. Qualitative research methods have different characteristics from quantitative research methods. Johnson & Christensen (in Hanurawan: 2012) the characteristics of qualitative research methods are as follows:

- a. Qualitative research experts have the view that the nature of reality is subjective, personal, and

is the result of social construction. This understanding of the nature of reality is in contrast to quantitative research which has a philosophical belief that the objective reality of different researchers has the same conclusion on the object of the phenomenon, which is beyond the subjective nature of the observer as an observer.

- b. The qualitative research process is inductive or bottom-up. In this context, the researcher creates a new theory or develops a theory based on the data collected during field research. This means that qualitative research is exploratory because of the limited knowledge about a research theme.
- c. The views of qualitative research experts on human behavior are dynamic, flowing, situational, contextual, and personal.
- d. The objectives of qualitative research are: descriptive, exploration, and discovery.
- e. The focus of the research is to reduce wider and deeper angles. In this case, qualitative research studies the breadth and depth of a phenomenon to reveal richer and more meaningful information about a phenomenon that is the object of research.



Figure 2. Research Flowchart

From the Figure 2. research begins with the initial meeting of researchers. The meeting discussed the research topic which decided 7 (seven) research designs.

1. First Pattern
 - a. Monitor information on the opening of research proposal submissions on the SIMLITABMAS page;
 - b. Took the theme "Digital Economic Transformation of PT Terminal Petikemas Surabaya's Inventory Warehouse" with descriptive qualitative research methods and purposive sampling;
 - c. Conducted an initial survey by asking permission from the Directors of PT Terminal Petikemas Surabaya as well as informants.
2. Second Pattern
 - a. Studying literature and making research proposals;
 - b. Upload the app on the SIMLITABMAS page.
3. Preparatory research to be carried out
 - a. Conduct a meeting with fellow researchers to prepare a preliminary report;
 - b. Prepare a field survey to PT Terminal Petikemas Surabaya;
 - c. Research socialization in the academic community of Barunawati Port Management

- Surabaya and lecturer expert tests.
4. Data Collection
 - a. Field data collection by obtaining information from official informants;
 - b. Compilation and analysis of field data with qualitative descriptive methods in the field;
 - c. Qualitative research methods, data were collected with several qualitative data collection techniques, namely; interviews, observations, documentation, and focused group discussions.
 5. Data Analysis
 - a. Data Collection: activities to find data in the field that will be used to answer research problems;
 - b. Data Reduction: summarize, select the main points, focus on the important things, and look for themes and patterns;
 - c. Data Display: presentation of data as compiled information that gives the possibility of drawing conclusions and taking action;
 - d. Conclusion: drawing conclusions is the result of research that answers the focus of research based on the results of data analysis.
 6. Checking the data to gain confidence in the validity of the data in qualitative research can be done by triangulation.

RESULTS AND DISCUSSIONS

Table 1. Details of receipt of goods							
No.	Description	Conventional (manual)			Digital (system)		
		Personnel (Person)	Time (Hour)	Receptacle	Personnel (Person)	Time (Hour)	Receptacle
1	Copy of Goods Receipt document (PO, Travel Certificate, Good Receipt)			-			-
2	Document storage (physical)	1	2	√	1	1	-
3	Document storage (soft copy) / server			√			√
4	Document Agenda			-			-
5	Document Recap (end of month)	1	3	-		1	-
6	Report Delivery		1	-	-		-
7	Copy of recap & proof of delivery	1	2	√	-	-	-
	Total	3	8		1	2	

Table 2. Details Of Implementation Of Item Issuance

No.	Description	Conventional (manual)			Digital (system)		
		Personnel (Person)	Time (Hour)	Receptacle	Personnel (Person)	Time (Hour)	Receptacle
1	Submission (input & approval)	1	1	-	1	1	-
2	Document storage (physical)			√			-
3	Document storage (soft copy) / server	1	1	√	1	1	√
4	Document Agenda			-			-
5	Document Recap (end of month)	1	3	-			-
6	Report Delivery		1	-	-		-
7	Copy of recap & proof of delivery	1		√	-	-	-
	Total	4	8		2	2	

Table 3. Qualitative documentation

No.	Description	Conventional (manual)		Digital (system)	
1	Periodic Generation	Report	Require personnel	Manual recap	System (Maximo Application)
2	Data retrieval		Excel File	Incidental	System (Maximo Application)
			Takes time	According to the needs	System (Maximo Application)
3	Report Delivery		Require personnel	Routine	System (Maximo Application)
4	Data validation		Require personnel	Manual validation	System (Maximo Application)
5	Papper		Require personnel	According to the needs	System (Maximo Application)
					Report (automatic) (on request) Real time By User Login Report (automatic) Papperless

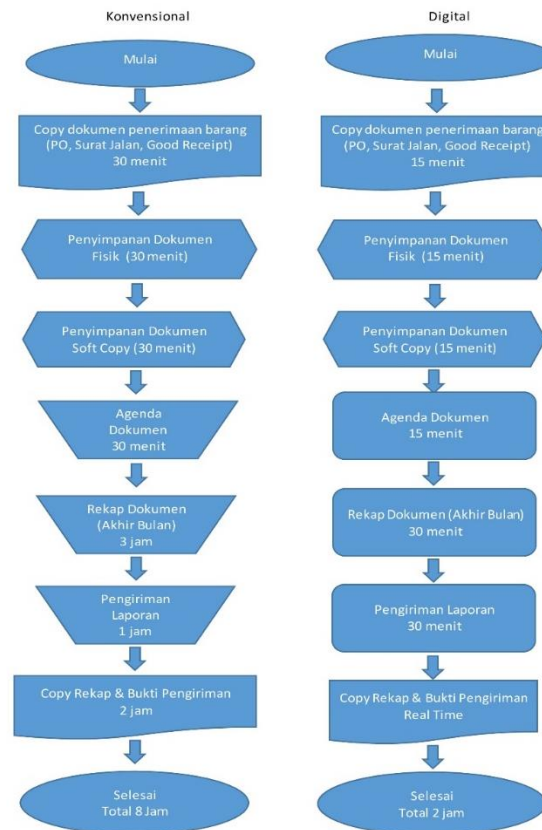


Figure 3. Conventional and Digital Receipt of Goods

Document Transfer Speed

1. Documents are archived either in hard copy (original archive) or soft copy (scanned results) by scanning

Based on the results of the study, recording incoming and outgoing transactions at the Inventory Warehouse of PT Terminal Petikemas Surabaya, already using a scanner as its input and entered / stored into the computer as a container to store transaction evidence so that the goods become electronic archives, which means recording incoming and outgoing goods in the inventory warehouse. PT Terminal Petikemas Surabaya records into electronic media. This is in accordance with Sugiarto and Wahyono (2015) that:

Basically, electronic archives are information that is recorded and stored in electronic media in digital form. The National Archive and Record Administration (NARA) USA defines electronics as records that are stored and processed in a format, which only computers can process. Meanwhile, according to the Australian Archive in the book *Managing Electronic Records*, electronic archives are records that are created, maintained, as evidence of transactions, activities and functions of institutions or individuals that are transferred and processed within and between computer systems. In the opinion of the above, the speed of document transfer is very fast, it does not take long. Because after there is a letter of release of goods, the employee of the archives directly archives the letter/document through a computer by scanning. Sugiarto and Wahyono (2015) reveal the advantages of electronic archives, namely:

- a. Fast processing;
- b. The level of accuracy of the resulting information is quite high;
- c. Ease of interacting with users.

Thus, the implementation of the transaction documentation process using a scanner into a computer is very useful to help facilitate the management of archives at the PT Terminal Petikemas Surabaya Inventory Warehouse.

2. Doing Changes in Document Forms From The Original Documents Transferred To The Computer Into Electronic Data/Files In The Computer

The results are based on research, the stages or processes of changing documents from original documents into a computer into data through scanning as input and input/stored into the Maximo computer system as a container for storing transaction evidence into electronic archives, meaning documenting the release of goods in and out at the Warehouse of PT. Terminal Petikemas Surabaya. Based on the above that electronic archives are very helpful in the administration of archiving at the PT. Terminal Petikemas because it has many advantages over manual archive management. According to Haryadi (Priansa and Garnida, 2015) there are four basic components that can be used as a guide in choosing an electronic filing system, namely Speed of Moving Documents, Document Research Ability, Document Indexing Ability, Access Control Ability. Thus, the stages or process of changing the original form of the document transferred to the computer into data using a scanner into the computer have more benefits and advantages so that it helps facilitate archiving management.

3. Manual File Input Into Digital Archive Moments After Document Received

Based on the research, it can be seen that entering the manual archive into the digital archive some time after the document is received is scanned and uploaded via the application to the server, namely by scanning the proof of incoming and outgoing transactions, the goods are then attached as attachments so that they are directly included in each transaction. (Sugiarto and Wahyono, 2015) suggest about virtual cabinets and virtual folders and archive sheets, namely:

- a. Cabinet Virtual, is a database that resembles the shape of a real cabinet used in conventional filing systems. The only difference is that in a real cabinet, the ability to accommodate archive maps is limited. The limit is the physical ability of the hard drive that stores digital data. The attributes in the virtual cabinet are cabinet code, cabinet name, cabinet function, location;
 - b. Map Virtual, is a database whose attributes are like real maps in conventional archival systems but unlike conventional maps which have limited ability to store documents, this virtual map has limited ability to store documents. Some of the attributes recorded in the virtual map are map code, map name, map location, description and others;
 - c. Archive sheets, which are stored in virtual folders can be in the form of document or image files. Document files are files created from Microsoft word, excel, power point and so on. While the image file is a file in the form of an image as a result of a scanner or import bitmap from;
 - d. Some of the attributes that are recorded in the database are archive code, archive name, classification, archive date, receipt date, sender, recipient, image, file location, physical location.
- The above guideline is to record archives in a structured and well-managed manner so that archive recording and storage is orderly.

Ability to save documents

1. Changes in Technology Can Support the Effectiveness of Digital Archive Storage

Based on the results of the study, it can be seen that in the Inventory Warehouse of PT Terminal Petikemas Surabaya, archive storage is very effective because the archive management is digitally based. In this modern era, of course, technology is very influential on human life, especially in the field of office administration, it is very effective if technology is used optimally, including in archive management activities to be more effective because it makes it easier to store and search archive data when needed and save space/containers/places. files. This is by (Sugiarto and Wahyono, 2015) that: "Basically electronic archives are information that is recorded and stored in electronic media in digital form. The National Archive and Record Administration (NARA) USA defines electronics as records that are stored and processed in a format, which only computers can process. Meanwhile, according to the Australian Archive in the book *Managing Electronic Records*,

electronic archives are records that are created, maintained, as evidence of transactions, activities and functions of institutions or individuals that are transferred and processed within and between computer systems. Based on the above opinion that the ability to store documents is very safe and very effective because archive storage or digital-based documents has more advantages than manual archive management.

(Sugiarto and Wahyono, 2015) revealed the advantages of electronic archives, namely:

- a. Fast processing;
- b. The level of accuracy of the resulting information is quite high;
- c. Ease of interacting with users.

Thus, archive storage is very effective because the archive management is digitally based. There are more benefits and advantages that help facilitate archive storage.

2. Digital Archive Storage System Able To Ensure Orderly Archive Storage

Results Based on the research, it can be seen that the service at PT. Terminal Petikemas Surabaya that the role of the availability/implementation of digital archives with the system, archive storage becomes and efficient. The archive system at the PT Terminal Petikemas Surabaya Inventory Warehouse is orderly because every part of the filing system is digitally based. However, the person in charge of the archives has prepared a concept for submitting a responsible or centralized archive. (Sugiarto and Wahyono, 2015) suggest the combination of centralization and decentralization.

3. Document Storage System Able To Last For A Long Time

Based on the results of the study, it can be seen that the archiving service in the inventory warehouse of PT Terminal Petikemas Surabaya, the document storage system is able to have a positive influence on the stored data. Because archives in the form of hard copies always have a special term of care, the archives stored can last a long time for digital archive data to be backed up regularly so as to minimize digital data loss. Duplication like this is included in the electronic filing system as it should (Bharthos, 2014) states that the archive is every written record in the form of images or charts that contain information about an event (subject matter) or events that are made to help people. it) too. Included as archives are for example: letters, receipts, invoices, books, payroll, price lists, identity cards, organizational charts, photographs and so on. Thus the document storage system in the PT Terminal Petikemas Surabaya is able to have a positive influence on the stored data.

Document Indexing Ability

Archive Field Index Using Keywords As The Method Used In Print Archives For Example Letter Number And Creation Date Results Based on the research, it can be seen that the archiving service at the Inventory Warehouse of PT. Terminal Petikemas Surabaya as a method that is very easy to use and can provide positive value in this office. So you can't change the code correctly because later it will be in accordance with office administration. The keyword system as the method used makes it very easy if the archive is needed again at any time, it will not be difficult to find it even if the hardcopy letter is lost. Because the archive management is digitally based. Incoming documentation is generally only recorded in a record book and then stored on an archive shelf labeled archive, then special folders are created on the computer for the archive storage location with archive classifications called cabinets virtual and map virtual. Thus the ability to index documents through the keyword system as a method used to make it easier when the required archive is returned and it will not be difficult to find it. Therefore the archives in the inventory warehouse of PT. Terminal Petikemas Surabaya in its arrangement can be said to be very neat.

Barriers to the Digital-Based Archive Management Process in the Inventory Warehouse of PT. Terminal Petikemas Surabaya

Results Based on the research that the obstacles faced in the management of the archiving service system (manual to digital) in the inventory warehouse of PT. Terminal Petikemas Surabaya as follows:

1. Hard disk has bad sectors;
2. Small server space owned;

3. High usage by Users;
4. There is an unstable network/signal/intranet connection;
5. Lack of quality (technological stutter) HR;
6. Human error.

Solutions To Overcome Barriers In The Process Of Archives Management At PT. Terminal Petikemas Surabaya

Based on the results of observations, the electronic filing system in the PT. Terminal Petikemas Surabaya uses the Maximo System, which is an application produced by the IBM technology company as a form of implementation of Business Processes related to maintenance activities and other supporting activities including office administration, where in order to further optimize the process, the Maximo System is expected only as a tool to computerize the maintenance process, but is able to be a means to perform data analysis and decision making as Enterprise Asset Management (EAM) as it should be supported by data (administrative evidence) as an auditable attachment.

Maximo is not only limited to one aspect, but works comprehensively from planning, maintenance, purchasing to handling financial problems. The web-based application was developed using an intranet network and an electronic filing system has been implemented in the work unit. Benefits of implementing EAMS Application (Maximo) in Inventory:

1. Increased Return on Assets (ROA) and Asset Return On Investment (ROI);
2. costs and risks;
3. Increased productivity and efficiency;
4. Better asset related decision making;
5. Improved response;
6. Efficient regulatory compliance activities;
7. Cost of Reducing Total Ownership;
8. Digital archiving of data.

Since 2019, Sub-section Warehouse Supplies PT. Terminal Petikemas Surabaya has implemented the Maximo system to support the process of implementing electronic archives. The implementation of the Maximo system makes it easier for officers at the Inventory Warehouse in service and makes it easier to do administrative work because of the use of Digital media so that archiving work is more effective and efficient. However, the implementation of the archiving process does not leave the conventional archiving process.

1. Related software to improve the quality of the internet network in order to maintain the Maximo system:
 - a. Maximo Production Environment;
 - 1) Operating System : Windows server 2008;
 - 2) Core application Server : Maximo 7.5 service pack 7.5.3;
 - 3) Application Server : Websphere 7.0.0.31;
 - 4) Address : tpsmaximo 01&tpsmaximo;
 - 5) Harddisk : Merk Western Digital 1 TB.
 - b. Maximo Database Environment;
 - 1) Operating System : Windows server 2008;
 - 2) Database : IBM DB2 9.7.0.8;
 - 3) Address : dbmaximo01;
 - 4) Harddisk : Merk Western Digital 1 TB.
2. Perform software and hardware maintenance by upgrading the program version so that there are no problems when the officer makes an error, stops the program running, and adds a virus security system (antivirus) so that there is no loss of some important company data or documents.

3. Currently there are special technicians (IT help desk) to repair and operate software and hardware; monitoring for 24 hours.

CONCLUSION

With the application of the manual to digital archive system, it has a very significant impact on the operational processes of the institution in real time, in addition to processing archive data that already uses a database, archive processing can also be carried out in an integrated manner in units that are given access rights to process archive data. digitally, so that the need for archives is no longer constrained by time and place, so as to improve business processes to be 6 hours faster; With the application of the manual to digital archive system, it has a very significant impact on the operational processes of the institution in real time, in addition to processing archive data that already uses a database, archive processing can also be carried out in an integrated manner in units that are given access rights to process archive data. digitally, so that the need for archives is no longer constrained by time and place, so as to improve business processes to be 6 hours faster; Provide better information and faster decision making 1 hour; Better archive services because they are easier to find; Reducing the 2 hours required when archiving officers search for information; By using the system (maximo application) in real time, it is possible to exchange information between units or organizations, and to reuse archived information by other units or organizations; Reduce costs and provide the ability to provide information accurately, quickly, and transparently according to user requests and the need for a regulation; Have preparation for business and risks that may occur and improve business continuity; Reduced costs due to reduced creation, storage, retrieval, and management of less paper media.

References

- Andriyan, D. N. (2019). Synergy and Harmony of the Presidential System of Multi Parties and Election to Associate Indonesia 2045. *Bappenas Working Papers*, 2(1), 16-30.
- Hadiono, K., & Santi, R. C. N. (2020). Menyongsong Transformasi Digital.
- Widnyani, N. M., Astitiani, N. L. P. S., & Putri, B. C. L. (2021). Penerapan Transformasi Digital pada UKM Selama Pandemi COVID-19 di Kota Denpasar. *Jurnal Ilmiah Manajemen Dan Bisnis*, 6(1), 79-87.
- Magetanapuang, J. D. (2021). Community Service.
- Gumilang, G. S. (2016). Metode penelitian kualitatif dalam bidang bimbingan dan konseling. *Jurnal Fokus Konseling*, 2(2).
- Pambudi, M. A. L. (2021). Manfaat dan Dampak Digitalisasi Pada Bisnis Logistik Di Era New Normal. *Dinamika Bahari*, 2(2), 131-135.
- Hadiono, K., & Santi, R. C. N. (2020). Menyongsong Transformasi Digital.
- Ghufron, G. (2018, September). Revolusi Industri 4.0: Tantangan, Peluang, dan solusi bagi dunia pendidikan. In *Seminar Nasional Dan Diskusi Panel Multidisiplin Hasil Penelitian Dan Pengabdian Kepada Masyarakat 2018* (Vol. 1, No. 1).
- Press, U. G. M. (2021). *Pemikiran Guru Besar Universitas Gadjah Mada Menuju Indonesia Maju 2045: Bidang Sains dan Teknologi*. UGM PRESS.
- Subandi, M. A. (2021). *Pemikiran Guru Besar Universitas Gadjah Mada Menuju Indonesia Maju 2045: Bidang Sosial Humaniora*. UGM PRESS.
- Harahap, M. N. (2021). Analisis Data Penelitian Kualitatif Menggunakan Model Miles dan Hauberman. *MANHAJ-STAI UISU Pematangsiantar*, 18(2), 2643-2653.
- Rahardjo, M. (2011). Metode pengumpulan data penelitian kualitatif.
- Gunawan, I. (2013). Metode penelitian kualitatif. *Jakarta: Bumi Aksara*, 143, 32-49.
- Dewantara, I. P. M., & Tantri, A. A. S. (2017). Keefektifan budaya literasi di SD N 3 Banjar Jawa untuk

- meningkatkan minat baca. *Journal of Education Research and Evaluation*, 1(4), 204-209.
- Sugiarto, A., & Wahyono, T. (2015). Manajemen Kearsiapan Modern dan Distribusinya.
- Widnyani, N. M., Astitiani, N. L. P. S., & Putri, B. C. L. (2021). Penerapan Transformasi Digital pada UKM Selama Pandemi Covid-19 di Kota Denpasar. *Jurnal Ilmiah Manajemen Dan Bisnis*, 6(1), 79-87.