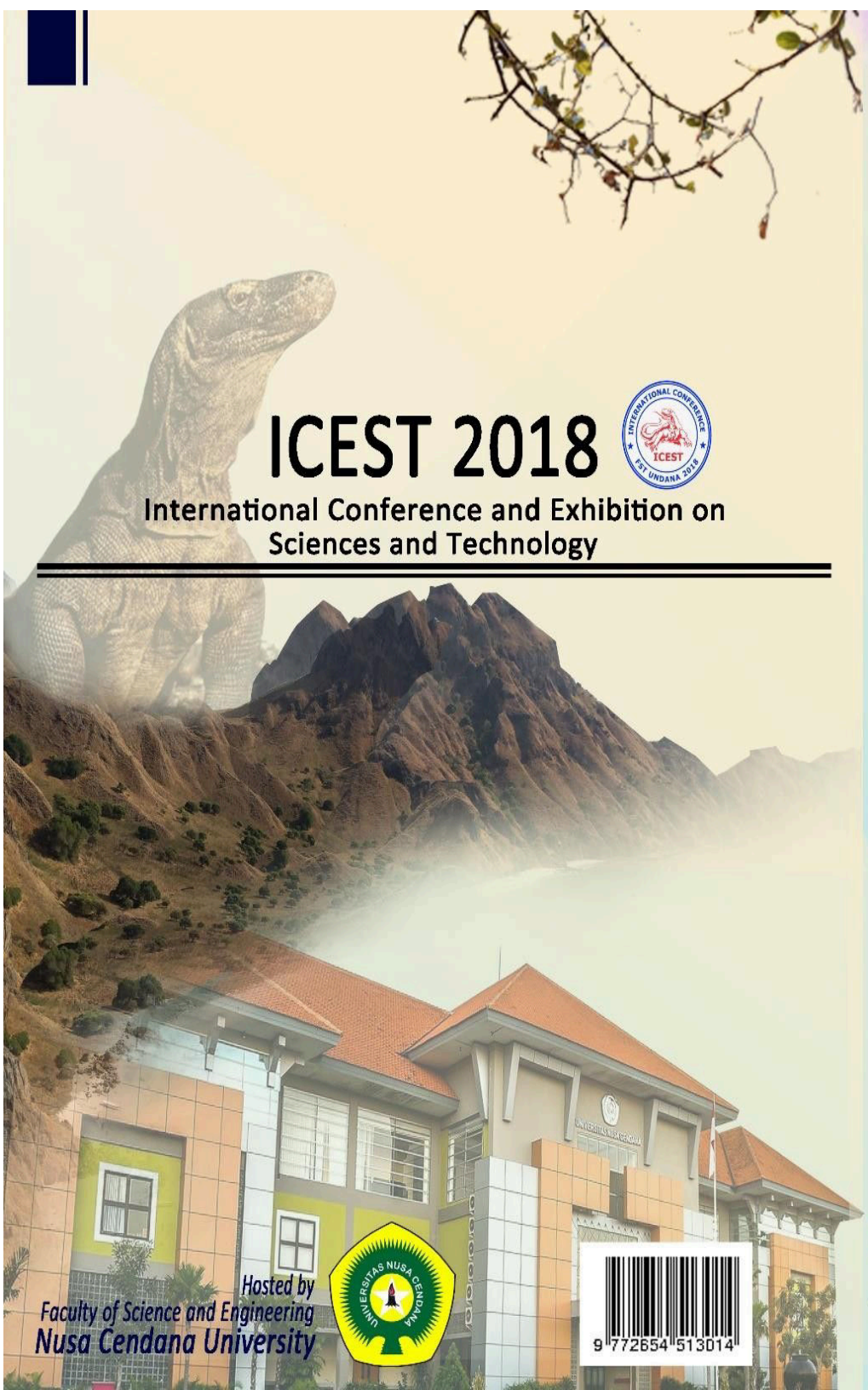
ICEST 2018

International Conference and Exhibition on Sciences and Technology



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PROCEEDING

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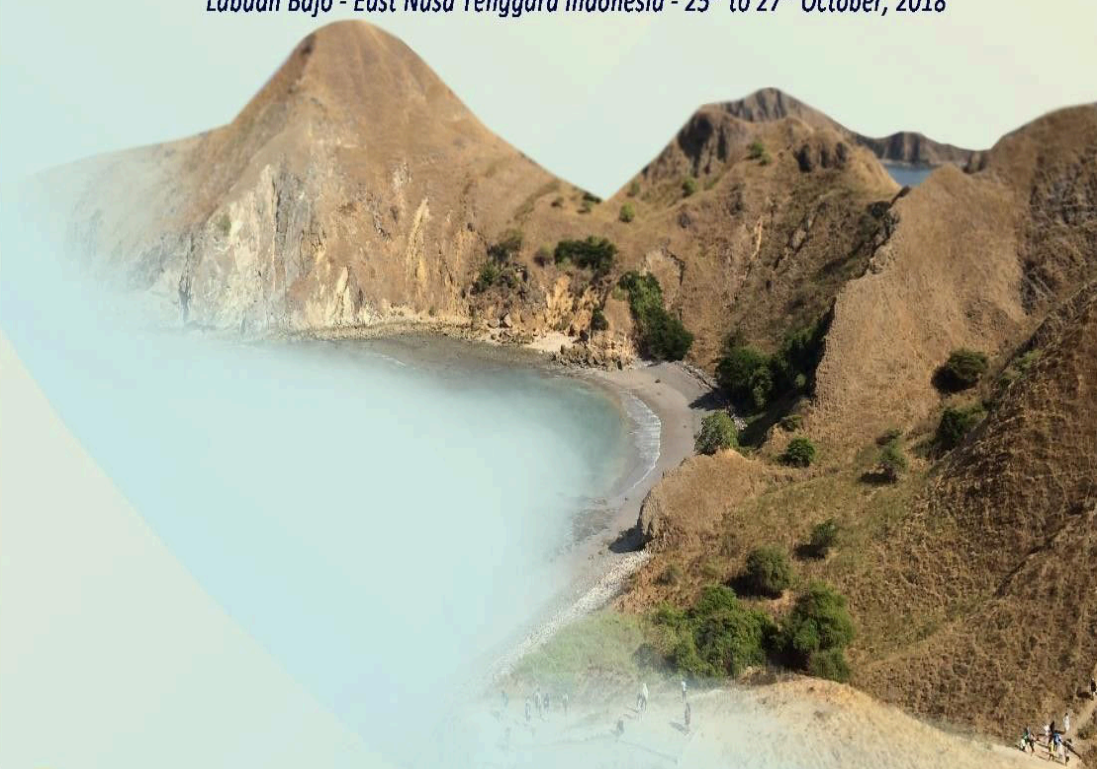
"Navigating of Recent Development on Sciences and Technology "

Labuan Bajo - East Nusa Tenggara Indonesia - 25th to 27th October, 2018



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PROCEEDING

THE FIRST INTERNATIONAL CONFERENCE AND EXHIBITION ON SCIENCES AND TECHNOLOGY (ICEST) 2018

Navigating of Recent Development on Sciences and Technology

Reviewer & Editor :
Amin Ajaib Maggang, ST., MTN.Eng
Andreas Christian Louk, S.Si., M.Sc
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PROCEEDING THE FIRST INTERNATIONAL CONFERENCE AND EXHIBITION ON SCIENCES AND TECHNOLOGY ICEST 2018

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PREFACE

First of all, let us give thanks to the Almighty God, because of His abundance of grace and love, Faculty of Science and Engineering Universitas Nusa Cendana (FST-UNDANA) Kupang, Indonesia can hold an International Conference and Exhibition on Sciences and Technology (ICEST) on October 25 to 27th 2018 at the The Jayakarta Hotel, and complete the Program and Abstracts book.

This International Conference and Exhibition on Sciences and Technology (ICEST) aims to encourage the researchers, scientists, scholars, academician, graduate students, industrial practitioners, and many others of related stakeholders of people in this world to participate in disseminating and sharing findings among the experts and society through the conference entitled "Navigating of Recent Developments in Sciences and Technology" in accordance with the program areas.

The papers were distributed in ten fields of study, they are Physics, Biology, Chemistry, Mathematics, Computer Science, Electrical Engineering, Mechanical Engineering, Civil Engineering, Minning Engineering, and Architecture.

The conference was well organized because of any assistance from various parties and hard work of the Conference Committee of the Faculty of Science and Engineering UNDANA. The tasks carried out by the Committee during seminar preparation were selecting abstracts, looking for sponsors, fund-Raising, arranging, and organizing the conference.

Finally, we would like to thank the Rector of Undana, Dean of FST, Conference Committee, speakers, conference participants, sponsors and donors, students of the Faculty of Science and Engineering UNDANA and all parties who have assisted and organized this International conference. Hopefully, this Abstract book can contribute significantly to the development in the field of Science and Engineering today and in the future.

Kupang, October 20th 2018

Conference Committee

WELCOME SPEECH
Head of ICEST Committee (2018)

Great, Intelligent Delegates,

Ladies and gentlemen, Scholars and Doctors, Keynote speakers, Invited Speakers, Sponsors, Academics and Business presenters, and all of you, welcome to ICEST conference; the first International Conference conducted by the Faculty of Sciences and Engineering, Universitas Nusa Cendana, Kupang; welcome to this city, Labuan Bajo, the one of the Tourism Cities of this Country. This is one of our reasons why Labuan Bajo was chosen as the venue of the ICEST Conference.

A. BACKGROUND

On behalf to unify our perceptions and make a clearance of related information thereafter, directly or indirectly linked with the ICEST event, it is required to introduce the background and subjects required to include in the event and therefore why this ICEST Conference required. The ICEST itself is abbreviated of “International Conference and Exhibition on Sciences and Technology”. For this first ICEST we have a theme as “Navigating of recent developments in sciences and technology.

Basically, science developed, is because of intellectual work reaches its momentum to improving the prosperity of the human beings. As scientists, we have senses to capture and understand the phenomena around earth and the natural facts facing all of human being which are essential resources to develop the intellectual work and navigate the developments of sciences and technologies. Hence, the current developed technologies-based natural sciences involving mathematics and engineering have already improved and facilitated the livings of human being throughout the world. Those already developed and their innovative related technologies have slightly made equally prosperity of people on this planet, a sharing prosperity arranged in acceptable regulations, of course.

We recognize and aware that matter and energy are sources of wealth that God (the Creator) provides freely to facilitate our life on this world. The material of natural wealth, both located within and originating from the earth or located and derived from the external earth can be used to facilitate easily the life. All of those wealthes, almost, can only be reached by the achievements of science and technology accompanied it. Remembering and re-stating the old word of wise people in this field that “Having a science without technology is similar with of having a useless ivory tower; otherwise operating a technology without an adequate science-based process could possibly produce the false prosperity”. The meaning might probably be able to express in other languages such as “テクノロジーのない科学を持つことは、無駄なアイボリーの塔を持つことと同じです。さもなければ、十分な科学的プロセスがない違う　技術を操作することで偽の繁栄を生み出す可能性があります” or “**Memiliki sains tanpa teknologi serupa dengan memiliki menara gading yang tidak berguna, sebaliknya mengoperasikan teknologi tanpa proses berbasis sains yang memadai dapat menghasilkan kemakmuran yang semu**).

The rise of science and technology to the present day has facilitated the lives of some human being on this planet. Yes, the achievements in the various fields of the science along with the accompanying technologies have ensured that material and energy are our aids to facilitate the life. How the material transformed into the energy or energy transformed into the material has been mastered in science as well as some of the accompanying technologies. The natural phenomena and facts have made a number of human children to learn how to wear those material and energy to facilitate **a temporary life on this planet**.

The development of computer science and digital-based information technology today has opened our eyes to increasingly see many things about the material and energy circuit from the aspects of chemical and physics which are assisted by the mathematical science as well as by the astronomy and mining science/engineering. Our eyes have widely opened to understand the circuit and therefore we, the humans,

have successively produced the derived material and energy in the form of various products from various applications of the technology such as performed in engineering fields of mechanical, civil, electrical, etc. in the ingredients of the spacecraft. The art is a dress which is one of aids to completely perfect the performance of science and technology.

Again, natural phenomena and facts have also made some human children to learn and to see the material and energy from the chemical and physical aspects in realizing the biomass of life science (Biological) materials. There are many material and energy secrets that have been revealed such as how to build the physical being of the biological material of this world. The developments of science and technology in the field of biological science have strengthened us regarding the meaning of the material and energy transformations, affirming us to the meaning of life on this planet. Overall, the navigating of recent developments in science and technology emergently required to continuously improving the lives of human being, our people, and society throughout the world. Therefore the International Conference and Exhibition on Sciences and Technology conducted by the Faculty of Science and Engineering Universitas Nusa Cendana Kupang encouraged the researchers, scientists, scholars, academician, graduate students, industrial practitioners, and many others of related stakeholders of people in this world to participate in disseminating and sharing findings among the experts and society through the conference entitled mentioned.

B. GOALS AND SUBJECTS

Actually, this conference has two main goals that are goals linking with the academics and those others linking with business. The goal linking with academics operationally defined in program areas, which are covered into the following subjects of each field but not limited to:

Field of physics:	**Field of Electrical Engineering:**
*Applied Geophysics	*Telecommunication and Network
*Applied Nuclear Physics	*Instrumentation and Control
*Material Physics	*Power Transmission and Distribution Systems
*Instrumental Physics	*Energy Conversion and Renewable Technologies
Field of Biology:	**Field of Civil Engineering:**
*Anatomy and Physiology	*Construction and Building Materials
*Biodiversity	*Hydraulic and Hydrology Engineering
*Bio-conservation	*Geotechnical and Foundation Engineering
*Bio-pharmacology	*Construction-Project Management
Field of Chemistry	**Field of Mechanical Engineering**
*Biochemistry/Nutritional Biochemistry	*Automotive Engineering
*Biotechnology	*Product Design and Manufacturing Engineering
*Material and Polymer Science	*Materials Science and Engineering
*Natural Product	*Energy Conversion and Renewable Energy
Field of Mathematics	**Field of Architecture**
*Algebra and Its Applications	*Sustainable Eco Green Architecture

*Applied and Computational Mathematics	*Architectural Design
*Pure Mathematics	*History Theory and Criticism of Architecture
*Mathematical Educations	*Building Science and Technology
Field of Computer Science	**Field of Mining Engineering**
*Computer Network and Security	*Geological Survey and Exploration
*Mobile Computing	*Development in Mining System and Technique
*Decision Support System	*Technology Developments in Mineral Processing
*Web and Cloud Computing	*Mining Environment Conservation & Rehabilitation

The goal linking with the business definitely involved in exhibition. The exhibition is aimed at local products from each district/city in NTT and/from other regions in Indonesia. This breakthrough is in line with the creation of sea toll lines already and/are being encouraged by the current central government. Thus, this event becomes an opportunity for promotion and creation of trade agreements between regions within the province as well as with other provinces in Indonesia. Trade agreements implementing a barter system might be better to be performed, thus contributing to the suppression of inflation values in their respective regions. Additionally, presentations that offer investment opportunities in each region can also be very promising for domestic investors to see the opportunities that existed in each region. The sea toll line created, therefore, can provide the greatest benefit for the people in this area and/others of Indonesia. Overall, the exhibitions and business presentations encouraged in this event may involve all Regional Device Work Units (known as SKPD) of Districts/Cities in NTT and/other district/city SKPDs from all over Indonesia, willing to utilize the event for the benefit of their respective regions.

Exhibitions and business presentations can also be utilized by the industry to offer the marketing of industrial products, as well as the results of technological findings that can be traded between industries. All kinds of industrial products based on the selected products conducted by the conference committee "can be presented in Labuan Bajo". In this connection, the presenter may sell the right of production on the basis of the granted patent documents, for example. Thus, this event can be useful for researchers/inventors both coming from universities and those from the industries. Instead of the domestic researchers/inventors, the event can also be utilized by researchers/inventors from Universities/Industries abroad to pioneer bilateral cooperation, for example, either G to G/B to B / or B to G.

Both those goals were considered importantly to include in this conference event because the event could **meet the people** from any regions in a province, any provinces in a country, and any countries in this planet, we meet in this tourism city of the NTT province, Labuan Bajo (Let us give applause for all of us). This event is able to perform today because of enthusiasm, high commitments, and hard works of the ICEST committee which are supported strongly by the local government, Bupati Manggarai Barat beserta jajarannya (Let us give applause for both backbones of the event).

C. OUTPUT AND OUTCOME

The output of this ICEST-2018 Conference is ICEST Proceeding in a serial form namely “ICEST-FST UNDANA PROCEEDING”. The proceeding is just only indexed in various International-based data such as Crossref and probably followed by Scilit, Google Scholar, Copernicus, etc., in advance. Creation of networks nationally and/or internationally among scientists, scholars, and participants since present to future might indicate the outcome of the event. In this connection, understanding the biological material transformations from the earth into life, in life, and it backs to the original earth might encourage people to spread their attention and affection for all people throughout the world, we are almost same, not so higher, and/or lower than that of the others.

D. FUNDINGS

The source of funds for this event was collected from various resources that are from DIPA FST/Undana, sponsors, participants, and other creativities of the ICEST committee under fund section. Our sponsors are: PT. DEKA SARI PERKASA, PT. Alfa MAS Mandiri, PT. SARANA AGRAHA GEMILANG, LPJK, ATAKI, and BANK ARTHA GRAHA INTERNASIONAL

E. WELCOME FOR GUESTS

Ladies and gentlemen, the Scholars and Doctors, Keynote speakers, Sponsors, Academics and Business Presenters, and all of you, we, the ICEST Committee, the Faculty of Sciences and Engineering, and the Nusa Cendana University Kupang, from our deep heart, we appreciate your efforts to join this conference. We are aware that this is not an easy decision to take a part in this event, to prepare time and anything, to reach 100% completed. We have speakers/presenters that could not join us here, because they could not reach 100% completion of their preparation. We appreciate also for their efforts. So, how about our keynote and invited speakers as well as all our presenters that are already presence here, join with us? They have already successively prepared their selves to join us here, from here from our deep heart; we highly appreciate (Give applause). Firstly, let us give applause for our Guest Keynote Speakers: Prof. Teruyoshi from Japan (We kindly invite Professor to stand up), Prof. Djoko Lego from UGM (We kindly invite Professor to stand up), Prof. Nana R. Syambas from ITB Bandung (We kindly invite Professor to stand up), Lady Fainmarinat Inabuy, PhD from Washington University, USA (We kindly invite Lady to stand up) and our host Keynote Speaker, Prof. Fred L. Benu (the President of Universitas Nusa Cendana, Kupang). Let us give a long applause for all of them). Secondly, let us give applause for our sponsors (We kindly invite sponsors to stand up, from the left to the right) Sponsor from PT. DEKA SARI PERKASA, PT. Alfa MAS Mandiri, PT. SARANA AGRA GEMILANG, LPJK, ATAKI, and Bank ARTHA GRAHA INTERNATIONAL, and let us give applause for our presenters.

F. CONFERENCE SCHEDULE AND FIELD TRIPS

Today, this afternoon, we establish the ICEST opening ceremony while presentation sessions will be conducted tomorrow from morning to afternoon/evening. The presentation session will be started by the Keynote speakers and followed by the parallel session, either academics or business presentations, that are oral presentations, posters, and promotion of products from any industries, Government/SKPD, UKM, etc. The committee will organize it for us. The October 27 morning, we will get field trips which are coordinated specifically by the agent.

"There is no ivory that is not cracked
If there are broken needles, do not store them in a chest
If there is a wrong word, do not store it in your heart"

Labuan Bajo, Kupang, Indonesia,
October 25, 2018
Head of ICEST Committee

Prof. Yohanes Buang, M.Agr., PhD

WELCOME SPEECH
by the Dean, Faculty of Science and Engineering

Great, Excellencies Delegates,

Ladies and Gentlemen, the Scholars and Doctors, the Keynote speakers, sponsors, the Academics and Business presenters, and all of you, welcome to ICEST conference; the first International Conference conducted by the Faculty of Sciences and Engineering; welcome to this city, Labuan Bajo.

We choose this city, Labuan Bajo, as the venue of this conference because of it has background as one of the tourism cities in this country. We would like to expose the strengths of this region. The typical archipelago, dry lands, and high intensity of sunshine radiated through this region are some unique power owned by the NTT province. By navigating of recent development in sciences and technology might, those unique power, provide the new areas of researches to promote the sciences and accompanying related technologies. The mentioned areas are directly related with field studies of 11 departments in Faculty of Science and Engineering, Universitas Nusa Cendana, Kupang.

The International Conference and Exhibition on Sciences and technology (ICEST) is one type of the applications of the university's vision by the Faculty of Science and Engineering. The committee preparing this conference aims to encourage two main goals, namely academics and business. The goal linking with academics operationally defined in academic program areas, while the goal linking with the business definitely involved in exhibition. Therefore, in this conference, we'll have academic and/or business presentation.

The exhibition is aimed at local products from each district/city in NTT and/from other regions in Indonesia. This breakthrough is in line with the creation of sea toll lines already and/are being encouraged by the current central government. Thus, this event becomes an opportunity for promotion and creation of trade agreements between regions within the province as well as with other provinces in Indonesia. Trade agreements implementing a barter system might be better to be performed, thus contributing to the suppression of inflation values in their respective regions. Additionally, presentations that offer investment opportunities in each region can also be very promising for domestic investors to see the opportunities that existed in each region. The sea toll line created, therefore, can provide the greatest benefit for the people in this area and/others of Indonesia. Overall, the exhibitions and business presentations encouraged in this event may involve all Regional Device Work Units (known as SKPD) of Districts/Cities in NTT and/other district/city SKPDs from all over Indonesia, willing to utilize the event for the benefit of their respective regions.

We would like to acknowledge our keynote speakers, invited speakers, presenters both academics and business. We sincerely hope that this activity is beneficial for all of us, especially to accelerate the development of science and technology for both, host and the respective presenters. Again welcome to Labuan Bajo, enjoy for your presentations, and enjoy the beauty of traveling in this city.

Labuan Bajo, Kupang, Indonesia,
October 25, 2018
Dean

Drs. Hery Leo Sianturi, M.Si

WELCOME SPEECH
Rector of Nusa Cendana University

Excellencies, Distinguished Delegates,

Ladies and Gentlemen,It is a great pleasure for me to welcome you all to this International Conference and Exhibition on Sciences and Technology (ICEST); the first international conference conducted by the Faculty of Science and Engineering, Nusa Cendana University, here in Labuhan Bajo, a transit city for tourists visiting Komodo National Park. It is an opportunity to all of us to make new contacts and to renew the existing ones while discussing problems of mutual interest with delegates from different parts of Indonesia and overseas.

Nusa Cendana University is a global oriented university. This vision is in line with our strategic location in the frontline of our country to two neighbouring countries, Australia and Timor Leste. It is also in line with the development of information technology today in the era of digital revolution. In our efforts to meet this vision, we strive to develop collaborations with both national and international universities, governmental and non-governmental organizations, and business world to improve our teaching, research, and community services. Yet, this vision has also guided us to look more deeply inward in our efforts to understand both the strengths and weaknesses of this region, the East Nusa Tenggara Province. Together with part of the neighbouring provinces West Nusa Tenggara and Maluku, East Nusa Tenggara is the driest province in Indonesia, receiving rainfall only for 2-3 months a year and as such qualifies as the only true drylands in Indonesia and the only archipelagic drylands in the world. We share this condition with our neighbours Australia and Timor Leste, but the drylands in Australia are continental.

The semi-arid climate archipelagic geography allows East Nusa Tenggara to enjoy a number of competitive advantages. In every island there are beautiful beaches no tourist can resist. Beaches with high waves in the southern coast of islands bordering the Indian Ocean invite surfers from various parts of the world. The archipelagic drylands have forced plants and animals in this province to evolve distinctly from those in other provinces. We have endemic plants such as white sandal (*Santalum album*) and endemic animal such as komodo dragon (*Varanus komodoensis*), thanks to this evolutionary force made possible by the challenging dryland environment. We owe the archipelagic geography (nusa) and the white sandal (cendana) for the name of our university. We should thank komodo dragon for making Labuhan Bajo one of the fastest growing tourist destination now in Indonesia. But drylands do not mean always dry. Flores island is mountainous and milder climate can be found on top of such mountains where different types of plants and animals thrive. Indeed, Kelimutu National Park with its three lakes of periodically changing colour, a popular scenic tourist destination, is located on top of a dead volcano.

The unique climate and geography of the archipelagic dryland of this province have shaped not only plants and animals but people as well. People in this province are so heterogenous that those living in one island belong to different ethnic groups and speak different languages. People of each of such ethnic groups nurture their own tradition and culture in the forms of cuisines, fabric, housing, music, and dancing. A traditional fabric known as tenun ikat is a trade mark of each ethnic group in this province that now has become a popular tourist souvenir. In nurturing their tradition and culture, people interact with their local environment under the guidance of their local knowledge and wisdom, allowing them not only to benefit from but also to take care for the available natural resources. Drylands are indeed not just about climate, geography, and soil, but about shaping and reshaping of all of their components, of people and their environment in particular.

It is this unique physical, social, and cultural environment that encourages us to develop archipelagic dryland as the scientific orientation of the university. We ask each of our 11 faculties and 47 undergraduate programme of studies to implement this scientific orientation in accordance with its field. For example, the Faculty of Agriculture should focus in developing centres of excellence in areas of dryland agriculture. On the other hand, the Faculty of Medicine, the Faculty of Veterinary Medicine, and the Faculty of Public Heath

each should focus in developing centres of excellence in areas of tropical health and zoonosis. Similarly, the Faculty of Science and Engineering should focus in developing centres of excellence in areas of science and engineering relevant to archipelagic drylands. Each faculty and programme of study should be able to implement this scientific orientation in its teaching, research, and community service activities. We also ask our graduate programme and its programme of study to do so.

This International Conference and Exhibition on Sciences and Technology (ICEST) is an event carefully planned by our Faculty of Science and Engineering to implement our vision and scientific orientation. The organizing committee have told me that this conference and exhibition aims to achieve both academic and business goals. The conference programme will provide the venue to achieve the academic goal, whereas the exhibition is the venue to achieve the business goal. Not surprisingly, throughout this conference and exhibition we will deal with both academic and business presentation.

We would like to acknowledge our keynote speakers, invited speakers, presenters, both academics and business. We sincerely hope that this activity is beneficial for all of us, especially to advance the development of science and technology for the benefit of both the host and the respective presenters. On behalf of the university, allow me to thank the organizing committe for their hard work in carefully planning and excecuting this conference and exhibition. Again welcome to Labuan Bajo, enjoy for your stay and please feel free to explore the beauty of this city. Last but not least, on behalf of the Almighty God and all of us, allow me as the Rector of Nusa Cendana University to pronounce this International Conference and Exhibition on Sciences and Technology officially open.

Kupang and Labuhan Bajo, Indonesia,
25 October 2018
Rector,

Prof. Ir. Fredrik L. Benu, M.Si., Ph.D.

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PROCEEDING
The First International Conference and Exhibiton on Sciences and Technology (ICEST)
Faculty of Science and Engineering UNDANA
Labuan Bajo, 25-27th October 2018

Automation of Accounting Systems in Non Profit Organizations based on Psak 45 Standards

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Abstract. Indonesia and other countries in the world have standard financial accounting guidelines. In Indonesia, these guidelines are called Pernyataan Standar Akuntansi Keuangan (PSAK). There are 58 non-Sharia PSAK that can be used in accordance with the function of each financial report. This PSAK is not binding and is not a requirement for the organization to prepare its financial statements. However, this PSAK can be used as a guideline to ensure the placement of economic data elements can be presented properly, so as to facilitate interested parties to interpret and evaluate and take economic decisions. One derivative of the Pernyataan Standar Akuntansi Keuangan (PSAK) for non-profit organizations is PSAK 45. Technological developments make transparency and accountability in both commercial and non-profit organizations increasing. Thus, non-profit organizations require an accounting system as a tool for collecting, storing and disseminating data for planning, controlling, coordinating, analyzing and financial decision-making purposes in accordance with PSAK 45 of 2011. With the SIA, non-profit organizations can report financially well and accountable so that the organization is increasingly trusted by the community and donors.

INTRODUCTION

Recently, information technology is a key requirement for digital organizations, including non-profit organizations. A non-profit organization is an organization or institution whose establishment is not intended exclusively for profit. Some of such the organizations are religious organizations, foundations, and educational institutions. Information technology (IT) plays a role in various sectors of non-profit organizations. A typical implementation of IT in financial sector is accounting report generation, or so-called accounting information system [9].

Non-profit organizations typically manage funds from third parties, donors, volunteers, and so forth. Transparent financial statement that must be relevant to activities undertaken is a factor that distinguishes the non-profit organization from business organizations. Usually, non-profit organizations are established in different forms compared to typical business organization. As the result of the difference of goals between them, then there exists some differences in presenting financial statements.

Indonesia and other countries apply standard financial accounting guidelines. In Indonesia, these guidelines are called Statements of Financial Accounting Standards (PSAK/ *Pernyataan Standar Akuntansi Keuangan*).

However, the PSAK can be used as a guideline to ensure that the placement of economic data elements can be presented properly, so as to facilitate interested parties to interpret and evaluate and take economic decisions.

The financial capability of an organization is communicated through a statement of financial position that provides information on assets, liabilities, net assets, and information on the relationships among the elements. This report should present separately both bonded and unrestricted net assets. The accountability of the organization's board regarding its ability to manage the organizational resources received from the contributors is provided through activity reports and cash flow statements. The activity report should provide information on changes occurring within the net asset group. Data processing consists of four main tasks: data collection, data manipulation, data storage and document preparation [10].

In entering the digital age, the demand for transparency of financial information is increasing, both from users of financial statements and from all involved policy stakeholders. In this case the treasurer in charge of finances wants to be able to make the required report with only one input. Likewise, the funders have a desire to be able to view the financial statements easily without opening manual records. While the operator wants to be able to revise and make improvements if there is an error. To meet these increasing demands, financial accounting standards must be supported by information systems that are easily accessible to stakeholders who need organizational financial information. [16]. Utilization of information technology within an organization can improve performance [7].

From the above problems and the need for utilization of information technology to support non-profit organizations, the authors propose to design an accounting information system that is specific to non-profit organizations using accounting standard number 45. With the information system that will be developed is expected non-profit organizations can make good and standard financial statements in a more efficient time

LITERATURE REVIEW

Related Works

In his research entitled " Sistem Informasi Akuntansi Bagi Organisasi Non-profit Berdasarkan Standar PSAK 45" Wibisono showed that Accounting Information System is required by any organization that requires financial reporting. However, the problems faced by financial stakeholders in non-profit organizations that are constrained by their ability or knowledge in preparing accounting reports can be overcome by the Accounting Information System which has been adjusted to the PSAK 45 standard [16].

Amin (2015) conducted a similar study on the design of accounting information systems for non-profit organizations based on the PSAK no 45 reporting standard. The designed system does not provide graphical functionality so that users can not view the report as a whole [1].

Bestari (2015) conducted a study on the application of PSAK 45 to non-profit foundation which resulted recommendation of phases of application of financial statements to PSAK 45. Bestari still use manual way in the application. Kristinawati (2014) also conducts research on financial reporting to non-profit organizations using PSAK 45. The research undertaken by krisnawati resulted in a writing format based on PSAK 45.

Wonok (2016) conducted a study that resulted in writing financial statements in an organization using the PSAK 45 standard. Wonok implements PSAK 45 standards manually [17].

Ramadhan, Dkk (2016) conducted a design study that produced accounting information system based on PSAK 45 at orphanages muhammadiyah pamekasan. The resulting system is in conformity with the PSAK 45 format, however, the resulting system does not provide graphical, print, and share menus for other users [13].

Research conducted by the author intends to design an accounting information system for non-profit organizations including churches, mosques, orphanages, infak institutions and amil zakat integrated with stakeholders as well as providing a graphic menu to display a summary of existing reports and print facilities so that reports can be reported online can also be printed as physical archives.

Accounting Information Systems

Accounting Information Systems is a collection of resources such as humans and equipment that is set to transform data into information [3]. Charles T. Horngren, and Walter T. Harrison (2007) stated that Accounting is an information system that measures business activity, processes data into reports, and communicates results to decision makers [4]. Romney and Steinbart (2009) define that Accounting Information Systems are systems that collect, record, store, and process data to generate information for decision makers [14]. There are three SIA subsystems, the first Transaction Processing System that supports daily business operations with numerous documents and messages for users throughout the organization. The second is the General Ledger / Financial Reporting System ("General Ledger / Financial Reporting System") that generates traditional financial statements such as income statements, balance sheets, cash flow statements and so on. Thirdly, the Management Reporting System provides internal management with special purpose financial statements and information needed for decision making (Hall, 2001).

Like a computerized system, accounting information systems have interrelated components, among others [14]: Human, Computer and Office Automation, Database, Encoding, Document, and Report.

These components are related to each other, good output or reports must come from good inputs, and vice versa. So the accounting information system is highly dependent on the data entered. Computer-based accounting information system can further facilitate the organization in preparing accounting reports more accurate and accountable.

PSAK 45

Statement of Financial Accounting Standards) is an instruction manual of accounting procedures containing regulations on the treatment, recording, compilation and presentation of financial statements prepared by the Indonesian Institute of Accountants (IAI) based on ongoing conditions agreed upon and approved by institution or official institution.

PSAK provides for accounting records based on transactions. For example PSAK 2 contains guidelines for recording cash flows, PSAK 13 contains guidelines for listing of investment properties. While PSAK 45 itself contains the guidelines for recording financial statements for non-profit organizations. Non-profit organizations have different recording methods with other profit organizations because there are some transactions that are only owned by non-profit organizations such as aid, grants, donors, etc.

The main purpose of the financial statements according to PSAK No. 45 is to provide relevant information to meet the interests of contributors, members of the organization, creditors, and others who provide resources to non-profit organizations.

The financial statements of non-profit organizations according to Statement of Financial Accounting Standards No.45 include: (1) Position Financial Statements whose purpose is to provide information about the assets, liabilities and net assets as well as information on the relationships between these elements at any given time. (2) Activity Reports whose purpose is to provide information on the effects of transactions and other events that alter the amount and nature of net assets; relationships between transactions and other events; and how the use of resources in the implementation of various programs or services. (3) Statement of Cash Flows to present information on cash receipts and disbursements in a period. (4) Notes to the Financial Statements which form part of the inseparable financial statements as they contain detailed accounts of the accounts in the financial statements.

Non-Profit Organization

A non-profit organization is an organization that is principally grounded to support an issue or subject in attracting public attention to a non-commercial purpose, without any concern for profit-making matters. The nature and character of the non-profit organization is very different from the profit-oriented organization in general including the difference in its financing structure. Non-profit organizations stand to realize change in individuals or communities, making human resources the most valuable asset, and not for profit but to channel funds to society in accordance with the vision and mission of the organization [15].

In other definitions non-profit organizations are organizations that are permitted to profit but are prohibited from distributing the profits or profits earned to those who control the organization [19].

The problem often faced by non-profit organizations is the problem of funding, because the funding structure of non-profit organizations comes from community-sponsored grants and grants. Another thing that non-profit organizations face to convince financiers is to report the best use of funds. Most non-profit organizations in Indonesia do not fully describe the most effective way of positioning themselves in having the ability to collect funds [15]. Therefore, non-profit organizations in Indonesia should rededicate their efforts in terms of fundraising, including how to convince funders by providing reliable reports.

METHODS

This research will be done by performing the steps described in the flow diagram shown in Figure 1.

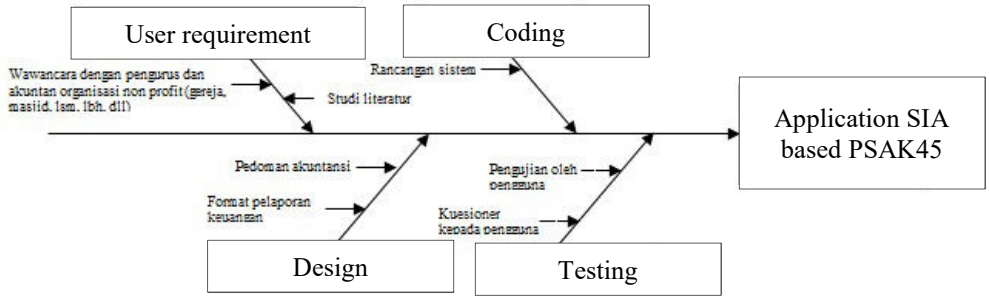

Figure 1. Fishbone diagram of the research

Method of Software Development, with the following steps:

a) System analysis, contains a needs analysis of the application to be built. At this stage the authors use a qualitative approach, because the issues discussed are problems that occur in some non-profit organizations. Data collection techniques are grouped into two, namely: main data and supporting data. For the main data obtained from interviews of stakeholders are people who are involved in the field of financial organizations such as treasurers, financial admin and financial operators. While supporting data obtained from documents in the form of notes, bookkeeping, SOP and other materials that can support in this research. To obtain the necessary data in this writing, the authors do a survey by coming directly to the place to be made object of this scientific writing and see the activities that take place especially on the part involved in the financial organization. Data analysis technique used in this research is descriptive qualitative analysis. The data obtained will be analyzed and then design the model of accounting information system.

b) The design of the system, contains the design and description of the application form to be built. At this stage the author designed a prototype that can be used to explore the needs of users.

c) Coding, which is the process of writing a program that realizes the design of the system that has been made, using programming language, by following the rules of the applicable programming. At this stage the authors start building the final product of user input and user needs analysis.

d) Testing the system, namely the testing process of the application made, whether it is running well and in accordance with the design.

RESULTS AND DISCUSSIONS

The developed system is devoted to assisting non-profit organizations in reporting their finances to conform with the accounting standards issued by the Indonesian accountant association (IAI) ie PSAK no 45 [6]. The process of preparing financial statements on non-profit organizations can not be separated from the evidence of transactions, proof of payment, receipt of evidence, and other evidence for later recorded into the cash book. Subsequently created in journal form and recorded in the ledger, then posted to the trial balance, then made a financial statement. Based on

the results of interviews with the object of research, the outline of the process of preparing the report can be described as follows:

Non-profit organizations may use this accounting information system to report their financial position to all stakeholders so that the organization can take account of the financial statements well and is expected to increase the trust of donors and other donors.

Basically by using Accounting Information System, there is no change in the basic structure of the accounting cycle manually or in writing. In other words, there is always input, process / processing, output, and feedback flows. What expresses the difference in the system is the activity of the information process in the system (the way work / process is done) and the technology used [16].

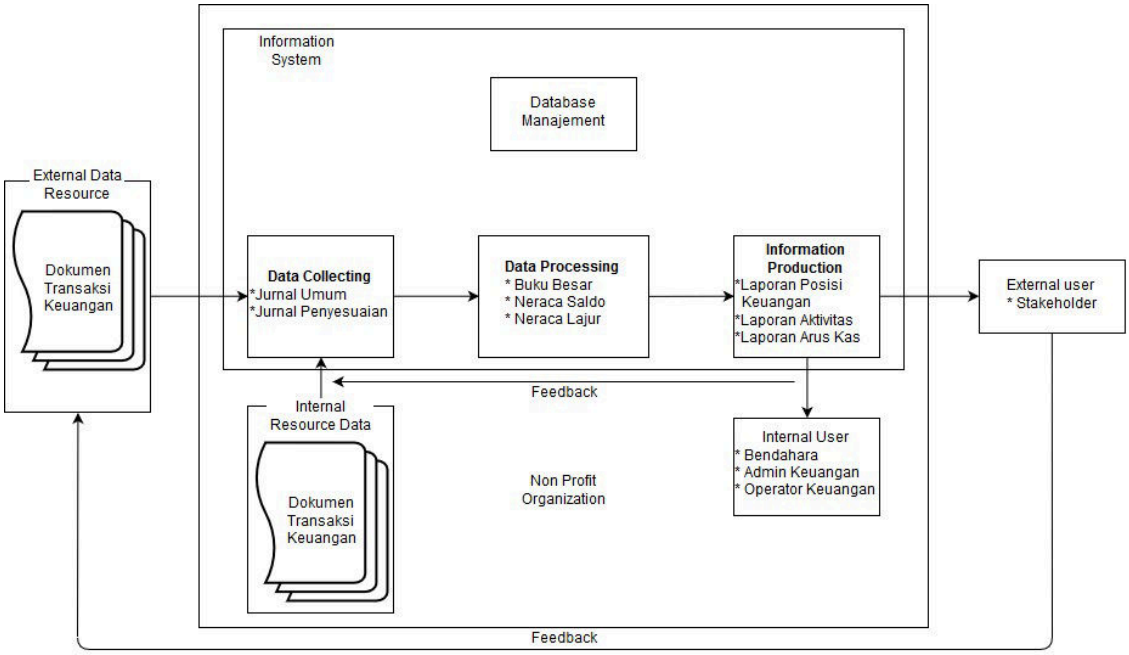

Figure 2. Implementation of PSAK 45 in SIA

System Functionalities

After going through the stages of analysis then determined what functions will be provided by this developed information system. These functions are software requirements designed to be presented in the use case diagram. Use case diagram can be used to indicate what functions are provided and done by whom. Figure 5 is a use case diagram of a developed system. Use case diagram shows there are five actors involved, and there are four main functions in the system. The five actors involved are administrators, assemblies, operators, checkers, and signers. The administrator has all access within the system and fully controls every function within the system. While operators can only use the functions contained in the management of adjusting entries and the management of general journals. Checkers and signers are responsible for providing validation, checkers provide validation of final checks, while signers provide validation and sign reports. The resulting report is intended for the assembly, so the assembly can only see reports of this system. The Assembly is a church council that has the responsibility to oversee the use of church funds and its financial statements.

Interface Design Description

The design of the accounting information system interface based on PSAK45 for non-profit organizations is presented in this section. There are seventeen main interface displays such as 1) main dashboard, 2) user management, 3) user add form, 4) account form, 5) add account form COA, 6) preliminary balance form, 7) general journal list form, 8) the general journal entry form, 9) the general ledger entry list, 10) the adjusting entry list, 11) the adjusting entry journal form, 12) the general ledger report, 13) the trial balance report, 14) the work sheet report report, 15) the activity report, 16) cash flow statement.

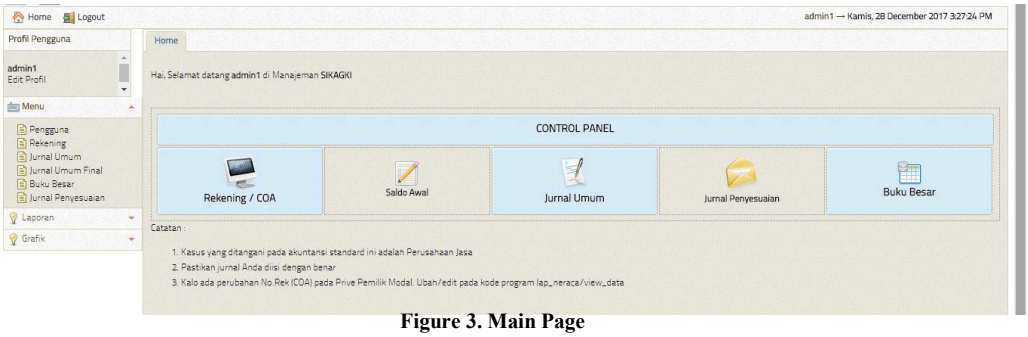

Figure 3. Main Page

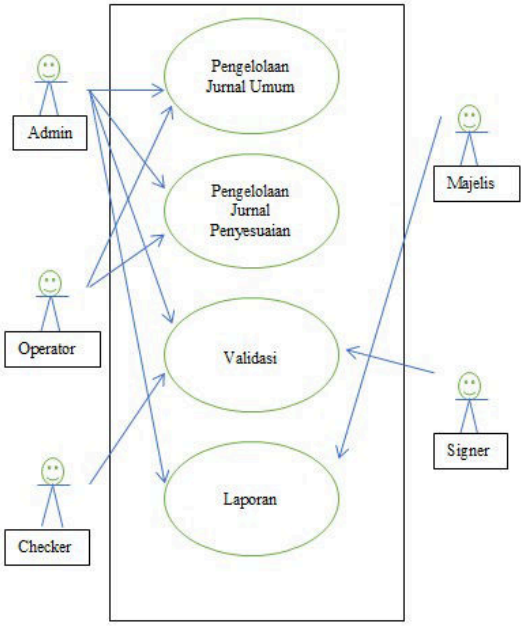

Figure 4. Use Case Diagram

Figure 3 shows the main page that will appear after the user successfully logged into the system. This main page / dashboard shows all the functions that the user can access. Nevertheless each user has a different function hence from appearing to be different. Figure 3 shows the results logged in from the administrator so that the function menu is displayed complete.

The form add account / coa can be accessed by administrator. The operator is tasked to enter transaction data into the system. Figure 4 is one of the tasks of the operator is to add the beginning balance in each account, in addition to the operator administrator can also operate this function. Any changes to the initial balance form will be stored in the balance table_awal. The beginning balance table has a primary key period and a foreign key no_rekening.

One of the functions offered in the development of this accounting information system is reporting. The report to be generated is the ledger report (figure 5), the trial balance report, the work sheet report, the activity report, and the cash flow statement. The resulting report is aimed at the non-profit organization's funding board. Funders can view, print and share all generated reports. When the print button is clicked, the system generates a report in the form of a pdf file in accordance with the default format and can be printed.

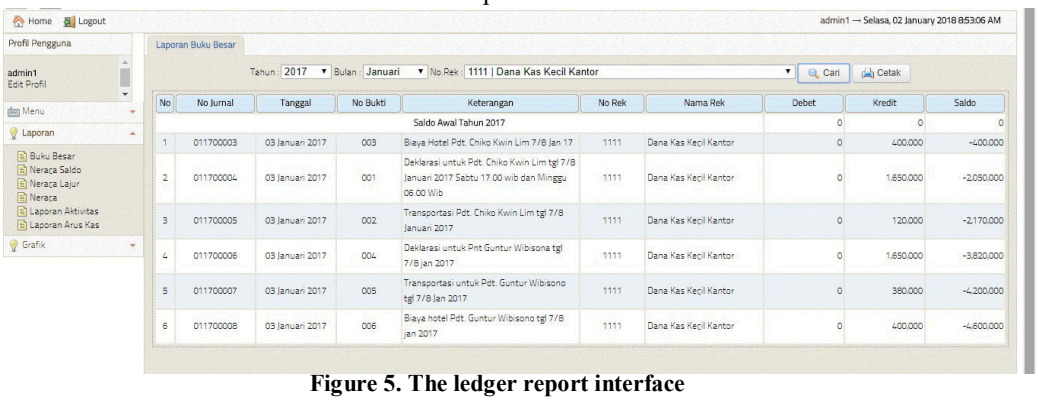

Figure 5. The ledger report interface

CONCLUSIONS

Based on the study and development of accounting information system based on PSAK 45 in this research can be used well. This is indicated by the overall design of the database up to the GUI design. However, the GUI design, database, and existing functions can change according to the needs of the organizations that will use. This system will serve non-profit organizations in managing finances. The system developed has not been studied the level of acceptance of the user. Further development of accounting information system based on PSAK 45 is suggested to explore the mobile application. This is important because to make it easier for people whose mobility is higher. Implement this application to non-profit organizations around the environment such as mosques, churches, orphanages, etc. to then know the level of effectiveness and efficiency of the use of this application.

Further studies are needed to measure the level of user acceptance of this application when actually implemented by using the Technology Acceptance Model method.

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