

# ANALYSIS OF E-LEARNING IMPLEMENTATION IN MAKASSAR MERCHANT MARINE POLYTECHNIC

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**Abstract:** This study aims to examine the readiness of the Makassar Merchant Marine Polytechnic in terms of Human Resources, readiness of the Makassar Merchant Marine Polytechnic in terms of Organizational Culture, and readiness in the Makassar Marine Polytechnic in terms of Infrastructure. This study uses a quantitative descriptive approach. The population in this study is the entire academic community of Makassar Merchant Marine Polytechnic. While the object of this study consisted of Taruna, Officers of Makassar Marine Polytechnic Students and Lecturers. The process of collecting data in this study was carried out by distributing questionnaires to a number of respondents. The data analysis technique used is descriptive quantitative analysis. The results of data analysis show that; the readiness value for the Human Resource component is 3.98 or ready but needs improvement in implementing e-Learning, the readiness value for the organizational culture component is 3.93 which means it is ready but improvement is needed, and the readiness value for the infrastructure component is 3.95 or in the ready category needed improvement.

**Keywords:** E-Learning, Human Resource, Organizational Culture, Infrastructure.

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## 1. INTRODUCTION

The era of the advancement of electronic devices is a necessity for the development of the world today, penetrating into almost all joints of life. Various models change from analog to digital, the dissemination of information changes from hardcopy to softcopy. This fact is increasingly becoming due to the many internet connections and technological developments in gadgets. The world of maritime education also does not want to lose and has utilized information technology for the development of maritime power competencies. E-learning is now seen as an upcoming educational model that has the support of technological developments in today's modern era.

On June 25, 2010, the International Maritime Organization whose members consisted of major stakeholders and Marine companies in the world ratified the Seafarer Certification, Training and Watch keeping (STCW), which was called the Manila amendment to perfect the latest developments in the maritime world, and one of which was sparked regarding the use of E-learning in the standard of maritime training as contained in Regulation I / 6.

The advantages of E-learning are providing flexibility, interactivity, speed, visualization through various advantages of each media (Sujana, 2005: 253). E-learning is a relatively fast way to distribute teaching materials and e-learning material can also be updated quickly (tridarmayanti, et al. 2007).

The online media news [www.beritatrans.com](http://www.beritatrans.com) on March 22, 2017 reported on the Head of the Transportation Human Resources Development Agency who has initiated to use E-learning for cadets who sit in the 7th and 8th semester starting April 1, 2017. This is a series of statements The Minister of Transportation, Budi Karya Sumadi, when visiting the Madiun Indonesian Railway Academy which explained the use of e-learning in the schools of the Ministry of Transportation. For cadets in semesters 5 and 6 who will practice being introduced to e-learning, semesters 7 and 8 will take full e-learning. In addition, this triggering has actually been supported also by the issuance of the Instruction of the Head of Transportation Human Resources Development Agency Number: IK. 02 / BPSDMP-2017 Regarding the

Implementation of Teaching and Learning with E-learning Systems in Technical Implementation Units in the Transportation Human Resources Development Agency. In addition, the news also reported that BPSDMP cooperated with the Open University for time efficiency and facilities provision budget. Because Open University is considered to be very experienced so that it will be easier and does not require a long time and a large cost if using the Open University e-learning system platform.

On the other hand, in this case the Open University represented by its Chancellor, Tian Belawati expressed his gratitude for BPSDMP's trust in them in implementing this software. He also revealed that in fact they had used internet media since a long time ago as a learning media. Precisely since 1996. He also explained the success of making a website as a learning media. Then in 1999 they developed an online learning system that utilizes electronic mail facilities or discussion groups via mailing list.

The news also explained Tian's statement that they were also developing distance learning methods by building their own platforms. They developed a Learning Management System platform or it could also be called an online learning management system. The aim is so that students and lecturers can do learning in modern virtual classes. The news also explained that the Open University would fully assist BPSDMP to use e-learning in transportation training. They will also hold e-learning utilization in accordance with the request of BPSDMP. In addition, they will provide special training for lecturers of transportation schools. The goal is so that they are accustomed to utilizing e-learning facilities in the teaching and learning process.

Completing the fact that the existing site [www.Liputan6.com](http://www.Liputan6.com) in Jakarta also reported that the Ministry of Transportation's Human Resources Development Agency had held training for lecturers, batch 1 and class 2, as many as 50 lecturers. Then next year there will be another 75 lecturers. Through the news, Masrono Yugihartiman, Secretary of BPSDMP explained that the implementation of e-learning will begin in 2019. According to him, this program will be faster and not less competitive with other countries. In addition, this program is also able to save money.

The use of E-learning certainly has the consequences of readiness for educational institutions that will implement it. The e-Learning Readiness model is formed by the e-Learning component used. The six main components in assessing readiness are Human Resource, Organizational Culture, Technology, Policy, Financial Situation, Organization and Infrastructure (Fariani R.I., 2013). This component needs attention so that the implementation of e-learning can be a part that supports the achievement of the vision of the Makassar Merchant Marine Polytechnic to become the leading University in the development of human resource Transportation and research in the field of Marine.

A variety of reasons people use e-learning as an educational aid. One of them is for reasons of time or opportunity. That means there are some packages that can be used asynchronously or not at the same time. Or in other words lecturers and students are not obliged to be at one and the same time to undergo the teaching and learning process. For example: the lecturer can upload learning activities in the afternoon and the students download them the next morning.

The second reason is the problem of distance. That is, lecturers and students are not required to be in the same room to carry out face-to-face learning using tools, such as video conferencing. This device allows lecturers to carry out their teaching assignments in office space while students can be in their homes or internet cafes. This of course will make it easier for lecturers who also have administrative duties to carry out their duties in the office without having to leave the room just to teach.

The third reason is space. The point is the ratio between lecturers: high students, for example 1: 180 makes the process of transferring knowledge less effective than the ratio of 1: 8. This is where e-learning is needed. Why? The answer is certainly because this device allows the non-demanding learning process to be in the same room. Or more simply it can be said that this device is able to overcome the problem of a high ratio of lecturers and students. The trick is to provide other solutions in the form of self learning for students.

The fourth reason is the repository. The point is that this device allows a digital repository of learning-discussion, quiz, and authentic assessment activities. This is certainly supported by the fact that this device is in the digital world. So that all data and information can be easily electronized, regulated and delivered. For example: for assessment activities.

The last reason is the desire to facilitate various kinds of learning preferences of students. You do this by providing several types of learning objects. Examples: sound, video, images, animation, writing and discussion in cyberspace. This diversity of objects makes the student learning process more optimal.

The development of technology and the need for these devices which are increasingly rapidly raises new needs for a global standard. Therefore, certain institutions conduct standard setting efforts in implementing this device. One of the institutions in question is the Airline Industry CBT Committee (AICC) which focuses on the standards intended for flight training. Examples include lessons, modules, evaluation tests and so on. Then there is the EDUCAUSE Institutional Management System Project (IMS), which makes work standards for the AICC.

The next institution is Advanced Distributed Learning or also commonly abbreviated as ADL. This institution was initiated by the United States federal government in charge of making SCORM. Then there are industry associations that focus on issues to standardize these learning devices. The association is called ARIADNE. Its stands are Alliance of Remote Intuitional Authoring and Distribution Network for Europe.

Besides that there are also accreditation standards in the United States which we often refer to as the IEEE Learning Technology Standards Committee. This standard is often abbreviated to IEEE LTSC. Then there are also information and communication technology standards for the teaching-learning process, education and training courses. The default is called ISO / IEC JTC1 SC36 (ITLET).

Then there is ALIC which is a consortium in the country of cherry and is intended to introduce and sell the technology and infrastructure of electronic learning devices. ALIC stands for Advanced Learning Infrastructure Consortium. In addition there are also companies whose business fields are business promotion and electronic learning technology in Japan. The business referred to here is eLC. eLC stands for e-Learning Consortium Japan (Sutanta, 2009).

The STCW Convention is actually trying to provide minimum standards in the implementation of maritime education and training. In addition, the STCW Convention also provides minimum requirements for seaman competencies. The STCW Code Section A-1/6 Training and assessment item 3 on Qualifications of instructors, supervisors and assessors says: "Each party shall ensure that instructors, supervisors and assessors are appropriately qualified for particular types and levels of training and assessment of competence of seafarers either on board or ashore, as required under the Convention ... ". STCW 1978 / conventional 2010 requires levels of knowledge, understanding and expertise for all seafarers at every level. Then e-learning here will be used as a tool to help meet these standards.

The question now is why e-learning is needed to fulfill MET competencies. The answer is actually very simple, because the device can develop well according to the educational needs of each era. This means that this electronic learning device is more reliable to overcome problems in various ages compared to ordinary learning devices that use paper that is easily damaged. In addition, this device provides a variety of media that can enrich learning styles in each era. The impact of course is clear, that is, this device can be used in any era.

Looking back at the STCW code problem, of course makes us ask ourselves about what the impact of implementing the regulations and conventions is. The impact is increasing the competency of seafarers or in other words helping the Marine industry facilitate safeguarding ship navigation and preventing pollution of marine life. Because seafarers will be at the forefront of its application. Approval Section B-1/6 in STCW Code has actually regulated Distance Education and e-learning that is specifically intended for training for seafarers. Distance education or PJJ itself can be interpreted as a process of education and a system where all or the main part of teaching activities is delivered by someone or something that is able to overcome the problem of distance and time (UNESCO, 2016). Therefore the researcher discussed the impact first so that the Marine and Training activities could be well prepared.

The International Maritime Organization (IMO) itself actually adapts competency models from the UK to training-based competencies for STCW 95 (Emad & Roth, 2008). This model provides competency assessments as units of assessment at the workplace of training activities. Basically there are two main types of competency models viewed from the country of origin of the educational model. The two countries are US and UK. So that each model is called the US model and the UK model. The first model often places competence into a training program and focuses on how to use competence in the entire learning process. While the second model has been discussed previously.

Previous research which discussed the same topic was the research of Makmur and friends in 2017. His research entitled Utilization of Google Scholar in Supporting E-learning Learning System Preparation at Makassar Merchant Marine Polytechnic. The results of his research indicate that the use of Google Scholar which will be used to support e-learning learning systems is quite large while the level of mastery is quite proficient. But unfortunately the results of this study are not enough to provide the results of an assessment of the Makassar Marine Polytechnic facilities in implementing e-learning applications. Because the results only provide a description of the use of help tools in the e-learning learning system.

The use of e-learning itself will actually require human resources capable of mastering this device. Culture in educational institutions that use these devices also certainly plays an important role in supporting the use of this learning model. The hardware infrastructure that must exist also requires an investment that is not small to support this system because it will be used for distance learning for cadets who are carrying out marine practice activities on board. Thus, it is necessary to assess the condition of the Makassar Merchant Marine Polytechnic based on human resources, organizational culture and infrastructure. This study is entitled Analysis of E-learning Facilities for Marine Practice Activities in Makassar Merchant Marine Polytechnic.

The purpose of this study is to examine:

1. Readiness of Makassar Merchant Marine Polytechnic in terms of Human Resources
2. Readiness of the Makassar Merchant Marine Polytechnic in terms of Organizational Culture
3. Readiness of Makassar Merchant Marine Polytechnic in terms of infrastructure

## 2. RESEARCH METHODS

The descriptive approach was used because the research was aimed at obtaining an overview and describing the current condition of the Makassar Merchant Marine Polytechnic, how it was prepared to implement e-learning. The quantitative approach is used by reasoning the use of numbers can provide an overview of the current condition of the organization more easily because it can be seen the position of the organization on the scale used. The research design that will be carried out is a research survey using a research instrument in the form of a questionnaire. The respondents chosen were cadets, student officers and lecturers.

The population in this study is the entire academic community of Makassar Marine Polytechnic. While the object of this study consisted of Taruna, Officers of Makassar Marine Polytechnic Students and Lecturers.

The process of collecting data in this study was carried out by distributing questionnaires to a number of respondents. Therefore, before making a questionnaire the research team first makes an overview or grid of instruments that will later be filled by the respondent.

The data analysis technique used is Descriptive Quantitative Analysis, Quantitative Analysis is the analysis of data carried out using tables, the numbers available in the end are interpreted to those numbers which then becomes a conclusion of this study.

## 3. RESEARCH RESULTS AND DISCUSSION

E-learning Readiness Analysis at Makassar Merchant Marine Polytechnic

This study based on a questionnaire that was answered by 118 respondents who were filled directly using the questionnaire paper sheet and which were filled online through the following results:

### 1. Human Resource

Human Resource includes Self Development indicators and Skills of research objects. The results obtained from the measurement of Human Resource variables in the research object are as follows:

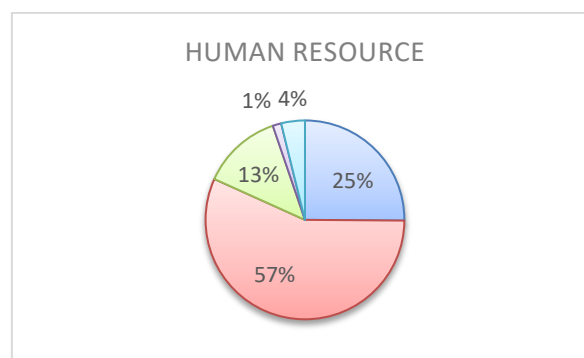


Figure 1: Measurement results of readiness of human resource variables

Readiness Analysis Results based on Variable Human Resource, 85% Ready Gain criteria;  $G > 75$  is considered Ready. The response of students generally shows readiness to adjust to changes but there are several lecturers and officers of students who assess themselves having difficulty responding to changes so that the value achieved is 3.86 or with criteria ready but improvement is needed.

Furthermore, measurement of cadets learning models, student and lecturer officers shows variations in numbers which are still positioned at a threshold of 3.4 to 4.19 or ready, but improvement is needed. The intended learning model is the tendency to like learning by listening, seeing and writing. When the model illustrates an interest in multimedia learning.

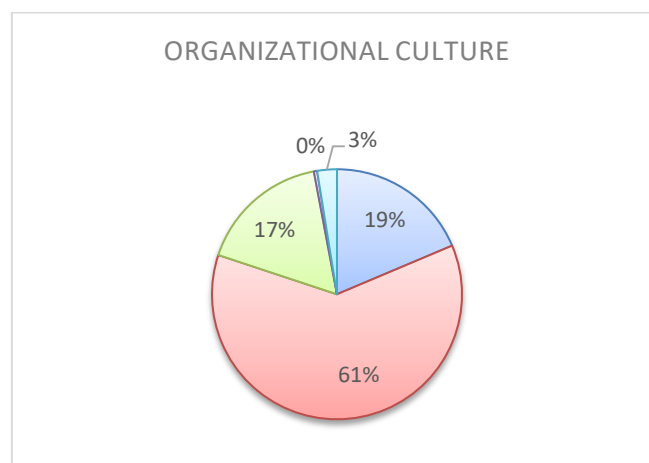
In general, respondents indicated that they were used to computers and the internet. For cadets in semester VII and VIII in Makassar Merchant Marine Polytechnic, they are free to use laptop devices and access the internet both from campus Wi-Fi and independently using a Wi-Fi tethering / smartphone. The rise of social media for almost all people has a big contribution so that they are accustomed to using the internet. But it remains a concern because the use of computers and the internet is often also not used optimally for learning and work but only reaches the entertainment function for watching movies and playing games.

Measurement of skill indicators in terms of the ability to use multimedia data processing software shows the number 3.6, the number is only exceeding 0.2 of the criteria for not ready and requires a lot of improvement. This skill is much needed by lecturers to improve the function of e-learning both as total e-learning and e-learning as a complement to conventional learning. Similarly, student cadets and student officers will be widely used in answering various tasks through e-learning.

The average measurement for the Human Resource variable is 3.98 (Ready but needs improvement in implementing e-Learning).

## 2. Organizational Culture

The results obtained from the measurement of Organizational Culture variables on the object of this study are as follows:



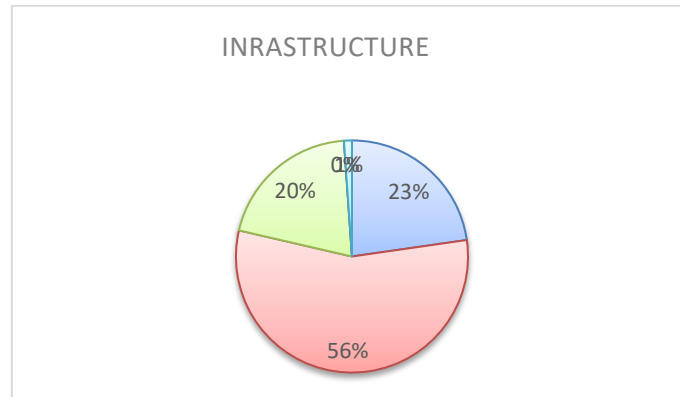
**Figure 2: Results of measurement of readiness of Organizational Culture variables**

Readiness Analysis Results based on components of Organizational Culture, 80% Ready Gain criteria;  $G > 75$  is considered Ready.

The value of the measurement results of the organizational culture is 3.93 which means it is ready but it needs improvement. The questionnaire shows the need for increased management commitment to implement e-learning at the Makassar Merchant Marine Polytechnic. In every organization that the role of management in accelerating implementation will be very significant, e-learning is the modernization of the teaching and learning process that requires painstaking effort to move or integrate conventional learning. However changing an old habit will require a lot of effort. Such obstacles can be minimized by management's strong commitment. Makassar Merchant Marine Polytechnic as a jabir (2016) study that the hierarchical leadership model is still a color in the organization so that management commitment has a great opportunity to be a stimulus for all employees, lecturers and students.

### 3. Infrastructure

The infrastructure included here is hardware and Software, Networking and Support indicators. The support meant here is information technology (IT) staff or employees. The results obtained from the measurement of Infrastructure variables in the object of this study are as follows:



**Figure 3: Measurement results of infrastructure variable readiness**

Readiness Analysis Results based on IF Variables, 79% Ready

Gain criteria;  $G > 75$  is considered Ready

Results of Analysis Overall implementation of e-learning

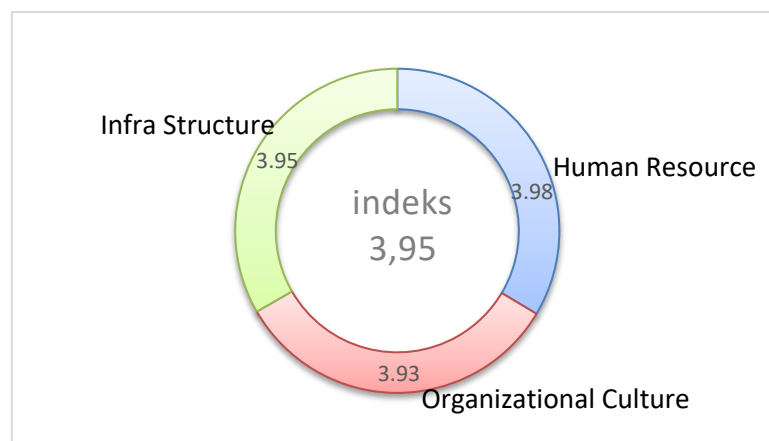
Being the conclusion of the three variables above can be seen from the graph and the following values:

Human Resource: 3.98

Organizational Culture: 3.93

Infrastructure: 3.95

3.9533



**Figure 4: Results of measurement of readiness of Makassar Marine Polytechnic**

index 3.95 means Ready but needs improvement as stated by Aydin & Tascii (2005) with indices 3,4 - 4,19, there are several indicators that require treatment, namely:

- Still need motivation of students
- Management commitment needs to be improved
- Need to improve capabilities for processing multimedia data (images, videos, sounds and text)

The results of the above assessment are still in line with the results of data collection through interviews conducted to seafarers' respondents in various vessels and operating areas,

- a. Respondent on behalf of Capt. Abu on the MBP 3208 ship with the Banjarmasin Marine line - Paiton, the internet can be accessed to receive e-mail and other multimedia using the 4G network but there is a blank spot for 24 hours when entering the residential area.
- b. Respondents on behalf of Akhsan on the MT Gonaya 8 ship with the Kotabaru - Banjarmasin Marine lane said that the internet can be accessed properly both chat functions and other multimedia access.
- c. Respondent on behalf of Capt. Rahmat Yamaid with the name of the IG Mulan ship in the Pekanbaru - Singapore Marine lane said that internet access ran smoothly but there were areas that were passed without signal in 5 hours travel time.
- d. Respondent Ibnu Setiawan on the TB Harlina 68 boat with the Banjarmasin - Morowali Marine line, there is a Blank Spot area for 24 hours, but the rest of the internet access runs smoothly with the BTS on Kerayaan Island.
- e. Respondents on behalf of Muhammad Aryansyah were on board TB. Harlina 167 with the Pomalaa cruise line - Manokwari which passes through the islands of Buru and Raja Ampat, within 16 days of travel there is a total blank spot for 9 days.
- f. Respondents on behalf of Hamsi (ATT-II) on the Ngapulu ship owned by PT. Pelni company with Marine lines Jakarta - Surabaya - Makassar - Bau Bau - Ambon - Biak - Tual - Kaimana - Pak Pak. Internet access can take place throughout the trip because the ship has been equipped with BTS in collaboration with Telkomsel.
- g. Respondents on behalf of Faisal Alamsyah on the MT Kakap (pertamina) ship with the Dumai - Aceh - Kualanamu cruise line, Internet access is enough to run text and video chat applications.
- h. Respondents on behalf of Sudirman on the Golden Ocean Cargo ship with the Makassar Marine line - Bontang, internet access can run for 12 hours from 36 hours of travel that is when the ship bypasses from the island of Sulawesi to Kalimantan.

#### Recommendations on existing problems

The problems that arise from the analysis of the implementation of e-learning that has been carried out are then discussed in the research team including those involved in information technology and related literature studies, then several recommendations are formulated to be used as alternatives to the achievement of the Polytechnic condition Makassar Merchant Marines to the target level ready for e-learning implementation without any more ready labels but needs improvement.

#### i. Increased motivation of students

The main part of e-learning activities is the implementation of the learning process independently so that the motivation of each student will be very important. Technical constraints in the initial implementation will occur a lot due to technical and constraints because they have to adjust the culture to be able to study independently.

#### j. Increased efficiency of accessing e-learning applications

E-learning must be designed with dual mode that is familiar with mobile devices because as we know that smartphone devices have a large penetration so that almost everyone has it. This of course will make it easier for users to access e-learning material.

Conditions in the work environment including vessels which will later become the target of users of education and training carried out by the Makassar Merchant Marine Polytechnic with characteristics will often be in the blank spot location or not accessible by the internet network. This needs to be overcome by the availability of a standard mode that prioritizes text content so that the material can be delivered and the synchronization mode will be active when connected to the network. At the time of synchronization, the data sent to the e-learning server includes logs or notes of student activities as material for evaluating the implementation of learning.

As the results of interviews with respondents on board that multimedia access on various ships can run well depending on the Marine area and internet facilities on each ship and in general can access the Whatsapp application with the chat and video call features but not good enough for access youtube. This shows that the use of webRTC technology must be used to pass video learning content on e-learning applications. WebRTC is WebRTC (Web Real Time Communication) is an open source project which allows each user to communicate with other users in real time through a browser. This project utilizes the capabilities of a modern web browser where communication in this case includes voice and video by utilizing existing Javascript APIs without the help of other plugins.

#### k. E-learning Application Development

Currently video conferencing technology is increasingly developing with the presence of webRTC technology that enables it to run by using high internet bandwidth efficiency due to the need for small video data transfers.

#### l. Addition of IT personnel

IT personnel who have computer network qualifications, multimedia are very necessary in guiding the implementation of e-learning. Computer network power is able to manage data traffic and the availability of electronic learning resources during the teaching and learning process. Students will access the e-learning application must be ready for 24 hours according to the spirit of e-learning in eliminating the boundaries of space and time. This power can also be a customer service to deal with problems during accessing e-learning.

Multimedia personnel are also important in assisting lecturers to produce teaching materials in electronic form.

## 4. CONCLUSIONS AND RECOMMENDATIONS

### Conclusion

1. The readiness value for the Human Resource component is 3.98 or ready but needs improvement in implementing e-Learning.
2. The readiness value for the organizational culture component is 3.93 which means it is ready but needs improvement.
3. The value of readiness for the infrastructure component is 3.95 or in the prepared category, but needs improvement.

### Suggestion

For further research it is recommended:

At present there is no measurement model for e-learning implementation readiness that refers to the conditions of the Indonesian people, especially for the character of Marine universities. Therefore, if possible, a combination of existing readiness measurement models can be used to form a new measurement model. The model is then tested for validity with the experts before finally being used as an appropriate readiness measurement model in Indonesia.

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