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The Strategy Mapping Development for Improving Smart Organization Using TOWS

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Abstract: This study aims to obtain a strategy mapping in developing Smart Organization to improve excellent human resources. The method applied in this research is to use a qualitative descriptive analysis approach to the real strategy implemented by considering internal factors and external factors in the SWOT Analysis. The underlying thing is because the globalization process gave birth to an era known as the Industrial Revolution 4.0, which was marked by the existence of Information Communication Technology (ICT) such as artificial intelligence, advance robotic, autonomous vehicles, virtual reality, and cyber physical systems. ICT raises a major and fundamental change in human life where there has been a shift in activities that were originally carried out in the real world now carried out in cyberspace. All digital and all activities carried out through online or internet media. The results obtained are the Smart Organization Development Strategy implemented with e-Office, e-Research, and Operational Information Systems systems that are integrated and systemic. The strategy of developing Smart Organization programs can improve human resources to be superior and advanced. These human resources include professional lecturer resources, smart personnels, stakeholder partners and operational employees. The conclusions and contributions obtained are Information Communication Technology development strategies based on Smart Organization (e-Office, e-Research and integrated Operational Information System) have a high role to improve professionalism in organizing advanced and quality higher operation so that they are able produce excellent human resources.

Keywords: Smart Organization, Strategy Mapping, TOWS Analysis

1. Introduction

Every Government requires smart Organization-based ICT devices. The presence of smart Organization-based ICT gave birth to a new civilization in the field of information and communication technology that has entered the era of digitalization. Various technology products and procedures are transformed into virtual and digital. Modern society has expanded its meaning to the digital society. Previously the service used paper and physical documents, now the service has been in the form of paperless and soft-files. In this era of digitizing

bureaucratic and administrative services are becoming increasingly effective, efficient, and optimal [5]. ICT encourages the birth of the concept of smart Organization in a tertiary environment, considering that tertiary institutions are one of the places where users with different backgrounds meet to carry out various operational activities by using and utilizing ICT. Management of services, personnels, lecturers/educators, operation staff, stakeholders, and Organization activities is the biggest challenge for organization. To face these challenges, a Smart concept is required that must be adopted by the Organization [11]. The main principle of Smart Organization is to provide high-quality services, protect the environment and save costs.

The Urgency of ICT Based on Smart Organization

The Urgency of ICT Based on Smart Organization is expected to produce Excellent Human Resources at Organization that can receive, transfer and apply technology. Some research related to this work includes The application of CBA and SUG models for improving the quality of Indonesian navy human resources [2], Applied Fuzzy and Nasa TLX method to measure the mental workload of Navy personnel [3], The relationship model of maritime culture and state policy towards national resilience for improving navy personnel [4], the Development strategy of national food sovereignty to encounter radicalism threat [6], The system dynamic model for policy evaluation of navy personnel on state-duty aspects [7] Analysis and scenario of navy performance allowance policy using the dynamic system model [8], and The naval harbors priority development using the zero-one matrix decision variable (ZOMDV) and Fuzzy MCDM methods [13]. All of this research becomes input and review for problem-solving in this study.

Some Smart Organization-based ICT system services are now being developed in several leading organization in the world and at Indonesia, including New Personnel Admission Management Information System, Operational Information System, Online Office Administration System, e-Office), Financial Information System, and Research Management Information System (e-Research) [14].

Communication Technology (ICT) into the institutional governance system (e-office), research service systems (e-research) and operational information systems The average tertiary institution which ranks as an excellent and World Class Organization, has implemented a smart Organization with an effective, efficient and productive management governance system [16].

II. Materials and methods

II.1. Smart Organization Concept

The Smart Organization system concept has successfully integrated all application activities and operational transactions into one application and transaction system, which includes office administration (e-Office), , electronic research (e-research), and information systems operational (Operational Information System). Smart Organization-based ICT program, which integrates e-Office, and e-Research applications, with the existing Operational Information System application as a unity in the technology system Organization information and communication to maximize the achievement of three main missions of higher operation namely Tri Dharma Perguruan Tinggi (operation, research and community service) and other aspects. Tri Dharma Organization's performance is the main reference in managing the process of institutional management towards a better direction [10].

II.2. The Concept of e-Office

The application of information and communication technology to the government is regulated in the Republic of Indonesia Presidential Regulation Number 95 of 2018 concerning Electronic-Based Government

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Systems. Electronic-based Government System hereinafter referred to as SPBE, is the administration of government that utilizes information and communication technology to provide services to SPBE users to realize clean, effective, transparent and accountable governance as well as quality and reliable public services. SPBE itself in its implementation is often referred to as e-government which is a new chapter for governance or government management in Indonesia, where all government agencies are required.

The development of e-Government is an effort to develop governance based on (using) electronics to improve the quality of public services effectively and efficiently. Through the development of e-Government management systems and work processes in the government, the environment is carried out by optimizing the use of information technology. The use of information technology includes 2 (two) related activities, namely: (a) data processing, information management, management systems, and electronic work processes; and (b) utilizing information technology advancements so that public services can be accessed easily and cheaply by people in all regions of the country. One form of e-Government applications is the electronic office or known as e-Office to support digital office administration service activities [5].

II.3. The Concept of Operational Information System

Operational Information System is an information and communication technology-based system that was built to provide convenience to users in Organization operational administration activities online, such as the process of admitting new personnels, preparing curriculum and making lecture schedules, filling in Study Plan Cards (KRS), filling in grades, guardianship, lecturer and personnel data management, and so on. Operational Information Systems can also function as a support for data analysis in determining Organization decisions [9]. Operational Information Systems have high benefits, especially in terms of (a) making it easier for personnels to obtain information without having to come to the administration section on Organization which often takes a long time because they have to queue. (b) The Organization administration section is also facilitated by the Operational Information System because of the reduced burden of interacting with personnels who require data so that the administration can focus more on data input and data checking. (c) Data is stored in a structured manner with a database stored on a computer. (d) Data updating between the Organization administration section and the finance department can be done quickly in real-time. In this millennial era, the Organization needs to update its administration system on Organization by using an Operational Information System that is integrated with other systems. The application of the Operational Information System on Organization can increase the effectiveness, efficiency, and productivity [10].

II.4. The Concept of e-Research and Development

The application of information and communication technology in research is functioned in various forms and has been mandated in RI Law Number 43 the Year 2007 concerning Research, article 12 paragraph 1, article 14 paragraph 3, article 19 paragraph 2, article 22 paragraph 3, article 23 paragraph 5, article 24 paragraph 3, article 38 paragraph 2, article 42 paragraph 3 as well as in General Explanation, Part 1 general. One form of information and communication technology applications in the research is realized in the form of a research management information system, or what is known as an electronic research or electronic research (e-Research). Fields of work-integrated in this system are acquisitions, cataloging, circulation and services, preservation, and bibliometric statistics of research materials. Besides that, the application of information technology is also used as a supporting means in activities to obtain, store and disseminate information in the complexity of research services. Previously research materials were stored in devices such as microfilms, videotapes, audiotapes, and

similar multimedia devices, now content is developing using compact discs or laserdiscs that are capable of storing digital data, and electronic databases, even now developing again through media gadget devices such as mobile phones, iPods, PDA's, blackberries, and so on [12].

The existence of e-Research (Electronic Research) is very important in helping the learning process in higher operation especially related to independent learning [14]. Why is that, because the information and facilities provided in the e-Research make it easier for personnels and lecturers to do various things related to the learning and research process. The characteristics of e-research that allow global access without being limited by place and time are important points for personnels and lecturers in utilizing all available resources for independent learning. The existence of e-Research strongly supports the existence of this independent activity process, including conducting research. Various scientific sources that exist in electronic research even allow people to do research online just by sitting at a computer [1].

III. Result and discussion

Several main reasons make Smart Organization-based ICT development that integrates e-Office, and e-Research & Development with Organization Operational Information Systems has a high urgency, including:

1) Effectiveness and efficiency in achieving operational goals can be achieved through the integration of e-Office, and e-Research with Organization Operational Information Systems. The integration of information network systems can make it easier for Organization management to achieve goals according to national standards set by the Directorate of Higher Operation. Besides that, economically it can reduce the operational costs of high operation, the need for human resources is very much, and the achievement of a long time. Efficiency can be done through the application of information and communication technology based on the Smart Organization.

2) The main principle of Smart Organization is to provide high-quality services to all operational community (personnels, lecturers, operation staff) and related stakeholders (users, organization and partner institutions, etc.). Smart Organization which integrates e-Office, and e-Research with Organization Operational Information System, can provide excellent, best, fast and safe services. Therefore, the Smart Organization concept requires the involvement of all operational community members and good collaboration with relevant stakeholders in organizing every program activity that is managed in an integrated manner in one network.

3) Applications that integrate e-Office, and e-Research with the Operational Information System Organization can present accurate, objective and transparent data that is far from subjectivity. All data can be read, uploaded, or downloaded anytime, anywhere, with various facilities, convenience, security, is not constrained by time and space, and displays the data as it is without engineering.

4) The final results of processing and analyzing data from applications that integrate e-Office, and e-Research with the Operational Information System Organization can be used as one of the main reference sources for Organization leaders to take appropriate policies and decisions based on principles scientific data that can be accounted for.

III.2. E-Research & Development Application

The Organization Electronic Research (e-Research) is a source of information that is available online and is 'open' due to the 'automatic' sharing process that exists in modern research models. Organization e-Research makes it very easy for personnels to find learning resources, even the lecture process does not have to be from lecturers who 'learn' and then deliver it in class, but it can be started from personnels who raise certain problems

from electronic information sources obtained through searching on the research. This means that between lecturers and personnels have the same opportunity in obtaining the 'knowledge' needed in the learning process. Especially with a large number of electronic information sources such as electronic journals, electronic books, electronic papers and electronic databases provided by research, the opportunity is becoming more open. Studying independently, for now, is something that is 'fun' and is very possible for personnels to do without worrying about a lack of information resources.

III.3. E-Office Application

The Electronic Office (e-Office) Organization is a system that deals with administration and virtual centralize the components of an organization where data, information, and communication are made through telecommunications media. E-office information and communication system is one of the media that connects all components in an organization to make it easier to manage all transactions that become the core business of the organization. In the past, correspondence transactions between institutions in an office environment were carried out manually, so that it took several hours for the letter to reach its destination, but in this digitalization era, the presence of e-Office was something very valuable, considering its existence was able to provide more services fast, easy, and real-time, so that the process, output, and outcome of activity can run effectively, efficiently and productively.

The existence of the Organization e-Office application can save the use of paper (paperless administration) and time (real-time). Electronic in e-Office can mean that all work related to office administration is done electronically and uses the help of communication tools and information systems. With the development of current telecommunications technology, which is supported by high-speed broadband networks, and the availability of the internet, offices will become all-digital and transform into virtual offices. The leadership disposition can be done online and the distribution of correspondence can be carried out via email and SMS notification.

III.4. The Integration of Organization e-Research & Development, and e-Office with Operational Information System.

To provide the best-integrated quality services in the organization of Organization Duty, Organization develops an integrated information network system based on Smart Organization, with general specifications, as follows:

1) The system is built based on Web using software applications that are easily obtained in the country and do not need to import from other countries.
2) Users/Members/ Organization operationalians can access administrative data, media, and learning materials as well as research collections according to their needs, responsibilities, and authority quickly, easily and properly by using the system application service modules.
3) The system application service module must cover all office administration, learning, research and Operational Information System activities at Organization.
4) The low failure rate of application services in each work unit caused by system, network, and data communication errors.
5) The system can be operated in the scope of intranet or extranet with infrastructure/network facilities that already exist in the Organization environment.

6) Having a reliable security system refers to standards and can provide flexible access, including:
   a) User safety.
   b) Data and information security.
   c) Application security.
   d) Network and communication security.
7) Having high data integrity, namely the ability to guarantee data accuracy every time changes occur.
8) Able to provide data and information services to support leadership decisions in a timely, accurate, safe, orderly, up-to-date and integrated manner.
9) Able to do the process of entry/update/delete data, learning media, and the catalog of digital research collections of the College of Technology.
10) Easy to use (user friendly) and implement a multi-user system.
11) Flexible in the application of network topology needs that are always flexible according to the needs and development of the organization.
12) Integrated into one Single Sign-On (SSO) card equipped with RFID and connected with another Management Information System (MIS) with Headquarters, National Research, and organization/partner institutions that collaborate.

III.5. Internal and External Factor Analysis.

A. Internal Factor

The Strength of Organization

1. Able to develop smart Organization of technology
2. Able to develop smart Organization ICT system.
3. Had cyber infrastructure in the smart Organization headquarter
4. Z generation of smart Organization who were familiar with computation
5. Technology transfer cooperation who opened the opportunity for smart Organization technological mastery.
6. Had maintenance system until organic stage
7. There was a smart Organization Committee of Defense Industry as the basic of independent technological development
8. Organization of smart Organization managerial which was solid enough
9. Presence of the blueprint of Smart Organization 2024.
10. As the biggest smart Organization organization in Southeast Asia
11. Logistic supporting system which was systematic and well-structured from the Organization organization

The Weakness of Organization

1. Limited aircraft of Smart Organization
2. Absence of electro molecular system in Smart Organization
3. Smart Organization technology which was still in the stage of prototype.
4. The Big Data Analysis smart Organization technology which was still hack-prone.
5. Partially data smart Organization analysis.
6. Absence of integrated smart Organization energy management system yet.

7. Hack-prone in the smart Organization Major Command level
8. Electronic smart Organization warfare technology which was still limited
9. Absence of the use of human augmentation smart Organization technology
10. Limited smart Organization manufacturing tools.
11. Technology of smart Organization development was dependent to import policy.
12. Budget strength of smart Organization was below the standard (5% of GDP).
13. Research and development of smart Organization were not in line with defense industry

B. External Factor Analysis.

The Smart Organization assessment result showed that there were some external factors which became the threats and opportunities in technological mastery as mentioned below

The Threat of Organization

1. Dependent to unrenewable resources
2. Fund for research and development was limited
3. Threat of cyber-attack.
4. Threat of data hack.
5. Natural resources as the target of many countries.
6. Threat as the weapon market.
7. Radicalism and communism threat.
8. Threat as a traffic when there was a conflict between countries.
9. Social gap.

The Opportunity of Organization

1. National economy growth which was above global economy growth.
2. Abundant stock of alternative energy.
3. Low wage level
4. There was a legal protection of defense industry.
5. Vast development of internet
6. Internet system which supported the decision-making time
7. Policy of the government
8. As the biggest democratic country
9. Bonus of population demographic

Based on the identification from various internal and external factors, the next step was arranged to be factors of strategy. The existing internal and external factors were combined to determine an alternative for the strategy of posture development. In this following table presented the strategies which were formulated from the SWOT matrix.

III.6. TWOS of Strategy Analysis

Step 1. Strategy (TW – Threat - Weakness)

1. Improvement of standard smart Organization defense budget strength (5% GDP) gradually.

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Step 2. Strategy (TS – Threat - Strenght)

1. Implementation smart Organization management of energy and development of renewable resources
2. Optimization of the ability of smart Organization Z generation in the system of information and cyber development
3. Improvement of the smart Organization diplomacy ability as the balance of power in Asia Pacific

Step 3. Strategy (OW – Opportunity - Weakness)

1. Development of smart Organization unmanned technology
2. Integration of big data analytics of smart Organization to the high level
3. Improving electronic warfare of smart Organization ability to the fifth level.
4. Upgrade of smart Organization manufacturing tools.
5. Development of smart Organization technology by focusing on domestic procurement.
6. Doing a research smart Organization which was suitable with defense industry.

Step 4. Strategy (OS – Opportunity - Streght)

1. Smart Organization technology development which reached production stage.
2. Development of unmanned system based on smart Organization to production level
3. Development of smart Organization cyber infrastructure to the level of Major Command.
4. Implementation of smart Organization technology transfer
5. Development of blue print that was suitable with naval smart Organization technological mastery

III.7. Smart Organization Strategy Mapping

Strategy mapping presented a portrayal of how each work could support the whole strategic achievement of the organization. Strategy mapping helped the organization to especially visualize what was needed to do and support the development strategy of integrated fleet weapon system.

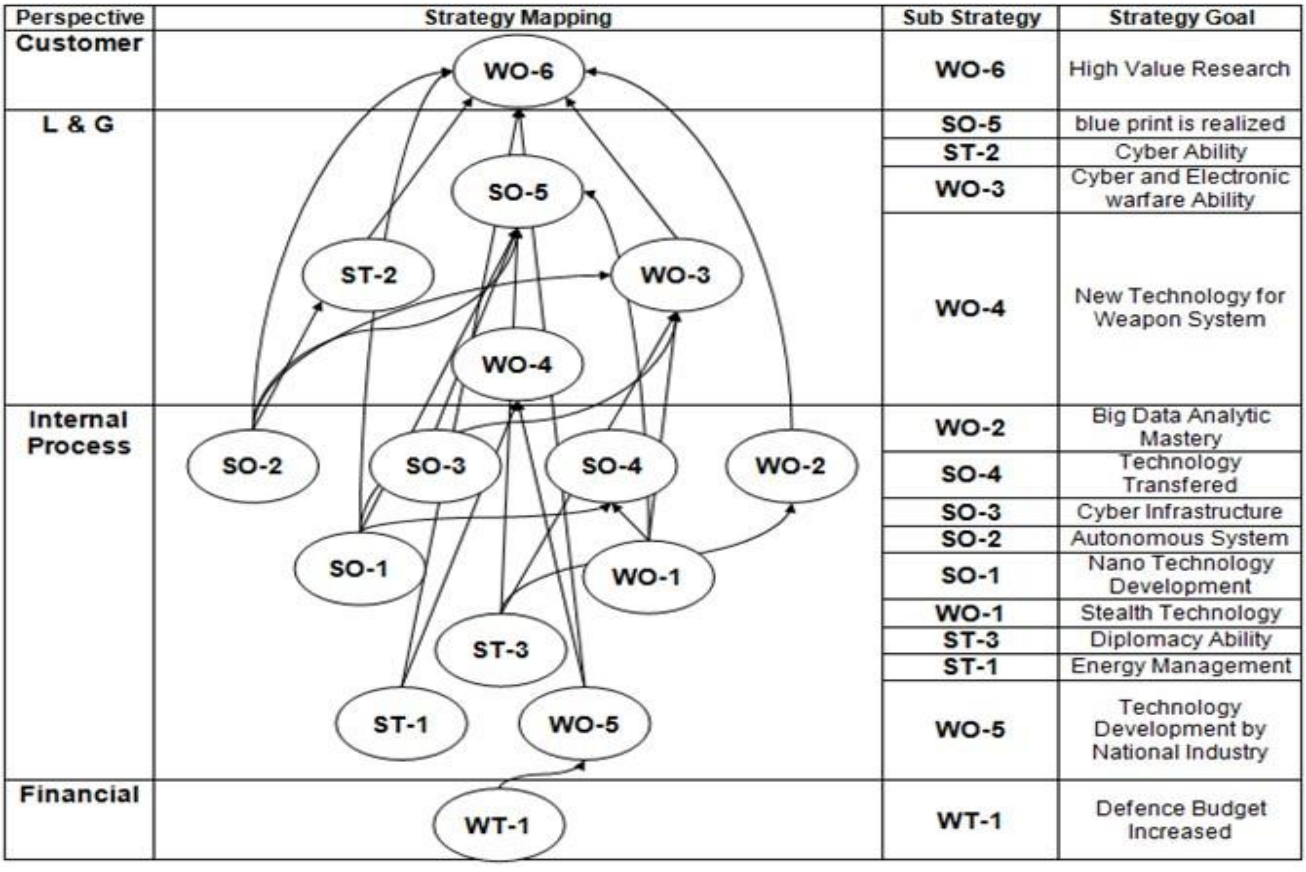

Figure 1. Strategy Mapping Smart Organization For Improving Excellent Human Resources.

III. 8. System Strategy Compilation of Smart Organization.
Technology Aspect for Smart Organization System

Code Sub Strategy
SO-1 Development of Smart Organization -technology development to production stage
SO-2 Development of smart Organization unmanned system based on production level.
SO-3 Development of smart Organization cyber infrastructure to the level of Major Command
SO-4 Implementation of smart Organization technology transfer.
SO-5 Development of smart Organization blue print that was suitable with naval technological mastery
ST-1 Implementation smart Organization management of energy and development of renewable resources
ST-2 Optimization of the ability of smart Organization Z generation in the system of information and cyber development
ST-3 Improvement of smart Organization the diplomacy ability as the balance of power in Asia.
WO-1 Development of smart Organization unmanned technology
WO-2 Integration of smart Organization big data analytics to the high level
WO-3 Improving of smart Organization electronic warfare ability to the fifth level.

WO-4 Upgrade of smart Organization manufacturing tools.
WO-5 Development of smart Organization technology by focusing on domestic procurement.
WO-6 Doing a research of smart Organization which was suitable with defense industry.
WT-1 Improvement of smart Organization standard defense budget strength (5% GDP) gradually.

iv. Conclusion

From the results of the discussion above, it can be concluded that the development of ICT based on Smart Organization (e-Office, e-Research, and integrated Operational Information System) has a high role to improve professionalism in organizing advanced and quality higher operation so that it can produce superior human resources as expected to master and develop science and Maritime technology in Indonesia. The strategy mapping created structure presented that financial perspective was made of one strategy target: improvement of defense budget. Nine strategy targets were in the internal process perspective, and they were 1) Big Data Analytic Mastery; 2) Technology Transferred; 3) Cyber Infrastructure; 4) Autonomous System; 5) SmartTechnology Development; 6) Stealth Technology; 7) Diplomacy Ability; 8) Energy Management; 9) Technology Development by National Industry. Learning & Growth perspective was made of four strategy goals namely 1) Blue Print is Realized; 2) Cyber Ability; 3) Cyber and Electronic Warfare Ability; 4) New Technology for Weapon System. In addition, customer aspect consisted of one strategy goal, High Value Research.

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