Original Research Paper

Management

DESIGN MODEL FOR ADAPTATION OF HUMAN RESOURCE MANAGEMENT AND INFORMATION SECURITY IN THE IMPLEMENTATION OF ONLINE SINGLE SUBMISSION WITH PRINCIPLES OF INDUSTRY 4.0

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ABSTRACT In today's Industry 4.0 era, government institutions responsible for providing licensing services in Indonesia face a unique challenge of balancing the demands for expedited service provision while maintaining a high standard of information security and privacy. The success in this endeavor is dependent upon the leadership, coordination, competence, and performance of human resources (HR) within these institutions. The objective of this study is to design a model for the adaptation of HR management and information security strategies in the implementation of online single submission (OSS) systems for business licensing, in accordance with Industry 4.0 principles. The research employs a qualitative methodology utilizing the Soft Systems Methodology (SSM) approach. Data was collected through interviews. The SSM analysis yielded a design model for the adaptation of HR management in the implementation of OSS systems. This model is a novel contribution of the study and comprises an integrated approach of four different HR management models which describes the strategies of leadership, coordination, competence and performance of HR in the implementation of OSS systems based on Industry 4.0 principles. The significance of this research lies in providing recommendations for the improvement of HR management and information security strategies in the implementation of OSS systems for business licensing in government institutions, as per Industry 4.0 principles, thereby supporting the role of these institutions in Electronic Government Systems (SPBE).

INTRODUCTION

The German Industry 4.0 initiative is a paradigm shift in the industrial landscape driven by the potential benefits of IoT technologies. Other countries have implemented similar strategies, such as the U.S.'s Industrial Internet Initiative, Estonia's e-Estonia, Singapore's Smart Nation, India's Make in India, China's Made in China 2025, Japan's Society 5.0 and Indonesia's Making Indonesia 4.0. Industry 4.0 represents a transformative shift in human activity, characterized by scale, scope, complexity and departure from traditional ways of conducting business by adhering to the principles of interconnectivity, information openness, technical assistance, and decentralized decision-making. (Hermann, Pentek, & Otto, 2016).

The government launched the Online Single Submission (OSS) system to facilitate business and investment activities in Indonesia on July 9, 2018. The OSS system is a part of Presidential Regulation Number 91 of 2017, which aims to streamline the process of establishing and running a business.The Online Single Submission (OSS) system aims to simplify and streamline the process of obtaining business permits in Indonesia by establishing a centralized, national portal for the administration of all such permits. This system adheres to three fundamental principles: Firstly, it serves as a unified portal for managing all business permits in the country. Secondly, it requires all businesses operating in Indonesia to possess a unique identity known as NIB. Thirdly, it standardizes the format of permits, eliminating the previous variations in format and requirements issued by different authorities.

In the Industry 4.0 era, a shift in human resource management (HRM) within organizations is crucial for the successful implementation of the Online Single Submission (OSS) system for business permits. This system aims to provide transparency and user convenience by enabling accessibility

from anywhere. However, HRM remains a fundamental issue in the implementation of OSS, with a lack of budget allocation to enhance HRM being a major obstacle to optimal implementation of public service innovation. (Utomo & Agusman, 2021). The Ministry of Communication and Information Technology is crucial in ensuring the successful implementation of the Online Single Submission (OSS) system for business permits. The Ministry faces several challenges, such as not all business permits being processed under Presidential Regulation No. 24 of 2018, inadequate dissemination of OSS as the gate for permit systems, differences in NIB data in OSS and Kominfo permit systems, and inadequacies in the integrated helpdesk system to handle problems related to the Kominfo licensing system integrated with the National OSS System.

The successful implementation of the Online Single Submission (OSS) system for business permits requires addressing the Human resource management (HRM) challenges. To this end, researchers have undertaken studies to devise a system management model that adheres to Industry 4.0 principles, comprising of leadership, coordination, competence, and performance evaluation. This aims to improve the HRM issues within government institutions that handle business permits using OSS. This research was conducted in the Ministry of Communication and Information Technology in Jakarta, specifically in the units of Ditjen SDPPI, Ditjen PPI, and Ditjen APTIKA, as well as the relevant units in the Secretariat General, specifically Bureau of Human Resources and Organizational, Planning Bureau and the Data Center.

Literature Review
Industry 4.0
The advancements and innovations in technology signify industrial revolutions and societal transformations. The first industrial revolution was propelled by mechanization, the

second by the utilization of electricity and the third by the incorporation of electronic and automation devices, marking the onset of an information society. These revolutions have had far-reaching impacts, influencing not just production systems but also the labor market and educational systems (Benešová & Tupa, 2017).

The term "Industry 4.0" or "smart industry" was first introduced to the general public at the 2011 Hanover Fair, an annual industrial technology exhibition in Germany. Generally, Industry 4.0 encompasses concepts such as smart factories, cyber-physical systems, self-organization (decentralized business processes), new systems for procurement and distribution, new systems for product and service development, product and service customization to human needs, and corporate social responsibility (Lasi, Kemper, Fettke, Feld, & Hoffmann, 2014). Industry 4.0 signifies the emergence of the fourth industrial revolution towards the integration of Internet of Things (IoT), Data, and Services (IoTDS) (MacDougall, 2014). A crucial element of Industry 4.0 is the extensive utilization of the internet and other forms of connectivity, which ensures the interconnection of dispersed devices throughout the production process (Ustundag & Cevikcan, 2018).

Industry 4.0 is characterized by four key principles: interconnectivity, which refers to the capability of machines, devices, sensors, and individuals to connect and communicate with one another through the Internet of Things, and which necessitates collaboration, information security, and standardization; openness of information, which refers to the ability of information systems to create a virtual replica of the physical world by incorporating sensor data into digital models, including data analysis and provision of information; technical assistance, which includes (1) the ability of assistance systems to support humans by conscious combination and evaluation of information to make sound decisions and resolve pressing issues within a short timeframe, (2) the ability of systems to support humans in completing various tasks that may be onerous, fatiguing, or hazardous, and (3) involving both virtual and physical assistance; and decentralized decision-making, which refers to the capability of virtual physical systems to make decisions and carry out tasks independently and as efficiently as possible (Hermann, Pentek, & Otto, 2016). The integration of physical, digital and biological worlds through novel technologies and methodologies will fundamentally alter human lifestyle and interactions (Tjandrawinata, 2016).

Human Resource Management

Organizations must effectively manage four key assets in Industry 4.0 era: physical, financial, intellectual and human assets. Human resource management encompasses policies and decisions that exert influence over the workforce. Productivity is an indicator that quantifies the effectiveness and efficiency of work completed, taking into account the associated costs and resources utilized (Mathis, Jackson, Valentine, & Meglich, 2017).

Job competency is defined as a combination of both professional and personal attributes that allows an individual to have a productive interaction with the work environment and contribute to their professional development. Job competency is comprised of: Professional Competencies (Scientific Competency, Practical Competency, Personal Competency, and Social Competency) and Workplace Competencies (Gallardo, 2010). Human Resource changes occur as a result of Training and Development and Recruitment, which aims to enhance leadership and interpersonal relationships or worker's skill (Rainey, 2009).

A leader is characterized by critical thinking, risk-taking, visionary mindset, innovation, courage, creativity, forward-thinking, openness to change, ability to learn from and overcome failures, team-building skills, continuous learning mindset, ability to work well with others, integrity, reliability, competence, supportive, fair-minded, cooperative, respectful, motivational, driven by values, inspirational, persistent, patient, resilient, credible, balanced, and emotionally mature (Klingborg, Moore, & Varea-Hammond, 2006).

The increasing need for human resources with professional competencies (problem-solving, determination, diverse expertise, interdisciplinary approach), social competencies (communication skills and adaptability) and personal competencies (responsibility and systematic thinking) indicates that education and further professional development are also important factors in achieving the objectives of Industry 4.0, which transforms the skills of workers (Vrchota, Ma□iková, □eho□, Rolínek, & Toušek, 2020). In the context of Industry 4.0, to acquire competitive human resources, the development of human resources must be designed so that its output is also able to master new literacies (Aoun, 2017).

According to Mello (2015), there are at least four impacts for industries in responding to new technological changes towards Industry 4.0, namely: the need for increased skills and work habits of employees, the displacement of low-level and managerial positions, a reduction in hierarchies, and a greater focus on collaboration and teamwork.
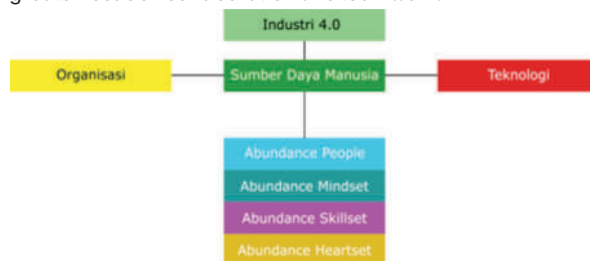
Figure 1: Diagram of the direction of the paradigm of HRM related to Industry 4.0.

Source: Discussion with Prof. Syamsul (2019)

The paradigm shift in human resource management in the industrial and organizational world becomes crucial to follow the principles of Industry 4.0. It requires adaptability and leadership capabilities. Human resources with the ability of abundance mentality leadership (Figure 1) consist of:
1. Abundant people: Attitude of individuals who are ready to become better in terms of how they view others
2. Abundant mindset: Attitude of individuals who view others based on likes/dislikes
3. Abundant skillset: Attitude of individuals who view others based on their abilities
4. Abundant heartset: Attitude of individuals who view others based on their sincerity of heart.

Electronic-Based Government Systems (SPBE)

The implementation of digital government systems, commonly referred to as electronic government or e-government, is a positive impact of the advancement of information and communication technology (ICT) in Indonesia. According to Presidential Regulation of the Republic of Indonesia Number 95 of 2018 on Electronic-Based Government Systems (SPBE), an electronic-based government system is necessary in providing electronic-based services for government administration and public services. The development of information and communication technology (ICT) in the era of Industry 4.0, such as the increased use of personal/mobile devices to access the internet, cloud computing, the Internet of Things (IoT), big data, and artificial intelligence, are factors driving the change

of SPBE. The goals SPBE are:
1. Realizing clean, effective, efficient, transparent, and accountable governance
2. Achieving high-quality and reliable public services
3. Implementing an integrated electronic-based government system.

The human resources within the field of e-Government, comprising of civil servants and citizens, play a crucial role in realizing a comprehensive and sustainable e-Government system. Enhancing the capacity of e-Government human resources is a key objective in the implementation of e-Government.

Integrated Electronic Business Licensing Services system (Online Single Submission)

The government has issued Presidential Regulation Number 91 of 2017 on Acceleration of Business Implementation, which was followed up through the development of an Integrated Electronic Business Licensing Services system (PBTSE) or Online Single Submission (OSS) since October 2017. With the support of Presidential Regulation Number 54 of 2018 on the Action Plan for Corruption Eradication related to Improving Licensing and Investment Compliance Services, the integration of OSS with the licensing process in the regions must be carried out to ensure that the business licensing process can occur within a single cycle. The implementation of the Online Single Submission (OSS) system for business licensing has been reinforced through the issuance of Government Regulation No. 24 of 2018 concerning Integrated Electronic Business Licensing Services. This regulation stipulates that OSS is a business license issued by the OSS institution on behalf of the Minister, the head of the institution, the Governor, or the Regent/Mayor to the business operator through an integrated electronic system.

The OSS system, which serves as a national portal for managing all business permits in Indonesia, is based on three key principles: a single portal for all permits, a single identification system for all companies, and a standard format for permits. The use of OSS system brings several benefits such as:
1. The OSS system simplifies the process of obtaining various business permits, including location-related, environmental, and construction permits, as well as business and operational permits, at both the national and local levels, through a commitment-fulfillment mechanism for permit requirements.
2. It facilitates business operators in connecting with all stakeholders and obtaining permits securely, quickly, and in real-time.
3. It facilitates business operators in reporting and resolving permit issues in one place.
4. It facilitates business operators in storing permit data under a single business identity (NIB).

In today's context, the human resources required are those who possess competencies in the utilization of digital technology (Rohida, 2018). In order to achieve superior performance and sustainable competitiveness, organizations must integrate and align strategic choices in their human resource management policies in order to effectively execute their strategic choices (Harmen & Fairuzzabadi, 2012).

Many organizations in Indonesia are preparing themselves, particularly in terms of human resource development, to compete in the global market as they become increasingly aware of the intense business competition in the era of Industry 4.0. Global companies with diverse business units have made human resource development a key strategy in facing global competition (Tayibnapis, Wuryaningsih, & Gora, 2018).

In order to address the challenges and competencies associated with Industry 4.0, a strategic approach is necessary in the management of human resources. This aims to equip employees with the necessary skills and capacity to perform more complex tasks in the face of new technologies in the industry 4.0 era (Hecklau, Galeitzke, Flachs, & Kohl, 2016). The implementation of Industry 4.0 involves not only new approaches but also new methodologies and technologies that must be adopted and introduced in the industrial sector. The transition to this advanced stage cannot happen immediately due to high costs and a lack of qualified personnel. Therefore, companies must prioritize the development of their human resources to adapt to the changes brought by Industry 4.0. (Benešová & Tupa, 2017).

The implementation of the Online Single Submission (OSS) system still faces fundamental challenges in terms of human resources management. A lack of budget allocation for improving human resources has become a major issue, hindering the optimal implementation of public service innovation. Despite this, the necessary hardware and software support for operating the OSS system have met the established standards (Utomo & Agusman, 2021).

The partial similarities between the current research and previous studies include the management of human resources and being within the context of Industry 4.0. (Heckelu et. al, 2016; Benešová & Tupa, 2017; Sorko et. al, 2016; Bayraktar & Ataç, 2018; Agarwal & Qouyatahi, 2017; Shaw & Varghese, 2018; Harmen & Fairuzzabadi, 2012; Ahmad et al, 2018; Tayibnapis et al, 2018), specifically within the scope of civil servants (Rohida, 2018; Utomo & Agusman, 2021), and using the interview method to obtain data (Tayibnapis et al, 2018; Rohida, 2018; Bayraktar & Ataç, 2018).

The main difference between this research and previous research is the scope of the industry being studied (Hecklau et al, 2016; Benešová & Tupa, 2017; Sorko et al, 2016), Bayraktar & Ataç, 2018; Agarwal & Qouyatahi, 2017; Shaw & Varghese, 2018; Harmen & Fairuzzabadi, 2012; Ahmad et al, 2018), focus on the business sector in Indonesia (Tayibnapis et al, 2018). The researcher utilizes the soft system methodology to address the issue of managing human resources, whereas previous studies have employed a literature review approach (Benešová & Tupa, 2017; Sorko et al, 2016; Hecklau et al, 2016; Agarwal & Qouyatahi, 2017; Shaw & Varghese, 2018; Harmen & Fairuzzabadi, 2012).

METHODS

The research utilizes the Soft Systems Methodology (SSM) approach due to the complexity of the problem at hand, which lies within the realm of human activity systems, where parties involved possess diverse worldviews regarding the issue at hand. SSM is a dynamic and conceptual thinking system that views the problem holistically, with the goal of constructing conceptual models of human activity systems. Developed by Peter Checkland at Lancaster University in the 1960s, SSM is an action research methodology that aims to explore, uncover, and learn about complex problems and structure them.
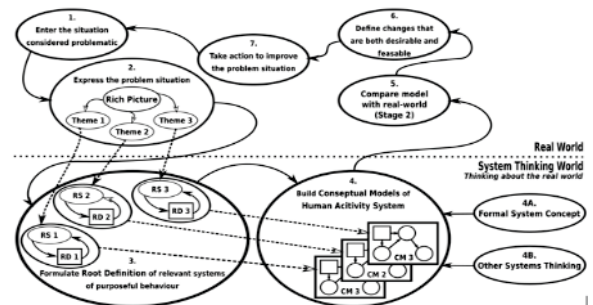

Figure 2: Seven (7) steps of SSM approach

Source: Burge, 2015

The SSM approach is presented by the diagram in Figure 2, which consists of 7 steps. The following is an explanation of each step in the SSM approach (Checkland & Poulter, 2006):

Step 1.
Identifying the problem situation. This step can be done through observation, interviews, workshops, and focus groups to identify the problem situation and the work scenarios experienced by each party in the situation under review. The problem solver (researcher) should gather as much information as possible.

Step 2.
Creating a Rich Picture. A detailed picture is created from the situation being reviewed, which aims to capture the main entities, structures, and various perspectives within it, the processes that take place, and the problems that have been identified or not. This process is done neutrally (as is, without imposing a manufactured structure on the interpretation of the problem context).

Step 3.
The Root Definition formulation provides an overview of how a system (Relevant System) should function. Simply put, a root definition is based on a transformation and is interpreted by a worldview. In formulating a worldview, the PQR formula (What, How, and Why) is used. Then, the CATWOE technique is used to analyze and test the structure and sentences in the resulting root definition. CATWOE is an acronym developed by David Smyth (Bergvall-Kåreborn, Mirijamdotter, & Basden, 2004) which stands for:
- C: *Customer*: The parties impacted by the result of the Transformation that takes place
- A: *Actors*: The parties involved in implementing the Transformation
- T: *Transformation*: The change from current inputs to desired outputs.
- W: *Weltanschauung* (*worldview*) is a term that refers to a broad perspective of an individual on life and the world, reflecting the person's philosophy (Runco, 2014). A worldview explains why a transformation has meaning. A worldview differentiates one root definition from another.
- O: *Owner*: Decision makers who have the authority and responsibility for the system in operation, and have a vested interest in its performance.
- E: *Environmental Constraints*: Boundaries and constraints that will determine the impact and success of the system being implemented.

The root definition generated can be analyzed using CATWOE, which has two main components: Transformation and Worldview *(Basden & Wood-Harper, 2006)*. A well-formulated root definition should be in the form of "a system controlled by O and operated by A, which impacts C, transforming T from one state to another according to a W within constraints E''.

Step 4.
The formulation of a conceptual model, which is a model of purposeful activity, contains all the activities derived from the root definition generated in step 3 in order to achieve the goals of the intended system. Checkland & Poulter (2006) believe that a conceptual model produced through the SSM approach should be an adaptable and resilient system, as it is a combination of operational subsystems and monitoring and control subsystems (with a focus on the effectiveness of the model). Three aspects to measure the performance of the model are known as the 3E's, which are:

Efficacy:
The transformation that is carried out provides expected results

Efficiency:
The transformation is carried out using minimal resources

Effectiveness:
The transformation utilizing minimal resources, and helping to achieve higher or long-term goals

Step 5.
Comparing the conceptual model created with the real world. How well the model created represents what is observed in the real world. In SSM, the models generated are models that are relevant to the problem situation.

Step 6.
Determining actual changes/improvements (Transformation) based on the conceptual model if deemed feasible.

Step 7.
Implementing changes from step 6 in the real-world context.

This research was conducted at the Ministry of Communications and Informatics in Jakarta as one of the institutions that provides and issues business licenses. The subjects selected are those who can provide maximum results to answer the problems being studied and can provide the data needed for this research. Therefore, the researcher's concern is the "completeness" of information acquisition with the diversity of existing variations, not the number of data source samples. (Sugiyono, 2013).

The data obtained from the subjects through interviews and observations of the SDM management issues in implementing OSS in the business permit unit of communication and informatics within the Ministry of Communication and Informatics in Jakarta is primary data. Supporting data, secondary data from literature review is also needed, especially before the research is conducted, as a guide for the research process. Other secondary data sources used in this research are data that are already available in the form of reports, regulatory documentation, and information related to the research objectives.

RESEARCH RESULTS
Analysis of Human Resource Management Issues in the Implementation of OSS.
In carrying out its tasks and functions, the Ministry is supported by 3,089 employees from various units, consisting of 1,986 males and 1,103 females. These employees are distributed across seven Echelon I units, including the Secretariat General (410 employees), the Director General of Application and Informatics (1,254 employees), the Director General of Post and Information Technology (297 employees), the Director General of ICT Innovations and Applications (191 employees), the Director General of ICT Human Capital (280 employees), the Director General of ICT Research and Development (91 employees), and the ICT Human Resource Development Agency (563 employees), as well as three expert staff and three special staff.

The licensing process at the Ministry of Communication and Information Technology using OSS consists of several steps. The first step in the licensing process is for the applicant to access the link: www.oss.go.id. From this link, the applicant is directed to the link: https://layanan.kominfo.go.id/ and chooses the type of license or certification available according to the applicant's needs. Then, by the Data and Informatics Center (PDSI) of the Ministry of Communication and Information Technology, for radio frequency spectrum licenses, the applicant will be directed to the website of the Directorate General of Post and Informatics Resources (Ditjen SDPPI). For post operator licenses, broadcasting operator licenses and telecommunications operator licenses, they will

be directed to the Directorate General of Post and Informatics Operations (Ditjen PPI). Meanwhile, for licenses related to applications, the applicant will be directed to the Directorate General of Informatics Applications (Ditjen APTIKA).

The process in Kominfo's OSS includes the following steps:
1. Distribution of Business Identification Number (NIB)
- OSS distributes permits to the Ministry/Agency/ Regional Work Unit (K/L/D) in accordance with the mapping of permits for each sector.
2. Final permit, Checklist and Reporting
- K/L/D sends the final permit to OSS
- K/L/D sends the results of the standard inspection of permit checklist
- K/L/D sends proof of the company's compliance with K/L/D standards.

The issues/challenges in the implementation of OSS:
1. Not all business permits in the field of Kominfo listed in PP 24 of 2018 have been incorporated into the OSS system
2. Applicants have not been fully educated on the use of the National OSS System as a gateway for existing government service systems within Kemenkominfo.
3. There are still discrepancies in NIB data between the OSS System and the Kominfo permit system.
4. The integrated helpdesk for issues related to the Kominfo permit system integrated with the National OSS System is not yet fully optimized.

The need for improvement in communication among the directorates that require the leadership capabilities of each director. Limited ability of employees in operating existing applications, ability to determine priority scale in the processing of files that require validation. From the rich picture in Figure 3, it can be seen that there is a need for employees in the licensing unit to improve and equalize their competencies in the field of ICT, as well as a change in mindset to adapt to the work environment in the era of Industry 4.0 in order to perform their duties and responsibilities according to their targets. Employees are required to have a high level of competitiveness, but they still face various problems, and there is a need for welfare for employees.
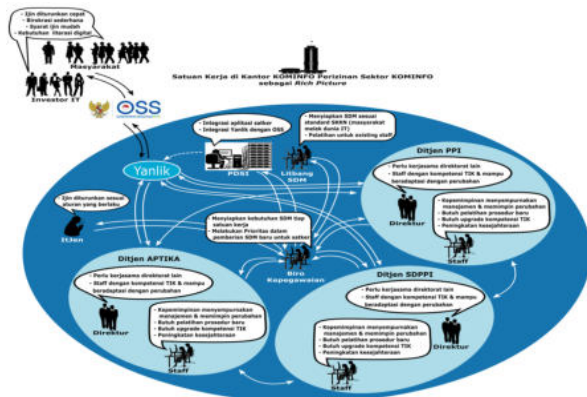

Figure 3: The Rich Picture of the situation of human resource management challenges in implementing OSS at the Ministry of Communication and Information Technology

The Conceptual Model of Human Resource Management in the Implementation of OSS.
The result of SSM study shows 4 (four) formulations of the conceptual model of human resource management in the implementation of OSS:
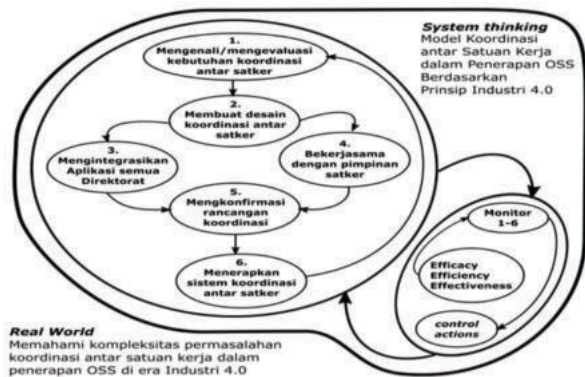1. Conceptual Model of *root definition* 1: Figure 4 is a system that is used by organizational units in management (P) through mechanisms of transparency, accountability, and fairness (Q) in order to produce leadership that reforms bureaucracy and leads change (R). There are six activities

within this model: (1) identifying the need for leadership that reforms bureaucracy and leads change, (2) creating a sustainable leadership development plan, (3)implementing the leadership plan, (4)building partnerships and coordination with stakeholders in the implementation of leadership development, (5)evaluating the implementation of leadership development, and (6)making improvements and revisions to the leadership development design to stay in line with changing demands.
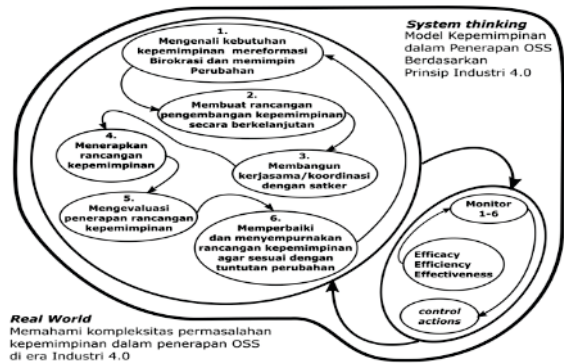
Figure 4: The Conceptual Model of Leadership in the Implementation of OSS

2. Conceptual Model *root definition* 2: Figure 5 is a system that is owned and run by directors and staff in Inter-Directorate Coordination (P) using design and development of information systems that follow technological advancements (Q) in order to provide optimal services (R). There are 6 (six) activities, namely: (1) Identifying/evaluating the need for inter-unit coordination; (2) Designing inter-unit coordination; (3) Developing a common application that integrates all unit applications, while prioritizing data and information security and privacy; (4) Collaborating with all unit leaders; (5) Confirming the design of coordination made; (6) Implementing the inter-unit coordination system.

Figure 5: Model Conceptual of Coordination in the Implementation of OSS

3. Conceptual Model *root definition* 3: Figure 6 is a system that is owned and operated by directors and staff in improving the competence of human resources (P) through training to increase knowledge and skills (Q) in order to achieve human resources with the competencies required in the Industry 4.0 era ®.

There are 7 (seven) activities, namely (1) Identifying, developing and using employee competencies; (2) Developing job competency standards; (3) Conducting employee competency assessments for employee competency profiles; (4) Developing and communicating training planning strategies in accordance with the needs of the units and employees; (5) Developing competency-based training in public services and stakeholders for employees; (6)

Reviewing and evaluating the impact of training programs; (7) Supporting and assisting new employees in the form of mentoring, coaching and tutorials.
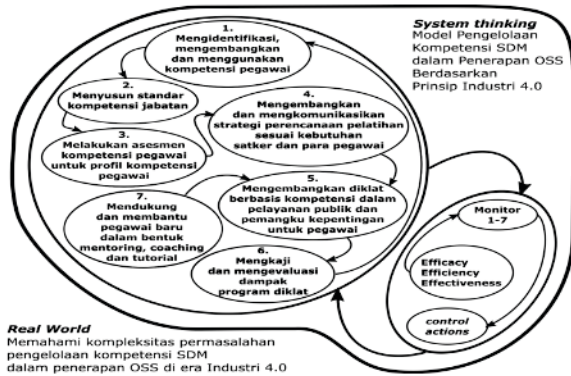

Figure 6: Model Conceptual of Competency in the Implementation of OSS

4. Conceptual Model *root definition* 4: Figure 7 is a system model that is owned by directors and implemented by directors and staff in evaluating the performance of human resources (P) through the implementation of performance measurement (Q) in order to achieve high-performing human resources in the Industry 4.0 era (R). There are 6 (six) activities, namely (1) Setting institutional goals, targets, and strategies; (2) Formulating performance indicators and measures; (3) Measuring the level of achievement of institutional goals and targets; (4) Conducting performance measurement; (5) Evaluating and providing feedback on performance; (6) Developing a merit system for performance improvement.
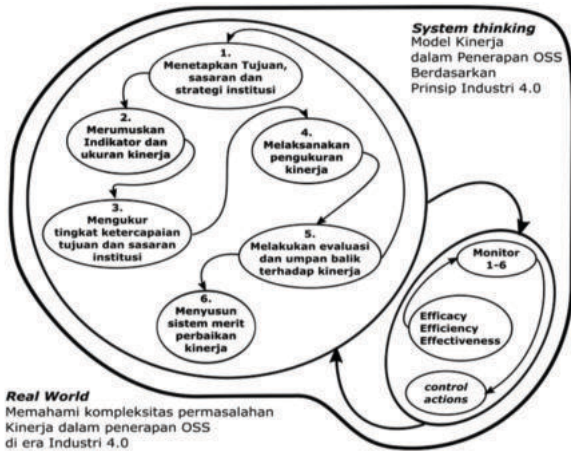

Figure 7: The Model Conceptual of Performance Evaluation in the Implementation of OSS

The formulation of a model for the adaptation of HR Management in the implementation of OSS. Figure 8 illustrates an integrated model for the management of human resources in the implementation of OSS, based on the one-system, two-system, three-system, and four-system models, consisting of 6 (six) activities: (1) designing an HR management strategy; (2) enhancing the competency of employees to meet the challenges of the Industry 4.0; (3) improving inter-departmental coordination; (4) enhancing employee performance; (5) developing pro-change leadership; (6) managing human resources effectively by following Industry 4.0 principles.

DISCUSSION
Hecklau et al (2016) developed a competency model for managing human resources that can be used to analyze the readiness of employees to face challenges that arise in the era of Industry 4.0, by creating four broad competency groups,

namely technical, methodological, social and personal. A strategic approach is needed in managing resources. This aims to make employees meet the standard capacity of more complex jobs in adapting to new technologies in Industry 4.0.
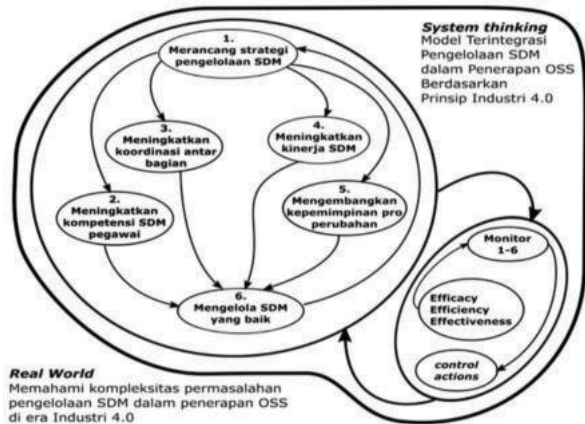

Figure 8: The Integrated Conceptual Model of management of human resources in the implementation of OSS

In their research, (Herlambang C.P & Susanto, 2019) found that there are five components of e-leadership that can influence the success of e-government. These five components are strong leadership, leadership vision and mission, aligning information technology goals and strategies, commitment, and leadership function. All of these are related to information technology.

According to the research produced by (Julianry, Syarief, & Affandi, 2017) using descriptive analysis and Structural Equation Model (SEM) analysis in the Ministry of Communication and Informatics, training has a significantly positive effect on motivation and performance.

Strong leadership, leadership vision and mission, aligning IT goals and strategy, commitment, and leadership function related to information technology are the e-leadership components that have a relationship with the success of e-government in Indonesia (Herlambang, 2019)

The interoperability modeling between different e-Gov applications can be developed through the use of web services technology. The use of web services technology in the exchange of data between two e-Gov applications is able to demonstrate the principles of interoperability (Istiyanto & Sutanta, 2012)

The integrated model produced by the researcher, which depicts the management strategy of leadership, coordination, human resource competency and performance in the implementation of OSS based on the principles of Industry 4.0 using the soft system methodology (SSM) is a novelty of this research.

Managerial Implications
Managerial implications of the model produced:
1. Units have standards for transparent and effective recruitment and promotion by recruiting people who have the intellectual qualifications, skills, and skills required to achieve the vision and mission for all levels of employees. Steps that can be taken are to create a standardized promotion system that is objective and fair.
2. There is a need to create a human resource management system in units with two divisions, namely operational and strategic. The first is related to contract renewals, and the appointment of senior or professional staff. The second is related to recruitment processes, training, development, performance management, and human resource information systems.

3. Implementing data/information management with strategic planning of technology and information systems, electronic government-based governance. In the era of industry 4.0 which prioritizes the interconnection of all parts, then the integrated system created must still prioritize information/ data security and information and privacy.

4. Units need to hold orientations for employees as a process of providing ideal and necessary information for new employees. Some important information that must be known for example company history, vision and mission, policies, social and cultural conditions, and benefits that employees receive after joining including career development opportunities. New employee training with training materials developed in accordance with the principles of industry 4.0 so that employees receive training that helps employees have the competence that is in line with the needs and certified.

5. With human resource competence that follows the principles of industry 4.0, it is expected to create standards that must be followed by business actors to obtain their licenses which in turn will improve the quality of services provided by business actors to the public.

CONCLUSIONS AND RECOMMENDATIONS
CONCLUSIONS
Based on the research on human resource management (HRM) in the implementation of online single submission (OSS) based on the principles of Industry 4.0, the following conclusions were obtained:

1. The research results addressed the problem of the current situation of HRM in the implementation of OSS. Based on the situational analysis of the implementation of OSS, HRM has not been carried out in a comprehensive and in-depth manner throughout all stages of HRM.

2. Four conceptual models of HRM with OSS implementation based on the principles of Industry 4.0 were developed, as follows:

i. The first conceptual model of root definition 1, focuses on building awareness of the importance of leadership that improves management and leads the way in adapting to technological advancements.

ii. The second conceptual model of root definition 2, focuses on developing an HRM information system for coordination between departments.

iii. The third conceptual model of root definition 3, is a system for evaluating measurable and targeted HRM competencies to achieve predetermined HRM competency standards.

iv. The fourth conceptual model of root definition 4, is a system for evaluating measurable HRM performance to achieve organizational goals and objectives.

3. The SSM study resulted in a design model for adapting HRM in the implementation of OSS, which is an integrated model of the four previously formulated HRM models. The novelty of this research is the integrated model that describes leadership management strategies, coordination, HRM competencies, and HRM performance in the implementation of OSS based on Industry 4.0 principles using the soft system methodology (SSM)

Recommendations
Practical Recommendations: Steps for improvement in HRM in the Implementation of OSS are as follows:

a. The establishment of strategic goals, quality objectives, and work programs to achieve overall quality objectives.

b. Monitoring and evaluating HRM performance in order to identify, measure, report, analyze, and provide feedback on performance.

c. The monitoring process encompasses all information technology processes that need to be periodically assessed to ensure quality and the success of the information technology support objectives. In the Industry 4.0 era, common applications that integrate all unit applications not only provide the advantage of a larger and more integrated and efficient system but also open the possibility of data attacks. The integrated system must prioritize the security of data and information and privacy.

d. The implementation of technology for all HRM processes. The availability of better integrated and jointly provided HRM information services, thus making information management more effective.

e. The improvement of the Code of Conduct (CoC) guideline in the implementation of OSS.

f. Standard Operating Procedures (SOPs) are to be used as benchmarks or guidelines in work that is in line with work procedures and systems.

g. Socializing the implementation of principles of electronic government systems (SPBE) for employees to have an understanding of thoughts, skills and attitudes, and values about SPBE in carrying out activities.

h. Evaluation of implementation to assess the level of success of ongoing activities and provide feedback on areas that need improvement.

Theoretical recommendations:
Conducting further research include studying the implementation of recommendations and testing the HRM model in the implementation of OSS with the application of Industry 4.0 principles in other government institutions that provide business licensing services. This research only goes as far as the recommendations stage, not implementing the recommendations stage as it is time consuming.

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