

## **Bureaucratic Reform in Facing the Industrial Revolution 4.0 and Its Implications for Governance**

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**Abstract:** The use of information technology in governance (e-government) is a manifestation of bureaucratic reform in improving the quality of public services to be more transparent, effective and efficient. In relation to the 4.0 industrial revolution, the use of information technology in every element in governance, is also one of the supports for the state civil apparatus (ASN) to be more quality, innovative, competitive, effective and efficient in carrying out its duties, so that an innovation is needed that is able to support and implement information technology in governance (e-government) easily, effectively and efficiently as part of industry 4.0, for that the integrated office is present as the right and effective solution in carrying out office management functions that have already been integrated.

**Keyword:** Governance, Industrial Revolution 4.0, Integrated

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### **A. Background**

Indonesia is a very large maritime country with a population of 263 million with diverse cultures, levels of education, and increased development which must be accompanied by equitable development. The big challenge for the Indonesian nation is meeting needs with a development paradigm that relies on innovation and the use of substitute materials that require innovation capability by reliable human resources, development of innovation capabilities must be carried out in an integrated, focused and efficient manner both in basic research and in the downstreaming research results.

Law No. 25 of 2009 concerning Public Services, public service is an activity or series of activities in order to fulfill service needs in accordance with the laws and regulations for every citizen and resident of goods, services and / or administrative services provided by public service providers. Then the relationship with public services and the era of the Industrial Revolution 4.0 is currently explicitly explained in Law No.25 of 2009 concerning Public Services, article 23 paragraph (1) states that: "in order to provide information support for the delivery of public services, it is necessary to establish an information system which national in nature "while in Article 2 Paragraph (4) of Law No.25 of 2009 concerning Public Services:" The Administrator is obliged to manage an information system consisting of Electronic or Non-Electronic Information Systems which at least includes: Profiles, Operators, Executive Profiles, Standards Services, Service Notices, Complaints Manager and Performance Appraisal ”.

Internet users in Indonesian society rose 82% from 2015 to 2018, namely 72.7 million to 132.7 million. This figure shows that Indonesians are starting to abandon conventional ways of increasing time and cost efficiency in carrying out activities such as services or seeking information. Internet using desktop / PC tends to fluctuate from year to year. However, when viewed from the growth in 2018 versus 2015, internet usage using desktops increased by 5.5% or from 32.7 million to 34.5 million.

Opportunities and challenges for central and local governments after seeing the growth of internet users in Indonesia. This is supported by APJII survey data, namely: information on laws and regulations of 16, 17%, administrative information of 12.51%, registration of KTP / SIM / Passport / BPJS of 11.78%, tax reporting of 11.2%. and report complaints of 9.58%. The results of a survey by the Indonesian Internet Providers Association (APJII) stated that the percentage of Indonesians is still low in accessing public information such as administration, whether this figure is due to the government's low awareness of technology-based innovation or low government transparency in implementing e-government.

In line with this, based on the 2016 GE Report, Industry 4.0 is a digitally connected manufacturing, covering various types of technology, from 3D printing to robotics, new material types and production systems, optimizing and simplifying the manufacturing supply chain, by digitally integrating the system. manufacturing, automation in almost all fields and the unlimited development of the internet of things (IoT) can change the entire manufacturing and business process. The principles of Industrial Design 4.0 are as follows:<sup>1</sup>

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<sup>1</sup> Antoni Arif Priadi, 2019, *Revolusi Industri 4.0 dan Implikasinya Pada Industri Maritim*, hlm.3.

1. Interopability: object, machines and people need to be able to communicate through the internet of things and the internet of people;
2. Virtulaizatton: CPSs must be able to simulate and create a virtual copy of the real world;
3. Decentralization: the ability of CPSs to work independently. This gives room for customized products and problem solving.

Some Important changes: Affect The Demographics of Employment:<sup>2</sup>

1. Big-Data-Driven Quality Control: In Engineering terms, quality control aims at reducing the inevitable variation between products;
2. Robot- Asissted Production: The entire basic of the new industry relies of the smart devices being able to the interact with the surrounding environment;
3. Self- Driving logistics vehichles: One of the most important focuses of optimization is transportation. Engineers use linier programming methods (such as teh transportation model) to utilize the use of transportation;
4. Production line simulation: While the need for optimizatioan for the transportation declines, the need for typically work on optimization and simulation) to simulate productioans lines will increase;
5. Predictive maintenance: having smart devices will allow manufactue to predict failures. Smart machines will be able to also independently maintain themselves;
6. Machines as a Service: The new industry will also allow manufacture to sell a machine as a service.

Era 4.0 and later 75% of jobs involve science, technology, engineering and mathematics skills, internet of things, lifelong learning. Technological progress is very fast and has now reached the 4.0 industrial revolution which relies on key technologies, namely: artificial intelligence, internet things, wearable, advanced robotic and 3 D printing. The priority of industrial development in Indonesia is directed at industries in Indonesia in industries where Indonesia has the advantage. The 2020-2025 RPJMN prioritizes the development of human resources and digital-based governance. The concept of Industry 4.0 was first introduced in 2010 at the time of the German Federal Ministry of Education and Research, namely:

“Industri 4.0 refers to to a new phase in the indutrial revolution that focuses heavily on in terconnectivity, automatioan, machine learning, and real-time data, Industry 4.0 also sometimes referred to as Ilot o smart manufacturing, marries phsical producion and operations wuth smart digital technology, machine learning, and big data to create a more holistic and better connected ecosystem for companies that focus and manufacturing and supply chain management”.

Based on the empirical facts above, the author raises an article entitled "Bureaucratic Reform in the Face of the Industrial Revolution 4.0 and Its Implications for Governance"

## **B. The Problem**

1. How is IT public service related to the Industrial Revolution 4.0 and its implications for domestic governance?
2. How is the Reconstruction of Public Services for the Industrial Revolution on Domestic Governance?

## **C. Discussion**

### **1. It Public Services To The 4.0 Industrial Revolution And Its Implications In Domestic Governance**

#### **A. It Public Services Againts Revolution 4.0**

The E-Government system, which is the government's effort in implementing the use of computer networks and information technology to run the government, especially public services, is still very minimal. There are still few Ministries of Institutions and regions that utilize technology in the public service process. Even if e-Government itself is implemented in every government, it is in line with revolution 4.0. and make government tasks easier

E-Government has many benefits in the governance system, including increasing the speed of communication between government, society, the private sector as well as coordination between internet-based agencies. In addition to realizing transparent services, increasing accountability of the process of government administration, saving government budgets, and facilitating the flow of information that can be accessed openly in order to realize the ideals of good governance and open government in governance in Indonesia.<sup>3</sup>

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<sup>2</sup> *Ibid.*

<sup>3</sup> <http://Ombudsman.go.id>, hlm.1.

Technological innovations allow redistribution and decentralization of power so that the government will change the approach used to involve the public in policy making. The main role of the government will be reduced. The provision of public transportation, which was previously a state duty, can now be taken by anyone by utilizing technological innovation. The emergence of a government openness initiative that was originally born from the support of the ICT industry in Silicon Valley in the bid to win President Obama in the US in the 2009 elections is projected to take advantage of technological innovation in governance. ICT has been chosen as the main medium in building transparency and opening up spaces for participation. The wave then hit the global, including Indonesia, which began to adopt in 2011 and was called the future of Indonesian governance.

The importance of digital governance in government was expressed by Dunleavy in 2005 when introducing the alternative concept that was adopted in Government. The thesis is simple, various changes related to technology will be very important for a wave of change with an open and sustainable system, revolution 4.0 can exacerbate income inequality, leave billions of people behind, and open opportunities for technological innovation to help overcome local, regional and global challenges. Another factor is the problem faced by technology is data security and integrity, the world will increasingly worry about data privacy and reduce trust to the government.

The Aspen Institute in 2014 discussed the reach of technology access and the inclusiveness of conversations about open government, dominated by those who have the means to participate, so that the need for industrial revolution 4.0 in governance can receive open data to increase accountability and public efficiency in the context of entrepreneurship, innovation. and solving social problems and increasing economic and social value exponentially.

## **B. Implications For Domestic Governance**

The involvement of the government in carrying out public service functions develops along with the emergence of an understanding or view of the philosophy of the State, this is expressed by Prawirohardjo saying that:

"Since the implementation of the ideals of a welfare state, the government has increasingly intensively intervened in the interaction of social forces with the aim that every citizen can be guaranteed minimum life certainty. Therefore, gradually, the initial functions of a repressive government (police and judiciary) were then added to other functions that were of a service nature.

The service function carried out by the modern government is closely related to the purpose of forming the government, as stated by Dedi Mulyadi that: the main purpose of forming the government is to maintain a system of order in society naturally. Modern government is essentially a service to society. Government is not created to serve itself, but to serve society, creating conditions that allow each member of society to develop abilities and creativity in achieving common progress. Furthermore, Dedi Mulyadi stated that service is essentially:

"... One of the essential functions of government, in addition to the function of empowerment and development. The success of a person in carrying out a government mission can be seen from his ability to carry out these three functions ... "

In this regard, the government can be said to be an institution that carries out state tasks reflected in the structure and process of implementing activities that emphasize organizational activities, namely to achieve goals and are carried out by several people with a certain division of tasks. The task of organizing this work is carried out within the bureaucrats. Parson argues that:

"... The bureaucrat is the best instrument to achieve the goals of the welfare state, namely by providing the best possible service to the community ...". Ethical questions then arise regarding the government's lack of attention to the needs of society. In order to obtain even the simplest services, people are always faced with various artificial difficulties. This unsatisfactory service view can be seen in almost all government agencies. In this connection Kumorotomo said:

"... Routines of service tasks that are redundant to formal accountability have resulted in rigid and slow procedures ..."

Employees no longer feel compelled to improve efficiency and improve work procedures, but rather often resist changes. The work ethic that tends to maintain the "status quo" has led to the public perception that dealing with the bureaucracy means dealing with various complicated and time-consuming procedures. These complicated procedures are often ridden by personal interests and turned into commodities that are traded for personal or group interests. If one looks at the slackness of bureaucratic services, it is not only caused by poor service delivery at the lower levels, other factors that also affect the poor quality of service, among others, are the principles of government organizations that are oriented towards implementation and formal accountability, without considering the quality aspect.

A management style that is oriented towards implementation and formal accountability creates a fear of making mistakes in carrying out tasks so that it affects employee creativity, because sometimes the conditions in the field are different from the regulations made. The government bureaucracy at a certain level must create a spirit of serving the interests of the community as the basis of their motivation to work in the government sector, as well as having a commitment to service and dedication to provide the best to society. Services provided by the government to the community are related to efforts to protect and fulfill the necessities of life for certain products. Unlike public services that can be sold and bought and privatized, the government monopolizes civil services. It is further argued that: civil services are not bought and sold, monopolized by public bodies (government, state) and may not be privatized (privatized), while public services can be bought and sold under legislative control. Every public body has the function of producing and distributing civil services when needed.

David Osborne and Ted Gabler argue that: the services provided by the state apparatus are still in the present and accounted rank, meaning that organizations or employees are aware of and know their position to provide quality services, but for efforts towards quality of service have not been seriously implemented, In general, government organizations often face three problems which include ineffectiveness, inefficiency and poor quality of service. A culture oriented towards achieving targets is one of the characteristics of bureaucratic organizations. It can be argued that from the various types of public services provided by the government, several problems arise in the provision of public services. These issues are identified by the State Administration Agency as follows:

- a. Weaknesses stem from the difficulty in determining or measuring the output and quality of the services provided by the government.
- b. The services provided by the government have high uncertainty in terms of technology so that the relationship between output and input cannot be clearly determined.
- c. Government services do not recognize "bottom line" meaning that no matter how bad their performance is, government services do not know the term bankrupt.
- d. In contrast to the pair mechanism which has weaknesses in solving problems of externalities, government organizations face problems in the form of internalities. This means that government organizations find it very difficult to prevent the influence of values and interests on the bureaucrats from the public interest that they should serve.

## **2. Reconstruction Of Public Services The Industrial Revolution To Governance Based On Pancasila**

State hegemony has been recorded as one of the longest sources of human misery in parts of the world, including Indonesia. Therefore, the emergence of the idea of good governance which encourages the state to share power aside from civil society and business, downwardly with society and above with trans-national institutions, has been warmly welcomed by many parties.

The practice in Indonesia in recent years shows that good governance should be characterized by relations that are equal to the reasoning of the State, business and civil society in managing joint affairs. The state should be a key player with the political capacity to ensure equal relations, facilitate accommodation and cooperatives, and ensure compliance in a vulnerable position under the control of global economic actors. Based on the theory of the operation of law on Chambliss & Seidman Public Services, it can be described the factors that influence the operation of the law in an effort to make policy makers to influence the behavior of implementing bureaucrats to be willing to provide services and regulate the behavior of the target group. In the diagram as follows: Based on the theory of the operation of law, Chambliss & Seidman can describe the factors that influence the operation of law in an effort to influence policy makers to influence the behavior of executing bureaucrats in order to be willing to provide services and regulate the behavior of target groups. in the demonstration as follows. In an effort to realize this idea in the theory of the operation of the law, its implications for Domestic Governance in the Millennial Era are as follows:

Table 1. Realization of the Ideas of Civilian Government

<b>Government Instruments</b>	<b>Realization of the Ideas of Civil Government</b>
Legislative	<ol style="list-style-type: none"> <li>1. Acting as a state statute maker that puts forward the aspirations of the community in creating a talent mobility program 4.0</li> <li>2. Making regulations in the control function and amending regulations that are not based on the spirit of empowering the community.</li> <li>3. Participative, argumentative and independent.</li> <li>4. Carry out an informational function in the face of the industrial revolution 4.0 which is also a vehicle for public education in harmonizing government policies and regulations across ministries</li> <li>5. Attempting to implement all of its activities in the framework of advocating for the creation of civil society for all components of the state, including society as a whole in governance</li> </ol>
Executive	<ol style="list-style-type: none"> <li>1. Developing a National Digital Infrastructure. Development of digital networks and platforms: for example 4G to 5G, 1Gbps optical fiber, data center and cloud to simplify government tasks</li> <li>2. Redesigned Industrial Zones</li> <li>3. Empowerment of MSMEs that are based and side with the community</li> <li>4. Technical Assistance: implement transparency easily understood by machines and humans</li> <li>5. Harmonizing the demands that arise in society in order to create conditions that are balanced with the complexity of interests.</li> <li>6. Attempting to implement all of its activities in the framework of advocating for the creation of civil society for all components of the state, including society as a whole.</li> </ol>
The judiciary	<ol style="list-style-type: none"> <li>1. Settle every dispute peacefully.</li> <li>2. Conduct a judicial review of any public policies that have the opportunity to hinder the realization of civil society.</li> <li>3. Build public awareness of the rule of law.</li> </ol>

Based on this demonstration illustration, the 4.0 Industrial revolution towards maximum public service can be formulated, carried out at the basic level, subject, purpose, substance and consequences. The portrait is depicted as follows:

Table 2. Characteristics of the Industrial Revolution 4.0 Based on Pancasila

<b>No</b>	<b>Characteristics of the Industrial Revolution 4.0 Based on Pancasila</b>
1.	Basic Strategy: Values of the Ideals of Law (Rechtsidee) Pancasila, broken down into the following values: <ol style="list-style-type: none"> <li>1) The precepts of the Supreme Lordship become the basis for performance based on religious morals;</li> <li>2) Just and civilized Humanitarian Precepts are the basis for performance that respects and protects non-discriminatory human rights;</li> <li>3) The Principle of Unity of Indonesia becomes the basis for performance to unite all elements of the nation with their various primordial ties;</li> <li>4) Social precepts led by policy wisdom in representative deliberations become the basis for performance that puts power under the power of the people (democratic); and</li> <li>5) The precept of social justice for all Indonesian people becomes the basis for performance in social justice so that those who are socially and economically weak are not arbitrarily oppressed by those who are strong.</li> </ol>
2.	Subject: Republic of Indonesia (Government and People). People's participation in the industrial revolution took precedence

No	Characteristics of the Industrial Revolution 4.0 Based on Pancasila
3.	Objective: As much as possible the prosperity of the people. Social functions and social justice in the field of governance. Evaluating legal products in Industry 4.0 that are against the constitution and social justice.
4.	Substance: <ol style="list-style-type: none"> <li>a. Collective interests take precedence over individual interests.</li> <li>b. The state controls Industry 4.0 State power cannot be reduced to use rights, but only in the form of permits.</li> <li>c. The production of all, by all and all for all based on joint and familial efforts.</li> <li>d. The state recognizes the right of individuals to participate in management, especially industry 4.0, which has implications for the community who controls the lives of many people in a limited manner both in the contribution and stages of industrial management</li> <li>e. The state must control the production branches which control the livelihoods of the people, otherwise production falls into the hands of the people in power and the people at large are oppressed.</li> <li>f. Foreign industries that cannot be in the hands of individuals, the private sector are given the opportunity to contribute a maximum of 49% of the company's shares.</li> <li>g. The state has the authority to: (1) Own (eigenar); (2) formulating policies (beleid); (3) take management actions (bestuurs daad); (4) make arrangements (regelendaad); (5) managing (beheersdaad); and (6) conducting supervision (toezichthoudendaad).</li> <li>h. The state must respect (to respect), protect (to protect) and fulfill (to fulfill) electricity.</li> </ol>
	Consequences: <ol style="list-style-type: none"> <li>1. The state as the regulator which determines the direction of national development in the face of the 4.0 industrial revolution and manages important production branches for the state and controls the lives of many people.</li> <li>2. Conducted the grand design of the regulation on the public service obligation.</li> </ol>

The new construction of revolution 4.0 in governance in the millennial era should be developed an application (Technology index Indonesia), which is based on electronics which has functions, among others:

1. Monitor the performance of the State civil apparatus;
2. Registering and publishing the results of work as well as evaluating;
3. The industrial revolution 4.0 in creating new technologies and approaches that combine the physical, digital world, in a fundamental way that can change human behavior both as social control (monitoring facilities) and social engineering (social engineering to create an agent of change);
4. Industrial changes in the form of manufacturing additives, advanced materials, intelligent machines, automatic machines, and other technologies, ushering in a new era of physical production;
5. Improved connectivity and more sophisticated data collection and analytical capabilities made possible by the Internet of Things (IoT) have led to a shift towards an information-based economy;
6. With the internet of thing (IoT) data, data other than physical objects, is a source of value and connectivity makes it possible to build smarter supply chains, manufacturing processes, and even ecosystems from upstream to downstream

Good governance is only realized when community institutions are placed parallel in realizing the goals of the country. To find out whether good governance is achieved, UNDP has identified a number of characteristics of good governance to measure this success as follows:

1. Equality, namely that all people have the same opportunity to participate in social, political and economic life.
2. The rule of law, namely that in a state that regulates law that is just, fair and impartial, all people, including the government, must obey the rules of law.
3. Transparency, namely that the decision-making process must be open and there is equal access to all information to the public.

4. Accountability, namely that the decision-making process must be monitored and criticized, in which the decision makers must be held accountable.
5. Responsiveness, namely all agencies and institutions to hear, consider and respond to community demands and developing opinions.
6. Participation, namely that as much as possible the participation of the community directly or indirectly occurs in public decision making.
7. Effective, namely that the entire decision-making process takes place in appropriate, cheap and simple ways.

Based on the principles of good governance, the role played by the community becomes bigger, while the role of the bureaucracy is more as an agent of reform, servant and community empowerment. Therefore, the regulatory and control functions carried out by the state are the formulation and implementation of policies that function as motivators and facilitators in order to achieve self-reliance and self-help from the community, including the business world. In addition to the above roles, the bureaucracy also acts as a "consensus building", namely building an agreement between the private sector state and the public that the bureaucracy must carry out considering its function as agent of reform and facilitator. As an agent of change, the bureaucracy must take the initiative and spearhead an action, while as a facilitator, the bureaucracy must be able to facilitate the interests that arise from society, the private sector and the interests of the state.

#### **D. Conclusion**

Based on the analysis of the above problems, the following conclusions are given:

1. The first problem of IT public services for the 4.0 Industrial Revolution and Its Implications for Domestic Governance in the Millennial Era The use of information technology in governance (e-government) is a manifestation of bureaucratic reform in improving the quality of public services to be more transparent, effective and efficient . for that, the integrated office is here as a solution that is appropriate and effective in carrying out integrated office management functions. IntegraOffice has been supported by document management (document management system), Knowledge Management System (KMS), Disposition Flow (E-Office Correspondence), to coordination between teams. The Industrial Revolution 4.0 with the governance system is closely related to governance during the industrial revolution 4.0 which is a technology that produces disruptive innovations to think about anticipatory policies.
2. The construction of the 4.0 revolution in governance has launched an application (Indonesia's Technology index), which has a function. Among others:
  - a. Monitor the performance of the state civil apparatus;
  - b. Registering and publishing the results of work as well as evaluating;
  - c. Industrial revolution 4.0 in creating new technologies and approaches that combine the physical, digital world in a fundamental way that can change human behavior;
  - d. Industrial changes in the form of additive manufacturing, advanced materials, intelligent machines, automatic machines, and other technologies, usher in a new era of physical production;
  - e. The increased connectivity and more sophisticated data collection and analytical capabilities enabled by IoT have led to a shift towards an information-based economy;
  - f. With IoT data, data other than physical objects is a source of value and connectivity makes it possible to build smarter supply chains, manufacturing processes, and even ecosystems from upstream to downstream.

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