Advances in Economics, Business and Management Research, volume 209
Proceedings of the International Conference on Public Organization (ICONPO 2021)

Acceleration of Artificial Intelligence Innovation in Banyuwangi Regency Government Using an Agile Governance Approach

Akbar Maulana[1,*], Itok Wicaksono[2], Danar Ilham K[3]

[1] *Universitas Muhammadiyah Jember*
[2] *Universitas Muhammadiyah Jember*
[3] *Universitas Muhammadiyah Jember*
[*]*Corresponding author. Email: akbar.maulana@unmuhjember.ac.id*

ABSTRACT
This study aims to determine the steps taken by the Banyuwangi Regency Government in collaborating by maximizing the functions of regional apparatus organizations for budget efficiency, improving services, and empowering the state civil apparatus through innovation. Artificial intelligence by using the approach Agile Governance is a solution for local governments in running an electronic-based government that can increase the value of collaboration to facilitate budgeting, monitoring, and evaluation affairs, and provide efficiency values by using the E-Village Budgeting (E-VB) application, E-Monitoring System (E-Village Budgeting). -MS), and the MSME Class Up Program. The development of artificial intelligent innovation acceleration in the Banyuwangi Regency Government is viewed from the Agile Governance approach through aspects of innovation, manager, autonomous and networked, structured coordination, transparency, open communication, and egalitarian which is carried out very well, structured, coordinated, open, and prioritizes the value of collaboration. creative. The Department of Communication, Information, and Encryption as the leading sector for the development of electronic-based innovation acceleration within the Banyuwangi Regency Government carries out its duties as executor in creating an application by looking at the readiness of existing ICT infrastructure to realize accelerated innovation in local governments. transparency, open communication, and egalitarianism that are very well implemented, structured, coordinated, open, and prioritize the value of creative collaboration. The Department of Communication, Information, and Encryption as the leading sector for the development of electronic-based innovation acceleration within the Banyuwangi Regency Government carries out its duties as executor in creating an application by looking at the readiness of existing ICT infrastructure to realize accelerated innovation in local governments. transparency, open communication, and egalitarianism that are very well implemented, structured, coordinated, open, and prioritize the value of creative collaboration.

Keywords: *Artificial Intelligent, Agile Governance, Innovation, Collaboration.*

1. INTRODUCTION

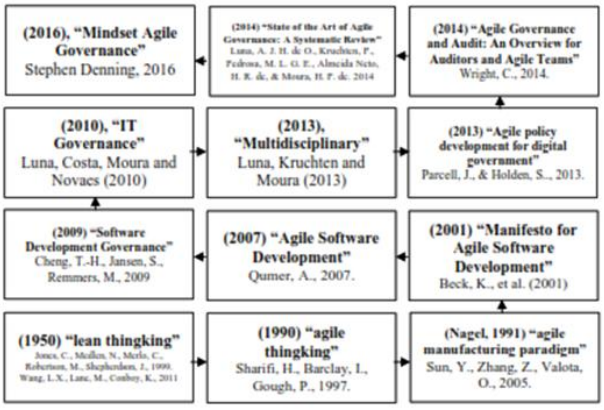
In an all-digital era, a leader in this case the regional head must be able to do the right things (doing the right things), in the right way (doing the things right). The concept of agile exists to offer bureaucracy in a new organizational paradigm. Agile Governance is defined as the organization's ability to respond quickly to unexpected changes in meeting the demands and needs of an increasingly changing society (Bradley, 2016). The concept of agile exists to improve the organization's ability to utilize information and communication technology. In the era of digitalization, this concept is able to answer all the challenges of environmental change. Agile is software and requires Brainware (human analogy) that is visionary and essentially innovative (easy, fast, superior). The development of innovation through artificial intelligence is a must in the application of Agile Governance in an increasingly digital era within the scope of collaboration with the Banyuwangi Regency Government by considering the capacity of the existing ICT infrastructure ([1]. Therefore, in a leadership

transition situation, innovation must still be developed by the elected regional head, because innovation is related to the strong vision and mission of the leader, and the transition period becomes a paradox that must be abolished because innovation leapfrogging must be continued, not starting from scratch [2]. The collaboration carried out by the Banyuwangi Regency Government is aimed at increasing the maximization of budget absorption, services to the community, and the empowerment of the state civil apparatus through its organizational leadership.

The government in any country will always strive to transform in the face of changing times. Every public institution or government is competing to be able to work smarter and faster in providing services to the public. One of the transformative strategies for the government sector is to innovate. Innovation is very important because it is believed to be a key step for improving organizational performance to be more effective and efficient [3]. For example, the Banyuwangi Regency Government during the leadership of Regent Abdullah Azwar Anas for two periods (2010-2020) was wrapped in creative collaboration with all elements of the government, the business world, and the people as a contribution to the progress of the beloved region. Through several transformations of innovation, as of now, there are a total of 194 regional, national, and international awards. The award was obtained from innovation and improvement in quantity, quality, in the fields of bureaucracy, agriculture, finance, environment, health, and tourism. Also related to the positive results obtained from the Government Accounting Performance Accountability System (SAKIP), Banyuwangi got the highest score of "A" in Indonesia for four consecutive years (2016-2019).

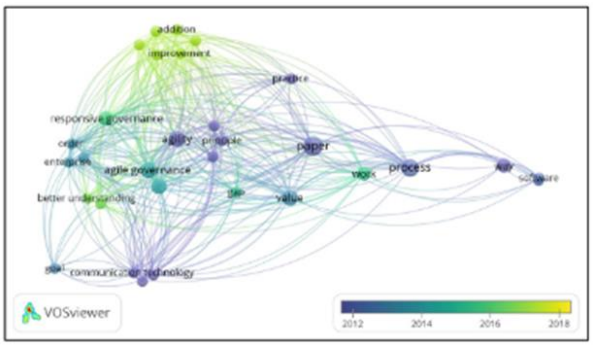
Furthermore, Windrum (2008) explicitly states that innovation in local government is a major contributor to regional economic growth and community welfare. Therefore, the competitiveness of a nation, directly or indirectly, is strongly influenced by the extent to which the capacity of local governments through their bureaucratic organizations is able and continues to develop innovation in a sustainable manner [4]; [5]. The results of a study on competitiveness in the Middle East region by the World Economic Forum (Klaus Schwab, 2018), for example, state that bureaucracy and corruption are factors that greatly affect the level of competitiveness of a country. In other words, the higher the innovation capacity of the local government, the higher its contribution to the level of competitiveness of a nation. Thus, the development of innovation transformation in Banyuwangi Regency requires extra work and smart work in achieving overall leapfrogging, both in the Regional Apparatus Organization (OPD) sector, as well as communication relations between the community and the private sector. A creative collaboration between sectors must be integrated, effective, efficient, and data safe. The Banyuwangi Regency renaissance was created because it has a leader who is ICT literate, intelligent, and able to explore the local potential for the development of all sectors. The work of OPD is encouraged by utilizing the potential of existing human resources. Not to mention the use of E-Kinerja which can boost innovation between departments, between fields in the service, and between individuals in each service.

The fundamental problem that occurs today is the lack of one-stop data integration which causes the ineffectiveness of the data collected in each service. This causes the data input database carried out by OPDs cannot be used by other OPDs due to the lack of items that exist at the time of data input. The Banyuwangi Regency Communication, Information and Encryption Service as the leading sector in several data matters related to other agencies try to improve the integration of this data one by one and increase access to computerized infrastructure facilities to create an effective work cycle, and not spend a lot of wasted budgets. in community data collection, and can better protect data from unwanted things in the future. Therefore, the researcher tries to describe the process of changing the agile governance paradigm by summarizing and collecting several studies from previous research. Thus, it is hoped that the change in the agile governance paradigm will become a reference for researchers in measuring research conducted with learning studies in the Banyuwangi Regency Government as the leading sector for the development of artificial intelligence-based information and communication technology innovation. The following is a description of the research description of the agile governance paradigm:



Source: Processed by researchers, 2021

Figure 1 Overview of The Agile Governance Paradigm Process



Source: Processed by researchers, 2021

Figure 2 VOSviewer Agile Governance Research

From the focus of the study and the definitions of several studies above, it can be said that the agile method is a method that must be used in every organization, especially public organizations. However, after the researchers reviewed based on the title and research abstract above which were analyzed using VOSviewer, it can be said that research focusing on agile governance was the most studied between the period 2014 to 2016. leadership. From the picture it is clear that the research above is more about the process and development of information technology software, meaning that this research is more in the technical realm of infrastructure for the development of agile methods. Not yet focused on the concept of innovation through agile methods. The agile method can be done if the leader in the organization has a model of agile leadership abilities in any situation. This ability to create strategies and innovations that are different from others is what if applied in the organization can be considered agile, agile, and adaptive. Agile methods and the ability to innovate in creating these strategies will ultimately lead to new ways that are superior, competitive, and strategic. Therefore the role of public organizations is not only to provide fast service but can bring business value to reduce the amount of cost and time used (efficiently). and effective). This can be applied if the facilities and infrastructure can support agile methods such as software and application development, transforming public organizations into digital organizations.

This research was conducted to obtain an overview of the concept of accelerated innovation of regional organizations and their implementation through the concept of agile governance referring to Stephen Denning's theory, 2016 through 7 (seven dimensions of focus areas including innovation, managerial, networked autonomy, structured coordination, transparency, open communication). and egalitarian. Then an in-depth study can be carried out to explore the various challenges of regional development innovation through the concept of artificial intelligence. This means that an agile approach requires strong leadership. The challenge of managing a team to adopt an agile approach is greater than managing a team in a hierarchical bureaucracy [6]. Agile leaders have a vision that focuses on new trends and strategic organizational goals. Leaders reduce these visions and goals into policies that are flexible to the situation, utilization, and availability of available resources (Purwanto, 2019). Agile in the organization can be achieved through the integration of the organization with competent human resource capabilities using technology. Therefore, organizations must encourage their human resources to master digital capabilities such as artificial intelligence, machine learning, and predictive algorithms. The use of technology helps organizations understand the behavior and expectations of their service users well. Thus, they are able to make decisions and provide services that are following the needs of service users (Purwanto, 2019).

An agile government prioritizes convenience and transparency in the bureaucratic sector and the public sector. The emphasis on this convenience is in the planning, budgeting, and monitoring processes. Agile Governance indirectly encourages the government to be technology-friendly and implement it in Electronic Government (e-Government). The aim of all of this is to increase the level of satisfaction or public trust and the capacity of government organizations.

2. METHOD

This study was descriptive qualitative research that employed a descriptive method in examining the status of a group of people, an object, condition, system of thought, or events in the present. According to the definition, qualitative research is research that intends to understand the phenomenon of what is experienced by the research subject, for example, behavior, perception, motivation, action, holistically using description in the form of words and language, in a special natural context by utilizing various scientific methods. In this case, the phenomenon that wants to be described is related to "Acceleration of Artificial Intelligence Innovation in Banyuwangi Regency Government Using an Agile Governance Approach." This research is focused on the Regional Government Organization of Banyuwangi Regency.

3. BASIC THEORY

3.1. Artificial Intelligence

Artificial Intelligence (AI) is a field of computer science that deals with the automation of intelligent behavior [7]. Programming computers to accomplish

things that would ordinarily need human intelligence is another concept of AI [8]. This includes the ability to perceive and monitor information visually/spatially, auditory, reason, make predictions, interact with humans and machines, and continually learn and improve. Meanwhile, big data and analytics can be used to accomplish some of the same tasks like AI, including automation, AI is not synonymous with these requirements. AI gets powerful with machine learning, where computers learn from training and supervised input over time to improve response. For example, translation, facial recognition, and targeted online advertising can be machine learning applications. One scenario where machine learning can be valuable in a government context is when there is a lot of data but not enough people to manage it or the experts to analyze it. Another scenario is a routine process that a machine can perform automatically while improving over time. Through these applications, AI can reduce administrative burdens, help solve resource allocation problems, and perform significantly complex tasks. AI applications for citizen services can also greatly reduce costs. It is estimated that the automation of the duties of government employees can be saved [9]. In order for computers to act like and as good as humans, computers must also be equipped with the knowledge and have the ability to reason and can become smart machines [10]. The provision consists of artificial intelligence settlement techniques, including the following techniques:

a) Search (search technique) is a problem-solving technique that presents the problem into a state-space and systematically generates and tests states from the initial state until a goal state is found.

b) Reasoning (reasoning technique) is a problem-solving technique that presents problems into logic (mathematics tools used to present and manipulate facts and rules).

c) Planning (Planning) is a method of solving problems by solving problems into smaller sub-problems, solving problems one by one, then combining solutions from the smallest unit into a comprehensive one.

d) Learning Automatically applies rules that are expected to be generally applicable to data that we have never known [7].

3.2. Agile Governance

The agile approach to organizations was originally used by the information technology (IT) industry two decades ago. Agile methods and practices are used to overcome problems often faced by the IT industry, namely budget overruns, unmet deadlines, low-quality output, and customer dissatisfaction. Agile approaches are proven to increase the relevance, quality, flexibility, and business value of software. Despite growing in the IT industry, the agile approach has relatively the same goals for organizations. Therefore, this approach was later adopted by thousands of organizations around the world [11]. Public organizations are also not left behind in adopting an agile approach. Public organizations realize that to be able to produce better public policies and services, it can be realized using an agile approach, namely working more strategically, flexibly, and adaptively to change. Therefore, the agile approach is not a goal, but a method and conditions that encourage the government to work more effectively and efficiently (Purwanto, 2019).

The agile approach to organizations was originally used by the information technology (IT) industry two decades ago. Agile methods and practices are used to overcome problems often faced by the IT industry, namely budget overruns, unmet deadlines, low-quality output, and customer dissatisfaction. Agile approaches are proven to increase the relevance, quality, flexibility, and business value of software. Despite growing in the IT industry, the agile approach has relatively the same goals for organizations. Public organizations are also not left behind in adopting an agile approach. Public organizations realize that to be able to produce better public policies and services, it can be realized using an agile approach, namely working more strategically, flexibly, and adapting to change. Therefore, the agile approach is not a goal, but a means and conditions that encourage governments to work more effectively and efficiently. The implementation of an agile approach in organizations has a number of prerequisites, namely the formation of an agile mindset; having agile leadership; and investment in human resources to master new fields of knowledge [12]; Purwanto, 2019). The agile mindset is more important than agile management, processes, systems, platforms, or organizational structures. Management methods that are implemented without changing the agile mindset only add little benefit to the organization [6]. The agile mindset consists of: but the methods and conditions that encourage the government to work more effectively and efficiently Implementation of an agile approach in organizations has several prerequisites, namely the formation of an agile mindset; have agile leadership; and investment in human resources to master new fields of knowledge [12]; Purwanto, 2019). The agile mindset is more important than agile management, processes, systems, platforms, or organizational structures. Management methods that are implemented without changing the agile mindset only add little benefit to the organization [6]. The agile mindset

consists of: but the methods and conditions that encourage the government to work more effectively and efficiently Implementation of an agile approach in organizations has several prerequisites, namely the formation of an agile mindset; have agile leadership; and investment in human resources to master new fields of knowledge [12]; Purwanto, 2019).

The agile mindset is more important than agile management, processes, systems, platforms, or organizational structures. Management methods that are implemented without changing the agile mindset only add little benefit to the organization [6]. The agile mindset consists of: an investment in human resources to master new fields of knowledge [12]; Purwanto, 2019). The agile mindset is more important than agile management, processes, systems, platforms, or organizational structures. Management methods that are implemented without changing the agile mindset only add little benefit to the organization [6]. The agile mindset consists of: an investment in human resources to master new fields of knowledge [12]; Purwanto, 2019). The agile mindset is more important than agile management, processes, systems, platforms, or organizational structures. Management methods that are implemented without changing the agile mindset only add little benefit to the organization [6]. The agile mindset consists of:

1) Goals, attitudes, and values are centered on providing added value and innovation to users and consumers, rather than making quick money.

2) Managers see themselves as part of the team and act as drivers, not controllers to enable them to take full advantage of the employee's capacities and talents.

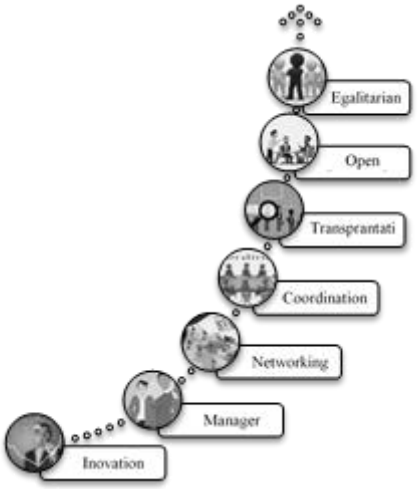
3) Form autonomous and networked teams to operate complex and critical tasks on a large scale.

4) The coordination mechanism uses structured, iterative, and customer-oriented practices.

5) Routinely embody the value of transparency and continuous improvement of products, services, and work methods.

6) Communication is done openly and in two directions, not top-down and hierarchical.

7) Physical workspaces are designed to be open, equal (egalitarian), and encourage collaboration [6].



Source: Stephen Denning's Agile Governance Mindset, 2016

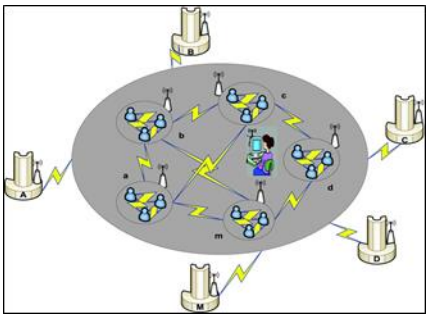
Figure 3 Mindset Agile Governance

Thus, the agile approach requires strong agile leadership. The challenge of managing a team for an agile approach is greater than managing a team in a hierarchical bureaucracy [6]. Agile leaders have a vision that focuses on new trends and strategic organizational goals. Leaders reduce these visions and goals into policies that are flexible to the situation, utilization, and availability of available resources (Purwanto, 2019). Finally, an agile approach to organizations can be achieved through organizational integration with competent human resource capabilities using technology. Therefore, organizations must encourage their human resources to master digital capabilities such as artificial intelligence, machine learning, and predictive algorithms.

3.3. Internet of Things

The internet of things is used to collect data from the environment and to communicate with one another [13]. The Internet of Things (IoT) is a concept in which a device may send and receive data across a network without requiring human or computer interaction. Wireless technologies, micro-electro-mechanical systems, and the Internet have all come together to form the Internet of Things. A person with an implanted heart monitor, a farm animal with a biochip transponder, or a car with built-in sensors to warn the driver when a component does not fit are examples of “A Things” in the Internet of Things. Machine-to-machine (M2M) connections in manufacturing, as well as energy, oil, and gas, are by far the most closely tied to IoT. The term “smart” systems refers to products that have M2M communication capabilities. Smart wires, smart meters, and smart grid sensors, for example. Another definition of IoT is the interconnection of detecting and driving tools

that enable the sharing of information across platforms via a unified framework, resulting in the development of a common operational picture that enables creative applications. This is achieved by real-time sensing, data analysis, and information representation, data analysis, and information representation with cloud computing as a unifying framework [14]. To meet the new connectivity requirements of the established IoT segment, there is a need for a new standard that will address the following: 1) low device costs; 2) increase battery life; 3) increased coverage;



Source: [15].

Figure 4. The Principal IoT Government

Service Collaborative data sensors are useful for a wide range of applications including government, medical, industrial and military. Collaborative analysis of sensors can fix management technical problems, such as data verification and government data validation [16].

3.4. Big Data

Progress technology advances in large-scale sensor networks have enabled the intelligent deployment of new applications by adapting to urban ecosystems [16]. In real-time, organizations can collect data from various sources, including business transactions, social media, and other information for government purposes. Variations of data collected have different formats. Starting from structured, numerical data in traditional databases, structured text document data, email, video, audio, financial transactions, and others [17]. When organizations can combine the amount of big data at their disposal with high-powered analytics, organizations can accomplish business-related tasks such as:

a) Determine the root cause of failure for each business problem.

b) Generate information about key points of sale based on customer buying habits.

c) Recalculate all existing risks in a short time.

d) Detect fraudulent behavior that can affect the organization.

4. FINDINGS AND DISCUSSION

Acceleration of artificial intelligent innovation in Banyuwangi Regency has been carried out starting from the last 10 years. Under the leadership of Regent Abdullah Azwar Anas, Banyuwangi Regency was transformed from a city of witchcraft to an internet city with the readiness of human resources, IT literate leaders, and the readiness of ICT infrastructure which has been continuously fulfilled until now. The development of technological innovation through artificial intelligence is carried out centrally at the Banyuwangi Regency Communication, Information and Encryption Service as well as being the leading sector in the development of the Electronic-Based Government System (SPBE). In the situation of the regent's leadership transition, the innovations that have been done previously are now being developed and added with breakthroughs regarding sustainable innovation.

Therefore, Agile Governance is agile governance, or in another sense is the government's ability to keep up with the times and can meet the demands of society quickly. Agile Governance is an estuary for governance developments in the current era, a measure of the success of a region in implementing Smart City, Good Governance, Dynamic Governance, Collaborative Governance, and other types of governance depending on how capable the regional head and his government are in utilizing ICT by developing artificial intelligence. Adoption of Agile Governance from a company or industrial system that is applied to government is intended to solve the problem of budget swelling, unmet deadlines, low-quality output, and customer dissatisfaction. In practice, the Banyuwangi Regency Government and the village government in solving existing problems are carried out by creating innovation, managerial management, expanding work networks, directed coordination, transparency in financial reporting, open communication with all parties, and the importance of leadership patience in running the wheels of government. Bureaucratic organizations are considered important because they are required to create a change through innovations and integrate data in each OPD. Accordingly, information related to data can be aligned and uniform and make it easier for organizations to provide services to their people. Several programs that have been created by the OPD in the Banyuwangi Regency Government include E-Village Budgeting, E-Monitoring Evaluation (Monev), E-Monitoring System (E-MS), Smart Kampung, and the program on "MSMEs Progressing Fast."

5. CONCLUSION

By utilizing artificial intelligence technology and guided by the agile governance mindset, resources, both human resources and budget, the Banyuwangi Regency Government can carry out its function as a public servant and is supported by existing policies. develop the concept of agile governance. It is also widely used by the private sector and society in general. The Banyuwangi Regency Communication, Information and Password Service as the leading sector for the development of government digitalization also carries out its duties and functions properly under the coordination carried out with the regent. Several programs made jointly by the Banyuwangi Regency Government have had a very good impact on government affairs, especially for public service facilities. This positive impact can be seen from the success of the agile governance mindset which consists of innovation, managers, networked autonomy, structured coordination, transparency, open communication, and egalitarianism.

ACKNOWLEDGMENT

The researchers would like to thank the Banyuwangi Regency Communication, Information and Encryption Office for supporting and assisting in providing data and information for this study.

REFERENCES

[1] M. T. Hanssen G.K., Stålhane T., "What Is Agile Software Development: A Short Introduction.," SafeScrum® — Agil. Dev. Safety-Critical Software. Springer, Cham, 2018.

[2] D. Schoemaker, PJH Heaton, S Teece, "Title Innovation, dynamic capabilities, and leadership," J. Calif. Manag. Rev. 61(1) ISSN 0008-1256. Publ. Date 2018-11-01 DOI 10.1177/0008125618790246 Licens. https//creativecommons.org/licenses/by-nc-nd/4.0/ 4.0, no. https://escholarship.org/uc/item/6447t130.

[3] M. Damanpour, F., & Schneider, "Characteristics of innovation and innovation adoption in public organizations: Assessing the role of managers," J. Public Adm. Res. Theory, 19(3), 495–522. https//doi.org/10.1093/jopart/mun021, 2009.

[4] P. and J. E. R. Evans, "'Bureaucracy and Growth: A Cross-National Analysis of the Effects of "Weberian" State Structures on Economic Growth'.," vol. American S, 1999.

[5] T. Im, "'Bureaucratic Power and Government Competitiveness'''. In Huck-ju Kwon and Min Gyo Koo (ed.),'" no. The Korean Government and Public Policies in a Development Nexus. New York: Springer.https://doi.org/10.1007/978-3-319-01098-4_4. (Accessed on 01 November 2020 at 01.05 WIB), 2014.

[6] S. Denning, "How To Make The Whole Organization 'Agile', Strategy and Leadership," Emerald Insight, Vol 44, 2016.

[7] George F Luger, "Artificial Intelligence: Structures and Strategies for Complex Problem Solving," vol. 5. 20.

[8] and D. F. H. Mehr, H. Ash, "'Artificial Intelligence for Citizen Services and Government,' Ash Cent. democrat," Gov. Innov. Harvard Kennedy Sch., no. August, p. pp 1-12, 2017., 2017.

[9] and Y. L. J. Yang, Y. Chen, W. Huang, ""Survey on Artificial Intelligence for Additive Manufacturing," vol. 23rd Int., 2017.

[10] S. Mathur, "'Smart City- A Gateway For Artificial Intelligence In,' IEEE Students," Conf. electr. electrons. Comput. Sci. Smart, 2016.

[11] J. L. Cooke, "Everything you want to know about Agile: How to get Agile results in a less-than-agile organization," Clive IT Gov. Pub, 2012.

[12] S. Denning, "How to make the whole organization 'Agile,'" Emerald Insight, 1-9, 2016.

[13] and L. G. S.Zhong, L. Zhang, H. Chen, H. Zhao, "'Study of the Patterns of Automatic Car Washing in the Era of Internet of Things,'" vol. 31st Int., 2017.

[14] L. Liu, "Things for Healthcare," Smart Cities Conf. (ISC2), 2017 Int., 2017, 2017.

[15] and G. I. L.Ang, S.Member, KP Seng, AM Zungeru, "'Big Sensor Data Systems for Smart Cities,'" vol. IEEE Inter, 2017.

[16] J. Yoon, "ANN-based Collaborative Sensor Calibration and GA-approach to Sensor Mutation Management," 6th IIAI Int. Congr. Adv. app. Informatics, pp. 897–902, 2017, 2017.

[17] and Y. S. S. Chen, K. Wang, C. Zhao, H. Zhang, S. Member, "Accelerated Distributed Optimization Design for Reconstruction of Big Sensory Data," vol. EEE Intern, 2017.