

Change Management Strategy for Organization in the Era of Industry 4.0



Lianna Sugandi, Yohannes Kurniawan, Lydiawati Kosasih Asalla

Abstract: *The Changes have survival benefits for an organization. And with out any change, it can be ascertained that the age of the organization will not last long. The Change sint end to make the organization notastatic but remained dynamic in the face of changing times. A leadershouldhave a vision and a change in the strategy based on assumptions about future condition sthatare expected to occur. The only leader who have the personality, be havior, and the sense of power that are able to deal with change. This paper analyzed the several literature study from national journals and books in Indonesia and international journals to see the change management concept from two perspective. And the results showed the similarity research funding from the researcher in Indonesia and the other countries about change management strategies and challenges.*

Keywords : *Change management, organization, leader, strategy, change.*

I. INTRODUCTION

The era of the Industrial Revolution Phenomenon 4.0 is definitely no longer in our ears, given the development of technology and information that is happening all over the world. The Industrial Revolution 4.0 is a phenomenon that collaborates cyber technology and automation technology. The concept of application is centered on the concept of automation carried out by technology without asking for human labor in the application process.

The benefits of technology in the industrial field, the benefits can also be obtained by all levels of society. At present, retrieving and transferring information can be easily done anytime and anywhere through the internet network. The Industrial Revolution 4.0 is a phenomenon that collaborates cyber technology and automation technology. The concept of application is centered on the concept of automation carried out by technology without asking for human labor in the application process. This adds value to the efficiency of the work environment where management

considers it vital and is needed by industry players. In addition, time management will improve work quality and production costs. A concrete example that can be taken from the use of technology in the industrial field is the bookkeeping and production process which can now be easily accessed by anyone and at any time.

At present, Indonesia has begun to work on the Industrial Revolution 4.0, as seen from factories that have used the internet network system to facilitate access to information on internal access, employee supervision, and accounting. These factories are often referred to as Smart Factory. To approve this era of the Industrial Revolution 4.0 which is still relatively new, special preparations are needed to support industry players, we must be able to change plans quickly, and how organizations can manage these changes requires changing management strategies. This paper reviews the literature from various sources to see how organizations can survive in the industrial era

Mangkuprawira Sjafri [1] said that in a business organization, the human element becomes a strategic thing in the production process. How to control and manage them has become an organizational problem. And today we know that increasing change is inevitable in human life. As humans we live in a world full of change. The rapid changes in the environment and technology force an organization to adapt. Many organizations fail to adapt to change and are eventually left behind by their competition and eventually the organization dies. But on the other hand, large organizations that want to move forward innovatively and are always able to survive in facing changes, for example like BNI, Gudang Garam and so on, can still exist even though they are more than a hundred years old because the organization is able to change to adapt.

There are difficult and even critical times in passing the changing times and the organization becomes slow, vulnerable, dull and lackluster, the organization must be forced to change, if it does not change soon, such an organization will be displaced and left far behind by its competitors. The change management is an ongoing process to serve every need for change and change always raises concerns and expectations. One of the goals of change management is to strive for the transformation process to take place in a relatively fast time with minimal difficulties. Meanwhile, according to Kasali R. [2] change management is an important part of management and every leader is measured by his ability to predict changes and make those changes a potential. Heller [3] said that change is the most important element of business management, in order to be competitive in an increasingly aggressive market, the organization and the people within it must be response positive about change. According to Heller [3] ignore or underestimate changes in trends, the organization will lose money.

Manuscript received on January 02, 2020.

Revised Manuscript received on January 15, 2020.

Manuscript published on January 30, 2020.

* Correspondence Author

Lianna Sugandi*, Information Systems Department, School of Information Systems, Bina Nusantara University, Jakarta, Indonesia, 11480.

Yohannes Kurniawan, Information Systems Department, School of Information Systems, Bina Nusantara University, Jakarta, Indonesia, 11480.
E-mail: ykurniawan@binus.edu

Lydiawati Kosasih Asalla, Information Systems Department, School of Information Systems, Bina Nusantara University, Jakarta, Indonesia, 11480.

© The Authors. Published by Blue Eyes Intelligence Engineering and Sciences Publication (BEIESP). This is an [open access](https://creativecommons.org/licenses/by-nc-nd/4.0/) article under the CC-BY-NC-ND license
(<http://creativecommons.org/licenses/by-nc-nd/4.0/>)

Change Management Strategy for Organization in the Era of Industry 4.0

The concrete goals of change management for different organizations may not be the same. However, the ethos of change management is the same, namely, making the organization more effective, efficient and responsive to changes that occur within the organization. The process of change is usually done through the focus of organizational change and starting from the business world who first realized the importance of change both small and large organizations, both in the private or public sectors. Most people struggle hard every day but often fail due to change. Organizational change always involves individual changes, and the response in responding to change.

II. METHODS

The approach used for this article is limited to analysis based on literature studies conducted from several sources national (Indonesia) from books and journals and international journals to see the change management concept from two perspectives. The researchers want to explore the strategies and challenges of change management in Indonesia compare with the other countries.

III. RESULTS AND DISCUSSION

The factors that causes change are (1) technology, (2) economic conditions, (3) global competition, (4) social and demographic changes, (5) internal challenges. The changes that occur in organizations are caused by various kinds of external and internal forces. To be able to grow and survive, organizations need to react and adapt to various forces. Organizations that carry out innovation activities and on an ongoing basis to improve products to meet changing consumer demand and to deal with competitors. According to Heller [3] changes in organizations can be dealt in three ways namely (1) opposing, (2) following, (3) leading. The opponents try not to change the impossible at this time, most individuals or organizations who reject change will miss or fail and will eventually follow the change. According to Gunawan et al. [4] try to anticipate and lead safer changes because the positive aspects of the changes are not as clear as the negative aspects if there has been a change in perspective and in developing strategies to enter and play in the business then the trend of change organizations continue to increase in frequency, speed, complexity and turmoil in the current conditions and there seems to be no sign of decline.

The changes can have a negative impact but can also have a positive impact on the organization. Change can affect every aspect of organizational life by being proactive towards change, that is, with the only way to master the future of the organization. Internal structural changes in organizations and markets are often rooted in broader changes in society, economy and technology. There are many factors that can make the need for action to change. Behavioral experts in the company in their book *Organizational Behavior* written by Kreiner Robert and Kinicki Angelo (2001) cited by Gunawan et al [4] said that there are two forces which can encourage the emergence of the need to make changes, namely: (1) External forces, i.e. forces that arise from outside the organization such as demographic characteristics (age of education, skill level, gender, immigration etc. Technological developments in market changes, social pressures and politics, (2) Internal strengths, i.e. strengths that arise from within the organization, such as human resource problems

(unmet needs, job dissatisfaction, productivity, work motivation and so on), behavior and management decisions.

A. Change Management Failures

According to a survey from the Total Quality Management (TQM) program from Schaffer and Thompson, Song Ciongwei quoted (2010) that 229 companies out of 300 electronics companies surveyed in the United States that 63% of companies failed to achieve quality improvement and only 10% of this program it works. In Europe, especially the United Kingdom, only 8% managed to make changes from the two thirds of the top 500 companies.

B. Change Management Perspective

According to Soerjogoeritno [5] organizational change can be done through a change management perspective. The basis of the change management perspective there are four main dimensions, namely: (1) relating to the concept of the change process; (2) relates to context and uncertainty; (3) relates to the concept of the content and scale of changes to be made; (4) relates to the methods and strategies chosen in managing change. the first dimension that arises regarding the concept of the process of change. The concept of this change process will provide an understanding of the process of change that can be used as a basis in creating conditions so that change is possible.

This second dimension concerns the context and uncertainty related to the reasons for changing. If it is associated with phenomena in a business environment that continues to experience dynamic changes, questions like "Do we have to change?" Become irrelevant to be raised. The more important questions are "Where will the change begin?", And "Will the change be for the better?", "When should the change be made?" The answer to such questions will be the basis for building a concept of activities and even become the basis for managing change. A strong foundation will be very urgent when it is understood that any change will create uncertainty.

The third dimension is about the concept of the content and scale of the changes to be made. This dimension requires that change must be perceived as something down to earth and accessible to thought. When the direction of change is perceived as something high, what is created is strong resistance to resist change. The direction of change that is not in accordance with the goals and interests of the organization, if change is perceived as something that makes members of the organization uncomfortable with new positions and conditions. The last dimension concerns the method or strategy chosen in making changes. This dimension raises the question of, "What strategies will be used?", And the selection of appropriate methods and strategies is a determining factor for the organization's success in making changes.

C. The Power that Helps and Blocks Organizational Change

The organizational change is an act of changing an organization from the current conditions, to the future conditions desired to increase its effectiveness. The organizational environment is constantly changing and the organization concerned needs to make changes in order to survive.

D. When Changes Happen and When Done

Soerjogoeritno[5] explains that there are three factors that drive organizational change, namely: (1) the amount of dissatisfaction with current conditions. The greater the feeling of dissatisfaction with current conditions, the more it will push to make changes; (2) availability of desired alternatives. The more alternatives available that are more feasible for updating current conditions towards better conditions, the more profitable it is to make changes; (3) with a plan to achieve the desired alternative and if a good and systematic planning means more opportunities for change.

Making changes does not need to wait until the moment of crisis. The best changes are made when the company is experiencing an increase. Because at that time the organization had great self-confidence, sufficient cash (cash inflow) and resilient resources. [2]. Rejection of change (Resistance to Change) will appear very strong because the organization is in a position of growth and organizational members who are in a comfortable state. To create change according to Kasali[2] organizations need great teams and great players.

In other words, this concept suggests that organizations do not wait until they are sick to make changes and recruit new people who are more "fresh" if not forced so the organization will sink. The change really requires sharp analysis that will determine which points should take precedence. Changes are made to continue life. And for that, the implementation must be done conceptually, systematically and gradually.

The condition for change quoted from Kasali[2] is the existence of a learning process, and all people in the organization are learning human beings. Organizations learn through several stages, namely: (1) human resources are selected through a very rigorous process; (2) the organization is led by entrepreneurial leaders; (3) the learning process takes place inside and outside the organization; (4) there are linkages between the organization and circumstances outside the organization; (5) there is a place to accumulate and disseminate information; (6) there is recognition and reward for success in individuals and groups; (7) there are no conflicts at each level; (8) there is a clear process that makes it possible for human resources to do things that are innovative (innovative culture).

A number of factors need to be considered when changes are made to an organization namely: (1) change agents; (2) determining what needs to be changed; (3) types of changes to be made; (4) individuals who are affected by change; (5) evaluation of these changes. The organizational process has two kinds of objectives, namely: (1) adjusting the organization concerned to its environment and (2) changing the behavior of employees.

E. Change Resistance

Many things are the reason why organizations prefer to maintain the existing status quo and refuse to make changes. Rejection of changes in things that often occur and are natural according to Handokoet al [6] causes of rejection are: personal interests, misunderstanding, norms, and the balance of power and the existence of various differences such as values and goals. There is a loss of comfort, power, security money as well as identity and other benefits incurred.

With the change will cause rejection, other than that misunderstanding as a result of misinformation makes people

reluctant to accept the change. This will happen if it is not included in the discussion and preparation of the change plan so that it does not know the objectives, processes and potential consequences. Rules and norms that are firmly entrenched will also prevent a change. Soerjogoeritno[5] identified several causes for the rejection of change including: (1) lack of understanding of the need to change; (2) the environment is not conducive to change; (3) the changes to be made are contrary to the basic values of the organization, (4) errors in understanding changes and their implications, (5) there is an understanding that the changes to be made are not the best choice for the organization; (6) lack of confidence for those who put forward a plan for change; (7) injustice in carrying out the process of change.

The resistance to change can occur because of the need for information and the impact of not making changes is lacking. The form of rejection of change does not always appear directly in a standard form. Rejection can be clearly seen (explicit) and immediately for example, protesting, threatening strikes, demonstrations and the like, or it can be implicit and implicitly, for example, loyalty to the organization decreases, work motivation decreases, work errors increase absenteeism rates etc. other. Other things can also be a problem such as the unavailability of configuration information in up-to-date infrastructure.

According to Gunawan et. al [4] one of the causes of failure experienced by organizations in making changes is the formation of a coalition that is strong enough among people who have the authority and ability to encourage change. There are eight levels in the process of change, namely: (1) Building a sense of urgency. (2) Creating coalitions. (3) formulating a strategic vision. (4) Communicate the vision of change. (5) Empower overall action. (6) produces short-term wins. (7) Consolidating results and driving greater change. (8) Adding a new approach to culture. The eight levels are a sequential whole but if the initial stages have been implemented there is no need to repeat them. The main impact of mistakes made in managing change is the emergence of resistance from managers or employees related to changes made by the organization. Resistance to change as an emotional / behavioral reaction that arises as a response to the emergence of threats, whether real or imaginary when changes occur in routine work [4].

F. Forms of Change Strategy

According to Kasali[2] there are many terms that are commonly used in change strategies. The terms include (1) change management. (2) turnaround management. (3) crisis management (4) reform (5) transformation (6) adaptive strategy. The change strategy is also known through its programs such as: (1) downsizing, (2) rightsizing, (3) reengineering, (4) restructuring. Whereas Platt (2001) in Kasali [2] said that change strategies can be divided into three categories, namely: (1) transformational management (2) turnaround management (3) crisis management. Management transformation is usually carried out by healthy organizations, or organizations that begin to perceive poor signals.

The management turnaround is usually done when an organization has begun to face rather complex problems and involve broader parties. Whereas crisis management is usually carried out if the company has entered a crisis period when the company starts to run out of funds and energy (reputation, motivation) quoted from Kasali [2]. These three strategies are closely related to each other namely when the organization enters a dangerous stage it is not possible to do a management turnaround, at this stage it must immediately implement crisis management in the form of strategic rescue measures. This stage is often referred to as "stop the bleeding", or stopping the bleeding in the form of cash flow, good name and trust of all parties.

The biggest mistake usually starts with dismissing signs of setback by only making mere operational changes. Operational changes alone will certainly not be able to produce strategic advances. All forms of change must be well known by the change leader and need to be done conceptually so that it does not stop halfway. Transformational change can be likened to what Greiner [7] said as a change that has an evolutionary nature, that is, changes that are made gradually and require a long time in the long run. Transformation strategies emerge as anticipation of change before the demands for change occur. According to Kasali [2], there are four types of changes in the Strategic Competitive Wedge, namely: (1) technology, (2) products & services, (3) strategy & structure, (4) culture. Changes in technology can change the product processes, skills and knowledge base so that production becomes more efficient the product is produced more quickly.

G. The Key to Leaders' Success in Managing Change

The desire to change only to a handful of people in the organization, change can be made if you have initiatives that arise from the awareness of the importance of a change. A trigger will begin and possibly lead the change process and there will be an effort to get other members to make changes. This allows change to be recognized as a necessity by all members of the organization. But a desire will definitely lead to rejection of change, if the desire and need to change is strong then the refusal will be sought to be eliminated. By first raising awareness and eliminating rejection, the process of managing change will be more youthful. The next process is by agreeing on the type of change needed, identifying and developing a critical success factor, providing systems and structures that ultimately lead to a strategy development.

The keys to success in managing organizational change cited by Ulrich [8] are: (1) leading change which is a person who sponsors the changes made by the organization; (2) creating a share need, namely convincing individuals to think together why they have to change and what needs are needed to change and the possibility of rejection of rejection made; (3) shaping a vision, namely overcoming obstacles to change; (4) mobilizing commitment which is an identification to bind and defend the interests of stakeholders that must be considered in managing change; (5) changing systems and structures, that is, using human resource and management functions (staffing, development, appraisal, rewards, organizational design, communication, systems, etc.) to ensure that changes are built into the organizational infrastructure; (6) monitoring process - setting benchmarks, milestones and experiments that can measure and demonstrate the process of change; (7) making change last

which gives confidence that changes occur through the implementation of planning, thinking and commitment.

The presence of a change agent who will lead the process of organizational change is the most essential factor in determining whether or not an organization faces change. Without the presence of a change leader, the change process will not be organized and will lose direction. The presence of a change leader can arise from people inside and outside the organization. Ulrich [8] said that the process of change in an organization, a change leader must be able to become a champion, namely: (1) must be able to spread his vision and encourage individuals to achieve that vision; (2) must be able to play a role not only as a knowledge worker but also as a knowledge broker; (3) must be able to spread knowledge to other members.

The Characteristics of an effective change leader according to Moran and Brightman [9] are: (1) knowing the picture of change as a whole and knowing its impact on individuals in the organization and being able to encourage members to adjust to new changes that occur are also able to provide the necessary resources; (2) creating an environment that allows individuals to try changes that occur, provide encouragement, have experience in new ways that are operated and able to break down existing cultures; (3) lead the effort to change in every words and actions. Responsible for implementing the performance process that has taken place and identifying potential rejections; (4) shows a strong dedication to change. Focus on results and processes, analyze mistakes, determine why they occur and dare to try; (5) interacting with individuals and groups within the organization, able to explain who, what, when, where, when, why and how the change occurred.

H. Managing Resistance to Change

There is no organization that can avoid change. Change raises concerns because people fear economic losses, inconvenience, uncertainty, and disconnect from common social patterns. Almost every change in structure, technology, people or strategy has the potential to disrupt patterns of interaction that are already comfortable. According to David Fred R. [10], resistance to change can be considered the greatest threat to the successful implementation of a strategy. People often reject the implementation of strategies because they do not understand what is happening, the implementation of strategies will succeed depending on the ability of managers to develop an organizational climate that is conducive to change. Change must be seen by managers and employees as opportunities and not threats to employees.

Resistance to change can occur at any stage or at the level of the strategy implementation process. According to David Fred R. [10] to implement change there are three strategies that are commonly used are (1) the strategy of forced change, (2) the strategy of educational change, (3) the strategy of rational change or for its own sake. Force change strategy includes issuing orders and obligations to carry out the order; the advantage of this strategy lies in its speed, but the downside is low commitment and high resistance.

Educative change strategy is a strategy that presents information to convince people of the need for change, the weakness of the educational change strategy is that its implementation becomes slow and difficult.

This type of strategy results in higher commitment and less resistance than a forced change strategy. Finally, a rational change strategy for self-interest (rational or self-interest change strategy) is a strategy that seeks to convince individuals that change is necessary for their personal gain or interest. If this effort is successful, the implementation of the strategy can be carried out with relative ease. Changes to implementation are rare that offer benefits for all parties. The rational change strategy is the best, so we will look at this approach a little deeper. A manager can increase the likelihood of successful implementation of a strategy by carefully structuring change efforts. Jack Duncan in David Fred R. [10] states that a rational change strategy consists of four steps: (1) employees are invited to participate in the change process and transition details; (2) certain motivations or incentives for change are needed; (3) communication is needed so that people can understand the purpose or purpose of the change; (4) giving feedback to everyone to find out about the progress achieved.

The change is a fact of life in the organization. The speed, magnitude and direction of change vary from time to time according to industry and organization. Strategists must try to create a work environment where change is recognized as necessary and good so that individuals more easily adapt to change. The adopting a management approach to the decision making process itself requires major changes in the philosophy and operations of a company. Strategists can take a number of positive actions to minimize manager and employee resistance to change.

The organization need to plan and aware about the current challenge in change management [11]. And they become successful, if they can adaptation with the change in the environment [12,13]. The other strategy that we have to concerned in the organization is the linking between human capital and the change management aspects [14], how to integrate those aspect, that the most important things that we have to aware and understand, because the involvement of all stakeholders in organization is the key success factors in organization, we need to increase involvement of them for strategy formulation until implementation and control change management in organization [15]. The variables needed to consider for the organization about implementation of change management in organization are the planning, time and monitoring of changes [16]. The other things that we have to concerned is the leadership aspect that will welp direction of organizational changes [17, 18]. The organization need to socialize the reasons of changes very clear to all stakeholders in organization to eliminate misconception and conflicts between employees and organization [19]. At the end the culture is the other aspect that we have to care too [20].

IV. CONCLUSION

In order to survive in the face of global competition today, an organization must make changes is no exception. In implementing changes in the organization it is necessary to have socialization that aims to describe the real changes to each employee and be able to provide a mirror of change to be seen by every employee about the true form of change in order to avoid the confusion of employees in appreciating

behavior and culture at work and minimizing resistance that is be the cause of failure in implementing changes in the organization. Changes are made to have a positive impact on the organization which tends to be an interesting challenge for employees who can understand the direction of change in responding to changes that occur. The organization needs to conduct an evaluation of the implementation and assessment, the impact caused to find out progress, provide feedback in order to improve the instrument of organizational change. Analysis of the critical success factors and factors that can lead to failure in order to maintain the process of change in a positive organization.

REFERENCES

1. M. Sjafriz, "Model manajemen mutu," *Jurnal Manajemen Publikasi Penelitian dan Review*, Vol. 1, No. 2, 2006.
2. R. Kasali, *Change*. Jakarta: Gramedia Pustaka, 2005.
3. R. Heller, *Essential Managers: Managing Change* (cetakan pertama). Jakarta: Penerbit Dian Rakyat, 2002.
4. R. D. Gunawan, R. R. Suryono, and I. Purwanto, "Analisa perubahan manajemen dalam implementasi sistem informasi pada perguruan tinggi ABC," *Seminar Nasional Aplikasi Teknologi Informasi (SNATI 2010)*, ISSN: 1907-5022, Yogyakarta; 19 June 2010.
5. E. Soerjogoritno, "Total organizational change berkelanjutan: perspektif manajemen perubahan," *Majalah Usahawan*, 06, Th XXXIII, June 2004.
6. H.T Handoko, and S. Reksohadiprodjo, *Organisasi Perusahaan (10th Edition)*. Yogyakarta: Penerbit BPFE, 1997.
7. L.E. Greiner, *Revolution as organizations grow*. Harvard Business Review, 1998.
8. D. Ulrich, *Human Resource Champions*. Boston: Harvard Business School Press, 1996.
9. J. W. Moran, and B. K. Brightman, "Leading organizational change," *Journal of Workplace Learning*, MCM University Press, 2000.
10. F. R. David, *Strategic Management*. Jakarta: Salemba Empat, 2010.
11. M. R. Aljohani, "Change Management," *International Journal of Scientific & Technology Research*, Vol. 5, No. 5, 2016, pp. 319-323.
12. J. Stouten, D. M. Rousseau, and D. D. Cremer, "Successful Organizational Change: Integrating The Management Practice and Scholarly Literatures," *Academy of Management Annals*, Vol. 12, No. 2, 2018, pp. 752-788.
13. N. N. Krishnan, G. Bhuvana, and G. Krishnaprasad, "Change Management in Modern Era," *IOSR Journal of Business and Management (IOSR-JBM)*, Vol. 20, No. 5., 2018, pp. 16-22.
14. L. G. Tummers, P. Kruijver, D. Vijverberg, and T. Voeselek, "Connecting HRM and Change Management: The Importance of Proactivity and Vitality," *Journal of Organizational Change Management*, Vol. 28, No. 4, 2015, pp. 627 - 640.
15. I. Makina and R. Keng'ara, "Managing Strategic Change of an Organization's Performance: A Case Study of Nzoia Sugar Company, Kenya," *Universal Journal of Management*, Vol. 6, No. 6, 2018, pp. 198-212.
16. D. Jan and T. Veronika, "Examination of Factors Affecting the Implementation of Organizational Changes," *Journal of Competitiveness*, Vol. 9, No. 4, 2017, pp. 5 - 17.
17. M. J. Hao and R. Yazdanifard, "How Effective Leadership can Facilitate Change in Organizations through Improvement and Innovation," *Global Journal of Management and Business Research: A Administration and Management*, Vol. 15, No. 9, 2015, pp. 1-6.
18. W. Makumbe, "Predictors of effective change management: A literature review," *African Journal of Business Management*, Vol. 10, No. 23, 2016 pp. 585-593.
19. A. C. Bejinariu, A. Jitarei, I. Sarca, and A. Mocan, "Organizational Change Management – Concepts Definitions and Approaches Inventory," *Management, Knowledge and Learning International Conference 2017 Technology, Innovation and Industrial Management*, 17-19 May 2017, pp. 321-330

20. A. A. Al-Ali, S. K. Singh, M. T. Al-Nahyan, and A. Sohal, "Change management through leadership: the mediating role of organizational culture," *International Journal of Organizational Analysis*, Vol. 25 No. 4, 2017, pp. 723-739.

AUTHORS PROFILE



Lianna Sugandi is a lecturer at Information Systems Department, School of Information Systems, Bina Nusantara University, Indonesia. She obtained her bachelor and master degree in Information Systems.



Yohannes Kurniawan is a lecturer at the School of Information Systems, Bina Nusantara University, Indonesia. He obtained his doctoral degree in Management Information Systems. His teaching experience for undergraduate and graduate students are in the field of knowledge management, user experience, business analysis, IT innovation, information system analysis and design.



Lydiawati Kosasih Asalla is a lecturer at Information Systems Department, School of Information Systems, Bina Nusantara University, Indonesia. She obtained her bachelor and master degree in Information Systems.