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THE ROLE OF CATALYTIC COLLABORATION IN LEVERAGING TRANSFORMATIONAL LEADERSHIP COMPETENCIES TO GENERATE SUSTAINABLE INNOVATION

Solikin M. Juhro, A. Farid Aulia, Dessy Aliandrina, Donni
Hadiwaluyo, Edo Lavika

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THE ROLE OF CATALYTIC COLLABORATION IN LEVERAGING TRANSFORMATIONAL LEADERSHIP COMPETENCIES TO GENERATE SUSTAINABLE INNOVATION

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Abstract

We analyze the impact of a catalytic collaboration as a tool on the leverage of transformational leadership competencies to generate a sustainable innovation by developing a Sustainable Innovation Matrix (SIM) leadership model. We observe it by employing a unique data set of the behaviors of fifty regional heads (mayors and regents) in Indonesia. The results of the analysis show us that the transformational leaders who made a catalytic collaboration have proven able to create significant impacts on their regions. The leaders with good transformational leadership competencies who make a catalytic collaboration can generate innovations that not only create relevant impacts on the needs of their regions, but they were also sustainable in terms of economic and environmental aspects. The results also suggest that leaders must be courageous to make innovation and strongly care for their regional development despite limited resources there. In doing so, those leaders must collaborate catalytically with other parties to optimize all available opportunities for the progress of the regions that they lead.

Keyword: Transformational Leadership, Catalytic Collaboration, Sustainable Innovation, Leadership Model

I. INTRODUCTION

In this digital era, the world is entering a hyperconnected world phase (World Economic Forum, 2013), where the people and things around us are getting more and more connected to the network and information transparency, collaborating with one another beyond borders, and obtaining content-heavy horizons from abundant data availability. We can see the implication of the development in this digital era from the way humans interact with one another, work, study, get entertained, obtain knowledge or information, run and create business, and various other aspects of life. Internet of Things (IoT) and Artificial Intelligence (AI) give them not only challenges but also inter-sector facilities to their civilization in the social-demographic, technological, economic, political and environmental scopes of an organization which will in turn lead to a new civilization. One real phenomenon example in this era is internet technology that enables a sharing economy mode to flourish, so it will be able to encourage a process of convergence among social-demographic variables (generation, social mobility, and lifestyle), technology variable (through Internet of Things), economic variable (how a sharing economy contributes to economic growth), and legal variable (laws and regulations in regard to application corporations).

Not only does the digital era generate development towards better changes, but it also creates typical problems such as individualism. Another problem that may arise is a silo. A silo is a mindset generated when a certain department or sector does not want to share its information with other people at the same company (Business Dictionary, 2017). A silo takes place when a team shares a general task, but based on their group's power and status. They are reluctant to share their resources to another department and tend to solve a problem with a solution that they have developed by their won. In fact, various problems that they are facing are often related to another department's performance and problems (Shift Indonesia, 2014). Therefore, the silo caused by advancement of the Industrial Revolution 4.0 era poses a challenge.

Nowadays, in Indonesia, the government really encourages digitalization in order that Indonesia will able to compete with other countries. The government's main strategies include developing a healthy and sustainable digital ecosystem in order to be effective and to be able to move all economic sectors. Problems arising in the regions such as regional economic gaps due to unevenly-disseminated technology make it difficult for Indonesia to realize it. Moreover, there are other problems that really pose a challenge such as inadequate digital infrastructures and non-optimal digital platforms. Manpower less qualified to facing technological changes is also an important factor that should become the main attention. To face those challenges, we should take advantage of technological advancement and industries must be oriented to enhanced effectiveness and efficiency.

Since the future is full of uncertainties, a leader must possess some competencies in facing all those uncertainties and environmental upheavals that may happen. It means that a transformational leader must be able to design a policy, able to solve a problem, able to

influence, have a visionary viewpoint, be agile, have a new breakthrough, and possess emotional and social intelligences (Juhro and Aulia, 2018; Edison et al., 2019). When a leader owns those competencies, he is expected to be able to answer various challenges with various breakthroughs in order to create new sources of growth (Juhro and Aulia, 2019).

Nowadays, it is very difficult to solve those global complexities individually (per silo). Collaboration is required to solve those problems once able to be solved by themselves. Collaboration is defined as a mutual engagement among parties materialized in the forms of a coordinated effort aimed at solving the shared problems (Lai, 2011). This collaborative interaction has several components such as shared goals, a symmetric structure, a high level of negotiation and interdependence, so it is expected to be able to generate ideas and innovations to become a driving force in order to be more developed.

A leader must employ more comprehensive approaches one of which is a catalytic collaboration. It can equip a leader when facing these complex challenges. A catalytic collaboration is a new approach employed to create a social and economic transformation that can help various organizations work together for a much greater goal than each of the organization's goal. When applied, a catalytic collaboration has four main components, namely prioritizing learning, systems thinking and acting, democratizing access to assets, and building long-term, diverse, and transformational relationships.

It is relevant to implement a catalytic collaboration since issues to be tackled become more complex. It is of crucial matters to implement this catalytic collaboration since it becomes less effective to solve a problem using a silo. A catalytic collaboration potentially unites magnitudes of economic growth taking place in the regions too, so not only the national economic growth but also the global economic growth will become better. Furthermore, a study conducted by Zohdy et al. (2016) on Stanford Social Innovation Review revealed that a catalytic collaboration created a long-term and sustainable impact. Moreover, that study stated that this approach had a great potential to solve social problems.

Specifically, this study is aimed at exploring transformational leadership-related issues and a catalytic collaboration as effective new approaches employed to anticipate more complex globalization challenges. The question to be answered in this study is: can a catalytic collaboration leverage transformational leadership competencies to oversee sustainable development achievements? Therefore, this study elaborates how a transformational leader plays an important role in anticipating complex globalization challenges in the digital era, so he can generate a transformational and sustainable breakthrough innovation. The approaches employed in this study are literature study, hypothesis development, discussions with experts, data collection, and collaborative case studies.

In regards to this a catalytic collaboration observation context, the scope of transformational leadership is generalized on public leadership in Indonesia that is based on

two basic considerations. First, in terms of its regions, Indonesia is a very unique country. It consists of 34 provinces and 500 regencies and cities. Therefore, it is very important to observe the roles of regional heads in the national development. Moreover, in line with regional autonomy, a regional head plays an important role in an effort to unite variables of economic growths in the regions to support the national development. Not only do regional heads play a very vital role in terms of their leadership competencies and innovation quality contexts, but they are also required to be capable of collaborating to solve problems of silos in implementing a policy.

This paper consists of five chapters. After the introduction, Chapter two discusses the theoretical background and thoughts in regard to the relationships between the Transformational Leadership and A catalytic collaboration, and the proposed propositions. Chapter three elaborates the methodology where we specifically propose a leadership model to observe how a leader plays his role in encouraging a sustainable innovation, known as Sustainable Innovation Matrix (SIM). Chapter four elaborates the analysis results of the behaviors of several Indonesian regional heads based on the proposed SIM model. Chapter five presents the conclusion and implication.

II. THEORETICAL BACKGROUND

The Urgency of Transformational Leadership and Collaboration (Why)

Along with the complexity, challenges and changes globally taking place, a leader capable of helping his organization survive and achieve the sustainable development goals will become more highly demanded. Transformational leadership is deemed to be appropriate when applied in this more complex era, since it is a kind of a participative leadership. The leader, together with the followers, moves towards the shared mission, so it is predicted that the leadership type tends to be more effective and better than any other leadership types. In fact, in this VUCA or even TUNA (Turbulence, Uncertainty, Novelty, and Ambiguity) era, an organization needs a flexible and adaptive leader since the world is changing very rapidly (Juhro, 2019). The leader must continuously learn and renew his organizational vision and strategies in order not be left behind the progress of the age. Only transformational leaders are flexible and adaptable leaders.

To be able to make an organizational transformation, a leader surely has to possess several basic competencies. These competencies are grouped into three clusters as previously having been proposed by Goleman dan Senge (2014), namely inner, others, and outer clusters known as the triple focus. These three clusters mean that a transformation must be started from the leader first (inner); then to other members of the organization, in this case followers (others); and eventually the organizational transformation itself (outer). These three transformational leadership competency clusters are then developed into nine competencies that a transformational leader must possess, namely (i) visionary, (ii) breakthrough, (iii)

agility, (iv) emotional intelligence, (v) social intelligence, (vi) ability to influence others, (vii) ability to communicate, (viii) ability to solve a problem, and (ix) ability to make a decision (Juhro and Aulia, 2018).

Transformational leadership is a kind of leadership that inspires and encourages the followers as well as members of the society to determine a great goal and to achieve it together. In terms to its focus on influencing other people, there are four levels of relationships between a leader and his followers in transformational leadership, namely professionally, personally, emotionally, and intellectually. These four levels of relationships between a leader and his followers will determine the followers' transformational effectiveness (Maalouf, 2018).

Meanwhile, collaboration is a mutual engagement among several participants in their coordinated effort, aimed at solving a problem together (Lai, 2011). This collaborative interaction is characterized by shared and common goals, symmetric structures, a high level of negotiation, interactivity, and interdependence. Roschelle (1992; in Lai, 2011) mentions the framework of collaboration. Collaboration is a process taking place in a convergence or construction of shared and common goals. Collaboration is required to develop understanding through sharing ideas and information among various parties, and proposing a solution mechanism to an uncertainty. Boyer-Kassem, et. Al. (2017) mentioned reasons why collaboration was important, such as (i) it made every member of the team able to cooperate to achieve their shared and common goals by thinking, brainstorming, and offering different perspectives to find a solution; (ii) it generated a strong meaning of a goal; (iii) it provided an opportunity for every member of the team to participate, communicate their ideas, and learn from one another; and (iv) it challenged each member to analyze themselves such as thinking, applying, and feeling the clarity of their own competencies.

In Industrial Revolution 4.0 era and technological advancement, humans still keep trying to understand various transformations taking place through basic changes in their way of life. Although technological advancement is deemed to be one of the most important things that humans have to pay attention to, a survey conducted to more than one thousand CEOs all over the world (Eckert, 2017) revealed that those CEOs deemed innovation to be prioritized and paid more attention to besides the technology. Attention priority towards innovation exceeded human capital, competitiveness, customer experience, and even the capability of the technology itself. Therefore, innovations must always be made in order to make a corporation/organization still relevant.

Eckert (2017) said that a study conducted to various technological industry-based corporation in Silicon Valley revealed that a collaboration was a key factor that could encourage innovation. In an innovation generation process, an inter-discipline collaboration enables the innovators to create their new, radical ideas that have never crossed anyone's mind before. Collaboration is one of the driving forces for the innovators to think out of the

box since without any other people's thought challenge, the innovator will so easily be trapped into an undeveloped thought.

In a broader scope, the urgency to collaborate emerges in the contexts of supporting a sustainable development serving as the world's important at this moment through the launching of Sustainable Development Goals (SDGs) program. SDGs can effectively be materialized when various parties are willing to collaborate with one another to realize its 17 goals. In this regard, achieving development goals in SDGs era requires multi-party partnership especially to answer the trans-pillar goals and indicators. The necessity of collaboration is also one of the SDGs points (point 17), namely partnership to achieve goals.¹

Catalytic Collaboration beyond Standard Collaboration (What)

As elaborated before, a collaborative approach is an effective to build a consensus, enhance motivation and innovation, create cooperation among the teams, and encourage a more effective coaching process in a team. A collaborative approach provides an opportunity for experimental processes to continue to flourish, so more innovations can be created. Then, a question arises. Can the existing collaboration model (standard collaboration) overcome challenges emerging in Industrial Revolution 4.0 and more complex global challenges that the digital society is facing.

Old approaches become more ineffective when applied amidst the higher world's complexity magnitude. Problem solution through a silo will make an organization/society more left behind from the world civilization speeding up faster and unstopably. A mere, standard (traditional) collaboration is deemed to not be able to solve complexity of the global challenge nowadays. The type of collaboration required in the future is a collaboration employed not only to achieve its goals, but also to be able to maintain the sustainability of results previously achieved and to be able to more positively impact on future development. Therefore, a catalytic collaboration approach will become more relevant to serve as one of the tools for leaders.

A catalytic collaboration is a new approach employed to create a social and economic transformation that can help various organizations work together to achieve a far greater goal than each of the organizations' goal (Zohdy, Samali, Laidler-Kylander, & Simonin, 2016). A catalytic collaboration has a relatively bigger potential (than other old approaches) in answering global challenges. For instance, it is mentioned that a catalytic collaboration has a potential to unite magnitudes of economic growths taking place in the regions, so the national and even global economic growths will become better. Moreover, a study conducted by

¹ The goals are no poverty; no starvation; healthy and prosperous life; quality education; gender equality; clean water and decent sanitation; clean and affordable; decent job and economic growth; industry, innovation, and infrastructure; smaller gap; sustainable city and residence; responsible consumption and production; climate change handling; ocean ecosystem; land ecosystem; strong peace, justice and institution; and partnership to achieve the goal. For more details, please go to the official website of Sustainable Development Goals (SDGs) UN (<https://sustainabledevelopment.un.org/>).

Zohdy et al. (2016) at Stanford Social Innovation Review revealed that the impact generated by a catalytic collaboration was a long-term and sustainable impact. Previous studies on a catalytic collaboration also revealed that a catalytic collaboration had a great potential to solve many complex social problems.

Catalytic Collaboration as a Tool to Develop Transformational Leadership (How)

Transformational leaders are a type of leaders most appropriate to the current situation (Juhro & Aulia, 2018). Moreover, transformational leaders have an opportunity to be the answer to the world by becoming reformers in various fields through innovation taking advantage of constraints (frugal innovation). It is a type of leadership making changes by employing innovations in order to create impacts and create sustainable prosperity (Juhro & Aulia, 2019). Facing industrial revolution 4.0, utilizing and taking developing the technology is unstoppable, and industries are making adjustments such as enhancing their effectiveness and efficiency. Due to future uncertainties, a leader must possess competencies to tackle those future uncertainties and environmental upheavals. Those competencies that a transformational leader must have are ability to make a policy, ability to solve a problem, ability to influence, ability to communicate, visionary, agile, new breakthrough, emotional intelligence, and social intelligence (Juhro & Aulia, 2018).

By possessing those competencies, a leader is expected to answer the challenges by creating a new breakthrough and has to build and strengthen collaboration to create a sustainable innovation. When applied, a catalytic collaboration has four main components (Zohdy, et. al, 2016), namely prioritizing learning, systems thinking and acting, democratizing access to assets, and building long-term, diverse, and transformational relationships.

The first component is prioritizing learning. This component focuses on a leader's (catalytic collaborator's) ability to identify strategies that can run or cannot run effectively. The leader is expected to be able to choose a relevant strategy that he will employ to solve a problem that he is facing and to observe past efforts that failed to solve problems, so he can evaluate that strategy. The strategy applied to overcome those social and economic problems is expected to be more right on target. Prioritizing learning also stresses on knowledge sharing among the organizations/societies since it plays a crucial role in building a catalytic collaboration behavior. Moreover, organizations and societies are expected to be transparent, to nurture good interpersonal relationships among one another, and trusting one another in that pertinent hub.

The next component is applying systems thinking and action. Different networks in various organizations in a hub will increase their opportunity to see their challenges and chances with different perspectives, and this situation is expected to make the leader's action and decision regarding an issue more effective.

The following component is democratizing access to assets, so there will be just access to the shared and common resources, instead of individual property. Opening access to the shared and common resources is an important thing to do in an effort to collaborate of in a hub. The leaders are expected to help one another create networks to be able to be connected to one another and, to a certain extent, share things. Furthermore, along with the technological advancement, the leaders are expected to be able to ensure that this access is capable of creating or taking advantage of technology and open space platforms.

The last component is building long-term, diverse, and transformational relationships. The leaders must be able to build lasting and transformational relationships to various types of shareholders such as the regional government and the central government, banks, other partners, hubs, and so on. The ultimate goal of this thing is to build transformational relationships among various policy makers, so, eventually, the collaboration that is formed will touch the sustainability component.

Propositions

Based on transformational leadership competencies proposed by Juhro & Aulia (2018) and based on the opinion of Zohdy et. al. (2016) on the characteristics of a catalytic collaboration, we can make propositions as follows:

Proposition 1: There are two-way relationships between the transformational leadership competencies and catalytic collaboration behaviors.

It is predicted that all of the transformational leadership competencies may encourage the emergence of a catalytic collaboration. On the other hand, it is also predicted that a catalytic collaboration may leverage the transformational leadership competencies. Therefore, eventually, a more effective and sustainable transformation will be achieved. This sustainable transformation will be the ultimate goal that the leader wants to achieve. Figure 1 shows the interconnection between them.

Figure 1 Interconnection between the Transformational Leadership Competencies and A Catalytic Collaboration

Proposition 2: Catalytic collaboration behaviors support the transformational leadership competencies in creating a sustainable innovation.

In the Industrial Revolution 4.0 era, more complex problems require the leader's enhanced capacity more than just being a transformational leader. In general, traditional collaboration may solve problems of silos in an organization; however, it cannot solve sustainability problems. It is expected that these catalytic collaboration behaviors can leverage the transformational leadership competencies. With the support of a catalytic collaboration, it is expected that it will be able to generate an innovation in order to achieve its ultimate goal namely sustainable development. In fact, in this context, there is positive feedback from strengthened transformational leadership to catalytic collaboration behaviors (as Proposition 1). Figure 2 shows the interconnection.

Figure 2 Interconnection between the Transformational Leadership Competencies and A Catalytic Collaboration with Feedback

III. METHODOLOGY

Proposed Model: Sustainable Innovation Matrix (SIM)

This study examines a social reality based on the constructed proposition stating that a catalytic collaboration can leverage the transformational leadership competencies to achieve a sustainable innovation. We can see this social reality through several phenomena such as a catalytic collaboration that a transformational leader makes in his individual and organizational levels.

To answer the question whether a catalytic collaboration (CC) as a leadership tool can leverage the transformational leadership (TL) competencies in generating a sustainable innovation, this study develops a new leadership approach or model, namely Sustainable Innovation Matrix (SIM), in this case elaborated in two innovation dimensions, namely having to have a great potential or impact (scalability) and close interconnection between the relevance and the goal to be achieved (relevance). A leader is expected to encourage an innovation that not only has a great impact and is relevant to the region that he leads but also has a sustainable result in terms of economic and environmental aspects.

Therefore, SIM integrates the leadership dimensions, namely TL competencies and CC components and innovational impact dimension, namely scalability and relevance on the other side. A leader whose TL competencies and CC components are excellent will more easily achieve a sustainable innovation. Meanwhile, an innovation the impacts of which are greater and more relevant will become more sustainable. Hypothetically, the relations between the leadership dimensions and impacts of innovation tend to positively realize a sustainable innovation.

Therefore, a leader's characteristics in SIM can be categorized into 4 (four) areas.

Area I represents a leader's characteristics with low levels of transformational leadership and a catalytic collaboration, so he has an insignificant and irrelevant program result, and therefore unsustainable.

Area II represents a leader's characteristics with a relatively low level of transformational leadership and a relatively high level of a catalytic collaboration, so the programs conducted are not so relevant and sustainable although they make a significant impact.

Area III represents a leader's characteristics with a relatively high level of transformational leadership and a relatively low level of a catalytic collaboration, so although the programs conducted are relatively very relevant, they make a relatively low impact, so they are not so sustainable.

Area IV represents a leader's characteristics with high levels of transformational leadership and catalytic collaboration, so the conducted programs are very significant and very relevant, and therefore sustainable. This area is an ideal area desired to encourage a sustainable development.

The matrix in Figure 3 shows those behaviors.

Figure 3 Sustainable Innovation Matrix (SIM)

Transformational leadership competencies and catalytic collaboration components interconnect one another, so they strengthen one another, too (vicious circle). A leader who is able to apply a catalytic collaboration well tends to leverage his transformational leadership competencies. Likewise, a leader with good transformational leadership competencies is expected to be able to sharpen his leadership potential to be able to make a catalytic collaboration. If applied by a regional head, those two things will generate a new innovation and breakthrough for his region that create a quite significant impact, so they will help create new sources of economic growth both in the regional and the national levels.

Leader Subjects and Scope of Leadership Behaviors

In this study, the leader subjects are 50 regional heads who participated in the Economic Leadership for Regional Government Leaders (REL) development program held by Bank Indonesia Institute, as well as several other regional heads in accordance with the sampling criteria.² Subjects of the study are selected based on the timeframe in accordance with the context of the Industrial Revolution 4.0 era. We will make an analysis on the heads and programs that they conducted. Aspects to be observed are transformational leadership

² Economic Leadership for Regional Government Leaders (REL) is a Flagship Program held by Bank Indonesia Institute. This learning platform for the regional heads and regional legislators is formulated to enhance the participants' understanding on the latest issues, national and global challenges, industry 4.0, and experience sharing among the participants regarding policy formulations that have been implemented. This learning process will encourage an exchange of ideas and coordination among the participants. For more details, please see the Proceedings of Economic Leadership for Regional Government Leaders, Batch IV (Bank Indonesia Institute, 2018).

competencies and catalytic collaboration components shown through how they solved any problems in their regions. Moreover, the indicators of TL competencies refers to Juhro dan Aulia (2018), namely (i) visionary, (ii) breakthrough, (iii) agility, (iv) emotional intelligence, (v) social intelligence, (vi) ability to influence others, (vii) ability to communicate, (viii) ability to solve a problem, and (ix) ability to make a decision. Meanwhile, the indicators of CC components are based on the conceptions of a study conducted by Zohdy et.al. (2016) as elaborated in Chapter 2, namely when applied, a catalytic collaboration has four important components such as prioritizing learning, systems thinking and action, democratizing access to assets, and building long-term, diverse, transformational relationships

The innovation dimensions are observed by seeing several examples of the regional heads' performances in Indonesia who have generated measurable innovations (from the scalability and relevance aspects), in line with transformational leadership competencies and a catalytic collaboration components that they possess. Specifically, we will observe whether the development focus of their region promotes a collaboration with various parties (not individual) in order that innovation that they make in implementing their development program can run comprehensively and sustainably, reflected in the achievement indicators of their economic development goals in line with Sustainable Development Goals (SDGs) general criteria. In this regard, the goals refer to several economic and social indicators such as economic growth, inflation, and the regional unemployment rate, and/or other awards that the regional government received.

IV. ANALYSIS

In this study, we analyze several aspects. First, we analyze transformational leadership competencies referring to 9 (nine) transformational leadership competencies proposed by Juhro dan Aulia (2018). Second, we analyze a catalytic collaboration referring to 4 (four) a catalytic collaboration components proposed by Zohdy et. al. (2016). Finally, we analyze the achievement performance aspect of development goals as elaborated in the previous chapter. Table 1³ shows the data.

Based on the collected data, we score the transformational leadership and catalytic collaboration aspects with 0 and 1, respectively. Below is the distribution figure of transformational leadership competencies and catalytic collaboration components of 50 regional heads in Indonesia.

³ See Attachment.

Figure 4 Matrix of Relations between Transformational Leadership and A catalytic Collaboration

The distribution on the matrix shows us that there are **14 (fourteen)** regional heads in Area I (irrelevant and unsustainable), namely leaders with low transformational leadership and a catalytic collaboration scores / below the median. Then, in Area II (irrelevant but sustainable) there are **5 (five)** regional heads, namely leaders with low transformational leadership scores but with high a catalytic collaboration scores. In Area III (relevant but unsustainable), there are **13 (thirteen)** regional heads, namely leaders with high transformational leadership scores but low a catalytic collaboration scores. Finally, there are **18 (eighteen)** regional heads already in the ideal condition, Area IV (relevant and sustainable), namely leaders with high transformational leadership and a catalytic collaboration scores.

The regional heads in Area I are samples of regional heads 5, 11, 13, 14, 15, 19, 21, 22, 25, 27, 29, 31, 41, and 47. The regional heads in Area II are samples of regional heads 9, 12, 18, 23, 48. The regional heads in Area III are samples of regional heads 1, 20, 24, 26, 28, 30, 32, 33, 34, 36, 38, 43, and 45. Meanwhile, the regional heads in the ideal condition / Area IV are samples of regional heads 2, 3, 4, 6, 7, 8, 10, 16, 17, 35, 37, 39, 40, 42, 44, 46, 49, and 50.

From the distribution above, we can draw a conclusion as follows. *First*, most of the regional heads are not in the ideal area, Area IV, with a high relevance and sustainability. The number of regional heads in Areas I, II, and III amounting to **32 (thirty two)** regional heads are much higher than that of Area IV amounting to **18 (eighteen)** regional heads. This fact

shows us that there is still a great potential for us to develop the transformational leadership and to apply the catalytic collaboration to make them much better. If those two aspects are optimally developed, it is not impossible that Indonesia will someday become a developed country. The future challenge is how to develop at least nine transformational leadership competencies both inner competencies (breakthrough, agility, emotional intelligence), other competencies (social intelligence, communication skill, influencing skill), and outer competencies (visionary, problem solving, decision making). It is also an important thing for regional heads to apply the catalytic collaboration in their regions.

Second, not so many leaders have made a catalytic collaboration. It can be shown from the fact that many leaders are in Area I and Area III, namely **27 (twenty seven)** regional leaders. In fact, **13 (thirteen)** regional heads have not made a catalytic collaboration despite the fact that their transformational leadership scores are high. It shows us that we can still have a big potential and space to take advantage of the catalytic collaboration in order that it can leverage new sources of economic growth in Indonesia. A catalytic collaboration is deemed important to be applied since there is a quite big, different impact between the leaders in Area IV and the leaders in Areas I and III where a catalytic collaboration serves as the confounding factor.

Third, although basically leaders in general can make a catalytic collaboration, it is highly unlikely that non-transformational leaders will make a catalytic collaboration (Area II). Moreover, in terms of the impact, the regional heads in Area II will generate a sustainable innovation, but it is not relevant to the society's actual needs. Therefore, a catalytic collaboration will create a greater impact if committed by a transformational leader. Moreover, it also shows us that transformational leadership plays a crucial role in leadership.

Fourth, many regional heads have already come up with relevant solutions (Area III), however, they cannot be implemented for a long term. In many cases, work programs will change due to the changing of regional heads. This relevant but unsustainable solution may take place due to several factors. The first is a short-term decision made by the regional heads. The second is a situation where the scope of the region is still so narrow, so the regional heads cannot make a very great impact yet. The third is the fact that there are no strategic foresights on the potential collaboration that may take place yet.

Other than the things mentioned above, the matrix above can give us an understanding on different impacts that the leaders in Areas I, II, III, and IV create. Below are the impacts of the regional heads in general based on the matrix above.

In general, the regional heads in Area I really experience economic growth; however, there are no data showing the relevance between the created impact and the vision and missions / targets that the regions wish to achieve. In fact, there are only two regions creating a positive impact on the environment (environmental sustainability); therefore, we can say

that the impacts of innovation / work program of the regional heads in Area I have not met the relevance and sustainability aspects.

The regional heads in Area II show different impacts from that of Area I. In general, the regional heads in Area II create impacts such as awards that they receive in several sectors due to the increased economic growth in those sectors. Meanwhile, some other regional heads in Area II generate sustainable programs that are in line with the matrix of relevance and sustainability above.

Next, the comparison between the matrix and the collected data might show us the impact that the regional heads in Area III create. The impacts created by the regional heads in Area III seem to be varied. For instance, there are certain different regions with the growing number of tourists, infrastructure development and establishment of the technology-savvy society, and increased farmers' living standards, respectively. Various impacts in those regions might show us that the impacts created by those regional heads are already relevant and in accordance with the specific targets of those regions. In general, there are also increased economic indicators in those regions. The thing that does not appear to those regional heads in this area is the sustainability aspect.

The next thing is Area IV. In general, in terms of their impacts, we can conclude that those regional heads in Area IV create quite significant impact on their regions. Similar to the impacts created by the regional heads in Area III, the impacts created by the regional heads in Area IV vary, too. In some regions, they are more infrastructure development and the number of tourists. Meanwhile, in other regions, they are less environmental pollution and potential duplication of innovation that other regions could make. Moreover, there are greater inclusivity and innovation extent. It is recorded that there are sustainable cooperation in the regions belonging to Area IV. Therefore, those things mentioned above show us that the regional heads in Area IV have a relevant and sustainable innovation.

In general, by making an analysis on SIM, we can describe the conditions of regional leadership in Indonesia. Indonesia. The leaders with good transformational leadership competencies who made a catalytic collaboration can generate relevant and sustainable solutions. The analysis is then confirmed by the data that has been collected on the impacts of each region's work programs. There are several impacts such as better infrastructures, increased regional and societal revenues in general, decreased poverty rates, innovations generating a breakthrough, potential innovation duplication, creations of more jobs, meeting several SDGs points, and social, environmental, and economic sustainability.

If we observe the catalytic collaboration components, we find out that a catalytic collaboration can generate more diverse results and greater impacts than that of the initial goals of the program. The data on the regional head samples shows us that leaders with good transformational leadership competencies, if supported by a catalytic collaboration in their leadership, have proven to create greater and more sustainable impacts on the regions. Not

only do the leaders run their programs well, but they can also make an innovation to achieve the ultimate goals for the sake of their regions.

Innovation and utilization of collaboration with catalytic collaboration components can encourage the transformation sustainability that they conduct. Through the prioritizing learning component, they will create a more relevant solution due to the knowledge sharing among the pertinent parties, so the solutions to the problem will be more right on target. Moreover, its problem identification is deemed to be more relevant since the R&D data employed to create the solution were available. Next, systems thinking and acting will increase the opportunity to perceive the challenges and chances from a different perspective. Democratizing access to assets in the collaboration will also encourage it, so this will help the network interconnected and share information more easily and fair, especially with a more rapid technological advancement. Furthermore, the long-term, diverse and transformational relationships nurtured through the catalytic collaboration will touch the sustainability component.

V. CONCLUSION AND IMPLICATION

Conclusion

This study is aimed at analyzing the effectiveness of a catalytic collaboration as a tool to leverage the transformational leadership competencies. The samples of the study, namely 50 regional heads, shows a variety both in the transformational leadership aspects and in the catalytic collaboration aspects. Most of the regional heads still do not own those nine transformational leadership competencies namely breakthrough, agility, emotional intelligence, social intelligence, influencing skill, communication skill, visionary, problem solving and decision making. The data mapping and analysis also shows us that, in general, many regional heads in Indonesia have not made a catalytic collaboration yet. Most of the regional heads cannot meet all of the catalytic collaboration components, namely prioritizing learning, systems thinking and acting, democratizing access to assets, and building long-term, diverse, and transformational relationships. Despite the fact that most of the regional heads have still not met those two aspects, there are regional heads deemed to be transformational leaders who make a catalytic collaboration.

Based on the Sustainable Innovation Matrix proposed in this study, the transformational leaders who made a catalytic collaboration have proven able to create significant impacts on their regions. The leaders with good transformational leadership competencies who make a catalytic collaboration can generate innovations that not only create relevant impacts on the needs of their regions, but they were also sustainable in terms of economic and environmental aspects.

That fact answered the question of the study that a catalytic collaboration can encourage effective transformational leadership in generating sustainable innovation and

growth. The innovations that some sample regional heads generated reflect the fact that leaders with good transformational leadership competencies who also possessed a catalytic collaboration components show a significant result for their regional development, especially in sustainable development for their regions in many sectors; moreover, the regions make obvious progress. It happens since not only do the innovations that they generate can focus on the person who built it, but they can also make collaboration with many parties in order that the programs could be sustainably conducted.

Implication

Different geographic, demographic, and psychographic conditions of regions in Indonesia show various results in this study. The regional heads have different capabilities depending on their breakthrough and innovation that they can generate. Data distribution in the samples of this study varies especially in the regional heads' efforts to meet the criteria of transformational leadership competencies and catalytic collaboration components and in whether the impacts of their achievements and program that they create are sustainable or not. This uneven distribution shows social and economic gaps among the regions, so the regions located near big cities might have more information than that of secluded areas. However, it is highly likely that regional heads with great transformational leadership competencies will be able to develop and enhance their regions although the regions have had limited resources better than regional heads who have broader regions. This might happen if those leaders have good transformational leadership competencies, so the programs that they conduct can run well and make significant results. Several sample regional heads in this study can show that situation.

Therefore, in the context of Indonesia, collaboration has not played an important role in a regional development. Many regional heads are still focusing on developing their own regions with the regions' own power and resources including the budgets. However, if these regional heads make a collaboration with various parties that can be involved in the formulation and implementation of the programs, they will be able to create a more comprehensive result and a more sustainable impact since they have already made collaboration with various parties in the process. Later on, if the regional heads are replaced with the newly elected ones, the programs that they have made will still be conducted by the new regional heads in order that the regions will be more developed and make progress. The changing times in the industry 4.0 era are a great opportunity for a leader to formulate a program involving various parties. Various sources of information can easily be accessed; moreover, it becomes faster and more efficient to communicate with others. Therefore, a leader is supposed to be able to take advantage of this digital era well in order to be able to communicate with various parties and to apply the technology when conducting development in this region catalytically.

That a catalytic collaboration is important shows us that not only must leaders have good transformational leadership competencies, but they must also make a catalytic collaboration. Those leaders can generate new innovation and breakthrough for their regions and they will surely create a sustainable impact. Those leaders must dare to make innovation and strongly care for their regional development despite limited resources there. However, those leaders can take an opportunity of this industry 4.0 era or must collaborate with other parties in order that their relatively limited resources that their regions own will become a great opportunity in the future for the progress of the regions that they lead.

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Table 1. The Study's Respondent Data

Sample	Transformational Leadership Competencies										Catalytic Collaboration Components					Relevance	Scalability	Ultimate Goal
	Br	Ag	EI	SI	Inf	Com	Vis	PS	DM	Skor	PL	STA	DA	R	Skor			
1			✓	✓	✓	✓	✓	✓	✓	7				✓	1	RR	SR	- Various awards to the government
2	✓	✓	✓	✓	✓	✓	✓	✓	✓	9	✓	✓	✓	✓	4	RT	ST	- Enhanced infrastructure - Increased number of tourists - Stable economic growth - Various awards to the regional government
ri3		✓	✓	✓	✓	✓	✓			6		✓	✓	✓	3	RT	ST	- Various awards to the government
4		✓	✓	✓	✓	✓	✓			6	✓	✓	✓	✓	4	RT	ST	- Various awards to the government
5					✓	✓	✓	✓	✓	5	✓				1	RT	SR	- Reduced poverty rate - The provincial government backup in efforts to develop infrastructure
6	✓	✓	✓	✓	✓	✓	✓	✓	✓	9	✓	✓	✓	✓	4	RT	ST	- Increased revenue of the community in general - Less environmental pollution - Duplication potential in other regions - The best innovator award - Products able to reach out broader market
7		✓	✓	✓	✓	✓	✓			6	✓		✓		2	RT	SR	- Positive responses from the community
8	✓		✓	✓	✓	✓	✓			6	✓			✓	2	RT	ST	- One of the best regions award - Controlled inflation
9			✓	✓	✓	✓	✓			5	✓			✓	2	RT	SR	- Developments carried out in several sectors

Sample	Transformational Leadership Competencies										Catalytic Collaboration Components					Relevance	Scalability	Ultimate Goal
	Br	Ag	EI	SI	Inf	Com	Vis	PS	DM	Skor	PL	STA	DA	R	Skor			
10	✓	✓	✓	✓	✓	✓	✓	✓	✓	9	✓			✓	2	RT	ST	-Development based on the regional potential -Cooperation among various parties -Several awards received by the regional government -Accomplishment of almost main regional indicators
11							✓			1	✓				1	RR	SR	-Awards received by the regional government
12			✓	✓	✓	✓	✓			5	✓	✓			2	RT	ST	-Enhanced Economic Growth and Human Development Index (HDI) -Several awards received by the government
13							✓	✓	✓	3			✓		1	RT	SR	-Awards received by the regional governments -Stable economic growth
14							✓			1			✓		1	RR	SR	-Enhanced Human Development Index (IPM) -Awards received by the regional government
15							✓	✓	✓	3			✓		1	RT	SR	-Awards received by the regional government -Stable economic growth
16	✓	✓	✓	✓	✓	✓	✓	✓	✓	9	✓	✓	✓	✓	4	RT	ST	- Creations of more jobs -Decreased poverty rate
17		✓	✓	✓	✓	✓	✓			6	✓		✓		2	RT	ST	-Several awards received by the regional government

Sample	Transformational Leadership Competencies										Catalytic Collaboration Components					Relevance	Scalability	Ultimate Goal
	Br	Ag	EI	SI	Inf	Com	Vis	PS	DM	Skor	PL	STA	DA	R	Skor			
18							✓		✓	2	✓		✓		2	RR	SR	<ul style="list-style-type: none"> - Decreased number of poor people - Decreased unemployment rate - Increased HDI - Several awards received by the regional government
19		✓					✓			2			✓		1	RR	SR	<ul style="list-style-type: none"> - Enhanced economic growth - Several awards received by the regional government
20	✓	✓	✓	✓	✓	✓	✓	✓	✓	9			✓		1	RT	SR	<ul style="list-style-type: none"> - Increased productivity - Opened access - Various awards received by regional government
21			✓	✓	✓	✓	✓			5	✓				1	RT	ST	<ul style="list-style-type: none"> - Social inclusion
22	✓	✓					✓			3	✓		✓		2	RR	SR	<ul style="list-style-type: none"> - Various awards received by regional government - Environmental awareness on the people
23			✓	✓	✓	✓	✓			5	✓			✓	2	RR	ST	<ul style="list-style-type: none"> - Increased Gross Regional Domestic Product - Regional economic growth is greater than national economic growth - Equitable development
24			✓	✓	✓	✓	✓	✓	✓	7			✓		1	RT	ST	<ul style="list-style-type: none"> - Growing number of tourists - Growing number of SMEs - Various awards received by regional government
25	✓	✓			✓	✓	✓			5			✓		1	RR	SR	<ul style="list-style-type: none"> - Better known batik from the region

Sample	Transformational Leadership Competencies										Catalytic Collaboration Components					Relevance	Scalability	Ultimate Goal
	Br	Ag	EI	SI	Inf	Com	Vis	PS	DM	Skor	PL	STA	DA	R	Skor			
26	✓	✓	✓	✓	✓	✓	✓	✓	✓	9	✓	✓	✓	✓	4	RT	ST	<ul style="list-style-type: none"> - Increased number on the indicators of human development and economic growth - Sustainable collaboration - Award on sustainable city
27	✓				✓	✓		✓	✓	4			✓		1	RR	SR	<ul style="list-style-type: none"> - Social inclusion - Award on environmental aspect
28	✓		1		✓	✓	✓	✓	✓	6			✓		1	RR	SR	<ul style="list-style-type: none"> - Increased number on health programs for the community - There is equitable village development assistance
29				✓		✓				2				✓	1	RR	SR	<ul style="list-style-type: none"> - Award on environmental aspect - There is social involvement in the society
30		✓	✓	✓	✓	✓	✓	✓	✓	8			✓	✓	2	RT	SR	<ul style="list-style-type: none"> - Welfare of farmers' commodities - There is social involvement in the community and sustainable collaboration - Various awards for government
31			✓	✓	✓	✓				4		✓			1	RR	SR	<ul style="list-style-type: none"> - Increased HR quality - Sustainable collaboration

Sample	Transformational Leadership Competencies										Catalytic Collaboration Components					Relevance	Scalability	Ultimate Goal
	Br	Ag	EI	SI	Inf	Com	Vis	PS	DM	Skor	PL	STA	DA	R	Skor			
32	✓	✓	✓	✓	✓	✓	✓	✓	✓	9	✓	✓	✓	✓	4	RT	ST	<ul style="list-style-type: none"> - Improvement on the quality of life of the people - High level of trust from the society - Decreased number of poverty and increased number of regional income
33	✓	✓		✓	✓	✓	✓			6		✓			1	RT	SR	<ul style="list-style-type: none"> - Environmental and technological awareness (in accordance with the targets to be achieved)
34	✓	✓				✓		✓	✓	5				✓	1	RT	SR	<ul style="list-style-type: none"> - Collaboration with other parties - Better quality on the trade sector
35	✓	✓	✓	✓	✓	✓	✓	✓	✓	9	✓	✓	✓	✓	4	RT	ST	<ul style="list-style-type: none"> - Improvement on the regional income as well as the society - Sustainable programs
36			✓	✓	✓	✓	✓	✓		6				✓	1	RT	SR	<ul style="list-style-type: none"> - Decreased number on poverty - Increased number on employment - Various awards received by the government
37	✓	✓	✓	✓	✓	✓	✓	✓	✓	9	✓			✓	2	RT	ST	<ul style="list-style-type: none"> - Became a pilot program for another regions - Sustainable collaboration

Sample	Transformational Leadership Competencies										Catalytic Collaboration Components					Relevance	Scalability	Ultimate Goal
	Br	Ag	EI	SI	Inf	Com	Vis	PS	DM	Skor	PL	STA	DA	R	Skor			
38		✓			✓	✓	✓	✓	✓	6				✓	1	RT	ST	-Opened access as an impact from the infrastructure development -Collaboration on increasing the quality of education
39		✓	✓	✓	✓	✓	✓		✓	7	✓		✓	✓	3	RT	ST	-Social involvement from the society -Various awards received by the government
40	✓	✓	✓	✓	✓	✓	✓	✓	✓	9	✓			✓	2	RT	ST	-Sustainable collaboration -Better condition of the society
41		✓		✓	✓	✓	✓			5				✓	1	RT	ST	-Economic growth -Sustainable collaboration
42	✓	✓	✓	✓	✓	✓	✓	✓	✓	9	✓	✓	✓	✓	4	RT	ST	-Economic growth -Sustainable programs
43			✓	✓	✓	✓	✓	✓	✓	7			✓		1	RT	ST	-Various awards -Collaboration on increasing the education quality
44	✓		✓	✓	✓	✓	✓	✓	✓	8	✓	✓	✓	✓	4	RT	ST	-Increased productivity & farmers' income -Decreased poverty
45	✓		✓	✓	✓	✓	✓		✓	7	✓		✓	✓	3	RT	ST	-Better quality on health, agriculture, trade, and education sector -Better quality of vital sectors
46	✓	✓	✓	✓	✓	✓	✓	✓	✓	9	✓		✓	✓	3	RT	ST	-Sustainable impact -Increased number of tourists

Sample	Transformational Leadership Competencies										Catalytic Collaboration Components					Relevance	Scalability	Ultimate Goal
	Br	Ag	EI	SI	Inf	Com	Vis	PS	DM	Skor	PL	STA	DA	R	Skor			
47	✓						✓	✓	✓	4	✓		✓	✓	3	RT	ST	- Economic independency - Economic growth
48		✓	✓	✓	✓	✓				5			✓	✓	2	RR	ST	- Various awards - Sustainable programs
49		✓	✓	✓	✓	✓	✓			6	✓	✓	✓	✓	4	RT	ST	- Various awards - SDGs number 3, 7, and 11
50	✓	✓	✓	✓	✓	✓	✓			7	✓		✓		2	RT	ST	- Various awards - Sustainable collaboration - Better HR quality - Social inclusion

Glossary:

1. Transformational Leadership Competences

- 1) Br : Breakthrough
- 2) Ag : Agility
- 3) EI : Emotional Intelligence
- 4) SI : Social Intelligence
- 5) Inf : Influencing Skill
- 6) Com : Communication Skill
- 7) Vis : Visionary
- 8) PS : Problem Solving
- 9) DM : Decision Making

2. Catalytic collaboration components

- 1) PL : Prioritizing learning
- 2) STA : Systems thinking & acting
- 3) DA : Democratizing access to assets
- 4) R : Building long-term, diverse, & transformational relationshipss

3. Relevance & Scalability

- 1) RR : Low relevance
- 2) RT : High relevance
- 3) SR : Low scalability
- 4) ST : High scalability