MODELING OF SUSTAINABLE MINERAL AND COAL GOVERNANCE BASED ON SYSTEMS THINKING AND U THEORY

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Abstract

The purpose of this study is to describe and analyze the structuring of sustainable mineral and coal governance issues in Indonesia, implementation of sustainable mineral and coal governance based on SSM and Theory U, and the modeling of sustainable mineral and coal governance based on the SSM-SNA-U collaborative analysis. The author uses a mixed methodology of qualitative by soft systems thinking (SSM, Soft System Methodology) and enriched Theory U, with the help of social network analysis (SNA, Social Network Analysis) and testing findings (novelty) with the SEM-WarpPLS as quantitative multiple predictive methodology. Result found that: 1. The most central actor (eigenvector centrality) is the name of the company on mineral and coal policy law No. 4 of 2009, and The most central actor (eigenvector centrality) on local government governance policies of Law No. 23 of 2014 is the district/city regulation. 2. based on the SSM approach and U theory perspective that the root causes of mineral and coal governance policies in Indonesia include: Improvement of the permit and land use system, Management of commodity production and trade, Supervision of mining production, Increase in added value and development of downstream industries , Increase in added value and development of downstream industries, Increase in added value and development of downstream industries, Mineral and coal funds, Effectiveness of regional development and decentralization, and law enforcement, prevention and eradication of corruption, and institutional strengthening. 3. Based on the results of the SEM analysis, sustainable mineral and coal governance is a function of governance, economic, community, environment which is mediated (bridged) by decentralization and moderated (supported) by U theory governance.

Keywords: Public policy, Sustainable mineral and coal governance, SSM, SNA, Theory U, De(re)centralization, SEM-WarpPLS, Welfare state

Introduction

Public administration plays a very vital and strategic role for the sustainability of the life of the nation and state. Within the scope of public administration, there are branches of public policy; where what is meant by public policy is all forms of activity related to government policy with the aim of solving all problems that occur in the public sphere. Government policy is a form of government response or reaction in overcoming a public problem. The problems that arise usually reflect the situation and conditions in the public sphere that can potentially cause social tensions or social unrest.

Public policy on natural resource management (SDA), especially minerals and coal (minerba) in Indonesia, is controlled by the state for the greatest welfare of the people (Article 33 paragraph 3 of the 1945 Constitution of the Republic of Indonesia) by giving the government authority to cooperate with business actors and/or through state company. The absence of a mineral and coal governance guideline since the 1999 reform until the issuance of the 2009 mineral and coal law was the initial stage of the emergence of various chaos in the mineral and coal sector. The problem of mineral and coal decentralization is complicated by the amendment of Regional Government Law No. 32 of 2004 to be No. 23 of 2014 which focuses on the transfer of several powers, including mineral and coal to the control of the provincial government, which changes the architecture of mineral and coal management and its bureaucracy.

Minerba decentralization, whose main objective is to bring prosperity to the region through equity, has not been achieved, in fact, the number of economic disparities between regions is getting bigger. If decentralization continues as it is today, especially in relation to mineral and coal natural resources, then the potential for a resource curse will be difficult to avoid and will become more evident in the future. This causes the balance of the role of the state, market and people to be disrupted.

In addition to problems related to the decentralization of mineral and coal governance, at the central level there have also been major problems since the issuance of Law Number 4 of 2009. According to KPK findings, at least 10 mineral and coal management issues have the potential to harm the state (detiknews, 8/2/2014). This problem relates to the development of a mineral and coal data and information system that is still partial, not all implementing regulations for Law No. 4 of 2009 concerning Minerba have been issued in a comprehensive

manner, renegotiation of the contracts of 34 KKs and 78 PKP2Bs has not been completed. In addition, the increase in the added value of mineral and coal has not been successful, as well as the problem of state losses, due to non-payment of financial obligations, due to non-optimal sanctions for business actors who do not pay their financial obligations. Of the several minerba issues at the central level, what stands out as a public concern and needs to be resolved immediately is the renegotiation of KK/PKP2B and downstream (increasing added value) of minerba.

Collaborative Governance is needed in overcoming the complexity of mineral and coal problems in Indonesia. Collaborative governance is actually governance between institutions or institutions, both state institutions and non-state institutions. The emergence of the concept of collaborative governance is also possible due to dissatisfaction from the public regarding the performance of government organizations. Osborne and Gaebler (1995) reveal the reason for the emergence of "reinvention" which transforms the "classic" bureaucracy that adopts organizations in the business and private sectors, so that it will be able to change the response of the "classic" bureaucratic style which tends to be slow and unable to deal with competitive pressures. Collaboration between collaborative governance and sustainable mining is the principle of sustainable mining governance, which is one of the novelties offered in this research.

Such matters reflect that sustainable mining governance is complex, with various interests involved from central, regional, community, private and international government levels. The transformation of mineral and coal governance requires in depth research in order to make this sector contribute as much as possible to the welfare of the people in the framework of a prosperous Indonesia. The author uses a mixed methodology of qualitative by soft systems thinking (SSM, Soft System Methodology) and enriched Theory U, with the help of social network analysis (SNA, Social Network Analysis) and testing findings (novelty) with the SEM-WarpPLS as quantitative multiple predictive methodology.

LITERATURE REVIEW

Public Administration

Public administration theory is the main theory in this research. Public administration is a very popular concept or practice. Experts explain public administration through a simple definition or give an understanding of public

administration as a simple phenomenon. In organizational life, especially public organizations, it is necessary to have administrative activities. About this many definitions have been put forward by experts. Jung et. al. (2003:4) suggests "administration has been defined as the guidance and leadership and control of the effort of a group of individuals towards some common goals". This definition provides an emphasis that administration is a guide or guide, leadership and supervision of the efforts of groups of individuals to achieve common goals..

Public Administration, better known in Indonesia as state administration, is one aspect of government activities. Based on this, public administration is a part of administrative science which is closely related to the formulation of various state policies. The role of state administration in realizing political policies as well as creating a sense of security and social welfare, through routine and developmental activities. The government requires efficient and effective state administration. The role of state administration or political administration is a process in formulating policies as Nigro & Kellough (2008) argues, namely "Public administration has an important role for mulating of public policy and thus a part of the political process".

Particularly in the context of public administration in Indonesia, Salamoen (1995:28) reveals that public administration in Indonesia has two main functions, namely in public service, protecting the public and increasing initiative and public participation. Serving the public includes functions that are usually the prerogative of the state, such as defence, foreign relations, law, monetary matters, medical equipment, and transportation services. Protecting the public refers to all activities necessary for the protection of individuals and includes regulation, policy formulation and supervision and control of community activities. Both of these functions will work well when supported by human resources (employees/ apparatus) who have high performance.

Minerba Governance Decentralization

Under Law no. 23 of 2014 concerning Regional Government, it has been regulated that apart from the 6 (six) governmental affairs which are the absolute affairs of the central government, the regional government has the authority to carry out affairs under its authority. The six central government affairs are foreign policy, defence, security, justice, national monetary and fiscal, and religion. Apart from these six affairs, the affairs of mining, energy and mineral

resources are decentralized affairs. In carrying out the affairs under its authority, regional governments carry out the widest possible autonomy to regulate and manage government affairs themselves based on the principle of autonomy and co-administration.

Venugopal (2014) found that the decentralization of mineral licensing in Indonesia was primarily administrative (transferring central authority to grant permits to the sub-national level) and fiscal (allowing local governments to collect related fees). Meanwhile, political decentralization, which allows for more transparent, consultative, accountable decision-making, and economic decentralization, which means that it is related to market regulation, cooperation with other parties, has not yet fully taken place. The decentralization of mineral and coal management in Indonesia has many obstacles in terms of the capacity of local government officials and the lack of coordination between the regional center. This has caused many problems in the current implementation of mineral and coal decentralization.

Supriyono (2010) provides an idea of a multicultural (asymmetrical) decentralization system that varies in each region by considering the local content of each region. This decentralization system will be more easily accepted by the community, because the system implemented will be adapted to the culture of the surrounding community. With regard to mineral and coal, this decentralized system will make it easier for local stakeholders to carry out mineral and coal production processes that are in accordance with local local values.

Sustainable Mining Governance

According to Harris (2007) sustainable governance is not a simple concept regarding how the process of current governance is, but must be able to become a foundation to support the next generation. In addition, sustainable governance offers a paradigm of basic principles in an effort to integrate environmental protection in every mining processing activity.

According to Galsby (2002) since the beginning of the industrial revolution, most human work is highly unsustainable. Historically, the responsibility in a job is to hold the job. In today's economy, profits occur by extracting natural resources. However, as the economy grows, natural resources are shrinking. In terms of making decisions, every public leader often has different policies in each period, so there are frequent changes in policies, which often contradict each other. Such policy changes reflect unsustainable policies, which must be avoided.

This research takes a good example from SMG which took place in Chile, due to its success in implementing sustainable mining governance and the similarity of the country's transition from a developing country to a developed country with its main focus on the mineral and coal sector. Chile is a country with a long tradition and history of mining, which the people depend on for more than a century. Since the emergence of democracy in 1990, significant progress has been made by the Chilean state in upgrading and modernizing its mining industry, which is dominated by world-class large-scale mining companies. Chile is transitioning from a developing to a developed economy, with mining playing an important role in advancing the economy, while minimizing the ecological impact on the environment, as well as promoting social awareness. In order to achieve sustainable mining governance, the Chilean state balances economic growth and equity with strict policies that pay attention to the carrying capacity of the environment. The success of the sustainable mineral and coal governance system in this study is reflected in the mineral and coal governance system that is taking place in Chile. Based on research from Ghorbani & Kuan (2017) there are four things that influence Sustainable Mining Governance (SMG) in Chile, namely the sustainability of environmental, community, governance, and economic.

Figure 1. Sustainable Mining Policy
Source: Ghorbani & Kuan (2016)

METHOD

This research is a comprehensive study of the governance of mineral and coal policies in Indonesia in order to achieve Sustainable Mining Governance (SMG) by using a mixed method (mixed method), qualitative and quantitative approaches. The qualitative approach in this research relates to the first and second objectives. The first objective is to describe and analyze the general description and structuring of problem situations related to mineral and coal governance, by analyzing Law Number 4 of 2009 concerning Minerba Mining and Law Number 23 of 2014 concerning Regional Government using the Social Network Analysis (SNA) approach. While the second goal is to describe and analyze the implementation of mineral and coal governance based on SSM analysis and U theory by finding the main root problems in mineral and coal governance and how to suggest actions.

Furthermore, the quantitative approach in this study is to answer the third objective in this study. The third aim of this research is to model sustainable mineral and coal governance based on SSM analysis and Theory U with the SEM-WarpPLS quantitative approach based on survey data.

RESULT & DISCUSSION

Structuring sustainable mineral and coal governance issues

1. Intervention Analysis

The introduction of problematic situations in the first part is analysis of intervention, useful for determining three (3) parties who play a very important role in the problematic situation that is of concern (Checkland and Poulter, 2006). The three (3) parties involved consist of:

1) The party acting as a client (client), namely the person or group of people causing the intervention related to the problematic situation being studied;
2) Parties who act as practitioners (practitioners), namely people or groups of people who carry out studies using a soft system methodology (SSM).
3) Parties who act as owners of the issues addressed, namely people or groups of people who have an interest in or are affected by the results of the study.

2. Social Analysis

Checkland and Poulter (2006) suggest three social elements to be the focus of analysis in the second analysis stage, namely elements of roles, norms, and values. Roles (Roles) are social positions that mark differences among members of a group or organization. Norms (Norms) is the expected behavior associated with the role. Values are standards or criteria into which behavior-in-role is assessed. These three social elements are closely interrelated, dynamic, and always changing over time, in line with changes in the real world. In this study at the macro level it relates to those in the institutions of the President of the Republic of Indonesia, the Republic of Indonesia Parliament and the Ministry of Energy and Mineral Resources, at the meso level it relates to those in the Provincial and Regency/City government institutions, at the micro level it relates to the community.

3. Political Analysis

This third analysis of politics illustrates a very effective force in deciding whether or not something related to the mineral and coal policy will occur. There are two things that are the focus of this political analysis, namely to find arrangements or arrangement of power (disposition of power) and the process to fill the power attached to these actors (nature of power).

Disposition of Power. At the macro level, there are two institutions being analyzed, namely the Indonesian Parliament and the President of the Republic of Indonesia. In this context, the power of the two institutions comes directly from the people through a direct election process. However, the chairman of the DPR RI is elected through a voting mechanism among members of the DPR RI. The President of the Republic of Indonesia has the highest authority of the entire cabinet he leads. In relation to the research theme, the DPR RI has the authority to supervise the implementation of mineral and coal policies carried out by the executive, which in this case is led by the President.

At the meso level, Governors, Regents/Mayors can determine and/or be actively involved in mineral and coal policies from planning, operations, sales, financial relations and others. Their involvement needs to adjust to central government policies.

At the micro level, the Chairperson of an organization engaged in the mineral and coal mining sector has the authority to determine the direction of

the organization's policies. The policies of the chairman and management of the association must be bound by the provisions made by the government.

Nature of Power. The nature of power implies the authority inherent in every actor, so that they have the ability to exercise power. First, at the macro level, the DPR RI has the ability to formulate regulations, budgeting and supervision regarding Minerba mining. While the President of the Republic of Indonesia has the ability to create, organize, direct, and carry out services regarding Minerba mining.

Second, at the meso level, local government institutions which are included in it have the ability to make technical regulations related to mineral and coal supervision policies. In addition, Governors/Regents/Mayors have the ability to carry out harmonious communication and coordination so that mineral and coal mining policies run effectively. Then, the institutions included in this meso level have the ability to act decisively against those who violate the provisions.

Third, at the micro level, producer and distributor associations have the ability to produce, procure, supply, and sell mineral and coal mining products. All associations have the capability and are directly responsible for the implementation of mineral and coal policies.

In political analysis describes the arrangement of power (disposition of power) and the process to fill the power attached to actors (nature of power) by each actor. The next analysis needed is to what extent the powers they possess influence each other, so that a network is formed that is able to provide answers to each of the main actors who play a role in this mineral and coal governance. In another perspective, political analysis requires describing the pattern of actors and the relationships between them in a social network. This is done by carrying out social interactions where actors produce group performance (Brinton and Nee, 1998). Researchers need this analysis to get an objective and neutral picture.

Preliminary conclusions from the analysis results of SNA NodeXL regarding mineral and coal governance policies Law No. 4 of 2009 suggest that the following actors are the main stream in mineral and coal governance policies, namely IUP/WIUP, IUP Production operations, statutory regulations, reclamation and post-mining funds as actors the most accessed (in degree), while the actors with the most access (out degree) are the government, holders of business licenses, types of mining businesses, supervisors, investigators civil servants. As for IUP (exploration/production operations), non-tax state revenue, state revenue, Amdal,

feasibility studies are actors who are influential in establishing the main policy relationship (betweenness centrality). Meanwhile, IUP OP and IUPK are the most closely related and widely discussed actor relationships (closeness centrality). The most central actors (eigenvector centrality) in mineral and coal governance apart from the name of the company are non-tax state revenues, reclamation and post-mining guarantee funds, management of mineral funds, application of economic principles, mineral and coal conservation, occupational safety and health, environment, settlement of land issues. , investment, mining location, processing and refining.

Furthermore, the conclusions from the results of SNA NodeXL's analysis of local government governance policies Law No. 23 of 2014 suggest that the following actors are the main stream, namely further provisions, regional heads, and draft regional regulations as the actors with the most access (in degree), while The actors with the most access (out degree) are ministers, governors, central government, government regulations and regional heads. As for regional heads, government affairs, regional autonomy are actors who are influential in establishing the main policy relationship (betweenness centrality). Meanwhile, Members of the Provincial DPRD APBD, provincial secretary and DPRD are the closest and most discussed actor relationships (closeness centrality). The most central actors (eigenvector centrality) in local government governance are district/ city regulations, APBD, RPJMD, task of assistance, evaluation of government administration.

Implementation of sustainable mineral and coal governance: SSM-SNA analysis and Theory U

Based on the results of the Soft System Methodology analysis, the following results are obtained. In revamping the licensing system and land use, the Ministry of Energy and Human Resources issues mining business permits (IUP) through the provincial government that must be monitored closely and must comply with the conditions that have been set. In the Management of Production and Commodity Trading, matters related to the management system of commodity production and trading need to be regulated systematically, including how much commodity must be met in each region. Meanwhile, in increasing added value and developing downstream industries, the government needs to establish a ministerial regulation so that it can be used as a clear reference in increasing

added value and downstreaming. And in monitoring GMP standards and handling social and environmental impacts, supervision of this GMP standard must be carried out strictly in every minerba mining business entity. In addition, it is also necessary to carry out social and environmental monitoring of the impact of the mineral and coal industry. In revamping the tax system and state revenue, as well as financial and investment aspects, the government must make clear regulations related to the tax system and state revenue related to the mineral and coal sector. In law enforcement, prevention and eradication of corruption, and institutional strengthening, parties involved in the mineral and coal mining industry with law enforcement must enforce the law in an honest and fair manner based on the regulations made by the government. In terms of the effectiveness of regional development and decentralization, the DPRD and regional heads as well as related parties must coordinate regional development planning. And regarding the Mineral and Coal Fund, the formation of regulations related to this Minerba fund needs to be carefully studied with related parties so that a joint decision can be reached.

In accordance with the research limitations that the desired and desirable change by considering systematically desirable, culturally feasible (Flood and Jackson, 1991) is a consideration among researchers, not the problem owner, in this case the manage sustainable mineral and coal policies as a reference for this research. Researchers, in this case, are only up to the stage of suggesting corrective actions to improve sustainable mineral and coal governance (SMG, Sustainable Mining Governance). Thus concrete actions are outside the scope of this research, because researchers are not owners who can determine policies in changing mineral and coal governance.

In accordance with the previous discussion, the qualitative approach of the SSM methodology with enrichment in social network analysis (SNA) is considered sufficient, however, the researcher wants to reach further changes (transformation) in the development of sustainable mineral and coal governance by learning from the future (Theory U). Theory U procedures and processes are closely related to change management to correct past unproductive patterns of behavior by learning from possible future events. If the SSM is a method by looking at the entire process that occurred in the past, then the U theory method is a change management method that reflects from the future through five stages, namely Co-initiating, Co-sensing, Presencing, Co-Creating, Co-Evolving.

1) Co-Initiating

Common Interests is a good way to listen to mineral and coal issues. As much as possible the regulation and implementation of mineral and coal policies must be able to prioritize common interests above individual interests. The achievement of common interests cannot be separated from the role of the community. If the community is able to be actively involved in mineral and coal policies, it is hoped that mineral and coal policies will be able to support the interests of the community. From the side of the minerba company must also be able to overcome obstacles in order to improve the minerba system.

The government as the formulator and implementer of regulations can also provide input and opinions in encouraging mineral and coal companies to be able to develop a good mineral and coal governance system. Stakeholders as company stakeholders can also provide input to the company in order to maintain the assets they have so that they continue to develop and be sustainable in their operations.

2) Co-Sensing

Good mineral and coal governance will certainly never be without obstacles. Good consistency and integration in fixing obstacles is expected to be able to develop better mineral and coal governance. Taking an attitude in the development process is the next process after we have succeeded in conquering development obstacles. Good mineral and coal governance requires taking the right attitude in every challenge of the development process in order to achieve a comprehensive governance system. Companies also need to maintain consistency in improving performance. This increase is expected to be sustainable and consistent.

3) Presencing

The root of the mineral and coal problem is the first thing that needs to be contemplated in bringing out inner knowledge. The root of the problem is the key in determining the steps and direction of a sustainable mineral and coal policy. This sustainable governance can then be considered as a mineral and coal governance system that will be implemented in the future. It is hoped that the new governance system will be able to provide solutions to problems that occur in the implementation of mineral and coal governance.

4) Co-Creating

Innovation is the first step in creating a new mineral and coal governance system. Innovation provides answers to the obstacles faced in developing a sustainable governance system. After innovation can be carried out, system improvement is the next step that can be carried out. Improvement of the system also needs to be planned in the development of a sustainable governance system in each period.

Companies also need to focus on giving roles to human resources in mineral and coal governance. Human resources are vital in governance, because these human resources will carry out all processes and systems for sustainable mineral and coal governance. Funding is also something that needs to be considered in the development of governance, because funding affects the ways and processes for countries in developing a mineral and coal governance system.

5) Co-Evolving

Increasing human resources is the first step in creating a new ecosystem in the entire mineral and coal governance system. HR that has been integrated will find it easier to create a better system and easier to adapt to the new system that will be implemented in the future. Technology also requires development in the mineral and coal governance system. Technology that will always develop encourages minerba stakeholders to stay up to date in implementing the latest technology in the governance system.

After all aspects have been met, now minerba stakeholders only need to implement the development plan for the minerba governance system and leave behind the unfavorable culture of the past. These two aspects are the final step in establishing a sustainable mineral and coal governance system. The success of the mineral and coal governance system in this study is reflected in the existing mineral and coal governance system in Chile. Chile as the world's largest copper producing country has been able to implement a sustainable mineral and coal governance system.

In the explanation described above, Theory U shows stages that are in line with SSM. Improvement of mineral and coal governance must go through process stages with appropriate achievements and controls so that the implementation can run optimally. Subsequent research tested the results of the all-system analysis of SSM (with the help of SNA) and U theory using the Partial Least Square

(PLS) predictive quantitative method. Researchers, with the help of WarpPLS software, wish to find relationships between actors (variables) forming models of sustainable mineral and coal governance, as well as in the framework of enriching the methodology to produce more in-depth research novelty in the study of system thinking.

Quantitative Model Implementation: SSM-SNA-U Collaboration

The quantitative model was obtained from the results of the analysis of U and SSM theory from Sustainability Mining Governance research in Chile which mentions four variables, namely Environmental, Community, Governance, and Economic as drivers of Sustainability Mining Governance with decentralized performance (in SNA theory from Law no 23 of 2014) as mediating because decentralization acts as a mediator between Sustainability Mining Governance policies in the regions and the center. Theory U-based mineral and coal governance transformation acts as a moderator because Theory U acts as a provider of recommendations in pushing for a better policy in the future. The SSM-SNA-U Collaboration structural model can be seen in the following chart.

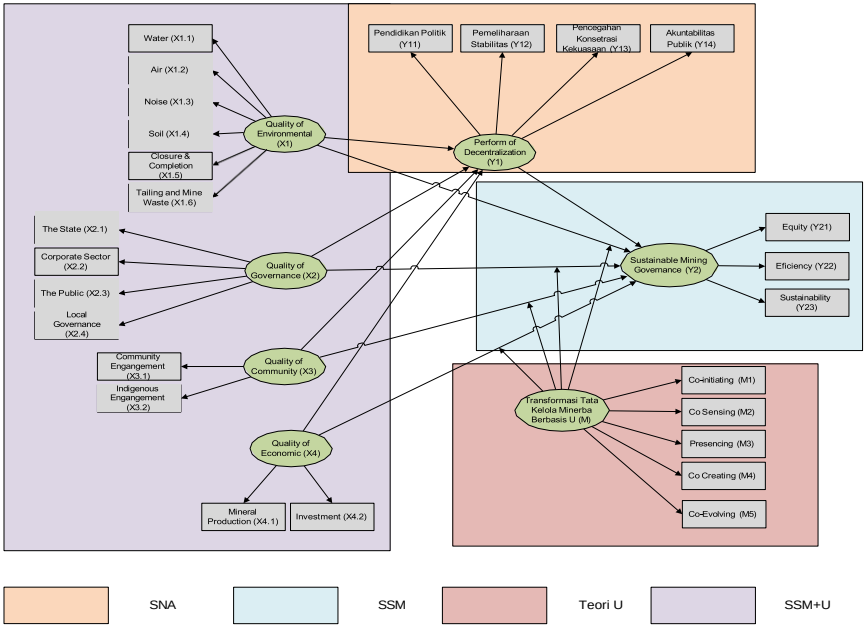

Figure 2. Quantitative Analysis Results

In Quantitative Analysis there are two models, namely the outer model and the Inner model. The value of outer loading (for reflective indicators) and outer weight (for formative indicators) shows the weight of each indicator as a measure of each latent variable. The indicator with the largest outer loading or outer weight indicates that the indicator is the strongest (dominant) variable measurer.

Tabel 1. Hasil Pengujian *Outer Model*

Variable	Indicator	Average	Outer Loading	P-Value	Conclusion
X1	X11	2.83	0.444	<0.001	Significant
	X12	4.04	0.562	<0.001	Significant
	X13	2.77	0.449	<0.001	Significant
	X14	3.35	0.652	<0.001	Significant
	X15	3.78	0.796	<0.001	Significant
	X16	3.33	0.733	<0.001	Significant
X2	X21	2.42	0.479	<0.001	Significant
	X22	3.48	0.766	<0.001	Significant
	X23	3.52	0.680	<0.001	Significant
	X24	3.95	0.690	<0.001	Significant
X3	X31	3.29	0.661	<0.001	Significant
	X32	2.78	0.407	<0.001	Significant
X4	X41	3.26	0.696	<0.001	Significant
	X42	3.85	0.741	<0.001	Significant
M	M1	3.91	0.597	<0.001	Significant
	M2	2.90	0.410	<0.001	Significant
	M3	3.81	0.685	<0.001	Significant
	M4	2.86	0.459	<0.001	Significant
	M5	3.73	0.739	<0.001	Significant
Y1	Y11	3.76	0.638	<0.001	Significant
	Y12	3.92	0.779	<0.001	Significant
	Y13	2.06	0.479	<0.001	Significant
	Y14	2.11	0.492	<0.001	Significant
Y2	Y21	3.75	0.505	<0.001	Significant
	Y22	3.36	0.588	<0.001	Significant
	Y23	3.47	0.677	<0.001	Significant

The outer model measurement results in table 1 show that all indicators have a P-Value below 0.05. these results indicate that all indicators in the model are significant in influencing mineral and coal governance. Table 1 shows the highest Outer Loading coefficient obtained that Closure and Completion (X15) as the strongest measure of Quality of Environmental (X1) followed by Tailings and Mine Waste (X16). That is, Quality of Environmental (X1), in mineral and coal governance is most influenced by the implementation of Closure and Completion and management of mine waste. Furthermore, the highest Outer Loading coefficient obtained that the Corporate Sector (X22) and Local Governance (X24) as the strongest measure of Quality of Governance (X2). That is, Quality of Governance (X2), in mineral and coal governance is most influenced by the corporate sector and local government.

The results from table 1 also show that the highest Outer Loading coefficient is obtained that Community Engagement is the strongest measure of Quality of Community (X3). That is, Quality of Community (X3), in mineral and coal governance is most influenced by community engagement. Furthermore, it shows that the highest Outer Loading coefficient is obtained that Investment is the strongest measure of Quality of Economics (X4). That is, Quality of Economic (X4), in mineral and coal governance is most influenced by the amount of investment. Besides that, the highest Outer Loading coefficient is obtained that is Co-evolving and followed by presencing as the strongest measure of U (M) Theory-Based Minerba Governance Transformation. This means that the U (M) Theory-Based Mineral and Coal Governance Transformation is most influenced by evaluation and planning activities in the presencing phase and development activities in the co-evolving phase.

For variable Y1, the results show that the highest Outer Loading coefficient is obtained that maintenance of stability and political education is the strongest measure of Perform of Decentrality (Y1). That is, Perform of Decentrality (Y1), is most influenced by the maintenance of decentralization stability and political education of stakeholders. Meanwhile for the Y2 variable, showing the highest Outer Loading coefficient, it was found that Sustainability and Efficiency were the strongest measures of Sustainable Mining Governance (Y2). That is, Sustainable Mining Governance (Y2), is most influenced by the Sustainability and Efficiency of mining activities.

Furthermore, in SEM there is an influence of the relationship between variables presented in the figure below.

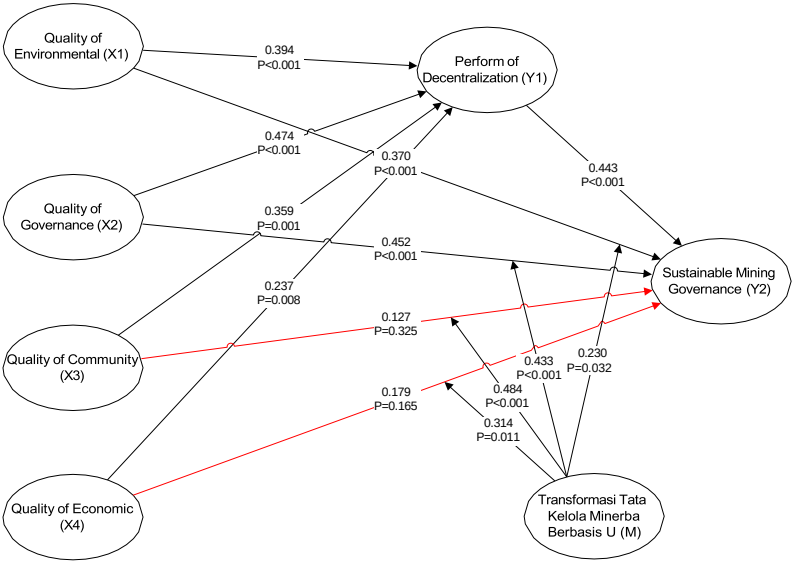

Figure 3. Quantitative Analysis Results

Note : ► = *Significant*

► = Not Significant

The results of testing the direct effect structural model as presented in Table 4.47 and Figure 4.48 show that there are 13 influence relationships between variables. There are 11 significant relationships and 2 insignificant relationships. The second relationship that is not significant is the influence relationship between the Quality of economic and quality of Community on Sustainable Mining Governance.

In addition to the direct effect, there is also an indirect effect between variables. Indirect influence is an influence that occurs with the help of one or more mediating variables. There is an indirect effect in this study which is explained in the table below. The results of testing the structural model of the indirect effect with one mediating variable are presented in Table 2.

Table 2. WarpPLS Analysis Results Indirect Effect of One Mediating Variable

Variable			Path Coefficient	P value	Conclusion
Exogen	Mediation	Endogen			
Quality of Environmental (X1)	*Perform of Decentralization* (Y1)	*Sustainable Mining Governance* (Y2)	0.175**	<0.001	Signifikan
Quality of Governance (X2)	*Perform of Decentralization* (Y1)	*Sustainable Mining Governance* (Y2)	0.210**	<0.001	Signifikan
Quality of Community (X3)	*Perform of Decentralization* (Y1)	*Sustainable Mining Governance* (Y2)	0.159**	<0.001	Signifikan
Quality of Economic (X4)	*Perform of Decentralization* (Y1)	*Sustainable Mining Governance* (Y2)	0.105**	<0.001	Signifikan

The results of testing the structural model with indirect effects as presented in Table 5.38 show that there are 4 indirect relationships between the variables in the model. All indirect relationships in the model are significant. The results of the indirect relationship led to the finding that although the direct influence of Quality of Community (X3) and Quality of Economic (X4) on Sustainable Mining Governance (Y2) was not significant, but with mediation from Perform of Decentralization (Y1), Quality of Community (X3) and Quality of Economic (X4) has a significant influence on Sustainable Mining Governance (Y2). This shows that decentralization has a role in bridging the quality of the economy and community in forming a sustainable mineral and coal governance system.

CONCLUSION

Based on the research results obtained the following conclusions.

1) The conclusion from the analysis of the SNA NodeXL analysis regarding local government governance policies of Law No. 23 of 2014 is that further provisions, the regional head is the actor who has the most access (in

degree), while the actor who has the most access (out degree) is the minister. As for the regional head, government affairs, regional autonomy are the influential actors in establishing the main policy relationship (betweeness centrality). Meanwhile, DPRD members are the closest and most discussed actor relations (closeness centrality). The most central actor (eigenvector centrality) is the district/city regulation.

2) New research findings (research novelty) of qualitative analysis about the root causes of mineral and coal governance policies in Indonesia with the SSM approach and the U theory perspective include: Improvement of the permit and land use system, Management of commodity production and trade, Supervision of mining production, Increase in added value and development of downstream industries, Increase in added value and development of downstream industries, Increase in added value and development of downstream industries, Mineral and coal funds, Effectiveness of regional development and decentralization, and Law enforcement, prevention and eradication of corruption, and institutional strengthening.

3) The quantitative approach of the SEM-WarpPLS predictive method in reviewing the relationship and its influence on sustainable mineral and coal governance that:

   a. Sustainable mining governance in Indonesia is closely related and is a function of the thinking process of the SSM system, which includes decentralization, U theory governance, governance, environmental quality, CSR quality, and economic developments that occur.

   b. Decentralization plays a central role as a puller for quality of environment, quality of governance, quality of community, and quality of economy and at the same time as a driving force or driver for maintaining and increasing sustainable mining governance..

   c. The transformation of mineral and coal governance based on the U theory has the role of strengthening the effects of Quality of environment and Quality of governance on sustainable mining governance, besides that it has an absolute role so that Quality of community and Quality of economy increase.

   d. Sustainable mineral and coal governance is a function of governance, economic, community, environment which is mediated (bridged) by decentralization and moderated (supported) by U theory governance.

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