

# CONFLICT RESOLUTION ANALYSIS USING GRAPH MODEL FOR CONFLICT RESOLUTION (GMCR) APPROACH (A CASE STUDY IN CONFLICT AND COOPERATION AGREEMENT BETWEEN IDT AND IDMT)

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## ABSTRACT

This study uses the Graph Model for Conflict Resolution (GMCR) as an approach to describe the optimal solution for resolving the conflict which happened between IDT and its subsidiary IDMT. This conflict arose when IDMT used IDT's 2.1 frequency band.

The main players in the conflict is IDT with its subsidiaries namely IDMT. The other parties involved in the conflict were KTI NGO, Central Jakarta District Court, Attorney General's Office and Policy Institute (MCIT and Administrative Court). The method used in this research is qualitative research that uses literature review as a tool for data collection

Based on the stability analysis, The equilibrium scenario for all the parties in frame I and frame II was the first scenario. The first scenario happened when, KTI NGO reported that there was an alleged misuse of mobile cellular network in the frequency of 2.1 GHz / 3G conducted by IDT and IDMT. IDT and IDMT sent out a counter report stating that they had been extorted by KTI NGO. The Central Jakarta District Court then concluded that KTI NGO had been guilty of extorting IDT and IDMT. However the Attorney General's Office continued their investigation on IDT and IDMT because of their suspected misuse of mobile cellular network and on the Policy Institute who defended IDT and IDMT. Based on the outcome of the conflict as reported on online news portals, it can be concluded there is correlation between the outcome of the conflict and the stable solution (equilibrium) generated through the GCMR approach. The implications of this study can be used as a reference for the Indonesian government and stakeholders in the telecommunications industry to resolve similar conflict in the telecommunications cooperation agreement.

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## ARTICLE INFO

### Keywords:

Conflict Resolution, Graph Model for Conflict Resolution, Telecommunications

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### Article history

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Article Submitted 12-01-2015  
Article Accepted 24-02-2015

\*\*Article previously published in  
EJEM 2014, vol 2, No. 1

## 1. INTRODUCTION

Based on the survey conducted by the Association of Indonesian Internet Service Provider (APJII) together with the Central Statistics Bureau (BPS) in early 2014 revealed that the number of Internet users in Indonesia has reached 71.19 million people by the end of 2013. That number grew 13 percent compared to the record in late 2012 which is 63 million people. With this amount compared with the total population of the population of Indonesia, the Internet penetration percentage in Indonesia is about 28 percent. APJII judging by these results Indonesian intention to adjust to the demands of the Millennium Development Growth (MDGs) which also agreed with International Telecom Union (ITU),

that in 2015 the population of the earth is to be internet savvy 50 percent has not yet achieved. Then there are two more years to catch up to achieve these targets. (<http://www.apjii.or.id> accessed on October 3, 2014).

Based on that, there are some stakeholder who can play an active role to make it happen such as the players in Telecom Industry as a network and service provider and also supported by the Government and people of Indonesia itself. In accordance with Article 33 paragraph (2) of the Telecommunications Act number 36 of 1999 which explains that the Internet Service Provider (ISP) can use a network provider's network (both wired network and mobile network) (<http://apjii.or.id> accessed at dated October 3, 2014). These are reasons for supports and cooperation between providers of telecommunications networks and telecommunications service providers to be able to create an internet savvy society.

One of the form of cooperation agreements that support the provision of internet for internet literacy will be done by IDT as a provider of telecommunications networks and IDMT as telecommunications service providers. Indar Atmanto as the Director of IDMT on 24 November 2006 signed the cooperation agreement between IDT and IDMT on internet access through 3G networks. However, the cooperation agreement turn into a conflict when the KTI NGO led by Denny AK on October 6, 2011 reported allegations of corruption made by IDT and IDMT on the misuse of mobile cellular network 3G radio frequency band to the West Java High Court (<http://news.detik.com> accessed on October 3, 2014).

Conflict occurs when there is a disagreement between an individual or group that has a different perception of things. In this case, law enforcement agencies in Indonesia, the Attorney General's Office stated that the cooperation agreement made by IDT and IDMT is not valid in the eyes of the law that set 5 suspects, former Director of IDMT (Indar Atmanto), former Director of IDT (Jhonny Swandi Sjam and Hari Sasongko), and two corporations IDT and IDMT (<http://news.liputan6.com> accessed on October 3, 2014). It is inversely proportional to the statements and information given by the telecom regulator, namely the Ministry of Communications and Information Technology (Communications) whose are not considered by law enforcement agencies during the judicial process takes place which states that IDT and IDMT cooperation agreement is in accordance with the Telecommunications Act, and there is no obligation to pay IDMT frequency rights fee due to the obligation is IDT's and it has been paid. This is confirmed by the issuance of a letter 65 / M.KOMINFO / 02/2012 by the Communications and Information Technology as telecommunications regulator stating that there is no violation of law, crimes committed, and losses that result from an agreement between IDT and the IDMT. Furthermore, the Minister of Communications and Information Technology (MCIT) also sent a letter to Attorney General's Office directly stating that both IDT and IDMT does not violate any rules and cooperation between IDT and IDMT is legal under the rules and regulations in force, and is a

common practice in the telecommunications industry. (Annual Report 2013 PT.IDT Tbk accessed on October 3, 2014).

The stipulation has become a major step back for Indonesian intention to adjust to the demands of the Millennium Development Growth (MDGs) which also agreed by International Telecom Union (ITU), that in 2015 the population of the earth is to be 50% internet savvy and has not yet achieved. On the other hand conflict arises when Telecommunications Industry itself still lacks clarity related to their rules. Even in the near future, the Internet in Indonesia is threatened to stop completely. Because the whole internet service provider or ISP in this country do not want to suffer the same fate as Indar Atmanto. They think that what Indar has done is in compliance with the rules and has been deemed lawfully correct by the telecommunications regulator. But in fact, Indar is imprisoned on an agreement which was ruled not appropriate by law enforcement agencies in Indonesia. Conflicts occurred with an alleged illegal use over an IDT's 2.1 frequency band by IDMT based on a cooperation agreement between the IDMT represented by Indar Atmanto as the former Director of IDMT with IDT that has go on since 2011, so it can be created a model of resolution to this conflict that can serve as a lesson and won't harm any parties.

There are many ways that can be used in an effort to generate a resolution model of a conflict; one of them is using game theory approach (Game Theory). In line with the development of science, Fang, Hipel and Kilgour (1993) used game theory to model conflict resolution with the known Graph Model for Conflict Resolution (GMCR) which is a new breakthrough to the approach to game theory. GMCR is a methodology for framing an interactive decision or conflict situations, in which the stability analysis can be generated as well as an assessment tool of the best strategies for conflict resolution. In Indonesia, GMCR has been used in a variety of case studies Handayati et al (2011), Alamanda et al (2010,2011,2012,2014), Ariyanto (2013), Husnayain and Alamanda (2014).

In this study, GMCR is used to describe the optimal solution obtained in a conflict that has happened in the agreement between IDT and IDMT seen from the preferences of each party involved in the conflict. The combination of the preferences of each party will result in scenarios which are shadows on the steps taken by each party in a state of conflict. As known by the previous explanation that the conflict of this agreement has resulted in the enactment of five suspects, former Director of IDMT (Indar Atmanto), former Director of IDT (Jhonny Swandi Sjam and Hari Sasongko), and two corporations IDT and IDMT. After going through the process GMCR approach, the correspondence between the steps that should be taken based on the GMCR approach and steps that occur in the real world are taken by each player on this conflict. Therefore, the final results are to know how the process of cooperation agreement IDT and IDMT conflict that can be used as lessons to learn by the other network providers and services in the Indonesian Telecommunications Industry.

## 2. LITERATURE REVIEW

Every decision is a matter of a strategic nature. Schwenk in Nooraie (2012: 406) mentions that strategic decision is a structured problem, not routine and important for the company, where top management usually plays a central role (Hofer & Schendel, 1978).

Vahabi (2009: 5) states that from methodology point of view, "strategic conflict" is based on the assumption of rationality and maximizing behavior of players in the conflict. This is about the definition of "strategy". It is assumed that the maximum "rational" value in the mode of behavior, and focuses on the fact that the selection of the "best" in every action depends on what he expects of others are doing, and that "strategic behavior" with regards to influencing the choices of others about how the behavior of other people associated with his behavior (Schelling, 1963: 15). Strategic conflict is trying to catch a "threat" or "potential" of the actual damage in the limited (but not the whole) case. This is the same with saying that the main subject of this theory is "prevention". In addition, the "prevention" is considered as if it composed of rational bargaining while In fact, in this approach the conflict side by side with the interdependency between opponents and partners.

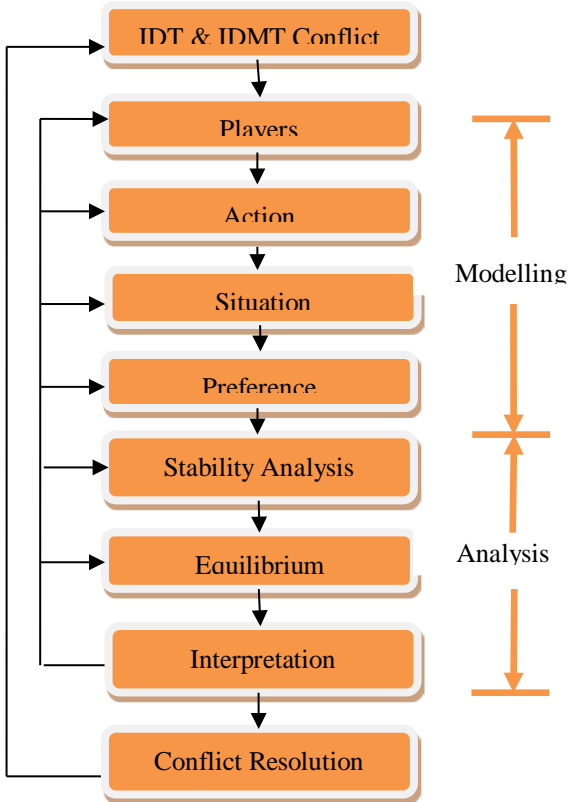
Kilgour, Hipel, Peng, and Fang in Obeidi et al (2002: 147) defines strategic conflict as "..., decision situation involving two or more decision makers (DMS), which make an individual choice which both determine the state, and which have individual preferences over the possible states (as a conflict resolution)."

Xu (2009: 1) states that in order to analyze the strategic conflict means to investigate the interaction of two or more decision makers (DMS) either opposed or partners to identify possible outcomes. There are many models available for strategic conflict, and many ways to analyze the model, including the strategy of the games in game theory, the form of the option, and the form which is closely linked to the table. Madani et al (2008) states that the complexity of the conflict can be simplified and analyzed using game theory to explore a range of potential outcomes resulting from the various strategies used by the players game. In line with the development of science, Fang, Hipel and Kilgour (1993) used game theory to model conflict resolution with the known Graph Model for Conflict Resolution (GMCR) which is a new breakthrough to the approach to game theory. GMCR is based on a mathematical framework that utilizes the concept of graph theory, set theory, and logical reasoning (Fang et al., 1993). The initial idea of GMCR was introduced by Kilgour, Hipel and Fang in 1987, and then it was presented in full for the first time by Fang, Hipel and Kilgour in 1993. GMCR has been applied to various fields of applications, from environmental management for workforce management, from military activities and peacekeeping to economic issues, from local to international level (Ke, 2007: 1).

GMCR is a methodology for framing an interactive decision or conflict situations, in which the stability analysis can be generated. GMCR, as a tool in the assessment of the best strategies of conflict resolution, also serves as a means of stimulation for the interaction and behaviour of decision makers and can be used in the preparation of mediation and negotiation. GMCR facilitates interested parties to put complex strategic decision problems into a better perspective and understanding of the current situation and imagine the potential resolution (Fang et al, 1993).

**3. METHODOLOGY**

Ke (2007: 7) states that the GMCR method as a graph model for conflict resolution methodology consists of two stages: modelling and analysis.



**Figure 1:** The procedure of GMCR

In modeling stage, issues that become conflicts are generated to be modeled with their basic elements which are decision maker, available option or states-defined option, and preference of decision maker. A decision maker is an individual, group, or organization that is able to make a decision affecting other decision makers in a conflict. Condition outlook is obtained from an option given in accordance with action taken based on available condition called option. The decision maker then chooses feasible state based on the collected options. Feasible state is a chosen scenario among a number of scenarios that may happen. The number of scenarios obtained is defined as  $2^n$ , where 2 is the probability of “Yes” (Y) and “No” (N) and n is filled by a number of available options. However, not all of states may be

appropriate. Therefore, modeling stage is important to eliminate states that are not appropriate. Those options are then ranked based on the likeable things preferred by the decision maker, which is called preference of decision maker. The information will be used in the next stage, which is analysis stage (Ke: 2007)

In analysis stage, the stability of each condition is calculated based on each decision maker' view. Afterwards, the whole stability of stable conditions can be obtained. The preference is important information required as input for the stability analysis using a variety of solution concepts. The concepts of the solution used are indicated using the letters (r) for Nash stable scenario and (s) for stable sequential scenario and (u) for unstable scenarios. Next step is to see any scenario that is eventually equilibrium for all those indicated by the letter (E).

After the stability being analyzed, the next stage will be sensitivity analysis. Sensitivity analysis is an analysis for finding out what will happen to the decision makers if they move from one state (usually from state status quo) to another. In several application somebody may use sensitivity to decide how the preference of decision maker must change to deliver the more wanted equilibria for other decision makers. The result can be said as equilibria if it is a stable condition for all parties. With interpretation and sensitivity analysis, decision makers or other interested parties can understand the meaning of the resolution of conflicts in the real world. To be noticed is that the presence of feedback is allowed on GMCR procedure. Feedback means any stage, either at the modeling stage or analysis stage, can go back to the previous point, if found new information. These characteristics make GMCR more flexible and practical (Ke: 2007).

**4. DISCUSSION & RESULT**

Based on secondary data sources adapted to the purpose of this study which is to determine how the process of conflict and cooperation agreement between IDT and IDMT that can be used as a lessons learn for the network providers and services in the Indonesian telecommunications industry, the last status (status quo) on conflict of cooperation agreement between IDT and IDMT is presented in Table 1 below:

**Table 1.** Status Quo

<i>Frame</i>	<i>Players</i>	<i>Oprtion</i>	
I	KTI NGO	Reporting suspected abuse of mobile cellular network frequency of 2.1 GHz / 3G conducted by IDT and IDMT	Y
	IDT and IDMT	Reporting Extortion by KTI NGO	Y
II	Central Jakarta District Court	Establishing KTI NGO as guilty	Y

	Attorney General's Office	Establishing IDT and IDMT as a suspect	Y
	Policy Institute	Protecting IDT and IDMT	Y

After determining the players, options and categorized them based on the situation of conflict (frame), the researchers can determine a feasible framework states that may occur. Based on the previously mentioned and assessed scenarios on secondary data sources from multiple online news portal, there are only 3 scenarios in the frame I and 5 scenarios on the frame II considered feasible by the researcher. Here are the scenarios and options of each player which are considered:

**Table 2. Feasible State Frame I**

No	Option	Scenario		
		1	2	3
	<b>KTI NGO</b>			
1.	Reporting suspected abuse of mobile cellular network frequency of 2.1 GHz / 3G conducted by IDT and IDMT	Y	N	Y
	<b>IDT and IDMT</b>			
2.	Reporting Extortion by KTI NGO	Y	N	N

**Table 3. Feasible State Frame II**

No	Option	Scenario				
		1	2	3	4	5
	<b>Central Jakarta District Court</b>					
1.	Establishing KTI NGO as guilty	Y	Y	N	N	N
	<b>Attorney General's Office</b>					
2.	Establishing IDT and IDMT as a suspect	Y	N	N	Y	N
	<b>Policy Institute</b>					
3.	Protecting IDT and IDMT	Y	Y	N	Y	Y

The next step of the modeling process of GMCR is sorting scenario which reflects preference of each player / decision maker. Preferences are the tendency of players. In writing, the more to the left, the higher the preference is for the player. Such scenarios are sorted by rank of the most desirable scenario on the left to the least preferred scenarios on the right. This preference is important information that is required as input for the stability analysis using a variety of solution concepts.

Furthermore, it is checked which scenarios are the equilibrium or stable and acceptable to all parties that can be used as a conflict resolution of cooperation agreement conflict between IDT and IDMT and is

marked with the letter E. A state is considered stable for decision makers if and only if (IFF) decision makers are not tempted to move away from their unilaterally. A state is said equilibrium, or resolution may be a solution of choice concept, if all the decision makers find stability under the concept of solution. The concept of stability analysis used in this study is only nash stable (r), sequential stable (s) and unstable (u) because only those three conditions occur during the stability analysis. Nash stable occurs when a player does not change position due to other positions are not higher than its payoff in the current position. Sequential stable occurs when a player does not change position due to considering the steps of the opponent, and the opponent is not much better than its payoff in the current position. The unstable occurs when players switch positions to better position that has a higher payoff than its current position.

Here are the results of stability analysis on conflict and cooperation agreement between IDT and IDMT presented in Table 4:

**Tabel 4.** Results of Stability Analysis

FRAME I				FRAME II					
KTI NGO				Central Jakarta District Court					
			E		E				
<i>Stability</i>	r	u	r	<i>Stability</i>	r	r	u	u	r
<i>State Ranking</i>	3	2	1	<i>State Ranking</i>	1	2	4	5	3
<i>Uis</i>		3		<i>Uis</i>			1	2	
IDT and IDMT				Attorney General's Office					
			E		E				
<i>Stability</i>	r	r	u	<i>Stability</i>	r	r	u	u	r
<i>State Ranking</i>	2	1	3	<i>State Ranking</i>	1	4	2	5	3
<i>Uis</i>			1	<i>Uis</i>			1	4	
				Policy Institute					
								E	
				<i>Stability</i>	r	r	s	r	r
				<i>State Ranking</i>	2	5	3	1	4
				<i>Uis</i>			5		

In Table 4 it can be seen that the equilibrium scenario for all parties in the frame I is the scenario 1 when KTI NGO reports alleged misuse of mobile cellular network frequency of 2.1 GHz / 3G conducted by IDT and IDMT followed by IDT and IDMT that also report extortion by KTI NGO. While in the frame II, the equilibrium scenario for all parties is the scenario 1 when the Central Jakarta District Court sets KTI NGO guilty, Attorney General’s Office sets IDT and IDMT as suspect and Policy Institute that defends IDT IDMT.



The next step is sensitivity analysis used to answer the question "what if?" In some applications, one may use sensitivity analysis to determine how the preferences of decision makers should be changed in order to produce a more desirable equilibria for other decision makers. These results can be said as equilibria if it is a stable situation for all parties. Or in other words, a sensitivity analysis is conducted when there are two or more equilibrium scenarios to find which one is the best scenario for all parties. And in this study, as it has been obtained previously in the analysis of the stability that equilibrium or stable scenarios on the basis of nash for all parties in the frame I and the frame II is scenario 1 so it can be concluded that it is not necessary to have a sensitivity analysis because there is only one equilibrium scenario.

## 5. CONCLUSION

Based on the results of the analysis it is indicated that the stability of the equilibrium scenario for all parties in the frame I is the scenario I when KTI NGO report alleged misuse of mobile cellular network frequency of 2.1 GHz / 3G conducted by IDT and IDMT and followed by IDT and IDMT reporting extortion conducted by NGO KTI. While in the frame II, the equilibrium scenario for all parties is the scenario 1 when Central Jakarta District Court sets KTI NGO guilty, Attorney General's Office sets IDT and IDMT as suspect and also Policy Institute that defend IDT and IDMT.

In this research, GMCR is used to describe the optimal solution obtained in a conflict that has happened in the agreement between IDT and IDMT viewed from the options and preferences of each party involved in this conflict. Therefore, after going through the process of GMCR approach, it will be seen the correspondence between the steps that should be taken based on the results of the approach of GMCR method and steps occur in the real world taken by the respective players based on the outcome of the conflict as reported on online news portals. The implications of this study can be used as a reference for the Indonesian government and stakeholders in the telecommunications industry to resolve similar conflict in the telecommunications cooperation agreement.

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