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# Structure-Agent Relationship in Social Construction Process An Implementation of Election Information System in Indonesia

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**Abstract:-** The 2019 Concurrent Election, which was the first time in the history of elections in Indonesia which use a Political Party Information System (Sipol) as a working aid for the General Election Commissions of Indonesia (KPU RI) and Political Parties at the registration stage of 2019 Election Contesting Political Parties, caused legal, social, Sipol users and technical and non-technical aspects. The Critical Paradigm that underlies this research uses qualitative research methods using the Theory of Social Construction of Technology (SCoT), Giddens Structural theory and Information Systems theory. Evaluation analysis were conducted using the Holistic Critical Evaluation framework and data analysis using Miles and Hubermas models.

The evaluative analysis results showed some differences in interpretation of meanings between structures and agents, this shows that the social construction process in the development and implementation of this Sipol (1). not yet have consistency starting from the vision to the results and (2). there is no balance between technical aspects and non-technical aspects. There is a practice of structural domination by the KPU RI due to unequal power relations between the RI KPU and Political Parties, so that there are differences in the position of the electoral system structure in Indonesia, and this has an effect on the development and application of Sipol. This research succeeded in offering 3 recommendations, namely: (1). model, (2). the use of theory between scientific fields and (3). architecture for development and implementation of Sipol. The renewal of this research is the modification of the SCoT theory with the Giddens Structural theory called the Giddens-SCoT Structural Theory Integration.

**Keywords:** SCoT, Structural Theory, Information Systems, Election Systems

## I. BACKGROUND

Indonesia has held 4 General Elections (Elections) since the reform era. This fifth election in 2019 is a new round of history for elections in Indonesia, along with the Decision of the Constitutional Court No.14/PUU-XI/2013 dated January 23, 2014 states that the implementation of elections must be synchronized. On the other hand, the development of Information and Communication Technology (ICT) in Indonesia is very fast, one of which is in the Election System, so that by the Republic of Indonesia General Election

Commission (KPU RI) the 2019 election requires the support of Information Systems (SI). For this reason, the KPU RI has prepared 9 Information Systems (SI) for 2019 Election performances, namely: Political Party Information System (Sipol), Nomination Information System (Silon), Vote Counting Information System (Situng), Voter List Information System (Sidalih), Voter Regional Information System (Sidapil), Logistics and Distribution Information System (Silogdis), Archive and Goods Management Information System (See BMN), Digital Archive Information System (Siadig) and Staffing Information System and Election Organizers.

Political Party Information System (Sipol) are used at the Registration stage of 2019 Election Contesting Participant Political Parties, in accordance with the General Election Commission Regulation (PKPU) Number 11 of 2017 article 1 (30), but the interpretation of this article is responded differently by Political Parties because Sipol is not regulated or Law Election Number 7 of 2017, and this difference is completed in the Election Supervisory Board (Bawaslu) which stipulates that all Political Parties participating in the 2019 Election are 'obliged' to use Sipol, which then arises the problem for all Political Parties is 'short time' (about 2 months) to prepare the needs of all data that must be entered (*input*) to Sipol.

Information and Communication Technology (ICT) has created an ecosystem that is constantly changing, developing and complex. This newly formed environment requires a new approach to explore the relationship of technology and society that shapes interactions and also the relationship between humans and technology at different levels (László Kovács, et.al, 2017), so that now there is a new view that the complexity of IT work often caused by a variety of unexpected non-technical factors (Tiko Iyamu, 2017). The development of communication and internet connection infrastructure in Indonesia is still not optimal because of the vastness and size of Indonesia's territory, there is a gap in the ability of infrastructure supporting communication technology (especially internet connections) and human resources. Sipol built web-based technology, in which this technology demands

a consequence of technical, namely: should the availability of internet connections in operation, so that it became one of the problems of implementation Sipol because of lack of attention to the digital divided community in Indonesia.

The dominance of the KPU RI at the registration stage of the 2019 Election Participant Political Parties is quite large,

this can be seen in Law Number 7 of 2017 concerning Elections (articles 173 and 179) and PKPU Number 11 of 2017. This dominance also influences the development process Sipol, where one of the main users of Sipol, namely: Political parties are very small involvement in finding the needs of their functionality. The connection of all Sipol users to the Sipol development process can be described as follows:

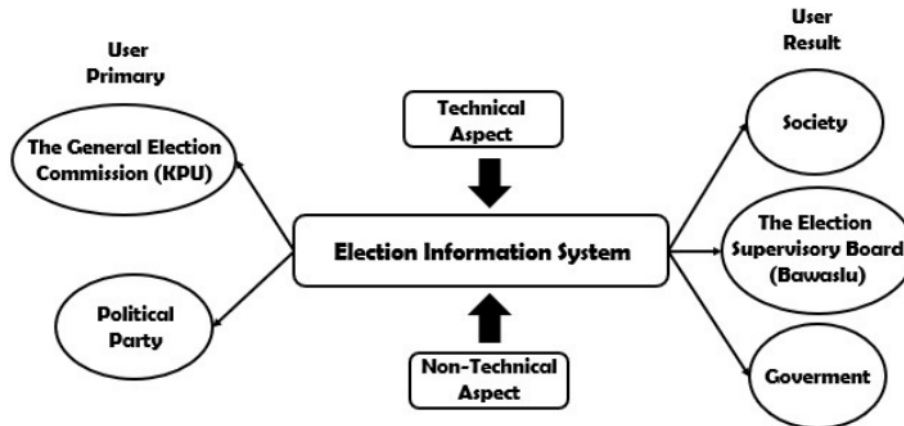


Figure 1. Sipol Users for the 2019 Election

It shows that Sipol users are actually KPU RI, Political Parties, Bawaslu, Government and society, although according to Sipol user information needs can be divided into the main users and users of Sipol results. The main user is a user who is directly involved in the use of Sipol at the registration stage, while Sipol results users are users who have information interests related to the 2019 Election after the registration phase is completed.

Information Technology (IT) work involves technical and non-technical factors (Rankin, Dahlbäck & Lundberg, 2011). Social perspectives still get a small portion of SI development, although new insights have emerged that the complexity of IT work is often caused by a variety of unexpected non-technical factors (Tiko Iyamu, 2017), so problems arise, such as : Understanding of Political Parties against Sipol is very minimal and lacks preparation for Political Parties to fulfill input data needs to Sipol.

The use of Sipol in the Registration stage of Political Parties candidates for the 2019 Election resulted in 14 political parties being declared qualified, namely: PDIP, Golkar, PAN, Demokrat, Hanura, PKS, PPP, PKB, PSI, Perindo, Garuda, Nasdem and Gerindra, and 13 parties politics was declared not to have passed, namely: PBB, PKPI, Pika, Bhinneka Indonesia, Idaman, Marhaenisme, Pemersatu Bangsa, PPPI, Rakyat, Reformasi, Republik, Republikan, Parsindo. Political parties that are declared not to pass this, because they cannot fulfill the provisions of the data that must be fulfilled in the Sipol in accordance with PKPU No. 11 of 2017 Article 17 Paragraph (1), Paragraph (2), Paragraph (3)

and Paragraph (4) up to a specified time limit. The failure of this Political Party can also show that many Political Parties are not ready to follow the provisions stipulated by PKPU No. 11 of 2017 at the registration stage.

Sipol as a result of PKPU's translation No. 11 of 2017 by the KPU RI, will not be able to escape from the surrounding power interests until the establishment of Sipol, which is part of the KPU RI's innovation steps produces several problems and the results are unsatisfactory, so the Giddens Structural theory needs to be supported by theories related to the process of using technology and the elements of society, such as: Theory of *Socialof Technology Development*(SCoT).

## II. LITERATURE REVIEW

This study uses the Giddens Structural Theory and *Social Contruction of Technology* (SCoT), where the research subjects are Sipol, which is an Information System (SI), so the research journals collected are related to the theory and application of SI that have social impacts. The 10 research journals related to this study are as follows:

1. Tiko Iyamu, 2017, "*Improvising Information Technology Projects Through The Duality of Structure*", Department of Information Technology, Cape Peninsula University of Technology, South Africa. Research Results: The realization of the reproduction of actions from non-technical factors, such as: cultural values, organizational structure, relations of power, human capabilities, knowledge

- and management of change used to gain a more constructive understanding and able to improvise in IT projects within the organization.
2. László Kovács, András Nemeslaki, Ákos Orbók, András Szabó, 2017, "*Structuration Theory and Strategic Alignment in Information Security Management: Introduction of a Comprehensive Research Approach and Program*", National University of Public Science. Research Results: Basing on Giddens Structuring Theory and Henderson Venkatraman IT Strategic Alignment modeling, this study succeeded in building 4 phases of the Information System strategy formulation process for information security which is systematically to analyze: a). new smart environment, b). various dimensions of information security awareness, c). leadership roles and d). the importance of strategic alignment.
  3. Sara Yousefikhak, 2017, "*Sociology of Innovation: Perspective Social Construction of Technology*", Universidad Eafit Medellín, Columbia. Results: This study is a process of updating frame technology (*technology frame*), using motode 'deletion creative' Schumpeter, frame technology should be eliminated to reduce the meaning and interpretation that have been agreed in advance, which will result in a new agreement among a collection of *relevant social groups*. This change is referred to as a strategy to prevent the recurrence of previous agreements and the possibility of entering new agencies into social groups because the entry of new agencies is the result of new problem definitions.
  4. Adi Wibowo Octavianto, 2014, "*Structure of Giddens and Social Contract of Technology (SCOT) as a Knife of Alternative Analysis of Social Research on New Media Technology*", Multimedia Nusantara University, Serpong, Tangerang, Banten. Research Results: Every element in SCOT, namely: *relevant social groups, interpretative flexibility, closure and stabilization, and the wider context* given the sharpening of the analysis using Giddens's structural theory.
  5. Christina Prell, 2009, "*Rethinking 'Following the Actors': A Reappraisal of Technological Frames*", University of Sheffield. Research results: In following the actors, Christina Prell realizes that some structural considerations, namely: the role and access of resources require a more detailed approach to the role of *technology frames*. Christina Prell believes that a more useful direction for future research lies in a approach *bottom-up* to learning technology. Such an approach, most likely, pays little attention to the process of socio-technical theory, and more in providing a good and in-depth description of the complexity of technological design, where structures and agencies are given attention to the needs of existing case studies.
  6. Sebastian K. Boell and Dubravka Cezec-Kecmanovic, 2015, "*What is an Information System?*", University of Sydney and UNSW Sydney. Research results: The current definition of information systems shows that information systems are complex phenomena and have different approaches to conceptualizing such information systems, allowing different points of view to see, understand, and examine these complex phenomena. Based on a *hermeneutic review of the different definitions of information systems*, this study finds 4 main views of information systems, namely: technical views, social views, social-technical views, and process views, each supported by a set of certain assumptions.
  7. Serena Liu, 2011, "*Structural of Information Control in China*", University of Essex, UK. Research Results: This study analyzes information control in China by testing the rules and sources of the actors involved. The rules of the government elite which are oriented towards the advancement of market formation, technological development and social stability dominate the information subsystem. The dominance of these rules up to access the author's monopolistic elite and organizational resources, where this rule was developed also reached legitimacy. Market rules and technology rules succeed in the growth of information, but are still controlled to the level of the government elite through stability rules. Foreign and domestic media are governed by a stability rule, which is not conducive to dissemination. Correlation between agency levels and relations with stability rules, where the relationship of Actors to the rules of stability is put between duality and dualism
  8. Hans K. Klein and Daniel Lee Kleinman, 2002, "*The Social Construction of Technology: Structural Considerations*", Georgia Institute of Technology and the University of Wisconsin - Madison. Research Results: This study examines the design of artifacts in the SCOT tradition. The SCOT framework contributes to the use of broad structural analysis, meaning assessing the relative capacity of actors in shaping the construction of artifacts, focusing on group conceptual and social interactions. Sensitive and focused concepts can provide an initial effort to investigate social structure and technological change, where this research offers breadth rather than depth, identifying various types of analytical categories and various insightful suggestions that can be provided. Empirical research needs to be done to explore the structure of the SCOT.
  9. Jeremy Rose and Rens Scheepers, 2001, "*Structuration Theory and Information System Development - Frameworks for Practice*", Department of Computing Science, Aalborg University and School of Information Technology,



Swinburne University of Technology. Research Results: Development of Social theory, such as the model from Orlikowski's can make a general approach in helping study Information Systems. The strength of Structural theory to be able to describe the real situation in Information Systems is to show examples of good applications. This will add to participate in the effort to develop the Structural theory concept in the future. However, in the future it can change the practical habits of the Information Systems community using this concept in making decisions to meet the needs of a realistic framework. This can be achieved by adopting a general form of theory in building Information Systems (diagrams, explanations and terminology), and the majority of people understand this theory. So this research offers a framework for implementing Information Systems (SI) that can be easily accessed based on Giddens Structural Theory (ST).

10. Laura Stein, 2011, "*Environmental Website Production Strategy Approach*", The University of Texas at Austin, USA. Research Results: The WWW emerged as a medium that activates online publishing, and selected forms and functions, so the website has an important role in this matter. Then, social studies about moving to a website, where all documents for this group use the medium, and some schools have studies to organize social form factors moving to website production. In this study, groups were tested in the website production environment by looking at how the priorities of the organization, processes and resource constraints and constraints on producing websites. The Structural Theory is used to analyze the group production environment of the website as gleaned from semi-structured interviews with 28 members of the webmasters group environment.

### III. METHOD

This study uses Critical Paradigm, in which in this study the researcher seeks to reveal hidden objectives that cannot be interpreted directly by Political Parties in the development and implementation of Sipol at the registration stage of 2019 Election Contesting Political Parties by criticizing through evaluating development and implementing Sipol.

Based on the characteristics of Johnson & Christensen's qualitative research methodology, this study uses the Qualitative research methodology, and seeing that from the results of the Sipol implementation there were 13 out of 27 (almost 50%) Political Parties who registered failed to qualify as 2019 Election Participants, where the results considered still not good, even though they have been assisted or use Sipol, there is a need for evaluation, so the type of research used is Research Evaluation, and the evaluation model used is the Evaluative Brinkerhoff model

with the type chosen is Summative Evaluation. Meanwhile, the approach chosen in this study is the Holistic Criticism approach, where this approach views a work, program, or event and certain conditions from a background perspective, its objective conditions, and its results or impacts which also include perceptions of people interacting with work, programs, or events that are evaluated.

In accordance with the research method in the critical paradigm, the data collection techniques used in this study are *in-depth interviews* with *key informants* who play an important role and are directly related to the use of Sipol. Meanwhile, the data analysis unit in this study is an Information System (SI), where SI as the unit of analysis in this study is Sipol, and to carry out the analysis researchers used the model from Miles and Hubermas, namely: *Three Steps of Water Model*, which has 3 stages: data reduction, data presentation and conclusion / verification.

### IV. RESULT

Political Party Information System (Sipol) which is the result of information technology products in the general election (election) field has been built and implemented by the KPU RI in the Registration stage of 2019 Election Participant candidates, and produced 14 political parties that can pass the Registration stage from 27 political parties register. The elements of *relevantsocial groups* are one of the elements of the SCoT that is used to determine the structure and agents of the development and implementation of Civil Society Organizations. The results of the evaluation analysis have determined that the RI KPU and Political Parties are structures, meanwhile the members of the Indonesian KPU and the Management of Political Parties as agents. Meanwhile, the element of *interpretive flexibility* is a central element of the SCoT theory and after an evaluation of structure-agent relations for the development and implementation of Sipol is carried out, in this element different interpretations arise which are related to: (1). the functionality of Sipol and (2). neutral nature of Sipol and (3). the frequency of Sipol socialization carried out by the KPU RI to Political Parties, while the equality of interpretation occurs only in the socialization technique, namely: using technical guidance (bintek). Evaluation analysis of structure-agent relations in the element *technology frame* shows the degree of importance in each structure, with this degree of importance Sipol can be used as a tool of power and agent power to regulate other agents.

The evaluation analysis of this phenomenon is carried out using the Holistic Critical Evaluation framework, and the results of the analysis are the different interpretations of meanings between structures and each agent, this indicates that the social construction process in the development and application of this Sipol (1). not yet have consistency starting from the vision to the results and (2). there is no balance between technical aspects and non-technical aspects. The balance of technical aspects and non-technical aspects is very

necessary in the process of development and implementation of Sipol because in the implementation of elections, Sipol cannot escape the political practices that surround it, so that attraction between structures or agents can damage the role of Sipol, Civil Service positions and even functionality Sipol. The imbalance of the technical aspects can be seen from the inequalities of interpretation of the technology used by Sipol, the technical support of the use of Sipol, the handling of differences in internet infrastructure in the region, the level of operational understanding of Sipol due to the insufficient frequency of socialization. Meanwhile, the imbalance of the non-technical aspects can be seen from the interpretation of the legal basis of Sipol. The agent of the KPU RI has an interpretation that Sipol is better set at the level of law, but there are agents from Political Parties having the interpretation that Sipol is just set at the level of regulation. In

addition, this evaluation can be used to photograph several problems in the use of information technology that will emerge in the implementation of elections in Indonesia later, so there needs to be a recommendation for the development and implementation of an information system in the administration of elections.

Building information systems related to General Elections (Elections) is not a simple job, not only related to technical issues, but also non-technical issues, such as: social and political. This research succeeded in offering 3 recommendations, namely: (1). model, (2). the use of theory between scientific fields and (3). architecture for development and implementation of Sipol. Basing on technical and non-technical aspects, this study recommends that models for the development and implementation of Civil Engineering are as follows:

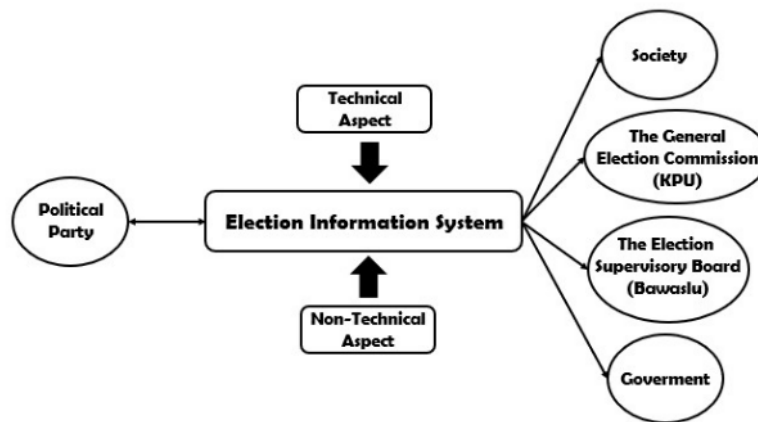


Figure 2. Recommendations for Development and Implementation Models

The Election Information System

Engineering application of technical and non-technical aspects must be built on the required theories, so that there is a comprehensive understanding in the development and implementation of Sipol. The basis of the use of theories in a particular scientific field related to the development and application of Sipol has an effect on the development process and the implementation of Sipol. The theoretical recommendations between the scientific fields used are:

Table 1. Recommended Use of the Theory of Scientific Affairs Interagency

No	Aspects	Theory	Field Scientific	Effect on Sipol
1	Technical	Information system	Information Technology	Sipol development model, include: the technology to be selected and used by Sipol; infrastructure needs of Sipol; Sipol testing

2	Non-Technical	SCoT, Structures	Communication	construction of Sipol; the selection of Sipol Developers; Sipol Socialization
		StateSystem	LegalLaw	The Foundation of Sipol

Recommendations on the Architecture and Implementation of Election Information System Indonesia offered in this study have 3 aspects, namely: (1). Legal aspects which consist of: Election Law, Constitution Development Supervision and Implementation of Election Information System (LP3-SIP) and Election Commission Regulation (PKPU); (2). Non-technical aspects and (3). Technical aspects, are as follows:

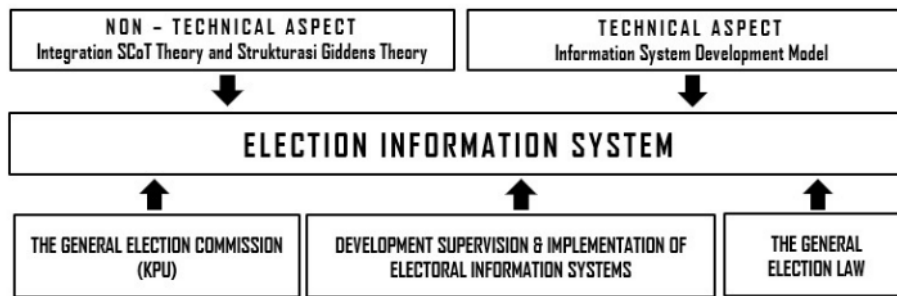


Figure 3. Recommendation of Development and Application Architecture

The Election Information System

Practice of structural domination was carried out by the Indonesian KPU due to the existence of Law No. 7 of 2017 concerning Elections, Article 13 (c) and the tasks of KPU RI to succeed in the implementation of the 2019 Election. The practice of domination occurs because the KPU RI's power occurs in a pattern of relations between structures in the electoral system, where unequal power relations between the KPU RI and Political Parties lead to different positions in the structure of the electoral system in Indonesia, and the practice of domination also influences the practice of domination in the development and application of Sipol.

This research has succeeded in modifying the SCoT theory with the Structural Giddens theory called the *Integration of the Giddens-SCoT Structural Theory* for the development and implementation of Civil Engineering in

particular and the General Election Information System in general. The concept of *Giddens-SCoT Structural Theory Integration* can be used for the development and implementation of Civil Engineering which must have 3 aspects, namely: (1). Non-technical aspects, (2). Technical Aspects and (3). Legal Aspects. *The integration of Giddens-SCoT Structural Theory* shows that Giddens Structural theory has succeeded in evaluating the development and implementation of Sipol by producing structures and agents and their relationships, where the process of forming this relation occurs in each SCoT element, namely: *interpretive flexibility, technology frame* and *relevant social groups*, this shows that social construction has occurred. So that the relationship or dialectic between Structural Giddens theory and SCoT theory is as follows:

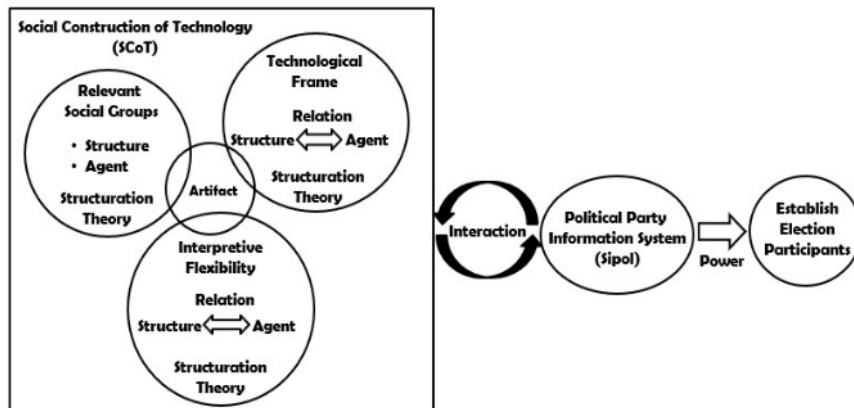


Figure 4. Dialectics of Integration of Giddens Structural Theory with SCoT Theory

V. CONCLUSION

Looking at this fact, it shows that there is a reduction in the Political Party Information System (Sipol) function so that there is a difference in interpretation of meaning between KPU RI and Political Parties to understand the role, position and functionality of Sipol. Structural duality affects the quality of social construction of a technology, so Political Party

Information System (Sipol) who still has weaknesses as an artifact/technology shows that the quality of Sipol is still not good for social construction, this occurs because of the practice of domination or power, so as to carry out development and the application of the Election Information System must pay attention to the recommended Model (Figure 2) and Architecture (Figure 3).



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