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Cyclomatic Complexity Test Design Flowgraph Registration of Emergency Installation Patients in Wava Husada Hospital Using SEM

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Abstract: ***Cyclomatic Complexity Test Result and Probability of Improvement of Patient Registration of IGD in WavaHusada Hospital [1]. Patient Registration Flowmap 21 cc IGD generate value to the type of procedure that is complex and critical, high-risk level system, with a probability value improvement of 20%, improvement in the level of risk higher recommended. [2]. Flowmap Medical Examination Unit 9 cc generate value to the type of procedure that tersetrukutr and stable, low-risk level system, with a probability value improvement of 5%, the risk level that's recommended repairs easier, [3]. Flowmap Unit Billing produces 3 cc values with simple procedure type, low system risk level, with a probability value of 5% improvement, the recommended risk level is easy. Total value of cc produced 33 cc with complex and critical procedure with high risk level, and probability value of improvement yielded 40% with recommendation of improvement of complex system. [1]. Patient Registration Flowmap 21 cc IGD generate value to the type of procedure that is complex and critical, high-risk level system, with a probability value improvement of 20%, improvement in the level of risk higher recommended. Being a system improvement process that must be done using Model Reflective improvement SEM test, to determine the inter-relationship with the node node and a probability value of the node system improvements that are fixed with reflective construct models. Therefore there is no problem of convergent validity on the model we tested, discriminant latent exogenous cc (0.693) and latent endogenous ² (0481) of the results can be seen that the system Flowgraph Registration of patients IGD RSU Wavahusada have a level of discriminant strong (0.693) against latent Endogenous Probability of R² improvement (0.481).***

Keywords: Cyclomatic Complexity, test case, SOP, SEM, Flowgraph matrix, node, relation weight, Flowmap, Data Flow Average

1. Introduction

The concept of cc test design is a design concept related to Cyclomatic Complexity of SOP or procedure of a sisitem. Apart from that all the cc test design concepts are dealing directly with the policy manager and make this cc test design concept can not dilakukakan with transparent and includes all boundry system related to the concept of cc test design. This is what makes the system can not develop peroidik and in accordance with the implementation of system activities undertaken. The top policy is the main basis for developing systems and evaluating systems to develop in accordance with the purposes used include: [1]. Short term, [2]. Medium term and [3]. The long term, from the initial exploration of this discussion merukuk on SOP public and private hospitals so many SOPs that have been developed but nothing that leads to improvement SOP system. SDLC method actually already discussed tentan live sycle system from planning to maintenance system used. The method helps when the system has become output output in betuk Information system application this is used as a guide by as analyst system by performing a test system to the user actor with the results% system performance in use is good, service, can be used and useful. But what about the SOP made which is a technology system in the form of a rational design system of the actor that analyzes the system. It is very unfortunate that SOP has been evaluated from the time period of implementation there is no quality measurement and it is done when there is urjen and urgent matters just done analysis and evaluation of SOP of basic funding to adjust the result of activity planning activity in each tribulan. The main factor is yet to clash with the policies of the related unit when making SOP. Because each unit has its own kepetingan and the needs of different systems. Flowcahart is a system technology in the form of rational design to classify the basic system in the form: [1]. Input, [2]. Process, [3]. Output. The basis of the system develops into the IOE, IPE, and IIApplication of this system development from the management of Medical Records that are not in the know affect the management of medical record activities in hospitals. The following table shows the Flowmap system of Patient Registration of IGD in Wava Husada Hospital.

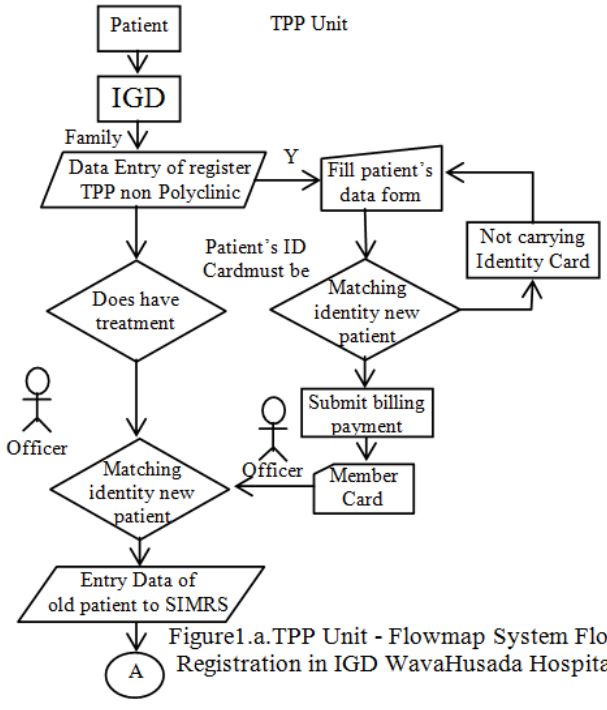

Figure1.a.TPP Unit - Flowmap System Flow Registration in IGD WavaHusada Hospital

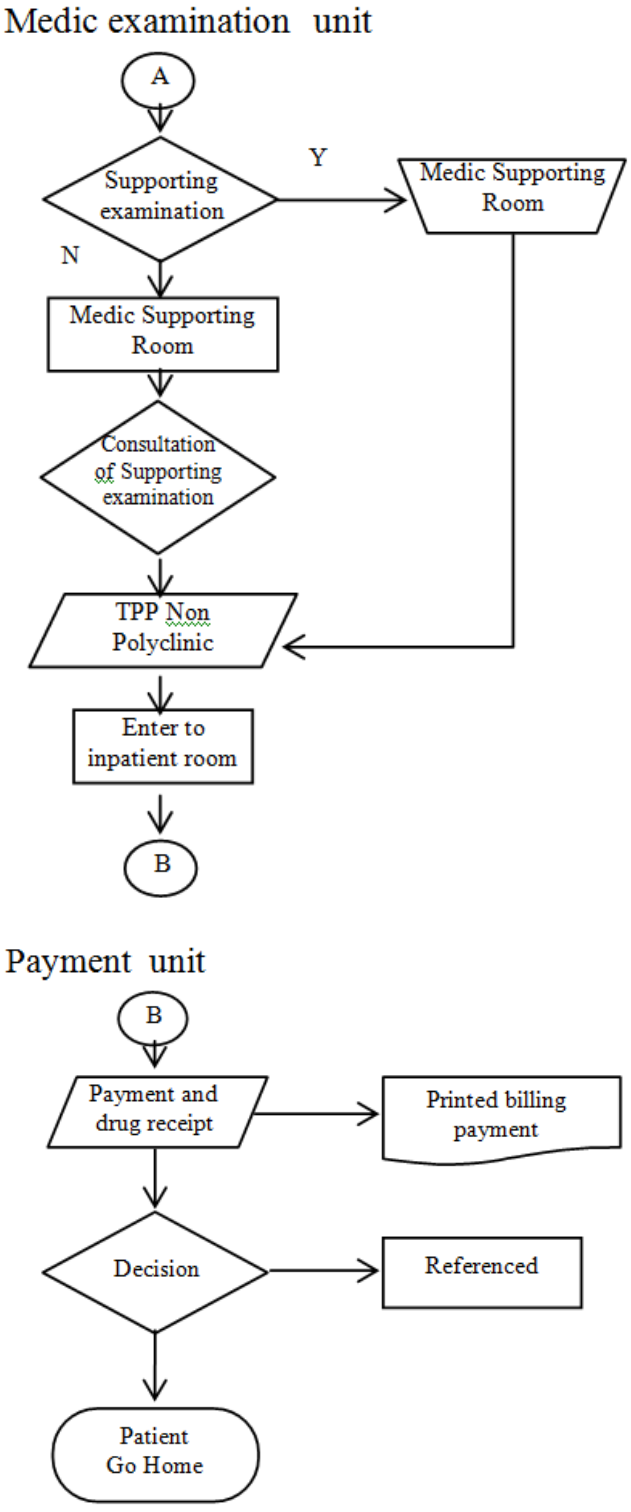

Figure 1.b. Medical exam. and payment unit - Flowmap System Flow Registration in IGD WavaHusada Hospital

Figure 1 (a and b). Flowmap system uses the conceptual information desing technology using system flowchart and documentation method, flowmap system TPP unit shows the system running in the form of IGD process, connection information (family) is entered into the TPP Non-Polyclinic Registration. Patient information is also filled in the operation manual in the form of patient data form. Officers asked Have you ever been treated, for a new patient by matching patient identification data for long-lived patient re-enter into SIMRS application. The operation manual in the form of patient data form is adjusted to the identity card of the patient by matching the patient's new idetity if not carrying the patient's identity card is returned to the patient data form operation manual. Patients who have registered submit billing payment in the form of member card to the officer. To re-validate the data. A connector symbol A connects to a decision of investigation by a decision yes to the medical support room and does not direct the patient to non-polyclinic TPP inpatient. The decision of investigation in the data in non-polyclinic TPP processed in the inpatient ward with the linking code A payment and prescription of drugs as input information made the decision to include the patient referred or can go home.

2. Research Method

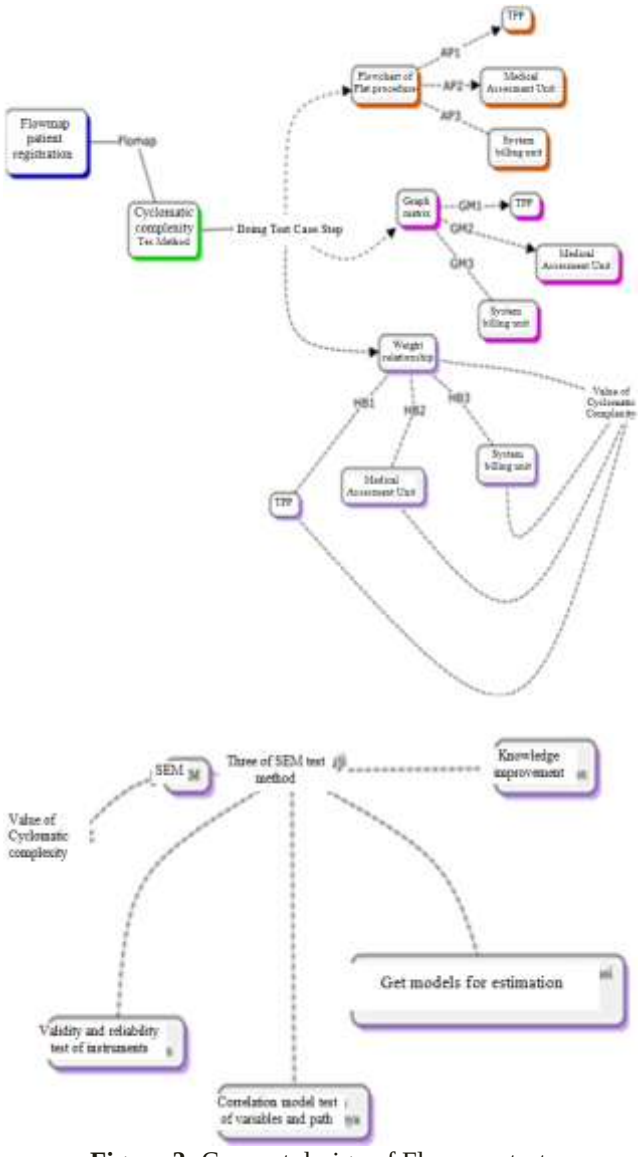

Figure 2: Concept design of Flowmap test

Figure 2. Concept of Flowmap Design Patient Registration of IGD RSU Wava Husada was tested by Cyclomatic complexity method which included test case, with test case test include: [1] .flow diagram, [2]. Graph matrix [3]. The weighting relationship, for each test case test using TPP flowgraph, Examination Unit, and billing unit. The weighted

value niliai yields a Cyclomatic complexity procedural value with a probability value of improvement. Then tested using SEM with Outer system method which includes: [1]. Test validity, [2]. Test relationship mode, [3]. Get models for forecasts. And the development of knowledge by including the actor.

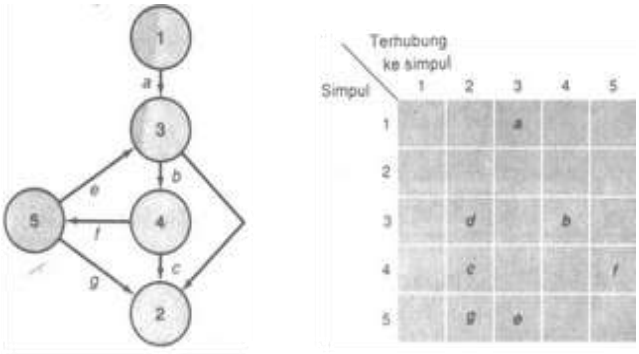

Figure 3: Graph matrix

Graph matrix in the flowgraph image each node is marked with a clan edge number with a lowercase letter, then translated to the matrix graph. An example of a node 3 relationship with node 4 in the graph is indicated by the letter b. The weighting relationship provides additional information about the control flow. Simply weights can be assigned a value of 1 if there is a relationship between the node or the value 0 if there is no relationship. It can also be marked with: [1]. Possible link (edge) is done [2]. Time spent on the process during the traversal of link [3]. Memory required during link traversal [4]. Resources required during link traversal.

Table 1: Weight Relationship

Node_number	Node_description.	Node relationship status	Weight
numeric	string	If there is relationship	[1]
numeric	string	If there is not relationship	[0]

Table 1. The weighted relationship table is the weighted relationship information between the nodes according to the matrix Grap that has been done; the table describes no_node [in the form of numeric data], description_node [in the form of letters], and description of the node relationship [1]. If there is a relationship between node [0]. If there is no relationship, the weighting result is performed from the node connected to the node with the initial node connected to the destination node with the description of the letters used. The formula used [1]. Node_related-node = value_node, [2]. Total_node + 1 = Cyclomatic Complexity in accordance with Table 2 Cyclomatic Complexity value and Table 3. Probability improvement

Table 2: Cyclomatic Complexity value

CC value	Type of procedure	Risk level
1-4	Simple	Low
5-10	Structured and stabile	Low
11-20	Complex	Moderate
21-50	Complex and critic	High
>50	Susceptible error	Very high

Tabel 2. The Cyclomatic complexity table using Aivosto's theory sets initially the maximum value standard for cyclomatic complexity is 10. However other standard values such as 15 or 20 have also been suggested. (Salste, 2012) Despite these standards, if the cyclomatic value exceeds 20 it should be considered that the outcome is alarming for the risk of disability. One view according to Aivosto (Salste, 2012) concerns the probability of correcting errors based on cyclomatic complexity values according to the following table.

Table 3: Probability improvement

CC value	Probability improvement
1-10	5%
20-30	20%
>50	40%
Approaching 100	60%

Tabel 3.Probability Table Improvement shows an explanation for performing the system improvements that have been done by knowing the standard CC system values [1]. 1-10 has a probability of 5% system improvement, [2]. 20-30 has a 20% probability of system improvement, [3]. > 50 has a 40% probability of system improvement, [4]. Approaching 100 has a 60% probability of system improvement. The probability table for system improvement is a standard used to improve systems developed from Aivosto's theory (Salste, 2012). From the results of CC and the probability of improvement is done PLS SEM method, namely the convergent validity of a set of indicators representing one latent variable and the underlying latent variable, in accordance with Figure 4. Construct test of CC value and probability value of improvement.

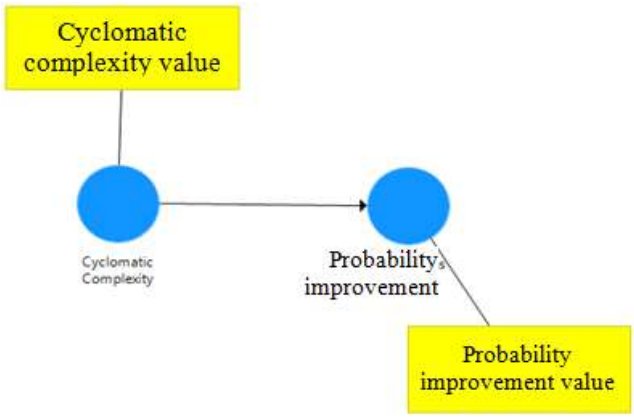

Figure 4: Construct testing of CC value and probability Improvement of Reflective Model

Construct testing of CC value and probability of improvement of Reflective Model. The measurement model is assessed using reliability and validity. For reliability Cronbach's Alpha can be used. This value reflects the reliability of all indicators in the model. The minimum value of 0.7 is ideally 0.8 or 0.9. In addition to Cronbach's Alpha, the value of ρc (composite reliability) is interpreted as Cronbach's Alpha. Each latent variable should be able to explain the variant of each indicator at least by 50%. Therefore the absolute correlation between the latent variable and the indicator should be> 0.7 (the absolute value of the outer raw loadings). The reflective indicator should be

removed from the measurement model if it has an outer raw loadings value below 0.4.

3. Result

This stage aims to know the results of CC test by using [1]. Flow data flow procedure, [2]. Graph matrix, [3]. Node weight relationship, from the results of this test can be known the value of CC and Probability of system improvements that will be done each Flograp Flow IGD system RSU WavaHusada. The result of matrix graph and table weight relationship as follows.

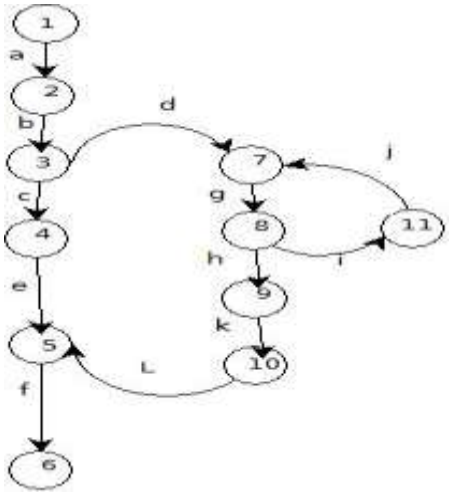

Figure 5: Matrix Graph Diagram

Flowgraph Flow System TPP IGD RSU WavaHusada

Table 4: Value of weight relationship

Node_ Number	Node_ description	Node relationship description	Weigh t
1-->2	a	If there is a relationship between nodes	[1]
2-->3	b	If there is a relationship between nodes	[1]
3-->4	c	If there is a relationship between nodes	[1]
4-->5	e	If there is a relationship between nodes	[1]
5-->6	f	If there is a relationship between nodes	[1]
3-->7	d	If there is a relationship between nodes	[1]
7-->8	g	If there is a relationship between nodes	[1]
8-->9	h	If there is a relationship between nodes	[1]
9-->10	k	If there is a relationship Between nodes	[1]
8-->11	i	If there is a relationship Between nodes	[1]
11-->7	k	If there is a relationship Between nodes	[1]

4. Results of Analysis

Table 4. The result table of the value of the Weighted Flowgraph Relationship Flow System of the TPP IGD RSU WavaHusada, node 1 connection to node 2 with the node 'a' description of the node connection 'if there is a node relationship', with the weight value of the '1' relationship, node 2 connection to node 3 With the node 'b' description of the node relation 'if there is a node relation', with the weight value of the '1' relationship, node 3 connection to node 4 with the node 'c' description of the node relation 'if there is a node' relationship, with the weighted value of the node '1', node 4 connection to node 5 with the node 'e' description of the node relation 'if there is a node relation', with the weight value of the '1' relationship, node 5 connection to node 6 with the node 'f' description of the node ' If there is a node relationship ', with the weight value of the' 1 'relationship, node 3 connection to node 7 with the node' g 'description of the node relation' if there is a node relation ', with the weight value of the' 1 'relationship, node 7 connection to node 8 Premises N node 'g' description of node relation 'if there is a node relation', with the weight value of the '1' relationship, node 8 connection to node 9 with the node 'h' description node relation 'if any node relation', with the weighted value of the node '1', node 9 connections to node 10 with the node 'k' description of the node relation 'if there is a node' relationship, with the weight value of the '1' relationship, node 10 connection to node 5 with the node 'L' description of the node ' If a node 'relationship exists, with the value of the relation weights' 1', node 8 connections to node 11 with the node 'i' description of the node 'relationship if a node relation', with the weight value of the '1' relationship, node 11 connection to node 7 With the node 'j' description of the node relation 'if there is a node relation', with the weight value of the '1' relationship, the cc value obtained from the Flowgraph The TPP System Flow IGD RSU WavaHusada, 1-1 = 0.5-1 = 4 , 5-1 = 4.7-1 = 6.7-1 = 6, 20 + 1 = 21 Cyclomatic Com Plexity in accordance with Table 1.weight relationship

5. Discussion

From this result it can be explained that latent exogenous cyclomatic complexity and latent endogenous probability of improvement have good convergent validity, so it should be included in hypothesis testing. Each AVE construct is above 0.5. Therefore there is no convergence problem of validity in the model tested. Exogenous latent discriminant cc (0.693) and endogenous latent R^2 (0.481) of the results can be seen that the Flowgraph system Registration of IGD patients in Wavahusada hospital has a strong discriminant level (0.693) to latent Endogenous Probability of R^2 improvement (0.481).

6. Conclusions and Suggestions

Based on the results and discussion of the total value of cyclomatic complexity produced 33 cc with complex and critical procedures began high risk level, and the value of probability improvement generated 40% with the recommendation improvement of complex systems. [1]. Flowmap Patient Registration The IGD results in a 21 cc score with a complex and critical type of procedure, a high system risk level, with a probability value of 20% improvement, a high recommended rate of improvement. Being a system improvement process that must be done by using improvement of Reflective Model of SEM test, to know the relation of node relationship with node and probability value of system repair to fixed node repaired with

reflective construct model Flowgraph Registration of patient IGD RSU Wavahusada has a strong discriminant level (0.693) To endogenous latent Probability of R^2 improvement (0.481).

Suggestion of future system development, after conducting Flowgraph test Registration of patient IGD RSU Wavahusada with cyclomatic complexity method include: (1) make SOP (Standard Operational Program) according to system covering input, process, and output. So connected with the data flow and the effectiveness of matrix graph in accordance with the need (2). Evaluate the running system procedure by calculating the weight of the matrix graph once a month, to find out which part of the system is experiencing increase and decrease, so that the procedure of the system can be repaired as soon as possible. (3). Evaluate system improvements in accordance with the probability table of system improvement in accordance with Avisto's theory, thereby preventing system upgrades handled by third parties, as well as reducing the cost of system repair costs. (4). Evaluate exogenous and endogenous latent systems for knowing the extent of discriminant mismatches of cyclomatic complexity data on the probability of system improvements in both short, medium and long term. (5). Create a schedule map of the cyclomatic complexity evaluation program and the probability of system improvement within 1 year.

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