



Development of Stakeholder Data Management System

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ABSTRACT

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Stakeholder management is gained more significant in both government and organization management because stakeholder has an impact on organizational accomplishment. As the existing of information technology, stakeholder management will be more effective when it applying with an information system application. However, there are hardly find the right one to deploy in the organization. This paper focused on developing both stakeholder data processing and application, which had been collected from the stakeholder management process. This development employed the stakeholder management process applying American Productivity and Quality Center (APQC) best practices to offer stakeholder data management in each stakeholder process which includes policy planning, stakeholder identifying, analyzing and recommending strategy, and engaging stakeholder. Additionally, the stakeholder data architecture was divided into policy, profile, classification, characteristic, recommendation, and activity. With the pre-defined stakeholder data processing design, the stakeholder management information system was developed accordingly. The expert opinion was conducted. 17 experts who have experience in managing policy from different industries were purposive sampling. The 5-level Likert scale questionnaires (5=strongly agree, 4=agree, 3=neutral, 2=disagree, 1=strongly disagree) were provided with research description. The stakeholder data management system was provided for evaluation as well. From our survey, the expert

opinion concluded the developed system was satisfied in terms of it covers key stakeholder management process, it will be improved operation efficiency, it will be convenient to use, and it will be practical to deploy in real life. With the stakeholder data management system, both policy creator and the project owner will improve their stakeholder analysis and stakeholder engagement. Furthermore, it will lead to organizational productivity, competency, and success.

INTRODUCTION

Stakeholder management has been studied for more than 30 years. Many pieces of researches have focused on stakeholder definition and stakeholder management. For example, Freeman (1) defined stakeholders are groups or individuals that may affect or be affected by achieving the organizational objective. Stakeholder management processes were studied in several groups (2-7). Schmeer (8) studied the stakeholder analysis to help policy makers and manager systematically analyzing health reform stakeholder data. The guideline suggested ensuring the obtained data. Pandi-Perumal (9) applied stakeholder management in a clinical research environment with Project Management Body of Knowledge (PMBOK) stakeholder management process model (7). Four project stakeholder management processes were studied which were Identify stakeholders, Plan stakeholder management, Manage stakeholder engagement, and control stakeholder engagement. The outputs were stakeholder register, stakeholder management plan, Issue log, Change requests, and Work performance information. The Yilmaz and Gunel

(10) described the importance of stakeholder management in the tourism industry by studying the expectation and impact of stakeholder, collecting data from interview stakeholder based on their interest.

As Information System and Technology era, most of the business process has been developed on the computer system. However, it hardly found the stakeholder management process and software stakeholder management system. To implement a stakeholder management system, additionally, it required well-defined stakeholder process and data such as profile, classification, characteristic from various sources.

This paper focused on developing both stakeholder data processing and computer application which had been collected from the stakeholder management process applying APQC (11) and the process defined by Lertnawapan and Tanawastein (12). The expert survey on satisfaction of our development system was performed, and the result from users was positive.

MATERIALS AND METHODS

Methodology

We conducted the expert opinion for their satisfaction to our proposed system development by using questionnaires with 5-level Likert scale—Strongly agree (5), Agree (4), Neutral (3), Disagree (2) and Strongly Disagree (1). The seventeen experts were purposive sampling and from at least 6 different industries. The samples were at the management level with direct experience in managing stakeholder, and they were at least 40 years old. As Dalkey

experiment (13), when the number of experts is 17 or more, the decreasing rate of average group error is minimal. Moreover, when group size is more than 13, the reliability is satisfied with a correlation coefficient is greater than 0.8. The median was chosen to measure the middle value of the dataset.

Process

In this paper, we gathered stakeholder data and processed according to the stakeholder process concept as below Figure 1.

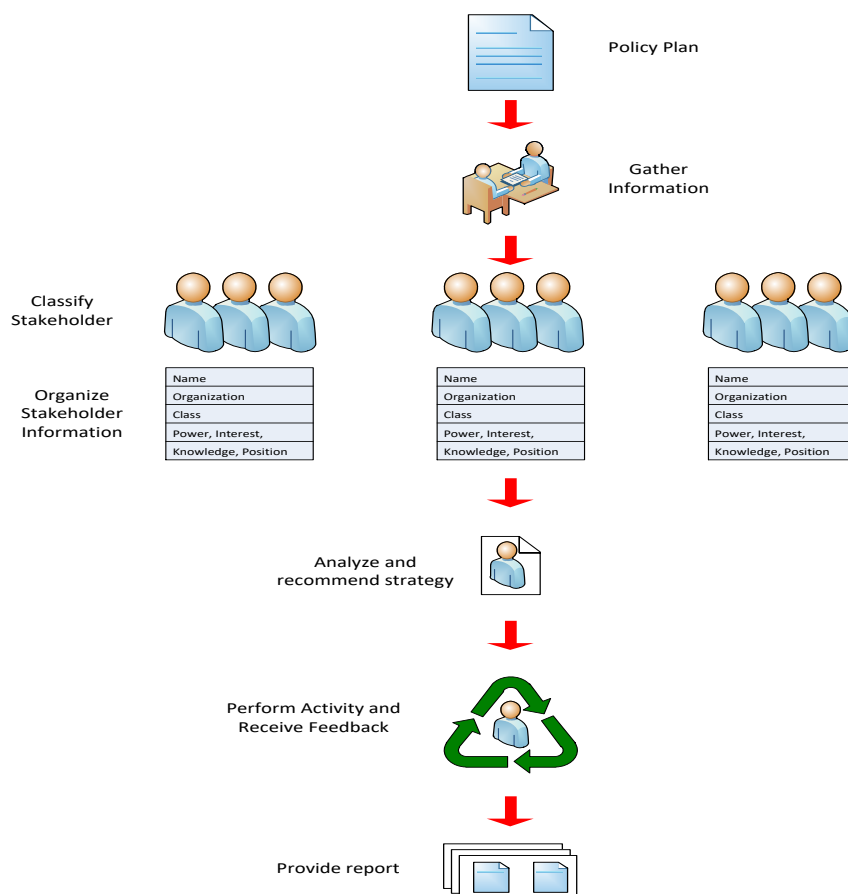


Figure 1 Stakeholder management concept

The process began when policy owner created a policy plan including policy title, description, effective period, responsible person, impact group, etc. Once it was ready, the stakeholder information would be gathered. The information was stakeholder Name, Title, Characteristic, Position for the policy, for example. As per the process, the stakeholder will be classified based upon the APQC process classification framework. The stakeholder power, interest, knowledge and position were identified

as well. When stakeholder data were ready, stakeholder analysis and strategic recommendation were developed to assist policy owner to manage target stakeholder. The strategic activity was performed to the stakeholder and lastly, all activities and responses were recorded and summarized. This was input to the policy owner and assisted him/her in managing stakeholder better. Stakeholder management process was shown in Figure 2.

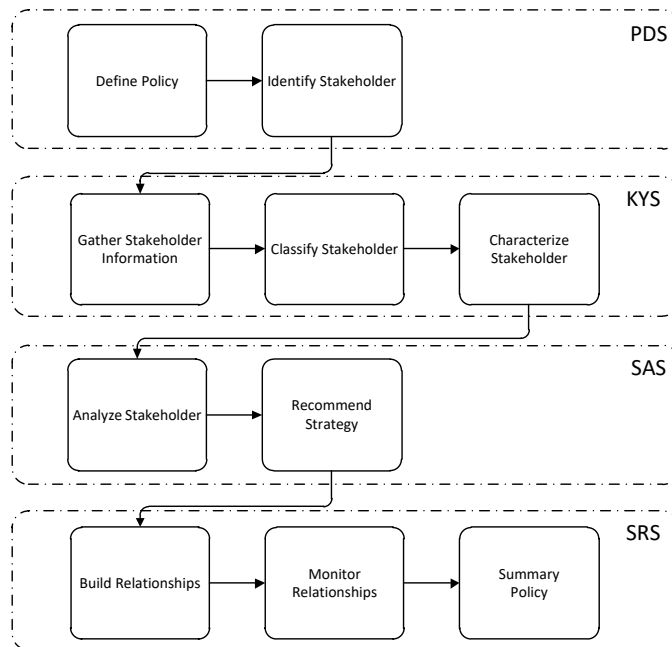


Figure 2 Stakeholder management process

There were 4 main components.

1. Plan Development System (PDS): The policy data will be defined and collected.

2. Know Your Stakeholders System (KYS): The stakeholder data such as profile, classification, and characteristic, were defined and gathered from both direct and indirect source.

3. Stakeholder Analysis and Strategy-formulation System (SAS): The stakeholder data

was analyzed and the system provided strategic recommendation for each stakeholder.

4. Stakeholder Relationships System (SRS): Stakeholder engagement data relevant to suggested strategy was collected in the system for future plan.

From the stakeholder process, we derived the required stakeholder data as shown in Figure 3.

<i>Data Group</i>	<i>Detail Data</i>					
Policy	Policy Name	Description	Effective Date	Responsible Person	Target Stakeholder	
Profile	Stakeholder Name	Title	Organization	Address	ID	Contact No.
Classification	Investor	Government and Industry	Board of Directors	Legal	Public Relation	Target stakeholder
Characteristic	Power	Interest	Knowledge	Position		
Recommendation	Maintain	Convert	Ignore	Weaken		
Activity	Activity	Activity Date	Response	Response Date	Summary	

Figure 3 Stakeholder data architecture

There were 6 stakeholder data groups and each data group was provided dataset as follow:

1 . Policy Data \in {Policy Name, Description, Effective Date, Responsible person, Stakeholder}

2 . Profile Data \in {Name, Title, Organization, Address, ID, Contact No.}

3 . Classification Data \in {Investor, Government and Industry, Board of Directors, Legal, Public Relation, Target}

4. Characteristic Data \in {Power, Interest, Knowledge, Position}

5. Recommendation Data \in {Maintain, Interest, Ignore, Weaken}

Activity Data \in {Activity, Activity Date, Response, Response Date, Summary}

Policy

The policy data were directly collected from a policy owner and recorded in the system on the pre-defined field. The data included Policy name, Description about objective and what policy was about, Effective date or period for the policy, Responsible person who managed the policy, and the target stakeholder who policy will be affected either positively or negatively.

Profile

The stakeholder profile included Stakeholder name (First name, Last name), Title, Organization he/she was working, Address, Identification number (Citizen ID was preferable, other would be passport number), Contact number which could be telephone number and/or email address. The stakeholder profile

was gathered with questionnaires and recorded in the system. Data was recorded field by field. In case stakeholder worked with many organization or title, we primarily requested the main title and organization or the one in which stakeholder spent most of the time.

Classification

With applying APQC, we proposed stakeholder classification as 6 classifications—Investor, Government and Industry, Board of Directors, Legal, Public relation, and Target stakeholder. The Government and Industry class was assigned to support stakeholder who was in, for example, Government, State enterprise, Chambers of commerce, Trade Organization, NGO, Vendor, and Supplier. The target stakeholder was stakeholder who was directly impacted by the policy.

We proposed a process called Stakeholder Classification Process (SCP) to examine each stakeholder and classify each one into the appropriate category.

Let N be the total number of active stakeholders

Let $S(i)$ be a stakeholder i

Let $SC(i)$ be a class of a stakeholder i

For stakeholder $S(i)$ where $i = 1$

If stakeholder $S(i)$ class $SC(i) = \text{"investor"}$

Stakeholder class $SC(i)$ is investor.

If stakeholder $S(i)$ class $SC(i) = \text{"government and industry"}$

Stakeholder class $SC(i)$ is investor.

If stakeholder $S(i)$ class $SC(i) = \text{"board of directors"}$

Stakeholder class $SC(i)$ is board of directors.

If stakeholder $S(i)$ class $SC(i) = \text{"legal"}$

Stakeholder class $SC(i)$ is legal.

If stakeholder $S(i)$ class $SC(i) = \text{"public relations"}$

Stakeholder class $SC(i)$ is public relations

Default Stakeholder class $SC(i)$ is target;

Go to next stakeholder $S(i)$ where $i = i+1$

Repeat Until $i = N$

Recommendation

For the analysis and strategic recommendation purpose, we consolidated stakeholder characteristic data from 5 levels into 2 or 3 levels as following:

For Power:

If Stakeholder's Power is more than "Fair" then its Power is "High" else its Power is "Low".

$SW(i)$ equals High when $SW(i) \in \{\text{Excellent, Good}\}$
or Low when $SW(i) \in \{\text{Fair, Poor, None}\}$

For Interest:

If Stakeholder's Interest is at least "Interest" then its Interest is "Much" else its Interest is "Little".

$SI(i)$ equals Much when $SI(i) \in \{\text{Very Interest, Interest}\}$ or Little when $SI(i) \in \{\text{Moderately Interest, Slightly Interest, Not Interest}\}$

For Knowledge:

If Stakeholder's Knowledge is more than "Fair" then its Knowledge is "Much" else its Knowledge is "Little".

$SK(i)$ equals Much when $SK(i) \in \{\text{Excellent, Good}\}$
or Little when $SK(i) \in \{\text{Fair, Poor, None}\}$

For Position:

Each stakeholder position will be classified into 3 groups—Support (Strongly Support and Support), Neutral, and Opposition (Opposition and Strongly Opposition).

SS(i) equals Support when $SS(i) \in \{\text{Strongly Support, Support}\}$ or Neutral when $SS(i) \in \{\text{Neutral}\}$ or Opposition when $SS(i) \in \{\text{Opposition, Strongly Opposition}\}$

The strategic recommendation was processed as below.

Let N be the total number of active stakeholders

Let S(i) be a stakeholder i

Let SS(i) be a characteristic of a stakeholder i

For stakeholder S(i) where $i = 1$

If stakeholder S(i) characteristic $SS(i) = \text{"opposition"}$ AND $SW(i) = \text{"high"}$

Do "Weaken the opposition" by incubating interest, knowledge or decreasing power.

If stakeholder S(i) characteristic $SS(i) = \text{"opposition"}$ AND $SW(i) = \text{"low"}$ AND $SI(i) = \text{"little"}$ AND $SK(i) = \text{"little"}$

Do "Ignore" (do nothing).

If stakeholder S(i) characteristic $SS(i) = \text{"opposition"}$ AND $SW(i) = \text{"low"}$ AND $SI(i) = \text{"little"}$ AND $SK(i) = \text{"much"}$

Do "Convert to supporter" by increasing interest, knowledge or lobbying.

If stakeholder S(i) characteristic $SS(i) = \text{"opposition"}$ AND $SW(i) = \text{"low"}$ AND $SI(i) = \text{"much"}$

Do "Convert to supporter" by increasing knowledge or lobbying.

If stakeholder S(i) characteristic $SS(i) = \text{"neutral"}$

Do "Convert to supporter" by increasing interest, knowledge or lobbying.

If stakeholder S(i) characteristic $SS(i) = \text{"support"}$

Do "Maintain the support" by increasing interest, knowledge or keeping relation.

Go to next stakeholder S(i) where $i = i+1$

Repeat Until $i = N$

Activity

The activity data included Activity—the task performing to stakeholder, Activity Date, Response—the feedback from stakeholder regarding the activity, Response Date, Summary—the conclusion of stakeholder activity. The activity summary would be among Reinforcement, Countermeasure, and Ignore.

RESULTS AND DISCUSSIONS

From all data requirement and design, we had implement stakeholder management system. The stakeholder profile, characteristic, activity, and report were shown in Figure 4, 5, 6, and 7 respectively. The system was systematically supported to collect, analyze and recommend all stakeholder data according to the defined processes.

We applied APQC PCF 12.0 Manage External Relationship to the process because of its reputation for the world's foremost authority in benchmarking, best practices, and performance improvement. The APQC process solved a policy owner issue in grouping stakeholders because of various definitions. Moreover, APQC primarily assisted policy owner to engage with stakeholders depending on their

classification. However APQC did not mention any of stakeholder characteristic and analysis, therefore we applied stakeholder analysis (8) to handle the stakeholder information.

Policy Development	Stakeholder Information
Know Your Stakeholder	Stakeholder Number : <input type="text" value="S0000001"/>
Stakeholder Analysis	First Name : <input type="text"/>
Stakeholder Relationships	Last Name : <input type="text"/>
Report	Title : <input type="text"/>
	Organization : <input type="text"/>
	Address : <input type="text"/>
	ID : <input type="text"/>
	E-mail : <input type="text"/>
	Telephone : <input type="text"/>
	Classification : <input type="checkbox"/> Investor <input type="checkbox"/> Government <input type="checkbox"/> Industry <input type="checkbox"/> Board/Council <input type="checkbox"/> Legal <input type="checkbox"/> Public Relations <input type="checkbox"/> Target
	Created Date : <input type="text" value="18-06-2019"/>
	<input type="button" value="Submit"/>

Figure 4 Stakeholder profile

Policy Development	Stakeholder Characteristics
Know Your Stakeholder	Stakeholder Number : <input type="text" value="S0000001"/>
Stakeholder Analysis	Policy Number : <input type="text" value="P0000001"/>
Stakeholder Relationships	First Name : <input type="text"/>
Report	Last Name : <input type="text"/>
	Title : <input type="text"/>
	Organization : <input type="text"/>
	Characteristics : Power : <input type="checkbox"/> Excellent <input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input type="checkbox"/> None Interest : <input type="checkbox"/> Very Interest <input type="checkbox"/> Interest <input type="checkbox"/> Moderate <input type="checkbox"/> Slightly Interest <input type="checkbox"/> Not Interest Knowledge : <input type="checkbox"/> Excellent <input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input type="checkbox"/> None Position : <input type="checkbox"/> Support <input type="checkbox"/> Neutral <input type="checkbox"/> Opposition
	Created Date : <input type="text" value="18-06-2019"/>
	<input type="button" value="Submit"/>

Figure 5 Stakeholder characteristic

Figure 6 Stakeholder activity

Figure 7 Report

Table 1 Survey result from expert opinion

Stakeholder Data Management System	Median
The system meets the objectives.	4
The system is fully comprehensive.	4
The system will improve operation efficiency.	5
The system is convenient to use.	4
The system is practical in real operation.	4
You are willing to recommend this system to others.	4

The computer system was implemented and the result of the survey was in Table 1. The expert panel mostly agreed on our stakeholder data management system, giving Median at least 4 (Agree). All information system would be well organized and kept permanently. It automatically enhanced management. This would strongly assist organizational operational efficiency.

CONCLUSION

In this paper, we developed best practice stakeholder data processing guide and application system by applying the APQC process classification framework best practice. The stakeholder data included policy, stakeholder profile, stakeholder classification, stakeholder characteristic, analysis and strategic recommendation, and stakeholder engagement activity. All the process was comprehensively applied in developing stakeholder management system. When deploying the system, the policy owner would be a benefit to understand and manage all pre-defined policy and stakeholder better.

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