

Design Budgeting Model with Approach of Soft Systems Methodology in the Manufacturer of Spare Parts for Cars

Nasab SS^{1*} and Motezakery R²

¹Department of Financial Engineering, Science and Culture University, Tehran, Iran

²Department of Basic Sciences, Shahrood University, Shahrood, Iran

Abstract

Soft Systems Methodology is one of the important methods of research in the soft operations. This model can offers framework for structured to complex and unstructured issues using design of conceptual models and rich illustrations. Since individuals and large groups are involved in the budgeting process, this kind of issues can be considered including of complex and less structured issues. In this study, we have evaluated budgeting system of one of the manufacturer of spare parts company by describing the different stages of soft systems methodology. To do this, first, we're familiar with budgeting system by open and unstructured interviews. Getting to know different people who are involved in this process and their unique worldviews is creating the ground for showing the system in a rich visual graph. In addition, by drawing model of targeted activities, which is aggregation of diverse worldviews, a comparison is done between what is doing now and what has to be done. These above targeted activities can be a sustainable basis for evaluating system in the future.

Keywords: Soft Systems Methodology; Budgeting; Costs; Earnings; Manufacturer of spare parts for cars

Introduction

The purpose of budgeting is a preparation of financial plans for future operations of government or organization. Beyond this, budgeting is Indicative of fiscal policies of organization to achieve the various objectives include of economic, social and political. It can take into account various four dimensions for each budget program:

- Forecast of Earnings and other economic resources.
- The set of policies and objectives of the organization
- The set of activities and objectives for implementing the policies and achieve objectives
- Anticipate costs of any future activities

Therefore, Recognition the desires, needs, problems and bottlenecks, recognition revenues and Overt and covert resources , identify and set priorities, classification problems, needs and bottlenecks on the basis of priorities are include of the important tasks in the budgeting process.

Today, Budgeting for Governmental and semi-governmental organization is done in Conditions which have created difficulties in direct and coordinate the functions of government by developing scope and increasing complexity of public services. In terms of Shortage of resources, organizations have to choose between the different programs for providing purposes and covering all needs and demand. So a rational decision-making process is need for providing appropriate interests and the public interest only through the use of appropriate decision-making instruments. Our country has been facing with this issue long before and it is the researchers' and authorities' Issues of interest. first ,This article tries to acquire a general knowledge of the system And then identify various challenges and deficiencies from the perspective of different people And finally by providing a the ideal conceptual model ,it offers structured debate to identify the final necessary change to correct it by studying Khorasan Exhaust Mfg co budgeting system.

Methodology

Today, the inefficiency of traditional budgeting system has been

proven to everyone and Effort to change the country's budgeting system is considered of the greatest importance. Effort and Emphasis to replace the new budgeting systems and particularly operational budgeting can be response and reaction to this ineffective. So, not only it has been considered the important issue in the Fourth development Plan, but it has been explicitly mentioned in the Fifth Development Plan, paragraph 91: The ministries and Governmental and semi-governmental institutions have to prepare their executive and operational program In format of executive packages of the Fifth Development Plan. Operational Mentoring during execution of the program and prevent from any deviation from the gales of the programs can be major benefits of Operational budgeting.

However, this type of budgeting has been faced with numerous problems during the years of the implementation. For these challenges can mention the following cases:

- The lack of proper relation between plan and budget
- The lack of study in the definition of costly plans
- The lack of projects Conformity with the executive capacity and financial power of organization or government
- The lack of accurate estimation of plan's executive costs
- The effects of political factors in the selection and approval of plans and projects
- Lack of monitoring on the ongoing activities

***Corresponding author:** Nasab SS, Department of Financial Engineering, Science and Culture University, Tehran, Iran, Tel;+ 656646446; E-mail: soheilsalminasab@yahoo.com

Received September 26, 2016; **Accepted** December 01, 2016; **Published** December 14, 2016

Citation: Nasab SS, Motezakery R (2016) Design Budgeting Model with Approach of Soft Systems Methodology in the Manufacturer of Spare Parts for Cars. Int J Account Res 5: 144. doi:10.4172/2472-114X.1000144

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- Existence of not so strong culture for planned tasks in the surveyed countries

Remove these shortcomings and thus improving the working methods is avoiding squandering resources and wasting Earnings and it is helping to allocate funds and budget timely and appropriately and is reducing costs significantly. Difficulties and deficiencies related to the budgeting systems can be classified among the disturbed issues in Iran. Because the issue cannot be defined with certain purposes and often should assign different and unclear objectives to them.

- The issue faces with great uncertainty and loss of data.
- Such an issue has numerous stakeholders and involved parties.
- "Success" needs to achieve a degree of agreement on the issue between the involved parties of issue.
- These complex issues are identified for a long time. Strategic character (in the short term and detail-focused) can be issued on these issues with another look

It can be expected, facility for extraction and classification distinctive range of perspectives is provided using soft systems approach and to consider multiple and contradictory objectives are removed without any of them.

Soft systems methodology

First, Checkland Soft systems methodology is done by Checkland and colleagues in Lancaster University. STSM is an action research method that caused to learning by research in terms of issue. In other words, since this method is the way of action research, not only create an intervention in terms of Problematic, but also it cause to learn from this intervention by creating feedback loops. Various methods are used for the use of SSL, but the basis of used concept is constant always. In this case, conceptual models of the targeted are interpreted by some ways on the SSM, there are means that is providing a structure and framework that through which discussions conducted among people and between people with different perspectives and sometimes conflict is reached [1-3].

The purpose of actions that lead to the emergence of soft systems methodology (SSM) was to find a way to deal with situations that constantly deal with in the daily life. Position that we feel, it should act about it. Such a situation is named "problematic situation". The complexity of problematic situations is rooted in the real world in this fact that they aren't never been static, yet they contains multiple mutual understanding of reality too. It is for this reason that certain individuals have certain assumptions about the world. So they can see the world in their own way. Then, It is not surprising, what terrorism in the view of a person is a struggle for freedom in the view of other person.

SSM is an organized and flexibility process to deal with situations that the person consider problematic. This process is based on systemic approach. Social situations are always complex because of the multiple interactions of different elements in a problematic situation, as a whole, and systemic approach has been primarily constructed based on the interaction between elements of a whole research Infrastructure in hard operations is the view that the data has obtained from Defensible source in the outside world (is not arbitrary)and has shared meanings for people, (it has been Founded built based on well-known theories such as statistics models As far as possible the) and are immune from observer's personal orientations as far as possible, In contrast, in research in soft operations, Things are not so simple and the data

often is obtaining based on the opinions and judgments of persons. Therefore, a conceptual model in SSM, represents the ideal of the available factors in the root definition that root definition will appear only in the shadow of a certain worldview [1-3].

The stage of soft systems methodology

- **First and second stages:** Define the position in the first stage, a problem detect in real-world and is considered. At this stage, the issue is not defined but we specify exactly what we are looking for and we'll draw the public space of the problem. In the second position of the stage, people is involved in the position and structure of the problem in terms of illustrative images. Illustrative images is the textual representations such as cartoon of the involved people, issues, problems, processes and relationships between the elements of a situation that helps to better understand of an issue. According to the Checkland, an Illustrative image should include the structure, process, people, and expressed issues by the people and to express disagreements. Illustrative images identify nature of the issue and related fields and finally it is ensured from creation of a common perception according to different available perspectives [1-3].
- **Stage three: The fundamental definition of the system:** At this stage, we are excited from the real world and enter the conceptual and systematic world and will provide fundamental definition of the issue. Basic definition is the definition of the ideal system and its goals and it definite involved persons in situations, affected people and influential people. A known technique called (CATWOE) is used to create a basic definition based on illustrative images.

Customer (C): who are customers, stakeholders and affected people in the system?

Actor (A): Who are the actors and participants in the system?

The transformation process (T): What will be changed by this system? What inputs is become to what outputs?

Worldview (W): what is the basis of worldview in this system?

Owners (O): Who is the owner of the system? Who has the power to stop this system?

Environmental factors (E): what are the environmental constraints in this system that must be considered?

Checkland is trying to define the above steps as a general targeted activity through a process of transformation and a worldview (a T and a W) which is define as:

It Needs people (A) who to carry out the activities that lead to T.

It effects on other peoples (clients C) ones who suffer and benefit from system

It faces several limitations of its environment (E).

It is changed or stopped by people who are called the owners of the issues (O) [1-3].

- **Stage four: Create conceptual model:** A model in SSM is diagram that has been formed from a series of activities and communication lines that connect them to each other. These models are extracted directly from the root definitions and are expressing key activities as statements which is available on the

root definitions. Each model must have been between 1 and 9 Activities which these activities are connected with logical connection. In fact, understanding more activities are available in the process of processing.

- **Stage five: Compare conceptual model with the real world**

This stage has been designed to structure the discussion about improvement the current situation. Checkland proposes to compare the conceptual model and the real world of are used unstructured discussions, scenario building or Plan the following questions:

Is this activity occurs in the real world? How?

How does it behave?

How is it assessed?

Is the process appropriate in the current situation? [1-3].

- **Stage six: Define changes to improve and develop:** This stage includes the possible systematic desirable changes in accordance with the values and culture of the society.

- **Stage seven: Plans to implement changes:** Detected changes to improve the system come into force before. It should be noted following, activities that should do in this cycle don't have sequence. Although virtually all research begins with the identification of problematic situations, but when SSM was used, activities progress in more than one stage at the same time.

1. Stages of Soft Systems Methodology process from the perspective of Checkland Soft Systems Methodology process of Checkland includes four basic steps:

Recognition: exposure to conditions that are considered problematic.

2. To build model or models of conceptual activity that provides a possibility of judgment about its relationship with the surrounding world. This model should be defined based on a certain kind of worldview.
3. Using model to ask questions about the real world, the purpose of this question is to find the changes that should be applied in the real world. These changes must be both acceptable and desirable culturally.
4. Action to improve SSM: it achieves Compromise between different people with different perspectives and worldviews at this stage to deal with the social complexity.

It is important to note that this process is not surely step to step process. This means that it can be revised at any stage refer to the previous step. This review is the result of greater recognition over time [1-3].

PQR formula

PQR is making useful form to provide any root definition. In fact PQR respond to what? How? And why?

“Run P via Q to achieve R”

PQR formula makes the possible that we can write the root definitions as a statement. This formula always explains a purposeful activity in now modeling in the form of a conversion process in which some entities are converted to another mode. Any imaginable purposeful activity can be explained in this way that facilitates the manufacturing process of the same model.

E1 and E2 and E3 Criteria

The question is this, what is the performance indicators by which judgments are evaluated on system operation? Thinking about what criteria can really improve thinking about purposeful activities that leads to their modeling. Three criteria that are important in all cases and must be considered include:

E1: Is criteria that determine whether the process of conversion operating T is working correctly and creates the desired results. In other words, the criteria are for evaluating of effectiveness.

E2: Is criteria that determines whether the conversion is done through minimal resources. That is the criteria for evaluating of effectiveness.

E3: Is criteria that determines whether this conversion can help to reach higher levels or longer-term goals? The criterion is the same effectiveness.

Drawing targeted activities Model

What was said, it was a background to draw targeted activities Model. Targeted activities Model should be define an effort “put together the necessary activities to explain the conversion process”. According to Checkland, bearing in mind the provided instructions by PQR, root definition, CATWOE and three E is not hard. The only required skill is logical thinking. According to him, the most common mistake among SSM users is the lack of attention to root definitions and modeling the actual types of targeted activities [1-3].

Action to improve

Checkland speaks about the finding idea of **compromise** rather than reach a **consensus** to get to this stage and achieve a solution to improve. In his view, reach a consensus by using of SSM is a basic mistake and is the production to refer the used resources for learning SSM. In his view, real **consensus** is rare in certain modes among some people in relation to trivial issues. But according the definition, a compromise is workable that individuals or groups accept different compromise and harmonies and live together despite of Difference without conflict. The compromise is the means of the acceptance or settlement without to be lead the creation of other difference [1-3].

According to what was said, ultimately, SSM seeks to create a situation which all can live with it. The compromise is certainly involve of compromise and withdraw from some positions.

Khorasan Exhaust Mfg co

Company history

Khorasan Exhaust Mfg co has been recorded under registration number 11803 in the Mashhad Management registry companies with name of Khorasan Exhaust Mfg co (KEM) on date of 1997.04.21. Now, the company is the Component of affiliated units of Iran industry Group of the automobile parts (public company)

Maine business

The subject of Company activities is According to Article 3 of the company Statute as follows:

A. Creation, establishment, management and operation of factories and production, distribution, sales, export and import of types of exhaust and its components and doing engineering services, design, construction and production of spare parts of automobile and advice

on installation and commissioning of industrial equipment and all its ancillary services.

B. Carry out all trade and commerce such as purchasing, sales, imports and exports of goods such as machineries, tools, spare parts, materials, and spare parts of automobile, distribution of them and generally perform all commercial operations that directly or indirectly associated with these products.

C. The certificate on behalf of internal and external companies to dealing their goods.

D. Establish stores and repair shops to sell, install and repair products of company.

E. Participate and invest in other companies and perform all Islamic contracts, get loan from individuals, companies and give loans to them.

F. Employment status: The average number of staff is 676 people during the reported financial period [4,5].

PQR formula

P is what we want to do: allocate funds for the company's current sales and current cost of Khorasan Exhaust Mfg co

Q is clear how get to P in this situation: experts of Khorasan Exhaust Mfg co

With respect to objectives, budget, internal facilities of Khorasan Exhaust Mfg co and the external demand.

R is what we want to achieve ultimately: to promote the brand and reputation of Khorasan Exhaust And to increase the production rate and sale of company products and maintain the company's position as the largest manufacturer of exhaust in the Middle East.

Determine the elements CATWOE

It is recommended that determination of CATWOE start from processing elements (T) and worldview (W) since we shall see determination of these elements can be regarded as a basis for defining other elements as following.

T or processing: The question is "what will be changed by this system? And what inputs do become to the outputs?"

Inputs: the instructions of main firm (IAPCO), the rules, need of IKCO to exhaust for manufacturing automobile, Need of spare parts market, according to company market share.

Processing: By interlocution of experts and experts from Khorasan Exhaust Mfg co and the decision of the Board

Output: one year budget plan of Khorasan Exhaust Mfg co.

E Triple criteria

Questions about the three criteria of E1 and E2 and E3 could lead to a better understanding of the process of optimum processing:

E1 or criteria's efficiency of the system: the criteria controls whether the T process is working properly. Here, the process of processing is its output to forecast revenues and costs of the Khorasan Exhaust Mfg co

E2 or criteria's efficiency of the process of processing: prepare the budgeting system of the Khorasan Exhaust Mfg co with an efficient use of material resources and in proper time

E3 or criteria for effectiveness: the output of the budgeting system

of the Khorasan Exhaust Mfg co should be such as that is cause to increase customer and employee satisfaction and improving position and brand reputation of the Khorasan Exhaust Mfg co and lead to more quality products and more production.

W or worldview: worldview is what the system should finally achieve it or all activities be in that direction. It is important that this ideology is ultimately defined Most of all affected by Comments of the system's owners. It can be mentioned four dimensions for the worldview:

- 1- Employee satisfaction of the Khorasan Exhaust Mfg co
- 2- Allocate funds to projects that have priority.
- 3- Provide quality products
- 4- Prompt and improve the brand and reputation of the Khorasan Exhaust Mfg co

A or actors' system: Who are the actors and participants in the system? Who do need systems for the processing or T? According to studies and interviews that were conducted in the step of the recognition system, these people can be describing as follow:

1. Board of Directors
2. CEO
3. Executive Vice President and directors of the organizations
4. Experts of the organizations including industrial organization

C or system clients: who are affected by the results of operations of the system?

1. Executive Vice President
2. The Director of the organizations
3. The experts of the organizations
4. The workers of the production line
5. Customers ranging from Automakers and spare market.
6. Main company (Iran car parts co)
7. SAPCO Company

O or issue owners: issue owners can be specify by answer to the question of what people are able to stop the system or change it.

1. CEO: since the final decision is his responsibility on the allocation of credit and the politics of Khorasan Exhaust Mfg co.

2. Board of Directors
3. Industrial organizations: it has important role in setting goals and communicating policies of the Khorasan Exhaust Mfg co in the allocation of credit to the organizations
4. Executive Vice President
5. Financial Organization
6. Inside and outside organizations for services

Determine the CATWOE elements and triple criteria and the PQR formula can be known a proper foreground for providing primary root definition. The "primary" for this reason that root definition and also targeted activities models will be assess and improve at different involved people in the system from now. In this way, The SSM gives

us suitable framework for asking and assessment of the problematic situation. Root definition can be evaluated from the perspective of different people and people with different worldviews help its further development [6,7].

The main definition of the budgeting system of Khorasan Exhaust Mfg co

The system is owned by the board, CEO, financial and economic office, especially industrial unit that have the ability to update the revenues and allocate credit to the current affairs of company and the company’s production plans in response to the continuing and growing need of the external environment . These planes are defined vision and objectives of the Company by experts compared with the

mission. The system also has the ability to measure and evaluate the rate of achievement to the objectives. Finally, the system causes to improve the brand and product of Khorasan Exhaust Mfg co. more product and more quality.

P, it forecasts earnings and allocate credit to the current affairs of company and the company’s production plans in the Khorasan Exhaust Mfg co

Q, it is experts of the Khorasan Exhaust Mfg co according to the organization’s goals and external demand

R, it is to enhance the brand and reputation of the Khorasan Exhaust Mfg co and produce more products and more quality (Table 1).

Row	Title	How is it done Now?	Is it done by whom?	What is the ideal form?	What are the requirements?	Obstacle to the ideal shape
1	Check habitual tasks	Annual and at the time of communication of the company's overall objectives for carry out. operational programs	Executive Vice President and Head of Departments	It is more appropriate, we change to investigate tasks from once a year to at least twice times at year.	explain organisational tasks Instructions of the CEO and Board of Dorectors	Involved in implementing projects Timeconsuming of this Activity
2	Check current costs of the company	Annual and at the time of budget propose budget	Management Accounting Unit	According to the operational budgeting process and accounting of fixed price is always predictable.	Forecasting revenue Forecasting costs	Lack of fixed Cost Accounting System Inaccessibility to details of costs Out of controlling part of the income and expenses
3	Check Environment for offering new plans	Case studies and in the form of plan or new Strategic Project Codify Strategic plans	A variety of study groups in the company and in particular the management accounting unit	According to the organizational chart and a list of institutional tasks must be performed by a management accounting unite with the help of other organizations	Financial and statistical information of organizations Information on the company's internal environment Information on the company's external environment	Lack of adequate knowledge of experts Lack of allocated time and budget to this topic Lack of cooperation between different organizations in the enterprise
4	Check the internal environment	listed Items in three line In addition, in the time of the modify organizational structure and company chart	listed Items in three line In addition to case studies at the time of created bugs in the system	On a continuous basis and Continuously and based on organizational tasks by the management accounting unit in collaboration with other organizations	Description of the tasks and goals of the organization Description of tasks and goals of the organization Get feedback from performance monitoring system	Lack of adequate knowledge Experts of Disbelief staff and poor organizational culture in this area Lack of co-director of organization units
5	Review proposals plans	According to preliminary surveys on the needs of internal and external organization , Upstream goals and other issues also the allocated budget will be discussed	will be announced to the CEO by Each organization	Only on the basis of the actual needs of society and If Capability of Production Information would have existed in other methods of production capability, the Continuous implementation was prevented Or was referred to register methods it is Based on the company's long-term plans and strategies	Information related to the scheme in the past Relevance of the productive information in the plan with the needs of users Indicators of Evaluation Quality Project	Lack of credits Distribution of work necessary for all organizations considering organizational chart lack of Time for the real examination Decisions from the top to Low
6	Check the cost of each proposal	It is forecast By providing a model for estimating credit for productive projects and different projects for each costs based on category operating separately	In determining the sample size and complete required information in the model by the related organization and control of management accounting unit is done	Now come close to the ideal shape, but the process control should be removed by the management accounting unit over time.	Existence detailed information about the decision parameters in the model For each project Details of how the funds spent by organizations	The tendency of organizations to maverick in anticipate costs and revenues Lack of transparency in spending funds in organizations Lack of adequate supervision on all projects in the enterprise
7	Targeted discussions to reach consensus on the projects	It is currently not targeted and it is According to budget constraints for consolidation and in some cases for bargains	-Board of Directors -CEO-Director of Finance and Economy-Managers of organizations- Management Accounting Unit	-In the form of minimum five-year strategic plans, strategies and road maps is drawn and act according it-Approach and implementation of productive projects goes as much as possible to approach the record.	Implementation costs Income generated by the project is reviewed by Strategic decision-making methods	-Lack of experts believes the registration statistics -Lack of agreement on the objectives and strategies of the Company-Analytical attitude rather than the attitude of the ruling system

8	You assign Plans to run to deputies and heads of organizations.	It is communicated Based on Anticipated sales program and Anticipated costs and finalized production plans	-Board of Directors -CEO -Executive Vice President	It hasn't distance with ideal method	It isn't required no specific information	There isn't a particular problem in this area
9	You Assign budgets to each project in due time	The budget is injected to the organization by CEO orders.	-CEO -Director of Finance and Economy	Send budget at least In each season.	Information on income and expenses for each period Information on the progress of production plans How the funds spent by organizations	There isn't a particular problem in this area
10	It is Defined quantitative and qualitative criteria for each scheme	In three cases has been defined physical and timing progress and quality.	Management Accounting Unit	Internal monitoring (of self-control) is strengthened Manpower and funds needed to monitor all projects and items of income and expense will be allocated. Evaluation quality and quantity of production is released	Report assesses the quantity and quality of products Lack of transparency report Internal and external monitoring	Lack of Inadequate staffing Non-compliance of the internal control in the company
11	Check the progress of each project	Development projects is carried out by the relevant agencies	-Related Organization -Management Accounting Unit	Use web application Existence single integrated system to receive information from agencies	Information of Each project in the organization Monitoring Report Online systems information organizations	Lack of sufficient familiarity human resources in new ways The absence of a coherent and integrated software based web Lack of organizational culture based on the adoption of modern technology Lack of adequate studies on the use of software and hardware and defeat them in the early performances
12	check reasons for The possible unavailability of any plan to target	By analyzing the data obtained from the results of the extraction plan Or monitoring reports on the quality of the implementation and some comments by some users plan Or pathology within the company Research Projects	-The relevant agencies -Management Accounting Unit	Full calculation of indices of quality assessment in previous years	Details of the monitoring reports of previous years Details of quality indicators Details of the socio-economic conditions prevailing in society	-Disbelief to full transparency about the quality of projects -Lack of detailed reports monitoring -Shortage of manpower -Lack of adequate information and analysis on the situation in society

Table 1: Using model for to ask about the real world and structured discussion on changes.

Conclusion

In this study, we discuss the issue of budgeting in Khorasan Exhaust Mfg co and express the importance and necessity of evaluation it with the Soft Systems Methodology. Due to the complex and unstructured nature of the problem. In this research, we chose framework for the our study after expressing the history of budgeting and the introduction of soft systems and Propose CATWOE elements and PQR Formula and the Triple criteria and modify and complete the budget process in the budgeting process in Khorasan Exhaust Mfg co with receiving feedback [8]. Finally, with the help of interviews and various review, appropriate system was introduced with the following questions:

- Now, how is done every process?
- By whom done?
- What is the ideal shape it?
- What is the needed information?
- What are the barriers to get its ideal shape?

Important tip is the constant update of the process to maintain the ability of responding to the issues of the day.

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