

## Designing Model of Chain Value

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**Abstract:** In production institutions, part of chain value makes providing chain. The present study tries to examine providing chain management and presenting a model to optimize performance of providing chain of production institutions. To this end, first of all providing chain in pure production systems was analyzed. Then the relation between providing chain and profitability is stated. So, in this production institute, of the main concerns of the management is to provide qualified material in order to increase profitability. Thus, in pure production system which is based on decrease in wastes, costumer orienting and decrease in inventory, models that deal with providers' relation with profitability of the company are examined to select the most suitable model in order to optimize and upgrade providing chain relation and profitability. In this model, some important factors for providing chain would be selected and then among them the main factors would be chosen. So, providers are considered and then with other variables and limitations in system would be mixed; therefore, the best provider will be selected and the purchase would be optimized, as well.

**Key words:** Chain value • Providing chain

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### INTRODUCTION

Interpretation of the characteristics of the modern age is effective in all organizational dimensions. Furthermore, shortage of resources, expensive energy and raw materials and population growth create shortage of resources rules. Markets are limited day by day and competition is more and more; so providing resources is of crucial importance. To this aim, successful organizations try to manage some ups and downs and change it into an opportunity. Thus, it is a must for companies to be part of the chain value to have more profitability, more costumer satisfaction and less liquidity in the long term.

A providing chain is composed of kinds of organizations which deal with production and changes in a product. This chain is made up of raw materials, producer, distributor and costumer. Facilities and equipment include: factories, distribution centers and Duties are as follows: prediction, purchase, inventory management, information management and sending program. So, each organization is part of a providing chain and is one of the facilities which has a special duty in the given process. Thus, each organization in its providing

chain is the main center which needs raw materials. It means, providing chain is made up of three parts such as: raw materials provider, producer, distributor and user; these parts are related and affect each other; it means providing chain produces value which is called chain value [1-2].

**Providing Chain Management:** Providing chain management is to optimize competing conditions of organizations and tries to strengthen the relationship between other parts in the chain. Therefore, it is necessary to establish a good relationship among providers, producers, distributors and users along the chain.

In pure production system which emphasizes value creation, proper application of providing chain is of vital importance because according to this model, the considered value would be provided to optimize profitability of the company. So, such a chain needs an effective management in order to facilitate the flow of information and materials and to prevent any probable problem and then the chain would be value center.

Now, we need a complete definition of providing chain management which is as follows:

The process of providing raw materials is of crucial importance in order for the costumer's purchase to create proper relation among different parts and to prepare common perception which leads to more value along the process [3-4].

**Purpose of Providing Chain Management:**

- More cooperation among providing-producing-distributing parts.
- Having a systematic perception toward pure production process.
- Controlling chain value to decrease inventory in the long run.
- Decreasing wastes and increasing efficiency.
- Creating competing superiority.
- Choosing proper provider.

**Choosing Provider:** Choosing a proper provider is of crucial importance because if there is the most qualified production line, distribution system and proper target market, but raw materials are not qualified enough, the final product would not be qualified enough. Companies have to pay attention to different aspects while providing needy materials.

- What are the features of materials?
- What is the present situation of providers?
- Is there any alternative for this providing market?

**Development of Providers:** Development of providers is a kind of attempt to upgrade qualified providers and does all necessary tasks in order to optimize the present function of the provider.

Long term relationship of the years of cooperation	Delivering with recording delay time	Short time Delivery times	Comparing quality of percentage of wastes	First price	Company's providers
2	20	35	5%	260	A1
4	18	30	6%	250	A2
5	10	20	7%	256	A3
3	15	15	7%	240	A4

**Variables:**

- Amount of demand (xi) for provider (i)
- (dj<sup>+</sup>) positive from the goal related to j
- (dj<sup>-</sup>) negative from the goal related to j

**Parameters of the Model**

D : Total demand for the task during a fixed scheduling period

**These Attempts Are as Follows:**

- Making a new ability in the provider
- Optimizing the function of the company
- Evaluating the performance of the providers

**What Is the Importance of Providers' Development?**

- Buying our needs from different markets
- Providing raw materials by kinds of markets
- Decreasing risk of purchases
- Providing various alternatives

**Designing Combining Model for Choosers:** In this study, combining model of analysis process has been applied to select the best providers.

**Step1:** Preparing a complete list of factors necessary to choose providers.

**Step 2:** Considering main factors and defining them.

**Step 3:** Designing hierarchical model of FAHP

**Step 4:** Determining the weight of main chosen factors in the previous step

**Step 5 & 6:** Now, it is time to specify quantitative as well as qualitative factors.

**Step 7:** Designing step by step ideal scheduling model

According to the experts' opinions, each of four providers has a kind of goal. The following information is based on the determined indicators:

- n : Number of providers that compete to choose
- Pi : Price of an ordered item with regard to i
- qi : Percentage of the returned defect items by the provider (i)
- Wj : The given weight to the factor (j)
- rij : Weight of the i provider in j factor
- Tij : Delay time to deliver the item
- Eij : Number of years for providers' cooperation
- B : Total budget of purchase
- Ci : Capacity of the i provider

A<sub>j</sub> : Acceptability of goal  
 K : Maximum percentage of purchase from each provider

**Limitations**

- Total demand of the product (total demand = 500)

$$\sum x_i = D \gg x_1 + x_2 + x_3 + x_4 = 500$$

- Capacity of the providers

$$x_1 \leq c_1 \gg x_1 \leq 70, x_2 \leq 250, x_3 \leq 60$$

$$2X_1 + 4X_2 + 5X_3 + 3X_4 + d_4^- - d_4^+ = 4 \text{ (500)}$$

$$20X_1 + 18X_2 + 10X_3 + 15X_4 + d_3^- - d_3^+ = 18 \text{ (500)}$$

$$35X_1 + 30X_2 + 20X_3 + 15X_4 + d_5^- - d_5^+ = 30 \text{ (500)}$$

$$0/05X_1 + 0/06X_2 + 0/07X_3 + 0/07X_4 + d_1^- - d_1^+ = 0/05 \text{ (500)}$$

$$260X_1 + 250X_2 + 256X_3 + 340X_4 + d_2^- - d_2^+ = 260 \text{ (500)}$$

**Step 8:** Final combining model to select providers

Min [0/44 d<sup>+</sup>, 0/277 d<sub>2</sub><sup>+</sup>, 0/178 d<sub>3</sub><sup>+</sup>, 0/129 d<sub>4</sub><sup>+</sup> + m, 0/082 d<sub>5</sub><sup>+</sup>]

$$2X_1 + 4X_2 + 5X_3 + 3X_4 + d_4^- - d_4^+ = 4 \text{ (500)}$$

$$20X_1 + 18X_2 + 10X_3 + 15X_4 + d_3^- - d_3^+ = 18 \text{ (500)}$$

$$35X_1 + 30X_2 + 20X_3 + 15X_4 + d_5^- - d_5^+ = 30 \text{ (500)}$$

$$0/05X_1 + 0/06X_2 + 0/07X_3 + 0/07X_4 + d_1^- - d_1^+ = 0/05 \text{ (500)}$$

$$260X_1 + 250X_2 + 256X_3 + 340X_4 + d_2^- - d_2^+ = 260 \text{ (500)}$$

$$X_1 + X_2 + X_3 + X_4 = 500$$

Therefore: X<sub>1</sub> = 70 , X<sub>2</sub> = 250 , X<sub>3</sub> = 60

**CONCLUSION**

Managing chain value is of the main duties of managers in production companies. Domination of the managers on the chain value leads to better providing, producing and distributing.

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