

CONCEPTS OF GENERAL SYSTEMS THEORY APPLIED ON GOODS

(Concepte ale teoriei sistemelor generale aplicate asupra mărfurilor)

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Abstract

The General Systems Theory is one of the most important points of view nowadays. Now, its concepts could be applied in a various number of sciences including Consumer Sciences.

The complexity of the product, the different way in which it can be seen and also the exponentially diversifying assortment requires another approach to the product, through models. This approach must take into account certain particularities which do not appear in a regular modelling

Keywords:

- Systems;
- Theory;
- Electronic Commerce;
- The consumer science.

Rezumat

Teoria Sistemelor Generale este unul dintre cele mai importante puncte de vedere din ziua de azi. Acest concept ar putea fi aplicat în diverse științe inclusiv Știința Consumatorilor.

Complexitatea produsului, modalitățile diferite în care poate fi folosit și sortimentul în continuă creștere necesită altă abordare a produsului, cu ajutorul modelelor. Această abordare trebuie să ia în considerare anumite particularități care nu apar în modelele normale.

Cuvinte cheie:

- Sisteme;
- Teorie;
- Comerț electronic;
- Știința consumatorilor.

Introduction

The fundamentals of the knowledge on systems are not yet clearly defined, in a generally accepted way for a „science of systems” as science is acknowledged in general. Still many of the concepts of systems are united in a set of principles known as The General System Theory.

The General Systems Theory uses the ideas promoted by The Society for General Systems Theory, which was founded by the biologist Ludwig von Bertalanffy, the economist Kenneth Boulding, the biomathematician Anatol Rapoport and the psychologist Ralph Gerald. This society was created with the purpose of making the future scientific research more connected and specialised, because the risk of losing connections between scientific disciplines exists.

Although the initial purpose of the General Systems Theory is the study of growing phenomenon, all the attributes of the systems found in the General Systems Theory can lead us to understanding the product as a system.

1. The system transforms the inputs into outputs

Informational aspect. In this type of system information related to the product are considered inputs. These information are linked to the aspects of knowing or not knowing the product, curiosity or a previous experience, advertising, usually all the main factors that determinate the buying process. Outputs are represented also by information, related to the degree of satisfaction or dissatisfaction, experience and others.

Natural aspect. In this type of system the product is considered an input through the money (value in money) and the process is the consumption process in which the outputs are residues, waste, satisfaction and others

Physical aspect. In this type of system, the product is regarded as an entity – inputs are represented by the influences of different factors (humidity, temperature, transport, packaging); the process being the place where the factors take place (transport, storing), and as an output we have another product modified by these factors.

Obviously, there can be other types of subsystems in the concept of the product as a system, depending on the number of factors of influence and the place where they act.

2. Systems are interdisciplinary

The good functioning of a system is the result of the interdependence of its parts. In this aspect, a system must be seen as a whole, with all its constitutive parts, even if one of those does not present a special interest in its analysis. The term designating the whole is known as „holism” and the systems are considered to be holistic.

The importance of holistic treatment of systems is relevant especially in the frame of the interaction with the environment (**product – consumer – environment relationship**)

3. Systems are hierarchical

The component parts of the systems can be themselves small systems, and the systems can be component parts for larger systems. This order of systems can be considered a hierarchy, term which reflects the relative measure or the rank of systems in a hierarchy. Parts of the system which are themselves systems (they act individually as a system) are named “subsystems” and the superior level to the system is called “suprasystem”. In conclusion the environment is some kind of suprasystem that contains other systems and subsystems.

4. Systems are controlled

Usually, the functioning by certain rules of a system is accomplished through a control subsystem. The inputs in the subsystem can come from the environment or can arise as feedback from the system’s outputs. The outputs of the control subsystem become inputs for the system, inputs that are affected by these rules.

5. Models in the consumer science

A model in consumer science is a simplified representation, except for the unrepresentative elements or neutral from their actions point of view, of a product (merchandise), of a group of products, of its elements and interactions that represent, develop or give its quality, at a given moment or in time.

Following there are some ways in which the models can be utilised:

- for the prediction of the performances of the modelled system
- for stimulations, because the stimulation process is reversible. It is easier and cheaper to make an experiment. Also the risks are much smaller than when working with a real system.
- in order to understand the business environment
- in order to help the decider in evaluating the different alternatives
- in order to increase the performances of the system by using the analysis. *What – if analysis (the model offers a series of alternative results which anticipate the effect of the different decisions that can be taken).*

We consider that the best representation for the development of such models (referring to the product, assortment structure, its quality or at optimising it) is the one given by the economic models.

They are included in these, and we consider that they must fulfil at least the following requirements:

- *To insure the measurement unit and the strict following of the values of the variable and constant measurements;*
- *To be based on the selection of factual data also taking into consideration the specific of measuring economic values;*
- *To reflect the real structure of the product and of the relationship between the components of the product as a system;*

If we try a classification of the science of commodities models (by analogy with the economic ones) based on those enounced earlier we will obtain the following classification:

Descriptive models – refer to the analysis of a product, through evidentiatio (presentation) of its characteristics, drawing conclusions on these; if the product belongs to a certain class or group; if analogies to other products of the same type can be made. We can also include here quality characteristics. Although in this case the computer's role seems reduced, in the conditions of the development of the Internet, the presenting of the product in this network can not be done without the computer (including the software).

Decisional (choice) models – are made out of a number of quality characteristics decisive in choosing a product. These models contain a determinant number of quality characteristics. An important aspect is the fact that among them we will also find the **price** characteristic to which a coefficient of importance will be granted.

Evaluation (of quality) models – these models are similar to the decisional models with the exception of:

- they will include as many quality characteristics as possible
- they will also include standard products (or of a renowned company)
- they will not include the price characteristic, but at most the quality/price rapport.

Optimisation models – they analyse the projection or modification possibilities of a new product in order to reach the optimum quality. In this case the product characteristics will be included in a system, which will emphasize the relationships between them. These models will also contain the parameters established as an objective: satisfying the customers' requests at the highest level possible, the lowest pollution level, maximising profit.

Prediction models – include the values of the quality characteristics

considered essential of a product at different time intervals. Based on these, the statistic-mathematical function, in which the evolution of the respective values is included, is established. Based on this function, the product's evolution is estimated. And here the product's characteristics will be related into a system.

In the development as a model the following aspects must be taken into account (1):

- Models must have a purpose.
- The model development is iterative; it is a creative process which must evaluate the capacity of the systems performances. The variables in the model must be carefully chosen in order for the system to reach its objective.
- A good model is as simple as possible and contains just a few variables which give it maximum efficiency capacities. In order to choose them, the system must be understood accordingly.

The complexity of the product, the different way in which it can be seen and also the exponentially diversifying assortment requires another approach to the product, through models. This approach must take into account certain particularities which do not appear in a regular modelling process.

In this case we could find:

a) Diversity of goods It is not always simple, when having products, their great diversity, for a set of given rules to be able to be extrapolated in order to obtain results.

b) Complexity of goods In our days goods are more and more complex.

Endnotes:

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c) Methodologies. A unique, given methodology, can be useful for certain products, but totally unsatisfactory for others (see food/non-food products). There are sometimes problems connected to the used methodology even for the same group of products.

d) Standardising. Although we tend to a general standardising, universally accepted, this aspect affects the modelling (for the appraisal of quality, for example) through levels of quality characteristics different from state to state.

e) The abstract approach. Taking into account that abstract in modelling is essential, we will try to support the way in which we can find out if a model is correct.

f) The virtual space. The new dimensions of goods in the era of Internet require a transplant of the physical elements into virtual space. Here we meet a series of particularities due to the restrictive elements of the Internet (in the case of electronic commerce the consumer who wishes to buy the products on the Internet does not have the possibility to touch the product) especially limits related to its virtual nature.

In the case of the modelling goods an artificial reality will be built. It will use the abstractising in order to control the complexity of the product, and the model will have to be validated through experimentation, comparison, by verifying if it will act exactly, or in a sufficient likeness to the modelled reality.