

THE IMITATING MODEL OF THE INFORMATION MANAGEMENT SYSTEM IN A MARITIME BRANCH ENTERPRISE

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The article considers engineering & analysis of marine branch enterprise's information management system. The entity-relationship model is built with basic mathematical methods of information processing and represents the description of enterprise's informational streams & their parameters. The conclusions of enterprise's information management system improvement are made in virtue of model analysis.

Keyword: information system, neuroinformational technologies, simulated service test, carrying trade, consulting model.

My report considers engineering and analysis of marine branch enterprise's information management system. I'll begin with describing the Information model of enterprise's management system. The model is a conditional image of object for research, having similarity to a prototype which serves as means of the description, an explanation and forecasting of a prototype behavior. The entity-relationship model is built with basic mathematical methods of information processing and represents the description of enterprise's informational streams and their parameters.

The methods of system working out and engineering, building the present model of enterprise are needed for further exploration,

forecasting and optimization of enterprise's management system [1].

People distinguish following kinds of modeling: determined and stochastic, static and dynamic, discrete, continuous and discrete-continuous modeling. I'd like to emphasize simulated service test on the base of intelligent control or in other words - neuroinformational technologies.

Imitation is understood as carrying out various experiments with the models on computers presented in the form of a certain set of computer programs.

Repeated reproduction of modeled processes with their subsequent statistical processing, comparison of characteristics, the account of various external influences on model allows to do conclusions to the advantage of this or that variant of system functioning.

In applied problems a neural network is used as an independent knowledge demonstration system as any of a control system components or the module of the decision-making transferring a resulting signal to other subsystems, not connected with a neural network directly.

There are some basic groups of functions carried out by a network[2]:

- Recognition and classification of a current condition of system;
- Compression of the data;
- Forecasting;
- Identification;
- Management;
- Associations.

Significant amount of problems of modeling can be shown with likelihood representation.

The network is trained to identify the major signs of images recognize and classify, then thus creating the basis for decision-making. It predicts the future reaction of the system to its previous behavior. It generalizes the saved up information, trained on the limited set training selections, and develops expected reaction with reference to the new data.

When solving the problems of dynamic processes management the neural network provides with development of corresponding operating influence. The neural network acts as a control system adapting to changing environmental conditions.

The neural network can play a role of an associative memory and help to avoid a significant amount of accidental errors, for example, input of the entrance information by a user.

Property of a neural network to process the information simultaneously by all neurons having a considerable quantity of interneuron communications allows to accelerate the process of processing the information considerably.

In the picture the following figure shows the general scheme of carrying out the imitating experiments applied to of an intellectual system.

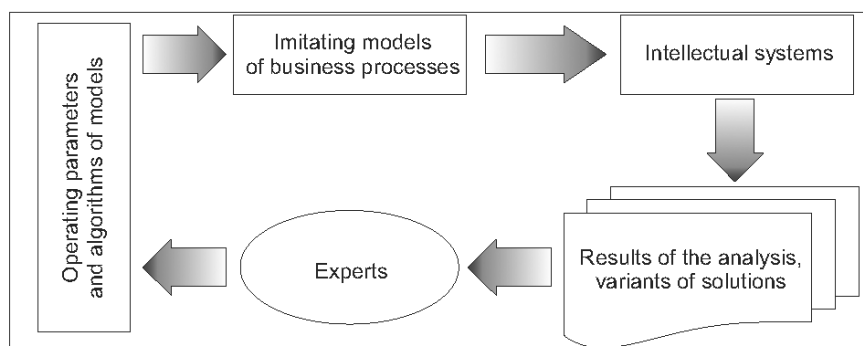


Figure 1. The scheme of carrying out the imitating experiments.

Results of imitating experiments arrive at the input of intellectual systems which carry out the analysis and offer some variants of solutions on a choice.

Further, experts can choose more rational solution, or carry out just the setting change-over of parameters, being guided by results of the intellectual analysis, and to continue the experiment.

Considering the activity of the intermediary companies which are carrying out a complex of services in arranging the cargo of transportation in sea transport system we can see that it includes the operations accompanying transportation process:

- Chartering of ships and freight setting;
- Cargo loading and discharging;
- Arrangement of cargo handling works;
- Insurance;
- Customs declaring of cargoes;

- Registration of required cargo of the accompanying documentation;
- Concluding an agreement for the contract of transportation with a transport agency;
- Cargo transportation setting;
- Consultations on settling and forwarding operations;
- Informing the participants of transporting process, etc.

To improve the quality of cargo and commercial work of the transport to meet the consumers requirements perfectly in transportations, cargo insurance, cargo transporting control of their movement, timely loading, application of the most a perfect form of forwarding activity arrangement is necessary delivering and discharging.

Creation of information systems, application of modern information technology based on new concepts of data warehouses, methods of intellectual data analysis, systems of business processes modeling and expert systems, promotes development a cargo transportation quality and improvement of validity, efficiency, quality of managerial decisions made.

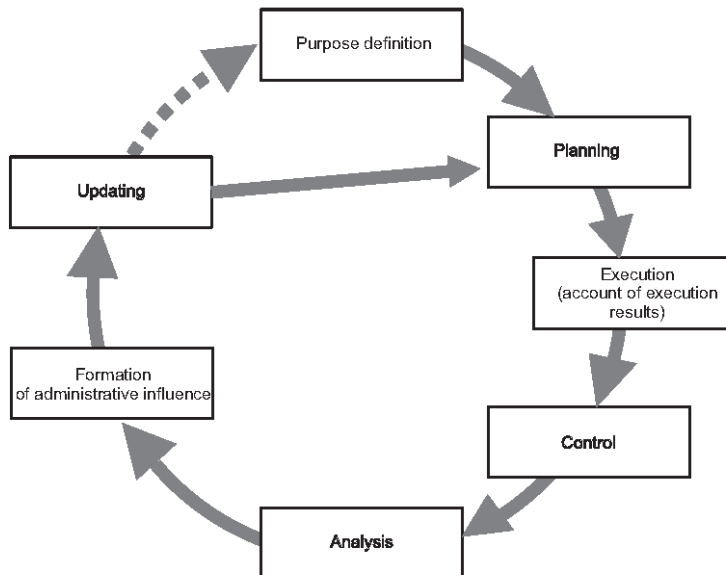


Figure 2. Function chart of the enterprise-holding's management

The universal scheme of management is a circuit. The information data flows are always in this contour which together with means of gathering, processing, transferring and storing information form information system (model) of an enterprise – holding company.

The model may consist of blocks:

1. The demand acceptance block

The block is modeling demand external stream. Admittance of demands is casual, and sources of demands can be various.

2. The processing block

The processing block is direct processing of a demand having various resources, including one of intellectual systems using neural network properties of adaptability and regulation of the data are involved.

3. The management block

The management block sets various algorithms for solution of different industrial problems, for example, choice of the most rational route of cargo transportation (comparison of tariffs, qualities, safety, cargo transit time, type of transport). In this case the application of preliminarily trained neural network is effective. Training sample is formed on the basis of values of indicators in the previous periods of time, and also other qualitative factors such as a seasons, market indicators, estimation of competitor firms activity etc.

4. The decision-making block

The decision-making block allows the application of technological neural prognostications, consisting of the following stages: data loading, classification and differentiation of signs, training neural network elements, an adaptive prediction and delivery of rational solution variants.

Experimenting on imitation model demands complex mathematical and information support of system modeling process connected with computing procedures, experiment planning, optimization, systematization of work dealing with large data volumes in decision-making procedures.

Conclusion

The following properties of neuron network method's such as: high speed of data processing, ability of finding laws in a big stream of the inconsistent information, keeping up connection between events, reduction processed information volumes maintaining the meaning and associative memory, can be of great help in activity of managers.

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