

A NEW MANAGEMENT CONCEPT OF MANUFACTURING SYSTEMS- CONCEPT OF COMPETITIVE MANAGEMENT

- Project description -

Importance of the scientific content

a) General aspects of approached area

The average industrial dynamism the si of business

On world wide plan, enterprises are confronted with a dynamics more and more an accelerated the si unpredictable changes. This is influenced by the technical and scientific progress, dynamic requirements of the customers, science of management and mathematical e economy [1]. These changes enforce an aggressive competition to the global scale what assume the requirest of a new settlement echilibre between economy, technology and society.

To this challenge, the scientific community proposes to answer new paradigm: Knowledge-based Economy [2].

Knowledge-based Economy

Thus, in SUA, this new orientation is considered a priority in what looks a future realization of performance and a competitive products, just as he arises from [3] as shown in:

'...Grand Challenge 3 is to 'instantaneously' transform information from a vast array of diverse sources into useful knowledge and effective decisions... Manufacturing enterprises are fundamentally and inescapably dependent on information technology, including the collection, storage, analysis, distribution, and application of information. If the exponential growth of computer and communication technologies (hardware and software) continues at its present rate, businesses of 2020 should be up to the task. The two main challenges will be (1) to capture and store data and information 'instantaneously' and transform them into useful knowledge and (2) to make this knowledge available to users (human and machine) 'instantaneously' wherever and whenever it is needed in a familiar language and form'.

Council European traced EU objectives [4] for the most competitive and dynamical knowledge-based economy from world.: ' The March 2000 Lisbon European Council set the objective of making the I 'the most competitive and dynamic knowledge economy in the world, capable of sustainable economically growth with more and better jobs and social greater cohesion. This ambitious target can not be met without the continuing presence of strong and competitive manufacturing sector'. Necessity technological accommodation to the society base on cognition is reflected in the EU programs FP 7 with the aim strengthened competitiveness of European economy and its technological force. The concept of eEurope is fated development of the informatical technologies for the outside of the year 2010 for the implementation society and the economy based on knowledge. To survive this new average complex and unforeseeableness enviroment,

the enterprises must have the capacity of quick reaction [5] in the sense the re-lay on favorable sprockets on the market. The acquirement and this preservation capacities is most difficult demarches for companionships, because he involves many endogenous factors the exogenous si have this and the process is some contiguous, dynamically and difficult predictable.

b) Particular aspects of approached area

In literature, an enterprise is a competitive on a certain the market when it obtains certain economic indicator: encipher of business, profits, segments of the comparable his superior market with one have another competitors [6].

Thence, it follows at the current level the competitiveness is defineted by the economocal factors and indicators obtained and is it more a suggested notion than a numerical evaluated. Don't exist, in this moment, defined an algorithm for the evaluation technical-economical competitiveness, because the factors of technical nature don't take in consideration for the definiteness of competitiveness, although the consumptions and the necessary expenditures of technological process are new generated by technical actions. This in contex, the competitiveness notion gets new valences, it gathering factors and which politics determine just the capacity of the enterprises dealt a favorable place on the market, kept that place and of improve continuously the position. The competitiveness characterizes synthetically and complete viability of the enterprises.

We can say as through competitiveness of the enterprises we understand the capacity (the potential) entreprise operated comparative performant with another enterprises) in the punctual mod context macroeconomical concrete to a moment given. The performance is measure in which the enterprise meet aim for which is creased.

The project proposes to do a numerical an don-line evaluation of the technical-economical competitiveness and control of the manufacturing system* to obtaine maxim competitiveness. Through manufacturing systems apprehend the ensemble of technological systems(machines tools, tools, apparatus, devices, parts, operator) are used for the a realization namely produced.

* In as part as present the project, through manufacturing system apprehend the ensemble of technological which systems used for realization namely produced. Each among these technological systems is consisted of machines-tooles, tools, apparatus, machine parts, innards, operators and executes one of the the operations of technological process of achieve respectivului produced. The manufacturing system is composed in the moment which in is launched into make product and abides at this structure just up to the completion execution produced respectively. After this, when is launched an another product, problem of structure the manufacturing system is taken again from begin. This ad-hoc structure of manufacturing system appears always to the make on lots, but he don't appears to the make in massively, when the ensemble of technological which systems compose the system of manufacture remains many unchanged weather.

The performance of the manufacturing system depends on the way which this in is driven. In special literature [7], [8], it done reference to the relations between the parameters of the regimes of cutting and technical performance of the manufacturing system (that is pure technical aspects) and, also, we known the relations between the product of technological system and market (that is relations of economic nature) and which we enforce to step in the technological system obtained economic favorable

effects.

Don't is reported the in special literature a attempt tackled the ensemble the manufacturing system-market and thereout exist funds of improve performances which don't used-up by-patnes wherethrough is tackled asunder the technical appearance the si the economic appearance. Don't is known an algorithm of management of ensemble manufacturing system- market, but just algorithm of technical management of the manufacturing system and economic of the relation with the market [9]. Today the manufacturing systems are driven through the programs of the machines tools with numerical program [10], [11]. Management is exclusive technique because don't exist a economical variable which in fact is an ultimate consequence. Dynamics changes and the general progress of society translated to the level of the enterprise through many comands as the little volume, very varied, obtained through frequent auctions with answers in short terms, carry he don't offers the times for analysis pertinence statements. Consequencely, don't drive for a long time. Must enforced a method of the fluctuant management as the market, on-line, prompt reaction, speedster and ephemeral [12]. The dynamism from the market is transmited the in style of operation and management. In the society and the economy based on cognition, operations as the determination of relevant informations and getting together them in parts of cognition wanted to is automatizate. In a such average complex the and unforeseeableness they are indispensable tools for creation, the search and arhitecture of the knowledges. The average economic interaction manufacture system is a major source of knowledges about economic enviroment and of the manufacring system [13].

The area of the project found out to the intersection of the triplet Technological Engineering- Management- Econometry with the triplet Informatic System-Data Mining- Cognitive Systems. Data mining [14], allias' bare knowledges of the in big databases', is a modern instruments the strong and of IT& C what can be used for the of a extraction useful informations, but still unknown. The methods of the data mining 'of learning' include techniques can used.

Thus, CBR(Case Based Reasoning) can be used for the of a creation a databases describes the previous situations and recorder tasks evering stage. GA,(Genetical Algorithm) representing adaptive techniques of search heuristics based on the principles of the genetics and of natural selection, can used for the accommodation from biology Exclusion Principle. K-NN (K nearest neighbour) is a technical to prediction the models of classification. PCA(Principal Components Analysis) is can used for the decrease dimension date multiplevariation in modelling statistics. The techniques identificate of data mining method can be transformate in knowledges, only that after a proper validation; then the knowledges shall can be used subsequent substantiated the taking of the decisions of the in the management of the system of manufacturare [15] for the procurance maxim competitiveness.

Appears here the must of of a new introduction of the new concept of management the manufacturing system, the concept of competitive management presupposes:

- 1 The evaluation the quicker and exacter of the consumptions;
2. The evaluation market behavior;
3. The possibility of modify the consumptions as the levels and structure (the relation the cost-capability) in equivalent conditions through interventions about the manufacturing system (possibility of grant the system of manufacturare with the requirements of the

competition);

4. To be used at the most the existing investment;
5. Can action proactively on the manufacturing system;
6. Can action anticipative on manufacture system.

In this context of competitive management can offer solutions for development and competing enterprises. Through this type of management the technical phenomenon is associated with the economical phenomenon.

Increase competitiveness is not a process of exploit of a short-time advantages but it appears as a complex process of constitute and support of a economic structures based on capital investments, on scientific research, develop and innovate. It necessary to put the obvious in the correlations among average economic(the market, competition) and the manufacturing system and to study the role on which these have it in the acquirement and increase enterprise competitiveness. This becomes still more pressing due to the fact as the special literature consigns studies about competitiveness [16] at least to the level of the enterprise and studies about process and technology of manufacturing system [17] don't connection between two entities in contextually of technical economical competitiveness.

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