Extende Model Of Competitivity Throug Application Of New Approach Directives

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Abstract:*The basic subject of this work is the model of new approach impact on quality and safety products, and competency of our companies. This work represents real hypothesis on the basis of expert's experiences, in regard to that the infrastructure with using new approach directives wasn't examined until now, it isn't known which product or industry of Serbia is related to directives of the new approach and CE mark, and it is not known which are effects of the use of the CE mark. This work should indicate existing quality reserves and product's safety, the level of possible competency improvement and increasing the profit by discharging new approach directive requires.*

Keywords: *directives new approach, competitiveness, enterprise, quality of product*

1. INTRODUCTION

A free flow of commodity is the one the basic principles in European Union besides a free flow of services, capital and work force. This freedom significantly contributes greater supply and simultaneously induces competency. For providing free flow of commodity, European Union develops specific mechanisms. New approach directives had the most important place among these mechanisms. Mechanisms needed for acting of the free flow of commodity depend upon preventing of a new obstruction arising on trade, mutual acknowledgement of examination results and certificates and technical harmonization [1].

States that are members of European Union must accept measures and arise the national infrastructure so that they would provide, at the inward market of European Union, that only products due to specific directives, which besides regular, installation, maintenance and use, do not imperil safety and health of people or some other public interests. Measures of proper market supervision are provided by State members and these are identical as for products from the countries of European Union thus for products from the countries out of European Union. Obviously, exporters out of European Union directive requires of new approach.

Reaching the certain level of international competency is also one of prerequisite for European Union acceptance because defined by Lisbon's strategy for European Union acceptance the countries must satisfy the condition of existing efficient trade economy and competitive enterprise able to stand the pressure of global markets [5, 6, 7].

According to the analysis of doing business of one hundred of the greatest Serbian exporters, we came to information that a number of companies export their products that must satisfy new approach directive requires. The basic subject of this work is the model of new approach impact on quality, safety and competency of our companies. There is no competitive national economy without discharging the most important condition and those are competitive products that satisfy technical and safely market requires. This work should indicate existing quality reserves and product's safety, the level of possible competency improvement and increasing the

profit by discharging new approach directive requires.

2. MODELING BASES

A model is approximate description of system or process used for system's understanding, his changing or managing it [2, 3]. Models should be much simpler, though accurate and useful for the purpose they are made for. In modeling there are different approaches that are referred to: time aspect, stochastic or determinist processes, discreet or continual state changes.

Time aspects are:
- Time slicing,
- Next event technique with intervals of different lengths.

Stochastic or determinist processes suppose:
- The system is determinist when its state can be anticipated,
- At stochastic system certain event's announcing can be anticipated with certain probability.

Discreet or continual state changes are:
- Continual at event point of time,
- Continual at proper interval,
- Completely discreet,
- Discreet at proper interval.

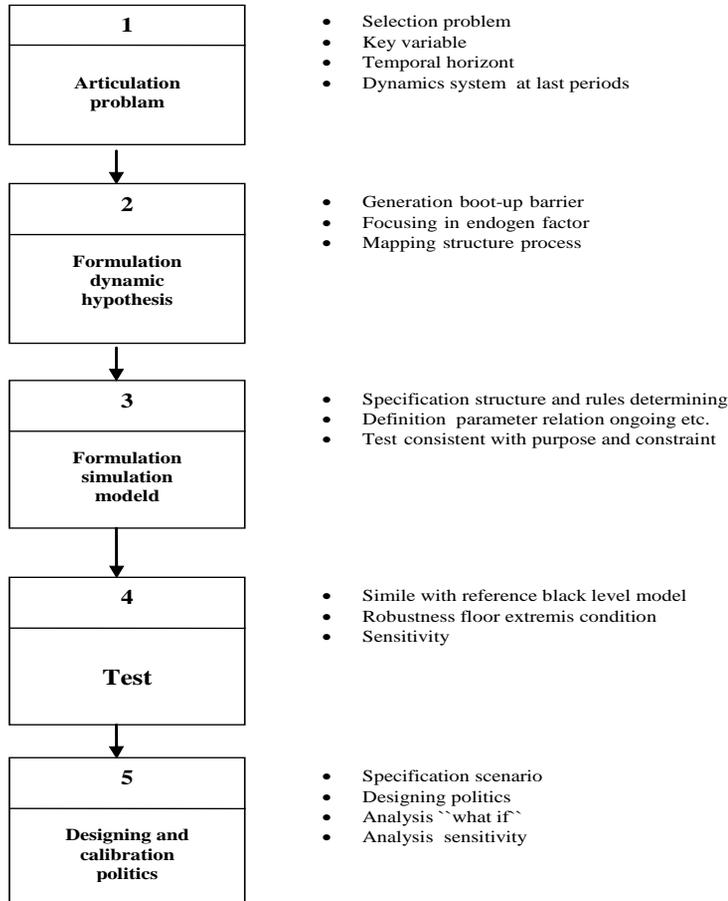Dynamics complex system modeling includes phases showed in Figure 1.

1 **Articulation problem**	• Selection problem • Key variable • Temporal horizont • Dynamics system at last periods
2 **Formulation dynamic hypothesis**	• Generation boot-up barrier • Focusing in endogen factor • Mapping structure process
3 **Formulation simulation modeld**	• Specification structure and rules determining • Definition parameter relation ongoing etc. • Test consistent with purpose and constraint
4 **Test**	• Simile with reference black level model • Robustness floor extremis condition • Sensitivity
5 **Designing and calibration politics**	• Specification scenario • Designing politics • Analysis ``what if`` • Analysis sensitivity

Figure 1 – Phases modeling

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At modeling it starts from observing real world and along by informational feedbacks created mental model of real world is, as well as strategy, structure and rules of making decision.

On the basis of them simulation model for making decisions in real world is formed (Figure 2).
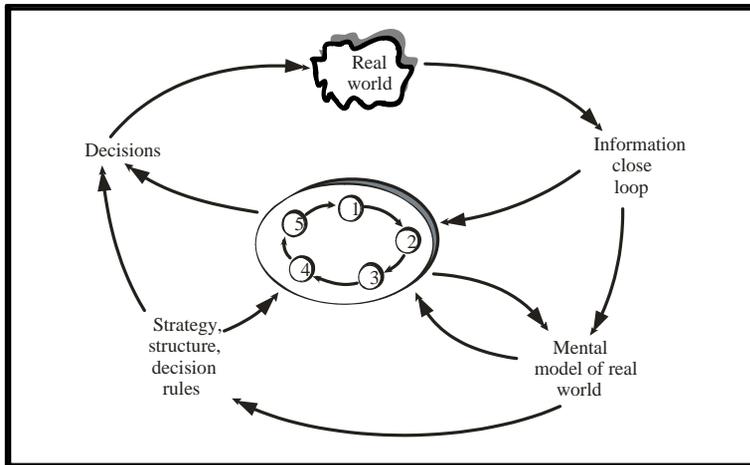

Figure 2 – The way from real world to the model

On the basis of these basic system behaviors structure and behavior of system components, relation between them (+ for positive impact and – for negative impact) or through certain diagrams that indicate to the dependence of system structure elements. The flowing phase is the development of simulation software, into which the structure's elements are built.

Previously underlined aspects of behavior are the base for the development of complex elements, from which the next are emphasized:

- Increase in form of S curve (logarithmic curve, or saturating curve) that is shamed in,
- Increase in from S curve with stabilization ,
- Great increase and collapse and others.

Other forms of behavior are:

- Equilibrium, when the system state changes very little in the second period and when negative system feedbacks are held approximately constant by the system,
- Accidentally, as result of accidental variation system elements or environmental impact,
- Chaos, that may be described through three forms of behavior: muted oscillation (local stability), increasing oscillations and limited cycles, and chaotic oscillations.

On the basis of previously underlined forms of behavior (theoretically and practically examined) model of complex dynamics system is formed and through proper tools for systematical opinion.

Causal Loop Diagrams – CLD are important and very used tool feedback in system structure. In these models the relationship performing between variables is causally consecutive. To define these relationships correlative diagrams, can be used, but system it should be emphasized that they display only the case of condition changing the second feedback can become inadequate. In modeling it is very important to define inter causer and according to them to define model's structure. If the observing system is complex, model's clearness is realized by using of loop. Names of alternations may be nouns or noun expressions (for example: expenses, costs, awards of a chief). Their name should indicate to the positive sense (for example: instead of loss – profit or instead of displeasure – pleasure). Over feedback forming positive

goals should be built, according to which management is acted and whit this negative feedback loop is realized. Delaying in systems is defined through middle time of delaying or delaying distribution, or Dirak's delta function.

On the basis of these tools complex dynamics model of observing system is formed.

3 MODEL IMPACT OF NEW APPROACH DIRECTIVE USE

In consideration of the theme of research it starts from characteristics K1-K18, by what levels of characteristics (Figure 6) and forms of dependence between the same relations R1-R26 are firstly established. The sign + demonstrates that by increasing of an independent characteristics the value of dependent characteristic increases according to certain relation Ri [8].

Precise relation defining depends on the kind of product, competency level in that area, manufacturer's characteristics and requires of directives and standards for that area, us well as costs of consultant services, examination and notification. Because of that, in this work, the authors decided to except model defining and relation form, define the degree of the new approach directive impact. Measure in the area of one middle class example requires (machines for PVC and Al profile curving) and assesses the impact degree according to characteristic's variations for 10 percent, what is real for one year period.
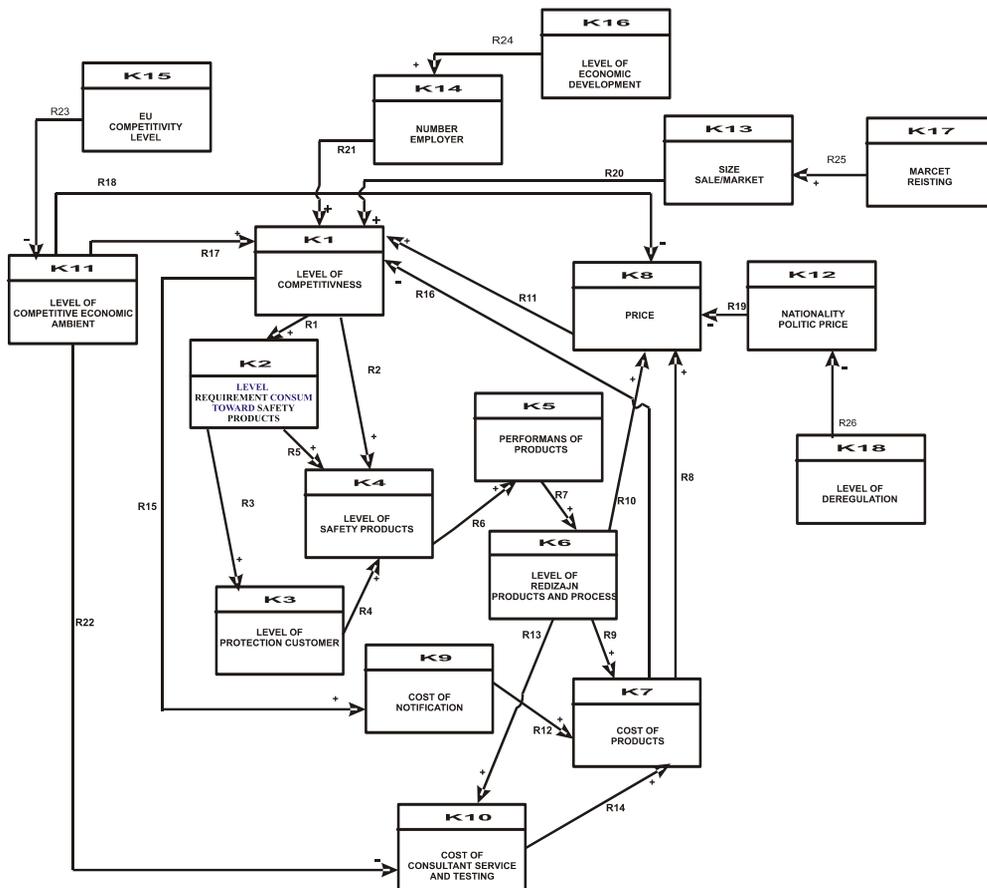

Figure 6 – Relations between characteristics

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Sensitivity analysis for initial values K*i* (Figure 7) and values K*i* after the first iteration (Figure 8) shows that the factor k8 has the biggest sensitivity and then follows the factor K7.

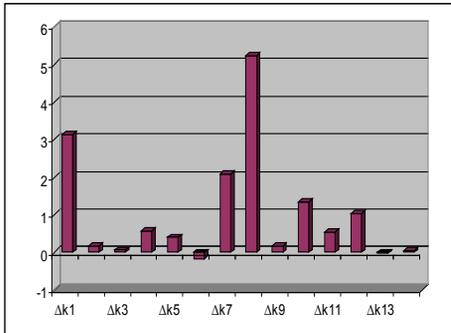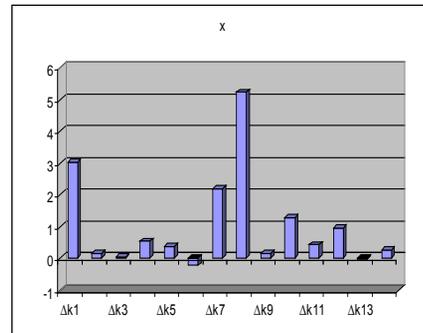*Figure 7 - Sensitivity analysis for initial values Ki*

Figure8 - Sensitivity analysis for values Ki after the first iteration

A degree mark of competitive level impact product cost price, as well as prices of product's selling can be seeing in the Figure9.
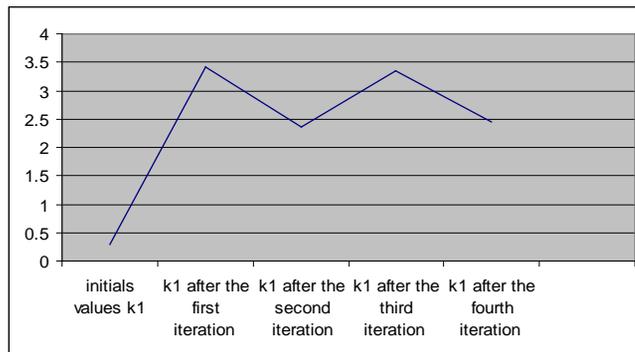

Figure 9a – Assessment the level impact of K1

Figure 9b – Assessment the level impact of K8
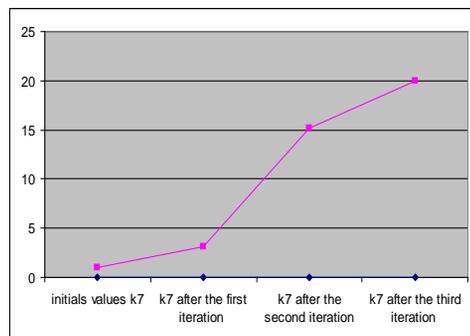

Figure 9c – Assessment the level impact of K7

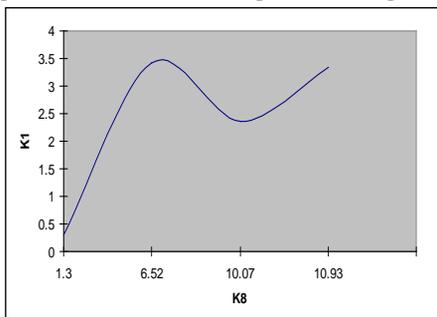Product price, as well as product cost price has a dominant impact on the product

competency (Figure 10 and Figure 11).

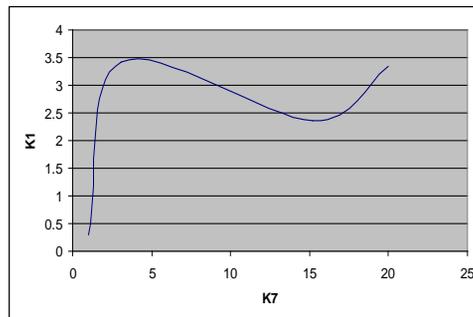*Figure 10 – Relationship between concurrency of product and price*

Figure 11 - Relationship between concurrency of of product and costs of products

4. CONCLUSION

This work represents real hypothesis on the basis of expert's experiences, in regard to that the infrastructure with using new approach directives wasn't examined until now, it isn't known which product or industry of Serbia succumb to directives of the new approach and CE mark, and it is not known which are effects of the use of the CE mark.

The model is stabilized, it has feedbacks, and model includes the most relevant factors. According to the given results we can conclude that new approach directives have dominant impact on product competency, there by on competitive enterprise.

The subject of fallowing research, would be besides these quantified initial states and relation, spread by including aspects QMS, ICT and parts refer to a development of new products and knowledge improving.

5. ACKNOWLEDGEMENT

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