Exploring the Possibilities of Excellence Achievement

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***Abstract*—** Our paper presents a brief review of the definitions and approaches related to Excellence and Business Excellence, explores the possibilities of Excellence "quantification", proposes a representation model and highlights the dependence of the model' parameters by different variation laws.

***Keywords*—** Business Excellence, Excellence, Quality, Triangle of Excellence

I. Introduction

In today's global competition and economic liberalization, quality has become one of the important factors for achieving competitive advantage. The quality movement has gone through many transformations. In the past, controlling quality meant that the product had to be inspected after it was produced to check whether it met all the specifications or not. The transformation from inspection mode to prevention mode is considered to be a very important step in building quality from the very beginning of the manufacturing process. The quality movement focused on building quality in every task that is performed in an organization. Therefore, it was seen a dramatic shift in the quality management focus from a concentration just on manufacturing, to a wide company spectrum of activities and, more specifically, to the needs of the internal and external customers. Some developmental milestones of the quality movement are synthesized as it follows: from inspection to statistical quality control and the „Japanese Age" of quality followed then by Total Quality Control (TQC) and TQM developments that led to the models of Business Excellence (BE) [6].

We present some definitions, approaches and representations that have contributed to the "enrichment" of the concept of Excellence and to the "shaping" of the concept of Business Excellence. The starting point in achieving Excellence is to improve quality. The natural sequence of steps to reach excellence is suggestive highlighted in Deming's chain (Fig. 1) [8].

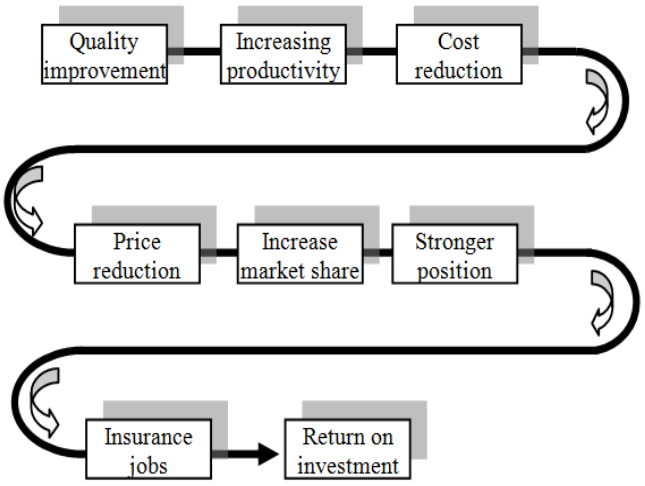

Fig. 1 Deming's chain [8]

Excellence is the state or quality of excelling. Particularly in the field of business and organizations, excellence is considered to be an important value, and a goal to be pursued. In Landier's opinion, excellence represents the essence of a great managerial thinking, the "absolute", a mythical ideal [7].

Antonescu [1] defines excellence in the following terms: "the ability of firms to make profits, while meeting the customers' requirements".

He also proposes a triangular representation in the so called "triangle of excellence" (Fig. 2).

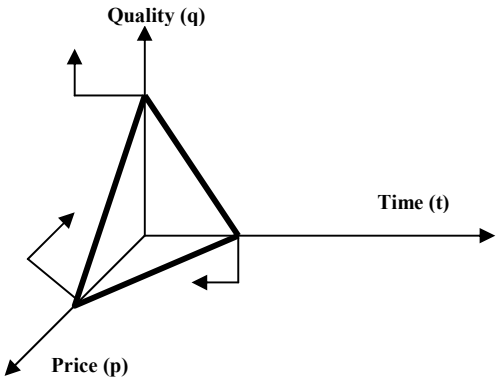

Fig. 2 Triangle of excellence

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The evaluation of excellence is done in the space delimited by the three axes.

The arrows indicate the path of improvement measures to achieve excellence.

Therefore, excellence means success in the competition by obtaining high quality products and services, offered to customers in shortest time, in terms of efficiency [9].

Another representation of excellence take account of other three coordinates: business, engineering/technology, and organization (Fig. 3).

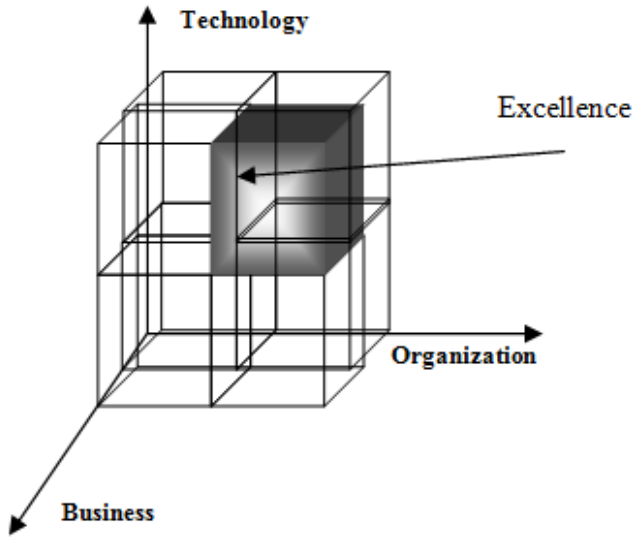
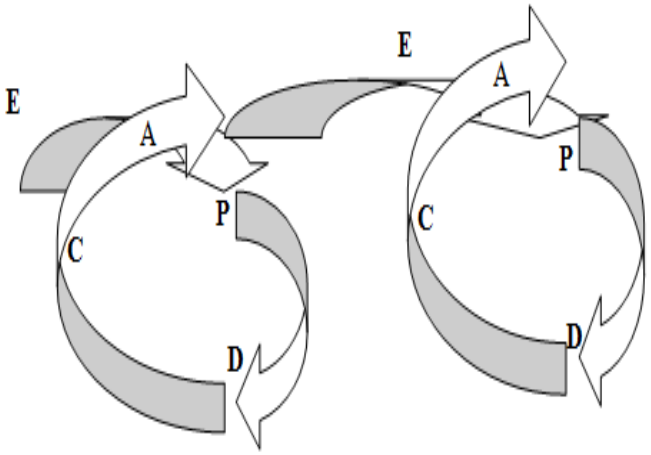


Fig 3. Coordinates of Excellence

Obvious, we cannot neglect the suggestive image proposed by Oackland based on the famous Deming's cycle that leads to excellence (Fig. 4), known as "the helix of never-ending improvement" [8].



E- Evaluate; P-Plan; D-Do; C-Check; A-Amend

Fig. 4. Helix of never-ending improvement

Promoting sustainable excellence in Europe is also the declared mission of the European Foundation for Quality Management (EFQM), organization that defines excellence as an expression of eight fundamental concepts (Fig. 5).

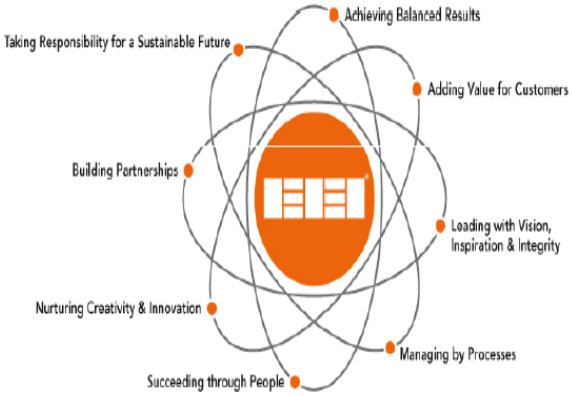


Fig. 5. The fundamental concepts of excellence according EFQM[13]

II. PROBLEM FORMULATION

This paper proposes a suggestive model of excellence representation, based on the "triangle of excellence".

This representation is intended as a first step in evaluating excellence in another way than do the already established (well known) models of excellence (EFQM Excellence Model, Baldrige Model, Australian model).

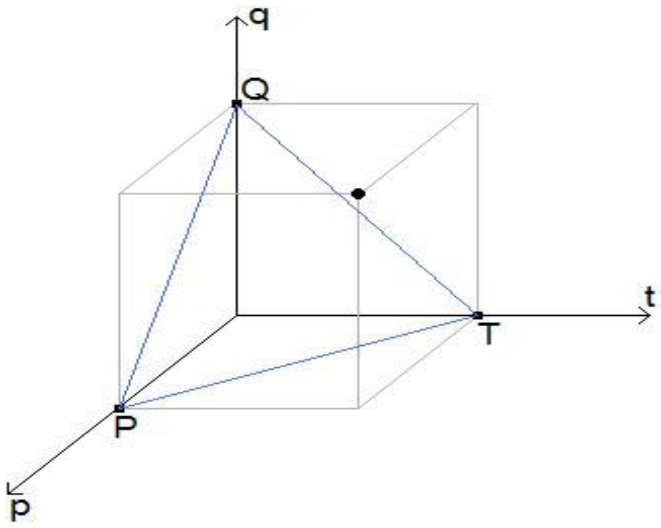


Fig. 6 Model of excellence representation

Fig. 7 presents the path of improvement measures to achieve excellence. It is the ideal case, with the most simplified representation (a line) were the parameters vary proportionally.

Excellence can be achieved by increasing quality and decreasing price and delivery time.

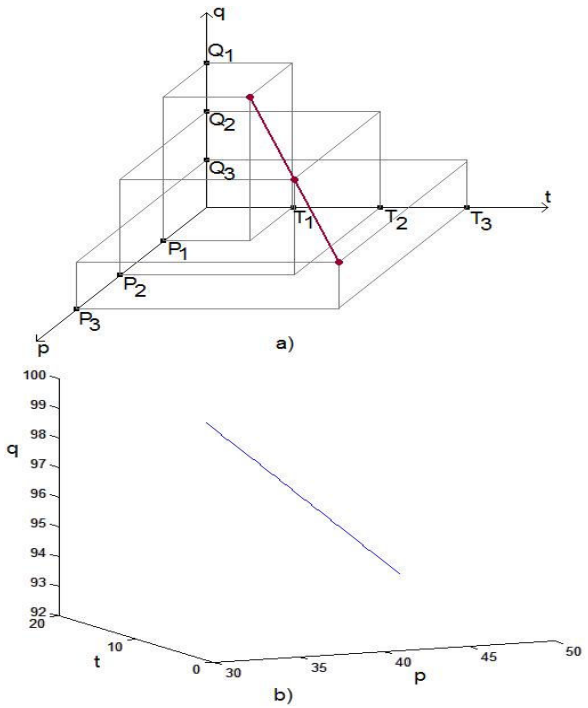


Fig. 7 Simplified representation of ideal case

Fig. 8 suggests the situation we are dealing with in most of the cases, situation that is far from achieving excellence. The parameters vary proportionally, but quality improvement involves rising prices and increasing delivery time.

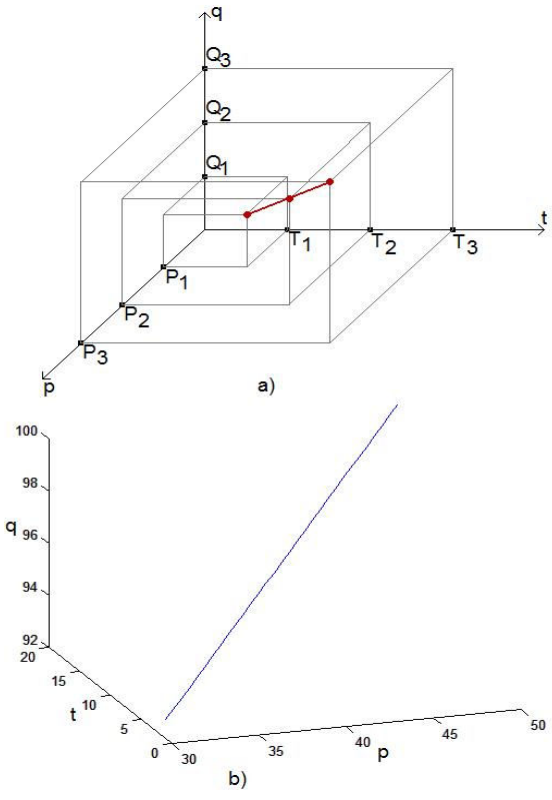


Fig.8 Non excellence case

III. PROBLEM SOLUTION

Building models of representation was followed in our research by the setting of the relationship (dependence) between quality and the other parameters (price and time) for different variation laws.

To represent these dependencies we used the following laws of variation:

- Case I: linear law, square law, cubic law (Fig.10)
- Case II: linear law, exponential law and logarithmic law (Fig.11)

For both cases, for the value of the q parameter, was considered the probability of acceptance based on the Acceptable Quality Level (AQL). As an AQL is an acceptable level, the probability of acceptance for an AQL lot should be high. (Typical values between 92.74% to 99.999996% for six sigma) [16]. The AQL can be determined using the operating characteristic (OC) curve by finding that quality level on the bottom axis that corresponds to a probability of acceptance on the left axis.

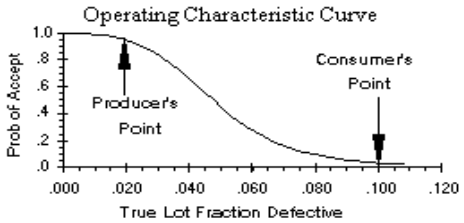


Fig. 9 Operating Characteristic Curve [15]

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1 -   q1=92.74;
2 -   q2=99.99;
3 -   p1=30;
4 -   p2=50;
5 -   t1=1;
6 -   t2=2;
7 -   for k=0:1:10
8 -       q(k+1)=q1+k/10*(q2-q1);
9 -       p(k+1)=p2-k*k/100*(p2-p1);
10 -      t(k+1)=t2-k*k*k/1000*(t2-t1);
11 -  end
12 -  plot3(p,t,q);
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a)

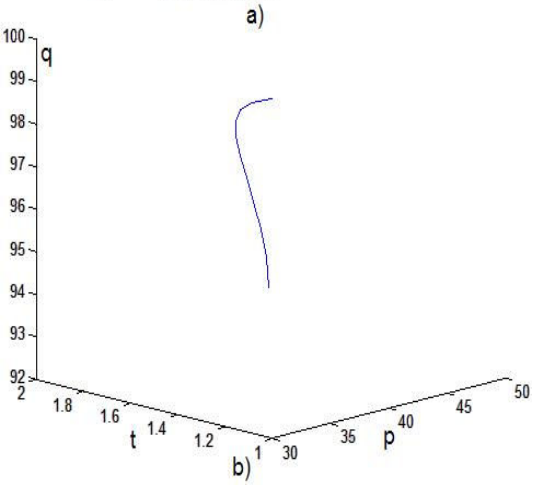

Fig.10 Case I

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q1=92.74;
q2=99.99;
p1=300;
p2=500;
t1=10;
t2=20;
for k=0:1:10
    q(k+1)=q1+k/10*(q2-q1);
    p(k+1)=p2-exp(k)/10^7*(p2-p1);
    t(k+1)=t2-log(k)/10*(t2-t1);
end
plot3(p,t,q);
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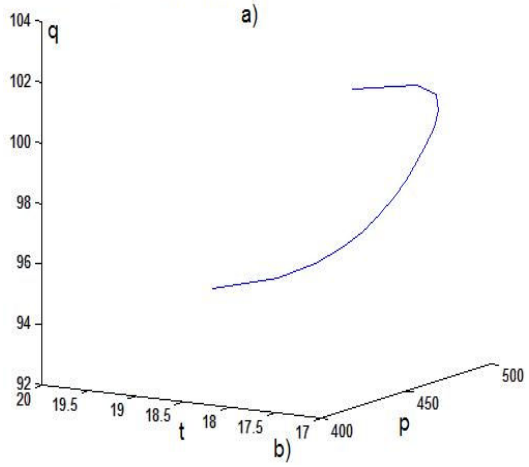

Fig. 11 Case II

IV. Conclusion

Our research can be used to simulate different situations when certain parameters are forced to be kept constant, varying other parameters. It may be a basis for negotiating customer – supplier contracts besides considering the producer's risk (alpha risk) and consumer's risk (beta risk) and other parameters such as price and delivery time.

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