

DEVELOPMENT OF COST VALUATION SYSTEM

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Abstract: *There is a great meaning of cost determination in enterprises. Nowadays it is mainly realised by experienced peoples oftentimes without computer support. The subjective influence is great and afterwards decision about acceptance of a offer is not economic effective. It is necessary to elaborate a methodology for cost valuation of offer as an important tool for CA systems.*

Key words: *rapid cost valuation, CA systems, group technology*

1. INTRODUCTION

Nowadays there is a great meaning of small and medium enterprises. They form a basis for production of country. Economic pressures urge manufacturers to make more customised products of high quality, in smaller series, with shorter lead time and of course, without increased costs. Time is becoming rapidly the most strategic topic of companies. Costs are also important, more important are competitive price and the most significant are marketability of manufactured products. Therefore the meaning of the small and medium enterprises are very important. There is a big competition among the enterprises. Consequently these enterprises need sophisticated tools for solving flexibility of production, cost and time reduction.

Except the reduction cost the valuation cost is also important. It often becomes that the customer needs information about acceptance of job-order in very short times. The producer is able to give acceptance information till process plans of job-order products are known. However the time for process plan making is not small. Making complete process plans for all products of job-order are not effective while the job-order is not accepted. Accordingly there is a contradiction as to make process plan in detail.

A valuation cost human belongs to important man in the enterprise. Following his very good knowledge on manufacturing possibilities he know to value the cost for job-order. The method of cost valuation is possible however it is not correct and objective. Consequently there is requirement for software system with high level of detachment and short time to cost valuation.

There is development of rapid cost valuation methodology and cost valuation system on the Department of Measurement and Automation in University of Zilina and on Department of Industrial Engineering in University of Bielsko Biala.

2. PROBLEM OF COST VALUATION

“To receive or not to receive” the job-order is standard question of human evaluator in the enterprises. Receiving determination is based on subjective taking measure of job-order. There is experience that difference of cost valuation for concrete job-order among human cost evaluators is 40%. The human cost determination is not realized according systematic analyse but according human opinion based on long-time production experiences. Real cost monitoring is uncertain and consequently control effects is very small.

Costs originate in all processes of enterprise. Total costs are result of all activities and processes from development to product expedition. As costs are very related to financial profit, it is needful to decrease their. Real costs originate in real condition. There is no information about real costs before receiving a job. However management has to decide to receive or not receive the concrete job. Management has to assess a preparatory cost valuation. Cost calculation and cost estimate are important input for decision about job receiving.

General remarks in area of cost valuation are the following:

- there is no exact formula for determination of total cost,
- costs which are not possible to calculate by mathematical formula are rated as overhead costs,
- overhead costs are different in different enterprises,
- evaluated costs are often different as they are realised by different peoples,
- precision of cost valuation is often small,
- as cost valuation precision is small there is possibility decreasing of financial profit by job receiving,
- customer would like to know determination about acceptance of job in a very short time,
- cost valuation without computer support is slow,
- there is a great human based influencing.

Accordingly there is effort to utilise software to increasing time to valuation and increasing of desinterestedness. The CA systems seem to be a very good candidate for the cost problem solving.

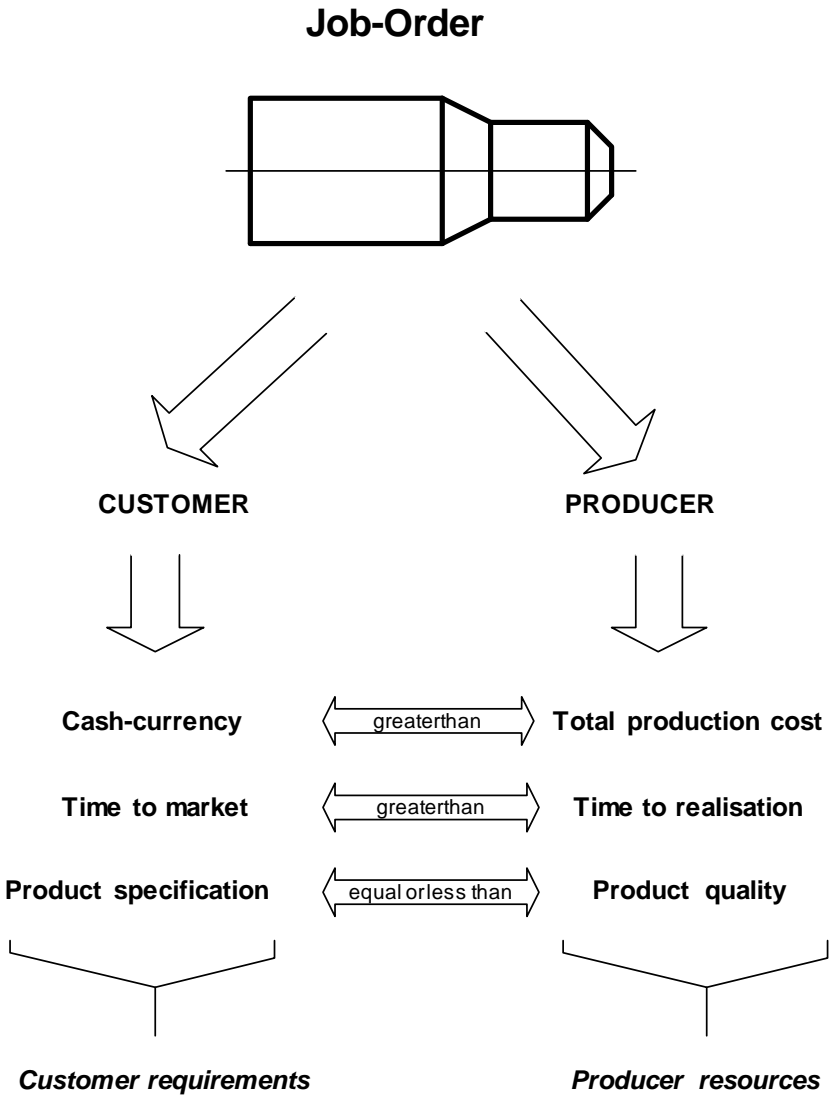


Fig.1. Relation between similarity

3. DEVELOPMENT OF COST VALUATION SYSTEM

Department of Measurement and Automation, University in Zilina (Slovak Republic) and Department of Industrial Engineering, ATH - University of Bielsko Biala (Poland) solve the problematic of production cost valuation. There is concept of Rapid cost valuation based on CA (Computer Aided) support.

The developed methodology is based on the following aspects:

- Similar engineering have similar process plans and consequently similar production cost,
- Group Technology (GT) is very good sophisticated tool for area of similarity,
- Majority of engineering parts of job-order is similar to produced parts,
- There is a section of parts dissimilar to produced parts
- CA system based on GT is utilised for cost valuation of similar engineering parts,
- For similar engineering parts are retrieved process plan of similar produced part
- Exact methodology based on expert system is utilised for dissimilar engineering parts,
- For dissimilar engineering parts are generated frame process plan.

A company may make hundreds or thousands of different parts. Because the parts are made in a concrete manufacturing environment, many parts are similar in some way. Each part is made according to a process plan. Therefore many process plans must be also similar. We can state as many engineering parts are similar afterwards many production costs must be also similar. If similar parts are situated in one group, their process plans and production costs are similar as well.

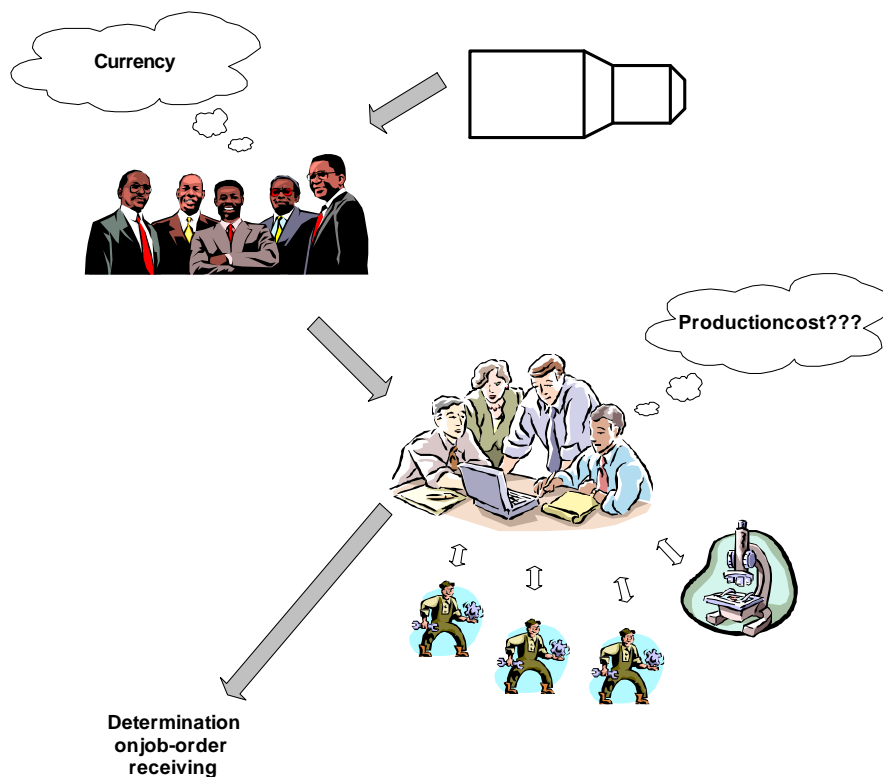


Fig.2. Relation between similarity

Engineers can use the GT philosophy to avoid redundancy by retrieving previously completed items for re-use. This saves design, planning and project time and contributes positively to time-to-market. Although applying the GT philosophy can be viewed as simply applying common sense, it makes more sense for engineering management to have formal GT systems and procedures in place for as many applications as possible. The CAPP (Computer Aided Process Planning) systems based on GT are very wide-spread in engineering industry.

GT emerges as one of the prime forces that will integrate the engineering and manufacturing processes. GT lends order to what has usually been a highly unordered collection of processes. It drastically reduces the negative phenomenon of needlessly recreated design and improves production scheduling and control processes.

Benefits from GT implementation have great importance for a company. Large cost saving can be achieved by GT implementation in production planning and control, process planning, tool design and facility design. Consequently it is suitable to implement some of GT program types.

Rapid cost valuation based on hybrid methods (group technology and exact methodology) implements a coding and classification scheme by which a process plan for a previously planned part is retrieved. The retrieved plan is based on the similarity to the new part. The retrieved process plan is then manually modified as required for the new part design. There is high probability that similar parts have similar process plans and similar costs. This is a basic assumption of utilising the GT process planning method.

GT methods assume that the user is able to determine the appropriate classification codes needed to retrieve appropriate plans, and that plans exist and include features which are closely analogous to those of the new part.

The computer is used as a tool to assist in identifying similar process plans, as well as in retrieving and editing the plans to suit the requirements for specific parts. According retrieved parts is determined production cost.

4. CONSLUSION

Current competitive market conditions need rapid cost valuation as a tool for enterprise management. Certainly the methodology would be based on computer support. The advantage of the methodology and CA support is the following:

- **Precision** of cost valuation is **high**,
- There is **no human** based **influencing**,
- **Time** for cost valuation is very **quick**,

- **Desinterestedness** is very high,
- There is good condition for real **cost monitoring**.

The GT is a very good key to accelerating the movement of a product to market and to the achieving World Class Manufacturing. The result of the GT is not only improved set up and throughput time, but also effective cost reduction through improved design rationalisation and better retrieval of the design data.

5. LITERATURE

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