

OPTIMALIZATION OF MEAT PROCESSING INDUSTRY

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How we can get better results of products by aspects of technology and economy is the question which accurs to experts in economy every day.

The modern rate of living requires to realize the results in economy on the better and more quickly maner.

In the big proccessing plants where the problems of economy are great, sincronization of technology and economy is the important and great work.

Problems are solved the hardest when it comes to alternatively possibilities, and what is specially important to bring bussines decission in the short time.

Fundamental problem in the plant is - how to advance rentability of doing bussines.

Therefore, in our concrete example was the fundamental intention to get higher rentability.

We attain it in production on this way, that we select from entire and potentially possible spectrum those that brings maximum of profit by aspects of group profitability.

We have more possibilities by claiming of production optimalization. For example, we can by aspects of fundamental raw material, capacity of equipments, supplies, transportation, e t.c. optimize production.

The possibilities of claiming optimum is very great. First of all it's important to draw up the point of our problem. We can

solve problem of optimum partially or complexly, with regard to range of work or nature of problem.

Results of optimalization depend of using methods too. We perform with standard or statistical - mathematical modern methods in elaborate of specifications.

With solution of optimalization production problem we get the answer to the question, which products or group of products and which quantity we have to produce, and improve financial effect of plant as far as possible.

Next we will demonstrate the possibilities for partial claiming optimalization of production in two examples.:

1. Claiming of the best use of fundamental raw material after cut compared to quality meat structure and
2. Claiming of rationalization through fortified dreg of product.

Either demonstrated problems presented partial problems in our branch of industry, and they are important for profit of doing bussines meatprocessing industry.

The first example we elaborated with mathematical - statistical methods and calculated on electrical calculating machine. In second example we did elaboration of specifications with classical - calculated methods.

Either results pointed to possibilites of more profitable production.

Because of complicated tehnology in meat processing industry /more phasic process/ and operations, that fundamental raw material /pigs/ presents 80 % and more of all expenses, we decided, try to solve the partial problem: the question of optimal cut of slaughtered animals, which means, in what products in the frame of

single quality of pigs and possible detailed form of cut quality, enter the most important raw material and in what proportions, that we can get the best profit.

Our problem was to find technological - economical optimization of cut in the frame of potentially possible assortment. Because of relatively prompt changes conditions of marketing/supply prices, selling prices/ we decided first to do phase of technological optimization with the point of demand to use raw material, pigs. Raw material was used entirely, except some fat for rendering.

Results we got, we can use it as optimal so long as material norms changes by one or more products.

We can do corrections in a short time.

Following data were necessary for concrete solution of problem:

1. Enter raw material as resurs quantity limitation of entry raw material/pigs/ elaborated per single detailed cuts. Destination of marketing was partially known/for cans on market in U.S.A. England of French/, end this only by main qualitative parts, for example: ham, shoulder, pork loin etc. This destination by technological cut effected to the quantity of remaining qualitative parts. Therefore we had to do optimization per detailed cuts in the frame of single quality. We united production possibilities destined assortments to technological cuts. For every variant of cut we claimed uniting to destined potentially possible assortment.
2. Variable products. Production various types of products with alternatively technological process was condition, that we could apply mathematical methods. For example: alternatively possibilities of processing ham sausage, mortadela, luncheon meat.

etc. For every product we had to found expenditure norms of raw material - meat, per ton of final product. We did it for entire potential possible assortment.

3. Quantity norm sum per single product served us by mathematical formulation of problem - forming of destination or criteria of problem. Immediately we worked at the cost problems. For every single final product we worked out in detail calculation on the base of direct cost product per unit of product.

As we can see from the scheme, processing production in the case more phase process with a great number of interproducts, whose raw material base is not homogeneous, for example, there are many products which needs pork and beef meat. Regarding, that products needs essentially pork meat, we took in calculation only material norms relate to pork meat. All after additions of raw material we took in consideration by expense problems. Starting point for entire work was hog cutting department, because in that department we dispose the point of forward use particular qualitative parts.

We did all variant without market limitation. We took the market in the consideration in the second work phase, where we worked on complexly optimalization production problem.

For the right range of work phases we used specifications of slaughtering department and hog cutting department where we worked out the line of technological operations.

Our work on arrangement entry data we began in slaughtering department, where we learned coarse fibered cut. We did detailed cuts in hog cutting department, where we - in the frame of technological possibilities cut fundamental raw material by the end.

On the base of this detailed elaborated single qualitatively parts of pigs we came to the origin, limitable factors, which

actually means . from 1 stick a 100 kg pig of the best quality we get variable parts by cut, we must use and which we may use alternatively in variable products.

In our example we did 49 variant, which we took into consideration, with regard to technological possibilities of cut on 86 products, which possibility of processing is united to the origin of raw material.

On the base of existing entry prices of raw material and all other direct expenses of elaboration and neto seling prices single products per unit of final product, we calculated bruto neto coefficients for entire potential assortment in the plant. Bruto neto coefficient presents difference between seling prices and variable expenses. It means, that we request those products by which wellget the greatest cover fixed expenses and finds. Because of relatively quick changes of market conditions, copply prices, we decides for natural criteria, what we had mentioned. On this way quantified results of optimal cuts, will remain until some norms do not changes by individual products.

Our problem was to do optimal material balance of account, in fact to find optimal use of fundamental raw material through potential possible assortment. With completed work we draw a conclusion:

1. Technological - economical optimalization of cut pointed to the possibility of improvement financial results, with partially changes in assortment and quantity, to raise and reduce them, if trade centre allow it.

Improved financial result can be used:

- for managing supply and seling prices.
- for increase advertising and propaganda of some products.

2. Natural criterium request maximum use of fundamental raw material indicated as justified. Raw material/meat/ made the most of it almost intirely, except some fat, which we may take out to the rendering.
3. Results, got on the base of natural criteria will remain as long as optimal, when norms of material do not change by some product or more product.
4. Through variable modifications - adition or let of /in origins or variant/ in the model we can calculate more other variant in the short time.
5. Results of this phase of work get us whole catalogue/49variants/ optimal detailed cut per single qualities, and the review assortment/in tone/
6. Those results can use work arrangement inascorting operative programmes in short term/weekly, dayly/ in sinhronization with commerce and with department for plan and analize.

In the second example I loded for economical effects upon enquired dreg of product. With elaborate so compounded and delicate matter - it vas my magistracy work - I had intention, to get my share in assurances, that technological problems inmeat industry are not only technological but economical too, and the one and the other has evidence in higher bussines effects.

Meat industry includes in a very small number of industry, where industrial expenses are high, what was problem, which was solved from other aspects in the first example.

Because of this, the relevan research factor of intermediate resors, which are evidently hidden.. through dregging products on the marker supplying animals, in family structure, maintenance and fat degree, what reflect in randman unit of supplied meat.

Expensive paid animals has to get optimal randman. Unless such a case is not in nonoptimal size losses already in fundamental raw material supply.

Fither losses grow by the cooling treatment, freeze, storing and transportation.

Growing losses reasons in the cases ahat are mentioned are not still today elaborated thoroughly. Destination of this work was, to learn about rezervs which are hidden in meat industry, and access his exploitation, as in section of reduce losses on the market animal supply, as cooling, freeze, storing of various sorts meat industry.

Analyses of dreg were performed year by year on various products in every four seasons.

Elaborate of supplied and slaughtered animals, as the use of it, analyses were made by elaborate of enimals, finalization of various products, balancing after slaughter, cooling, freeze, manipulation of finalization.

Results entire studing pointed at following:

1. To maintain hygiene of slaughter and elaborate of various meat patrs in all process of work.
2. The use of faser cooling after slaughter, as to reduce dreg of slaughter.

We must point the attention to relative wet and temperature of room, but it we know optimal limit of temperature, we save a lot in weight of meat, as in its holding too. We suceed to keep its natural appearance and taste.

3. We must work permanently on shorting product cyclus for half durable and durable product.
4. Engaging system of animals by suppliers should cancel. It

should inaugurate engaging at line of slaughter per unit of ran-
than, so that manufacture and industry can be protected.

5. It should restore seling net for seling meat parts up to
this digree, that knows the most necessary problems from te-
chnology. I think, that every expert - economist or technolo-
gist who works i meat industry must know these described
problems, then he can't guide efficiently bussines politic
in process of supplying animals, or production and seling.
Just supplying and seling does functions which brings higher
or smaller income.

6. It work in research of dreg is necessary in sausage products
all sorts and apply that regime which causes smaller losses
in product of finalization.

We should introduce daily inspection of dreg and direct
attention to responsible functions for every day stay product and
ascertain what are losses in quality or quynntity.

Knowledge of problems we met in meat industry, should help
us to orient work in meat industry and contribute higher bussines
efficiency.