PRODUCER MATRIX – INSTRUMENT FOR INNER MEDIUM ANALYSIS, APPLIED FOR ELECTRODISCHARGE MACHINES MANUFACTURERS

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ABSTRACT:
The producer matrix is an instrument for internal medium analysis, relative to other competitors from the same industry. The paradox of using the managerial instruments – matrix client and producer matrix – is that the competitive advantage can be obtain only through movement within client matrix, but the organization can actuate only on variables from producer matrix. This is achieved through movements on different directions – strategic options – on the basis of essence competencies, which characterize the analyzed organization. The paper exemplifies the application of producer matrix in case of electrodischarge machines manufacturers, highlighting the specific essence competencies leading to sustainable competitive advantage.

KEYWORDS: producer matrix, costs, efficacy, essence competencies, electrodischarge machines.

1. GENERAL CONSIDERATIONS
Producer matrix is a specific instrument for inner medium analysis, necessary step in order to adopt an appropriate development strategy. This activity is a component of the first stage of strategic management process, namely business medium analysis, implying evaluation of strategic resources, capabilities and distinctive competencies.
The external analysis, which establishes the attractiveness of competitive medium, is not sufficient for taking the decision to enter certain markets. It is like an athlete who decides to compete in an attractive speed running, but having the appropriate physical structure for long distance courses. This question of primordiality of external medium analysis or the inner analysis is fundamental. These two components must be taken into account in a permanent interdependence [1].

2. THE VARIABLES OF PRODUCER MATRIX AND SPECIFIC MOVEMENTS
The producer matrix is based on two variables: the efficacy and the cost per unit [2], as it is presented in fig. 1. Hence, the producer matrix establishes the relation between the relative cost per unit and relative competencies of the organization, which create perceived use value (PUV).

Fig. 1. The variables of producer matrix

Competencies from vertical axis are called efficacy competencies, aiming the fulfillment of strategic objectives related to perceived use value increase of organization products, in the following approached analysis - electrodischarge machines of organization A. The evaluation of the relative values of producer matrix supposes the comparison between homologous values obtained by competitors from that industry. If the organization decreases the costs per unit, seemingly moving to west, but its competitors achieve a greater reduction of their costs per unit, then the new position of analyzed organization within the matrix is closer to the east (fig. 1).
Similarly, if the concurrents make their efficacy competencies superior than those of the organization A, then the relative
movement is to the south, and not to the north as it is initially aimed. There is an indirect bond between client matrix and producer matrix. The competitive advantage can be obtained only as a result of movement within client matrix, through growing vectors. The ideal direction obtained is to the NW [6].

The paradox of this interdependence between the two discussed matrixes is that the organization can only actuate on the variables of producer matrix, on the corresponding directions:

- Decreasing the costs per unit, aiming increasing of efficiency;
- Increasing of essence competencies in order to obtain competitive advantage [2].

3. Evaluation of Essence Competencies for Electrodischarge Machines Manufacturers

There are three types of essence competencies:

- Operation competencies;
- System competencies;
- Costs focused competencies.

Competencies of operation have technical nature, being related to smooth functioning of an organization on a certain market. They can vary significantly in different industries, but in some cases, there are such competencies that match more fields.

For an electrodischarge machines producer, the operation competencies are: manufacturing technology, components and rough materials supplying and distribution network as it is illustrated in fig. 2.

Certain weights are assigned to these operation competencies depending on their influence concerning the strategic objectives fulfillment (efficacy) or costs decreasing. The weights are differentiated corresponding to different market segment. In this case, taking account of weights values, it is considered that this organization type has to bring sufficient added value within its products. Competencies are evaluated on a normalized scale determining the concurrential profile (fig. 2). As it can be noticed, the particular profile emphasizes a certain competency as technological level, which has to be higher in order to get competitive advantage.

System competencies act on the whole product as well as on the processes that create the respective product. They represent a powerful source to obtain the sustainable competitive advantage, increasing the efficiency, through:

- Efficacy increasing;
- Costs decreasing.

Generally, the system competencies are: quality assurance, value increasing and innovation capacity.

- Quality assurance. Quality management shows that is chipper that an organization achieves a product from the beginning, with

![Fig. 2. Concurrential profile of an electrodischarge machines producer](image-url)
a quality level required by customer, instead of treating unconformities. The attention must be paid preponderantly on preventive actions and less on corrective ones. Hence, through this competency, the organization lowers the unit costs and raises efficacy (increases perceived use value of its products).

The approach of management as system (the one of quality management fundamental principles – ISO 9000) imposes the improving of all processes contributing to products achieving – primary activities and support activities (Porter’s value chain, fig 5).

- **Value increasing** supposes products modernization through attention paid to quality characteristics whose weights is high in the frame of perceived use value [6]. Thus, an organization monitors the clients requirements and develops its products for increasing of PUV.

- **Innovation** can be approached in two ways: quantum mode (with great steps) and incremental mode (small steps, but continuously). The relative risks resulted from the mentioned approach are different, respectively, great and low.

In EDM field, the creation of PUV chiefly is based on innovation capability and also on quality assurance. Therefore, the two essence capabilities must have high weights in the frame of concurrential profile presented in fig. 2.

As it can be noticed, the particular producer has not a favorable profile, because the relative innovation capacity and quality assurance are under 0.5, relative to the main competitors on this market segment.

**Competencies focused on costs decreasing are:**
- continuous costs decreasing;
- economy of scale;
- control and coordination;
- production costs factors.

- **Continuous costs decreasing.** The natural trend of organizations is to increase the costs along with their development; additional functions appear within the support activities - trend of organizational bureaucracy increasing as a result of entropic model of thinking. Organization response to this trend is simplification, reflected by continuous costs decreasing. This way of managerial action is to reduce the costs which have low influence on perceived use value of organization products. In case of electrodischarge machines, the producer has to concentrate the resources on activities influencing the machining precision and EDM-ed surface quality, characteristics required by potential clients [6].

The costs decrease could be the result of:
- valorization of learning process, which is very effective in case of high complexity processes and products, i.e. electrodischarge machining fabrication;
- „just in time” management through optimization of material fluxes and implicitly financial ones;
- leadership – building of professional and financial motivation;
- continuous education of employees.

- **Economy of scale** has the effect on costs decreasing through capital investments transferring on a greater production volume, thus, resulting lower unit costs. Although, the ED machines fabrication is not a high series one, adopting the experience curve model...
assures unit costs lowering at increasing of relative cumulative production.

○ Control and coordination implies optimum deployment (maximum efficiency) of all processes contributing to products achieving. This competency makes the difference between organizations concerning the quality of management. Efficient coordination is also extended in organization exterior through integration with suppliers and clients, as it is presented in fig. 6.

○ Costs of production factors comprises those concerning employees, rough materials, components, investments, utilities etc. A Romanian ED machines producer has a beneficent position even if its other competencies are inferior to those of foreign competitors. Thus, the organization having high production costs from countries with developed economies in compensation must grow the level of their essence competencies. In conjunction with the economical development, the organizations from countries as Romania will progressively loose this important advantage.

In fig. 3, it is illustrated an example of an organization concurrential profile focused on costs with corresponding assigned weights and also a relative evaluation of specific competencies on normalized scale. This ED machines producer has to move up the level of coordination and control, as well as continuous costs decreasing in order to obtain sustainable competitive advantage (SCA).

The final goal of any strategy is achieving SCA. Therefore, the essence competencies previously presented must be distinctive ones – which differentiate the respective organization relative to its competitors, functioning on that market. The essence competencies determine only good functioning of an organization in that industry. For a Romanian ED producer, taking into account the high level of this market development, a distinctive competency could be the innovation capacity strongly associated with control and coordination.

In other words, distinctive competencies are based on certain resources, having intangible character, which are difficult to imitate or substitute. Generally these resources can be:

• innovation resources;
• market reputation (company image);
• informational resources (know-how);
• organizational culture etc.

When the essence competencies do not match the distinctive ones, the organization aims to obtain resources and additional competencies trough internal development, strategic alliances and acquisitions.

4. PRODUCER MATRIX BUILDING

In order to build the producer matrix, some stages are necessary (fig. 4):

Stage 1: Costs analysis in value chain. Firstly, it is used Michael Porter’s inner value chain (fig. 5), which comprises the whole processes contributing to product (products) accomplishing - the subject of initial analysis with customer matrix [6].

The example of inner value chain - from fig. 5 - indicates a high weight of costs on activity of components supplying, which emphasizes a low added value within organization product. Hence, this ED machine is not differentiated relative to the competitors ones. In order to get a superior market share, the analyzed organization must have competencies focused on costs decreasing. For a further deeper analysis, the processes contributing to product accomplishing can be detailed. In this case, the supplying activity is analyzed using the external value chain, which is related to components suppliers (fig. 6).

In order to actuate on possible high value weight assigned to production, the high consumer resources processes must be identified and improved if they have no strong connection with product characteristics, which determine high perceived use value [6].
Analysis is also extended on external value chain (fig. 6), studying the possibility of costs decreasing implying all the organizations from the chain, participating to product achieving. The analysis emphasizes a high weight assigned to supplying, which has to lead to an increased preoccupation to find new providing sources.

Stage 2: Market segment establishing. It is necessary to obtain the agreement of managerial team on market segment addressed by the organization product. Different essence competencies could correspond to various market segments and especially, different weights could be assigned to these specific competencies. It is also possible that certain competencies are appropriate to more market segments.

Stage 3: Identification of essence competencies. The problem that has to be solved by managerial team is to identify the competencies of operation, system, focused on costs, which are necessary for the organization to increase the share of the market segment addressed by its products.

Stage 4: Rating of essence competencies.

For rating on normalized scale, the analysis is extended to the main competitors to obtain the relative values in producer matrix. The aggregate ranking of operation and system competencies \((N_{os})\) is assessed using the following relation:

\[
N_{os} = \sum p_i C_{osi} \tag{1}
\]

where:

- \(C_{osi}\) is the relative rating assigned to operation or system competency \(i\) on normalized scale (fig. 2, concurrential profile);
- \(p_i\) - the weight corresponding to competency \(i\) \((\sum p_i = 100\%)\).

The \(N_{os}\) value determines organization position on Oy axis from producer matrix.

In order to get the organization position on Ox axis, information concerning production costs of competitors is necessary, but difficult to obtain. Therefore, the profile of costs focused competencies is considered as referential. Thus, it is possible to have competitors ranking based on exterior information.

The aggregate ranking of costs focused competencies \((N_{fc})\) is determined with the relation:

\[
N_{fc} = \sum p_i C_{fci} \tag{2}
\]
where: $C_{fc_i}$ is the rating assigned to cost focused competency $i$ on normalized scale (fig. 3, costs focused competencies profile);

$p_i$ - the weight assigned to competency $i$ ($\sum p_i=100\%$).

For more accurate evaluation of rating $C_{osi}$, $C_{fc_i}$ from relations (1) and (2), benchmarking can be used [4].

Stage 5: Building of essence competencies matrix. The aggregate ratings previously determined are used in producer matrix to obtain competitors positions: coordinate $x = N_{fc}$, coordinate $y = N_{osi}$ (fig. 7).

![Fig. 7. Example of competitors positions in producer matrix](image)

Depending on organization position in producer matrix, strategies for competencies improvement can be elaborated. Basically, competition is on NW direction, mainly actuating on one of matrix variables. The analyzed organization (A) has a relative good position regarding unit costs, but moving to the NW, it has to improve operation and system competencies.

The feed-back relations from producer matrix building show that a possible approach of previous stages can occur due to high dynamics of concurrential medium.

An ED machines producer can apply a costs focused strategy (stage 1), resulting a new position within the matrix. Another possible situation could be launching to new market segment, imposing the reconsideration of stage 2.

The evolution of concurrential medium leads to resume the stage 4, meaning relative competencies ranking again.

Nowadays, on long or even medium term, it is also possible to modify the weights $p_i$ assigned to essence competencies or even competencies change (stage 3).

5. CONCLUSIONS

The analysis of an ED machines producer, highlights that producer matrix is an instrument applicable at organizational level, leading to identification of essence competencies to earn the market. Practically, the same established competencies can match other industries (different similar markets).

The producer matrix analysis shows the strategies adopted by competitors in order to obtain a more favorable position in client matrix.

If the client matrix reflects the situation for today, the producer matrix offers indications on evolution of client matrix in the future.

REFERENCES


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