# Competence Matrix and workforce flexibility on Brazilian automotive chains

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## Abstract

The chains global manufacturing, especially automotive chains, standing face pressures to reduce operating costs. The automotive industry is extremely competitive and undergoes significant fluctuations in demand, which requires fast adjustments of resources, including manpower, to market requirements. For this reason, it is important that employees become multifunctional, in order to strengthen the organizational skills necessary to build essential skills, fundamental to strengthening the organization meet the demands of the market. The deployment of the array of skills such as tool management activities identifies training needs, fundamental to "multifunctionality". The methodology used in this study was exploratory research associated with the case study, in order to contribute theoretical and practical, as for identifying improvements obtained with the array of powers as in the identification of the difficulties and methods of its implementation.

**Key words:** Competence, Global automotive chain, Workforce flexibility

### Introduction

The Brazilian automotive industry is undergoing significant changes in its global supply chains, due to the international competition, different "nationalities" of capital, different management models, fragmentation of markets, as well as the dynamics of innovation. Pure models of lean production do not always respond to emerging needs. It is often necessary to combine the flexibility of craft production with scale of mass production avoiding the high costs of the first and the stiffness of the second (Okubaro, 2001). This combination enhances the unbundling of companies engaged in the governance of automotive chains and stimulates the process of integrating horizontal / vertical, characterized by outsourcing, channeling activities increasingly complex supply chains of top providers.

Thus, new requirements in terms of quality, reduction of process variance and waste arise continually, demanding increasing specialization and flexibility of the employees. Companies should establish policies for learning, to align the organizational competence to competitive strategies of the company, strengthening the strategy of operational excellence based on quality/cost, typical of the automotive industry, whose platform is the production of mass, as defined Tracy and Wiersema (1995). The Competency Matrix is the organizational tool that

manages the assignment of tasks to operators, aiming interchangeability of the workforce in various jobs in order to identify training needs, reduce risks of failures in the process and strengthen the quality of the final product.

**Literature Review**

By differentiating competency aptitude, skill or knowledge, McClelland (1973) defines it as an inherent characteristic of the individual, able to make its superior performance in carrying out an activity. In fact, as the author described, competence is a set of skills, abilities and knowledge, which explain a high performance. As Primi et al. (2001), competence is a structural form of intelligence, expressed in the form of actions and operations used to relate objects, situations, phenomena and people who wish to know.

Following the mentioned authors, the result of skills and abilities are associated with the plan of running tasks, but through training, where skills are articulated, they may establish new skills. Berti et al. (2009) define competence through two perspectives: professional and educational. According to the authors, professional competence is an ability that is revealed only in the workplace and its classification is only possible when it is put into practice and by appropriate means of measuring and control. The power is always associated with some physical activity, as highlighted by Setzer (2006). However, Fernandes, Mills and Fleury (2005). argue that the simple stock of individual competence, without joint or connection is not sufficient to enable an organization to address the need for innovation and flexibility. It is necessary that the individual skills match up properly to provide gain to the organization, as pointed out by Prahalad and Hamel (1990), when considering that the core competencies of an organization, resulting from the appropriate grouping of individual resources, enabling the organization to offer real benefits to their customers, and create barriers to competition and ensure access to diverse markets. Thus, we can say that organizational skills are formed from individual functions and activities, some of these skills will become fundamental to organizational core competencies and these, in turn, will be basic for competitive strategy, providing perception of the company by customers. As Fleury and Fleury (2004), maintaining this business competitiveness in the long run, depends directly on the administration of the organizational learning process in the same manner in which Prahalad and Hamel (1990) argue that organizational learning is the collective responsibility for excellence in conduct of business, resulting in the execution of basic skills (core competence), fundamental to strategy and business survival.

**Intellectual Capital and Competences Management**

As discussed above, core competence stems from organizational skills, which origin is in the individual skills, i.e., the intellectual capital of the organization. This intellectual capital, the difference between book value and market value of the company is formed by the human and structural capital, as the approach of Chen, Cheng and Hwang (2005), with the primary focus of this analysis will be the human capital.

Given this vision, strengthen human capital increase the company implies the relationship "market value / book value", which means business efficiency in creating tangible and intangible values within the organization, as the approaches Puntillo (2009) and Pulic (2000). Therefore, from the perspective organizational, is convenient to treat the competence not only in individual terms, but also in the collective context, as discussed by Prahalad and Hamel (1990), under the management approach.

In order to raise the necessary skills, it is important that the senior management of the company develops the management skills to identify critical items to the expected business performance, as discussed by Brandão et al. (2010), establishing the positive and negative relations with the expectation of customers. Therefore, the top management can use structured questionnaires, interviews with internal employees and customer's voice, among other instruments, according to their accessibility to the sample. Having collected the data, and using statistical tools for each situation, it should build the correlation matrix that establishes the individual skills necessary for critical items associated with the business strategy. As Cardoso (2004), the development of Competency Management includes the following steps, detailed by Borsatto, Shibata and Santos (2006):

1. Building preliminary trees of competence: structures that help employees to identify the knowledge needed by the organization;
2. Identify needs and skills of processes: this step identifies knowledge, activities and behaviors needed for each activity. It is this step that builds **Competence Matrix** in each business area analyzed;
3. Construction of the global tree of competences: consolidation of Competence Matrix constructed. This step identifies any gaps, redundancies and inconsistencies of the process to be corrected before construction of the final matrix;
4. Mapping availability and expertise: is the stage where you identify the skills needed by the organization, in its entirety, consolidating all areas involved;
5. Survey of gaps: Crusaders are data on the needs of process, required expertise and availability of employees involved, establishing a balance of learning and planning skills required.

Pacheco and Rodriguez (2011) propose a model of skills management through nine steps, summarized below:

1. Prioritization of core competence as the dominant competitive strategy: skills are defined as proposed by Fleury and Fleury (2004);
2. Strategic focus of the competency model: to determine problems and solutions;
3. Mapping critical processes;
4. Identification of critical functions: prioritized duties and functions associated with critical processes;
5. Mapping critical and strategic individual competencies: the inventory of skills, and behavioral profiles desired. It is this step that starts the construction of Competence Matrix;
6. Linkage map of critical skills and strategies to the Balanced Scorecard and Strategy Map: the strategic individual competencies are linked to strategic map;
7. Diagnosis of individual strategic skills gaps;
8. Developing the adequacy to the human assets plan;
9. Assessment of results from the competency model.

Both approaches aim to identify the necessary training programs, professional profiles desired, proper distribution of employees, indices of competence and adequate gaps to be filled.

**Organizational Training and Competence Matrix**

As we saw above, the Competence Matrix is the tool resulting from the process of Competency Management, which falls under the category of Visual Management Processes, indicating the levels of competence through symbols associated with a collaborator. Figures 1 and 2 indicate

Competency Matrices company's automotive analyzed, in which quadrant of a circle or colors indicate the state of knowledge of an employee.

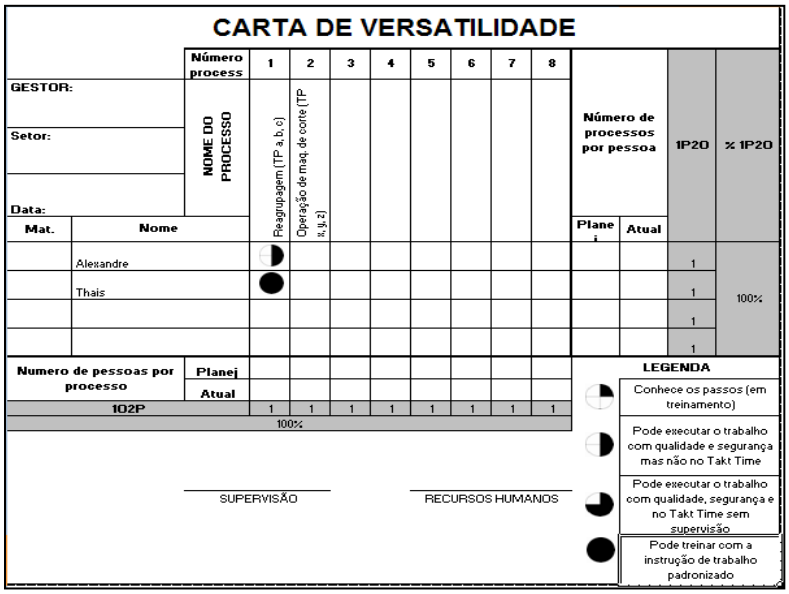


**Figure 1: Competence Matrix identified by quadrants**

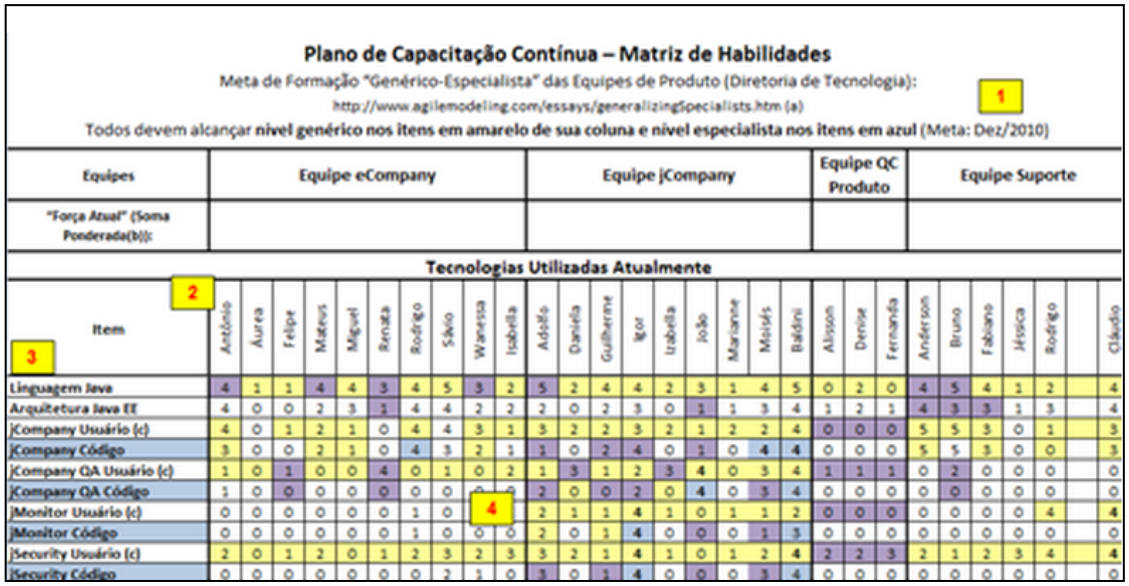


**Figura 2: Competency Matrix identified by Lickert scale**

In the above example, values of 0 to 5, according Lickert scale, indicate the level of operator training after training theoretical, based on e-learning platform, with 0 indicating no knowledge of the operation, up to level 5 which indicates full operating capacity, with operators able to train others in audit and enforcement activity. Through the information contained in the matrices above defined the operational training, aiming flexibility of the employees. According Bohlander et al. (2005), it is recommended that training presents four phases: (i) needs assessment, (ii) design program, (iii) implementation and (iv) evaluation as a process PDCA.

**Methodological aspects**

In this study we used the exploratory research approach as Gil (1993), supported by case study, according to Yin (2001). The research instruments used were structured questionnaires applied to production managers, combined with interviews applied to trained personnel for the activities of the factory.

We analyzed the eight types of matrices qualifying existing factory, involving a total of nine hundred operators active in cutting processes of laminated and tempered glass, annealing furnaces laminates, assembly and final inspection. The results were analyzed quantitatively and qualitatively, to identify the adequacy of knowledge of matrices with company goals.

**Objectives**

The primary goal of this work is to analyze the results obtained with the implementation of Competency Matrix and its adjustment to theoretical training in e-learning environment, with training activities in their own production environment. Intended to supplement, it will evaluate the need to adapt the Competency Matrix to a new configuration.

**Results**

In the manufacturing unit researched training modules are used in theoretical e-learning platform developed by professionals from plants in different countries, with the aim of adapting new entrants to the work environment and train operators continually experienced in the use of new equipment.

At the same time, operational training by experienced operators are applied (grade 5, as shown in Figure 2) to the less able or the inexperienced, in which new entrants are scored between 0 and 4.

In order to evaluate the correlation between the percentage of use in theoretical training modules (e-learning) and the score assigned in operational training, a sample was made with employees who never received theoretical training and all employees who had scores 3 (trained) and 4 (trained and can teach) in training operations. It was observed that considered trained staff and able to perform operations on the rows, had never received training courses. This result confirmed data obtained from questionnaires and structured interviews, in which some managers and employees considered the theoretical training insufficient to absorb the requirements of quality, speed and flexibility of the operator. The goal is to use an operator present at least 80% in each training module to be considered fit to work, and this level of recovery was not achieved by most operators.

At the same time it was found that training run directly in the production area, based on "copy of activity," was not appropriate because it presupposed some previous experience on a particular product and/or production process, which is not always true. At the same time, the operator had experienced difficulties in applying the operational test, because its tasks performed within the time standard, which do not provide training times.

When analyzing arrays of skills, it was found that one of the models in use did not indicate the required minimum number of employees trained (with scores 3 and 4) for each job, to ensure product quality.

**Comments**

A multidisciplinary team was assembled with two staff training, two employees of the human resources area, a production supervisor and an analyst of methods and processes for the formatting of the new model of theoretical training.

In order to associate the practical and theoretical training properly, establish a minimum number of employees index above 3 to act in the workplace and identify the minimum core activities so that employees can act on jobs reliably, we proposed new Competence Matrix, Figure 3, indicating the name of the operator, product line, a position in which it operates and processes. Each operator will be ranked 1-4 according Lickert scale, indicating whether it is new function (1), is in training (2) if is apt to the activity (3) or is fully trained and able to training of peers (4).

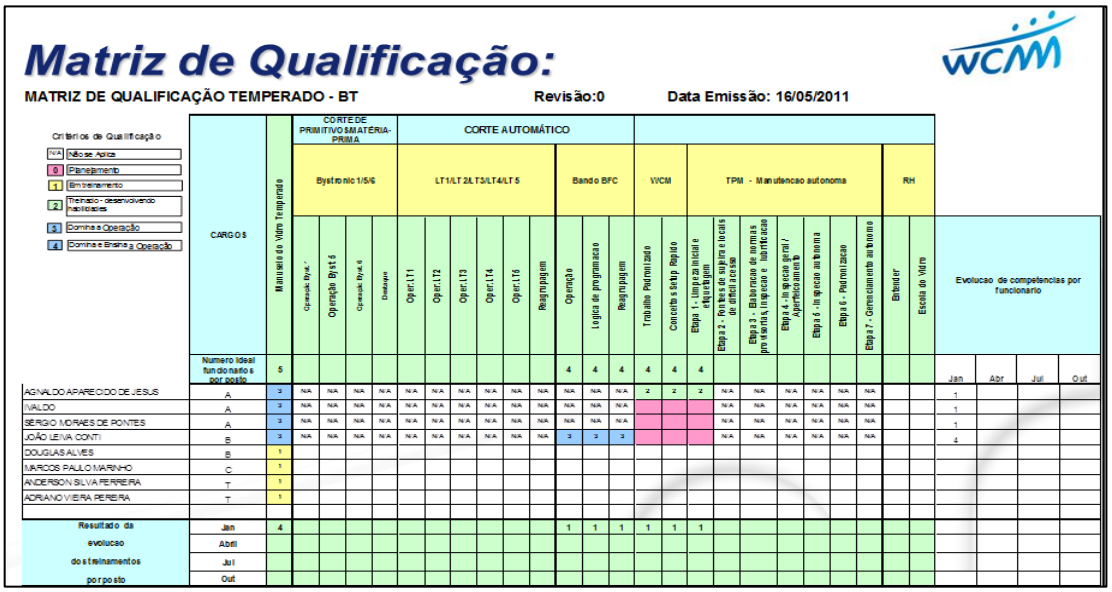


**Figure 3: Competency Matrix changed and called Matrix Qualification,**

It was added NA, Not applicable, for jobs that require no training; adopted the indication of cell (table) or empty in pink for the operator to be trained to act in the workplace, and, under the job name was included the optimum number of skilled employees (with index 3 and 4) to ensure product quality. It was also established quarterly to review the array, since it was found that the previous arrays were not regularly updated. In the last column of the matrix was established an index of evolution of learning per employee.

It's important note that, despite beginning, the first group of works trained after changes shown more than 80% in each training module.

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