



Forschung an der Fakultät für Maschinenbau und Wirtschaftswissenschaften

Industrial Competence – A Challenge for Industrial Management

Industry is, without doubt, of high importance for the social development in general. This is true not only for the specific situation in Austria but also in a global context.

Expectations regarding industry in general and industrial enterprises in particular, have always been very high and will most probably remain in future. More competition, higher awareness of the society in regard to environmental effects caused by industrial plants, are only a few examples.

Industry nowadays can be seen in many different forms. Despite all the different forms of industrial activities, it is still possible to make statements, which are of general value. G. Hamel and C.K. Prahalad have brought with their book "Competing for the future" the idea of competences resp. core competences in the focus of scientific work: "A core competence is a bundle of skills and technologies that enables a company to provide a particular benefit to customers." (Hamel G., Prahalad C.K.; 1994, p.219).

In that sense, the work on industrial competences seems to be of high value for companies and the concerned individuals.

The development of individual competences can be realized in different areas:

- Personal competence: „Talents“
- Social competence: „Smarts“
- Professional competence: „Knowledge“
- Methodical competence: „Skills“

In this context Industrial Management can be described in two ways. In institutional orientation, Industrial Management is including all human resources or organizational units who are engaged with management tasks in industrial enterprises. In functional orientation these management tasks can be seen in three core functions according to the concept for Integrated Management (by: Bleicher K., 1999)

- Design of a framework, which supports the development of knowledge and skills.
- Steering by the formulation of targets and the determining, starting and checking of activities in a system and its elements.

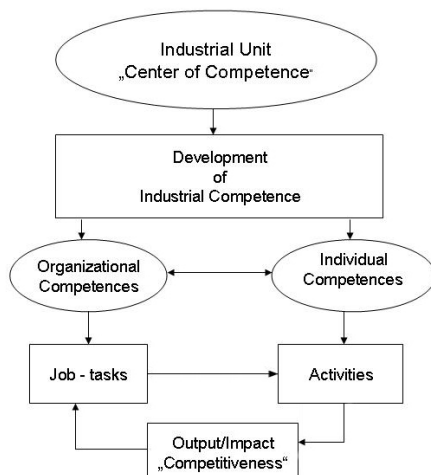


Fig. 1: Development of Industrial Competences on individual and organizational basis

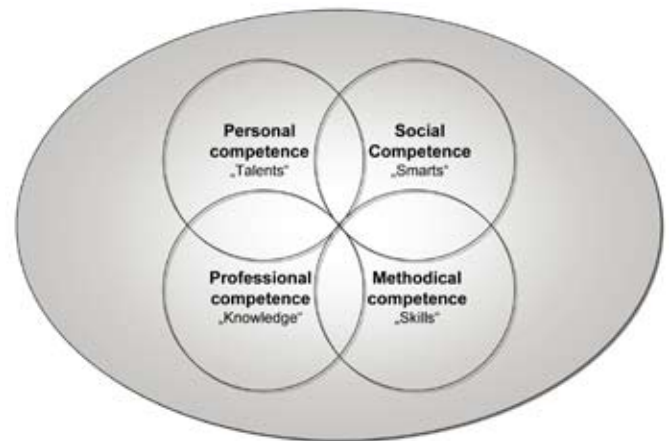


Fig. 2: Development of individual competences

- Development by the introduction and realization of change processes.

As a possible answer to the challenges of today and for the future a model-based approach for Industrial Management has been realised. In the present form, the structure within this model is built by modules in three different categories, which are condensed in three concentric zones:

- Basic modules expressing the basic ideas of Industrial Management; they are part of the core zone.
- Functional modules expressing the different functional priorities in Industrial Management; they are part of the differentiation zone.
- Cooperation modules expressing the approaches of cooperation of various functions in Industrial Management; they are part of the integration zone.

The basic modules show the intellectual basis of Industrial Management. They are therefore in the centre of the model - the core zone. Based on the concept of Integrated Management (by: Bleicher K., 1999) the basic modules are:

- Value Management
- Normative Management
- Strategic Management
- Operative Management
- Change Management

In Value Management the identification of entitled groups and their expectations is of interest. Each of these entitled groups expects to have certain benefits and it is evident that these expectations cannot always be equally satisfied.

In any case, this basic orientation has a large influence on the company's policy and thus on the principles in the Normative, Strategic and Operative Management. In Change Management, possible approaches for the introduction and successful realization of change processes are studied systematically.

With these basic modules ahead specific functional modules can be established. They are created by functional differentiation; this is why the zone around the core zone is called the differentiation zone. Innovation Management is intentionally put at the beginning of the list

as it is the function of organization, management and development of products and processes. Closely linked to the Innovation Management is Marketing Management. These two functions determine the successive processes of added value. Staff Management provides, as a specific function of the work preparation, for the required preconditions regarding the human resources; the same is done for the technical capacity by Facility Management. Material Management is focused on the various aspects of the material flow; Energy- and Environmental Management can be considered important in addition. In Information Management the necessary information systems are created, managed and developed. In Production Management, the combination process of the production factors is handled specifically. Efficiency Management and Cost Management deal with the economic aspects of the added value chain; in Quality Management the aspects of quality are considered. Last but not least, Financial Management has to provide for a sound financial basis.

The outer layer of the model consists of the cooperation modules situated in the integration zone. These modules should support and strengthen the cooperation beyond the different functional modules. They show possible approaches to overcome barriers which can easily be the result from too much differentiation.

Among these possible approaches, based on the actual state of the art in Industrial Management, four cooperation modules are to be looked at more closely. Project Management has been used in almost all industrial areas for the successful cooperation in the context of special projects. This cooperation module has to be regarded as temporary.

In Generic Management a possible cooperation beyond the function modules is targeted by means of a far-reaching integration within the existing core organization.

In actual developments, the functions of Quality Management, Environmental Management and Safety Management are integrated as well as possible. The starting point for the integration of partial management systems is to be found in the standards or other regulations which are already of relevance or are to be expected in future. Process Management as a possible cooperation module can be characterised by its focus on the relevant value adding chains of an industrial unit. In today's development it becomes more and more obvious that the creation of value adding chains, i.e. the value adding system within the Process Management, the establishment of the relevant knowledge, gains in importance. Thus the Knowledge Management can be considered as a further important cooperation module, particularly in regard to organizational learning. The present development of industry is still characterised by high dynamic changes. If the requirements for industrial enterprises increase, the requirements for the people working in management increase, too. Thus the professional competence within the industrial units has to be developed. As a consequence the requirements for institutions which work out in research and teaching new solutions for the problems of the industrial practice will increase too.

The Institute of Production Science and Management and the Institute of Industrial Management and Innovation Research at Graz University of Technology therefore can be seen as an academic platform for the development of industrial competences. The successful cooperation of industry on the one hand and academic research and education on the other seems to be of advantage to both sides. It is especially the Graz University of Technology which has always been trying to facilitate such cooperation.

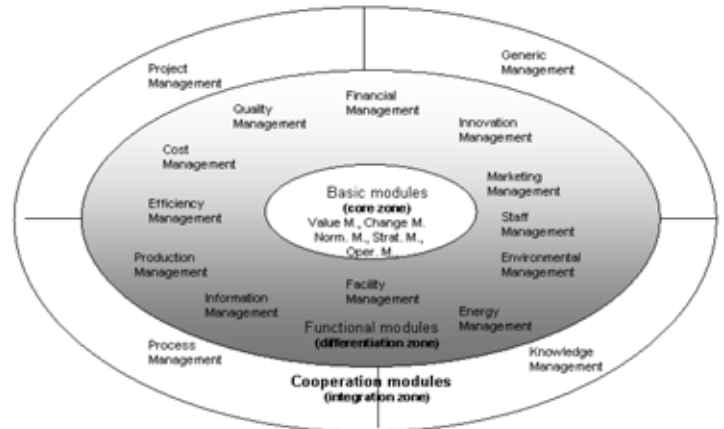


Fig. 3: Different modules within the "Graz Model for Industrial Management"

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2. Hamel, Gary, Prahalad, C.K.: Competing for the Future, Boston, 1994
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Summary

Expectations regarding industry in general and industrial enterprises in particular, have always been very high and will most probably remain in future. On the one hand, industrial activities supply products and services as the essential basis of today's standard of living; on the other hand industrial activities create numerous jobs, so that people employed by industry make a considerable part of the total employees. The present development of industry is still characterised by high dynamic changes. If the requirement for industrial enterprises increases, the requirement for the people working in management increases too. Thus the professional competence within the industrial units has to be developed. As a consequence the requirement for institutions which work out in research and teaching new solutions for the problems of the industrial practice will increase too.

In this context a model-based approach of Industrial Management has been realized, the "Graz Model for Industrial Management". It can be seen as a possible answer on the challenges of today and for the future. The Institute of Production Science and Management and the Institute of Industrial Management and Innovation Research at Graz University of Technology therefore are working as an academic platform for the development of industrial competences. The successful cooperation of industry and academic research and education seems to be of advantage for both sides.