Innovation in manufacturing SMEs through people involvement

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Technology Transfer & Knowledge Transfer

Pressures of space and time increasingly limit the innovative potential of SMEs. Overcoming these pressures requires competences based on knowledge which are often not typical of the mainly experience-based development histories typical of smaller firms.

From this observation, the need arises to look for new knowledge from the outside. This knowledge can be found in Technology Transfer Offices (TTOs) in research centres, universities, large enterprises with R&D facilities, suppliers and customers. From a mere academic paradigm, open innovation thus becomes a strategic requirement. Once the need for specific knowledge has been identified, this knowledge must be acquired, adapted, assimilated and integrated into the organisation and its production context. The "absorption capacity" of the firm is therefore vital to consider.

Technological transfer is often seen as a context specific activity. As knowledge is transferred to the firm it becomes contextualised, generating new innovation competencies within that specific corporate environment. In the sense that "competence is knowledge in action", knowledge management then focuses on the transformation of this knowledge into value for the company.

Generally speaking, a distinction is made between functional knowledge and operational knowledge, at least in general terms. The former knowledge is based on scientific, codified content traditionally found in universities and research centres; the latter is typical of enterprises, having an operational connotation and supporting tacit, experience-based knowledge. The distinction between the two concepts can be expressed as: "Scientific Technology and Innovation" (STI) and "Doing-Using-Interacting" (DUI).

These two worlds may often not interact with each other; however if their respective differences are not seen as unbridgeable, but rather as integrative and complementary, they build the

strength of a team. It is obviously necessary to overcome cultural barriers and differences in values to gain a mutual understanding of different languages and to eliminate any presumption of superiority. By bringing together different types of competences, integrating scientific knowledge and know-how, a company can reach suitable levels of knowledge thereby triggering innovation.

Factory of Knowledge

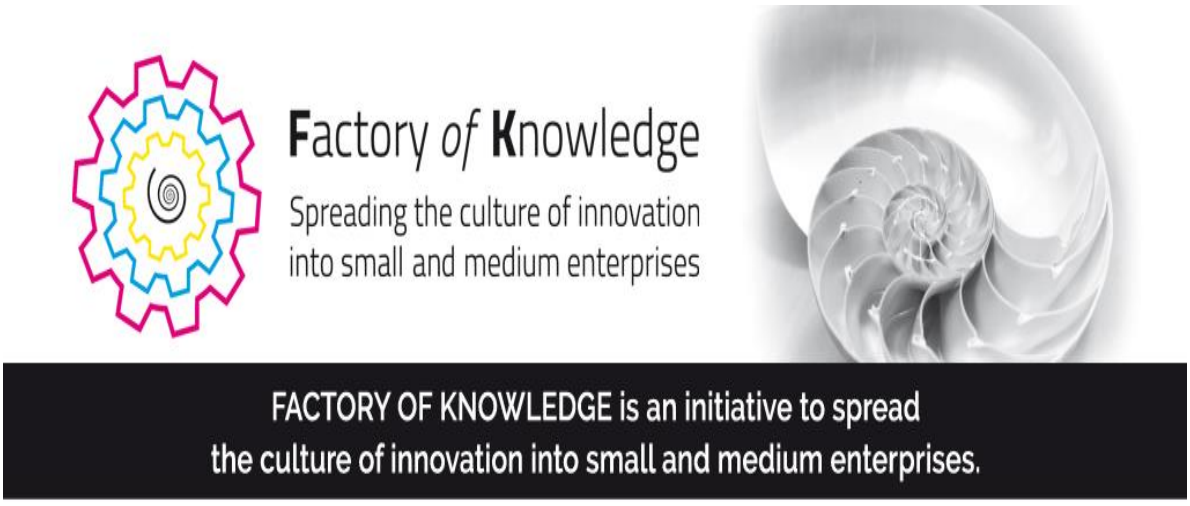
In order to share, spread and support the culture of innovation, and obtain tangible results for the world of SMEs in the Veneto Region, Confindustria Veneto SIAV S.p.A. launched and animated the *Factory of Knowledge*, a community of enterprises and knowledge providers such as universities and research centres, with the aim of integrating perspectives, knowledge, competences and tools for innovation. The initiative includes cooperation with regional and national policymakers concerned with the development and growth of the region. It aims at technological as well as organisational development using several instruments - from the role of the innovation broker to work-based training and learning actions. *Factory of Knowledge* promotes innovation through the identification and analysis of business models implemented in SMEs to support the transfer of knowledge and technology by means of company-based training actions.

So far, three fields of activity have been identified:

- An INNOVATION OBSERVATORY to analyse the development of industrial and economic assets.
- APPLIED RESEARCH to clusters, networks and case analyses of business models.
- ENTERPRISE INTERVENTIONS to define, develop and activate innovation processes into companies by means of knowledge and technology transfer.

The *Factory* provides related services to enterprises including:

1. Creativity for innovation.
2. Open innovation / building absorptive capacity.
3. Methodologies to implement the innovation process in enterprises ("Technological Road Mapping").
4. Technology transfer, design, new materials
5. Skills for innovation.



The Promoter

Confindustria Veneto SIAV S.p.A. is the service agency of the Regional Association of Entrepreneurs in Veneto that gathers over 12,000 companies, mainly SMEs. In 2015 439,202 enterprises operated in the Veneto Region, 95% of which are SMEs. The rate of entrepreneurship is very high with one company for every 10 inhabitants. The unemployment rate, 7.0% in the third quarter of 2015, is below the national figure of 10.6% in the same period, but the rate of investment in Research & Development is low (1.05% of Veneto's GDP against 1.53% in Italy as a whole).

Activating people's skills to develop innovation strategies

The Factory assumes that people are the engine of its interventions to stimulate innovation and competitiveness.

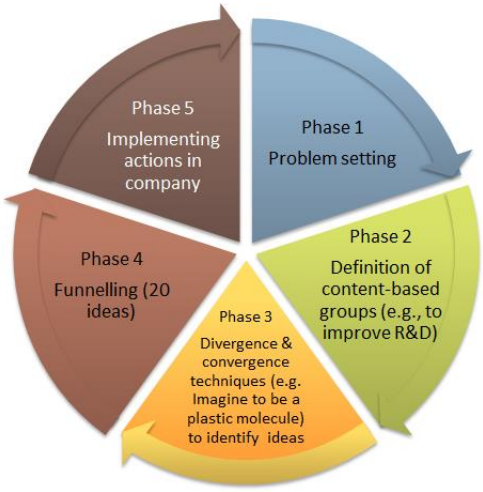
Challenging stereotypes, focusing on concrete results, and involving employees in participative work-based training, have led to the redefinition of companies' products and processes. Two examples of implementing the *Factory of Knowledge* approach in SMEs are presented below.

Case 1 – API Spa: work-based learning for creativity and sustainability

API is a (bio)plastic processing company. Three generations of entrepreneurs (the company was established in 1956) have built a presence in several fields from the manufacture of plastic rolling shutters to the development of footwear polymers, with diversified markets including automotive, packaging and industrial production of bio-plastics. The company's strategy for innovation is successfully supported by infrastructure and human resource investments. Training programmes are implemented to support R&D, sales and business development.

Confindustria Veneto SIAV supported two activities fostering the development of new products and processes. The first one, in 2011, involved 30 out of the 115 employees in a work-based training programme. A training session on problem setting and generation of innovative ideas/solutions was organised at the entrepreneur's home with the support of an external expert. The context was free from work-related constraints, and participants felt safe from external judgment. The implementation of identified solutions was subsequently carried out by small groups of employees within the company.

The Creativity for Innovation training model is composed of 5 steps (Figure 1):



The second activity, in 2014-2015, aimed at revising the product development, marketing and sales processes. API applied the Life-cycle Assessment (LCA) methodology to evaluate the environmental impacts associated with a product through a work-based learning participative approach. Based on the analysis of internal needs and supported by Confindustria Veneto SIAV and the research centre Consorzio Venezia Ricerche, the entrepreneur and the head of the R&D Department developed a training programme matching the company's strategic objectives and the upskilling of employees.

Outcomes: Company managers (from the Sales, Marketing, Technical and Accounting Departments) participated in the application of LCA methodology, thus understanding its meaning and benefits, increasing their own competences and improving the competitive advantage in relation to customers. They became promoters of change within their respective functional unit, activating continuous participative learning.

Case 2 – SIGMA srl: From steel wire working to competitive services

Formerly established as a B2B steel wire working company, Sigma is now innovating to access B2C markets through new product development. The use of mechatronic machines allows the rapid and accurate manufacture of products using steel rods as the main raw material.

Since 2012, Confindustria Veneto SIAV has been supporting strong investment in creativity training initiatives to develop innovation and support marketing strategies. After the Creativity for Innovation work-based training (see Fig. 1 above), SIGMA launched a successful co-operation with on-demand online design platforms thanks to the seminars proposed by Confindustria Veneto SIAV.

Moreover, the *Factory of Knowledge* supported the upskilling of sales and marketing staff to develop creativity, ensure a coherent market analysis for new products and support organisational change.

Technology transfer and development actions involved the employees. The first results were the Value Charter and the Behavioural Charter. Employees participated in the Technological Road Mapping session (see photograph) and were introduced to the use of Visual Management.

According to the entrepreneur: "We believe that the search for innovation will become an approach of the company in order to transform a concept into reality. Therefore it is necessary to:

- Devote time to training
- Devote time and resources to Research
- Nurture relationships with Universities and Research Centres
- Facilitate the crossing of ideas and opinions among employees
- Seek cooperation with other companies".

More information here. Contact the Authors

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