

HIGH ROAD TO WORK ORGANISATION

CASE STUDY

The Bologna Packaging Machinery Cluster



Gian Luca Baldoni & Pier Paolo Patrucco

Nomisma

September 2001

Abstract

The cluster of the packaging machinery producers is considered as one of the most successful examples of network development in Italy and offers lessons for both industry strategies and public intervention. The cluster is specialised in a high tech engineering production, in which product innovation must be combined with a flexible organisation of production. This case clearly shows the importance of the development of a local supply chain and, in particular, of a network of specialised subcontractors. Finally, this case highlights the positive role undertaken by the local institutions, which fostered the initial development of the cluster by creating key complementary services.

HI-RES Case Study: THE BOLOGNA PACKAGING MACHINERY CLUSTER

Sector

Packaging Machinery

Key Words

Clusters; Inter-organisational structures; Networks; SME

Table of Contents

Abstract

'Good Practice' Case Study: The Bologna Packaging Machinery Cluster

Sector

Key Themes

1. Background Information	3
2. Drivers for Change	5
3. Characteristics and Process of Change	5
4. Obstacles to Change	6
5. Risk Analysis	6
6. Benefits of Change	6
Conclusions	6

1. Background Information

The area of Bologna is part of one of the most industrialised regions of Europe (the Region Emilia Romagna). This region is also world wide known for the presence of long established and successful industrial districts.

Bologna, is the administrative capital of the region and in this role has developed a strong service sector, alongside with a traditional presence of the manufacturing industry.

Value Added by macro-sectors - 1997

	%
Agriculture	1,8
Industry	29,1
Services and other activities	69,1
Total	100,0

Source: Nomisma on data of Istituto G. Tagliacarne

Even if the service sector is now the most important in terms of value added and employment, the manufacturing industry still has a leading role in the economic development of the province.

Considering the distribution of the enterprises by sector in the manufacturing industry, it is possible to understand the prominent role of the metal-mechanic industry, which accounts for about 50% of the overall local industry.

This also is the specialisation which has shown a constant growth in terms of turnover and employment, while other important sector (such as the textile-garments and agro-food) have reduced their presence in the local economy since the beginning of the '80s.

The metal-mechanic sector also originates most part of the relevant export of the Province. The local economy is highly export-oriented.

Distribution of the manufacturing companies by sector in the Province of Bologna (1999)

	%
Food and drink industry	9,5
Textile, garments, footwear and leather industry	13,8
Printing and paper industry	7,4
Chemical, rubber and plastic industry	3,9
Non-mineral processing	2,0
Metal works	22,8
Machinery and equipment industry	12,5
Electronics and electrical equipment	6,9
Optometrical apparatus and medical equipment	5,2
Means of transport industry	1,8
Other manufacturing industries	14,1
Total	100,0

Source: Nomisma on data of Movimprese

When focusing attention on the characteristics of the Bologna cluster, the network is made up by specialised packaging machinery producers. The machinery produced in Bologna may be divided into three main categories: machines for primary processing and packaging; machines for secondary packaging; and machines for final packaging, usually wrapping/boxing. The market for these automatic packaging machines may be divided into two macro-sectors: food products, about 40% of total production; and all others, the main ones being tobacco, pharmaceuticals, cosmetics, paper products, and publishing.

The cluster is formed by around 200 companies, producing the packaging machines. The employment directly related to these companies is estimated in around 8,000 workers.

The companies are mainly located in the area of Bologna (177), but the cluster's "borders" are extended to the adjacent province of Modena, where around 30 enterprises are located.

Key indicators of the cluster (1997)

N° of companies (in the province of Bologna e Modena)	207
N° of employees (in the province of Bologna e Modena)	8.000
Export (% of the total turnover of the sector)	85
Share of the companies with less than 50 employees (% of the overall N° of companies)	90

Source: ISTAT

Nevertheless, these 200 companies are the final level of a complex system of production where a relevant role is played by the specialised subcontractors. These small companies, mainly specialised in the metal-mechanics sector, operates both for the packaging machines cluster and for other mechanical industry of the region. In the main province of the Region (Bologna, Modena and Reggio Emilia) there are around 3650 enterprises operating in the mechanical industry, most of them in the role of subcontractors or suppliers of components.

In fact, the automatic packaging machine sector of Bologna is characterised by a dense network of small and medium-sized firms responsible for various parts of the production process. There is extensive use of outsourcing and subcontracting among firms.

2. Drivers for Change

The role of the local institutions is key feature explaining the development of the cluster.

The most important institution for the local packaging machinery industry is a municipal technical/vocational school. The Aldini-Valeriani Institute was founded in 1844 in a combined effort on the part of two university professors, local businessmen and city officials. Its mandate was to train young people in a variety of trades, with the emphasis on mechanics. Importantly, the school was not only concerned with teaching how to run machines, but also stressed how the machines work, how they can be designed. Nearly all the founders of local packaging machine firms spent at least some time at Aldini. The school has developed at the end of the '90s a foundation, with the participation of local business associations, that is in charge of developing and offering professional or re-qualification training to local workers.

Recently the University of Bologna has developed a course for engineers who want to specialise in the packaging machines design.

Some service centres promoted by the regional government (Democenter, located in Modena, and Cermet, located in Bologna) provide the companies of the metal-mechanic sector with services such as: testing and certification, technology demonstration and transfer, consultancy on quality control and on production process organisation.

Finally, there is a very active museum connected with the school that traces the history of local industry, in particular packaging machines, that offers a wide range of initiatives from guided tours for school children, and special exhibits aimed at them, to seminars and workshops on the current role of organised labour in packaging machine firms in light of the changing marketplace. The museum's impressive display of historic packaging machines and documentary material also serves as a frequent backdrop to meetings among packaging firm representatives and potential customers. It is widely believed that the continued success of the school and the recent development of the museum and its activities has resulted from the collaboration of the city government, school officials and local firms.

3. Characteristics and Process of Change

The packaging machine sector in Bologna has its roots in the mechanical industry which began to assume significant dimensions between World War I and World War II. In 1924 the packaging machine sector was started in Bologna with the founding of ACMA (Azionaria Costruzioni Macchine Automatiche). Not only did ACMA mark the birth of the new sector, it also produced many of the founders of other firms which are still the mainstays of the Italian packaging industry.

It was not until after World War II that Bologna really began the process of industrialisation and then, in a very brief period (mid-1950s to the mid-1960s) that it established itself as a modern industrialised city based not on huge plants as in the northern regions of the country, but on medium-sized and small firms. During the war, the few firms in Bologna employing more than one hundred workers before the war were commissioned by the government to produce various goods for the war effort. Employment in these firms greatly increased, but once the war ended many workers were left without jobs. This unemployment crisis was the catalyst for many skilled workers to use their experience to set up shop for themselves. It was in the early 1950s that many workers left the larger packaging firms to create firms of their own. Another such "generation" of entrepreneurs founded small packaging machine firms in the early 1960s.

When looking at the policy model adopted by local authorities in order to govern and eventually sustain the development and evolution of the cluster, there is usually some confusion about role and impact of the local governance. Even if there are various related institutions on the local and national level that contribute to the workings of the network (see 'Drivers for change' in particular), the district *per se* developed spontaneously and not because of specific programs or policies.

Very shortly, there is no explicit district policy mainly because there is no formal district organisation and co-ordination.

Nevertheless, the local authorities has developed initiatives, mainly concentrated on the implementation of service centres and complementary institutions, which has surely contributed to foster the cluster development.

4. Obstacles to Change

The structure of local factor markets, which are especially characterised by low labour mobility and by sticky financial markets are main obstacles to change. It is necessary to set up financial instruments for micro-enterprises. Although in the early phases of the evolution of the cluster the start up of new firms was facilitated by already accumulated capital within rural and urban families, and by the prospective of demand growth that allowed new enterprises to self-finance their activities, in the present consolidation and specialisation phases the start up of new enterprises, even with simple technologies, is very critical because informal financial sources are very poor and the institutional ones are difficult to access.

5. Risk Analysis

The high concentration of local specialised firms at the same time represents one the basic advantages in terms of co-operative and interactive relationships, and poses serious problems in terms of the lack of highly qualified and skilled human resources. Although the institutional endowment of the cluster is one of the main factors favouring the development and the competitive advantage of the cluster, the fast growing specialisation and consolidation of the cluster lead to a constant under-investment in human resources in respect to firms' requirement.

6. Benefits of Change

The major and overall benefit of the development of such a network is the increasing competitive advantage gained by embedded on international markets. This competitive advantage is mainly based on product quality and innovation.

The cluster of Bologna is seat of a number of world leader in this specific sector. Most of these leaders still are medium-sized companies, but they gained their prominent position in the international markets thanks to a highly-developed specialisation. The strategy adopted by these firms is therefore a niche-market strategy. One of the outstanding characteristics of the cluster is its high export orientation: around 85% of the turnover is exported, mainly to Europe, USA and Far East.

Italy ranks fourth in packaging machine production behind the U.S., Japan and Germany. It should be noted that U.S. and Japan produce largely for their internal markets, whereas Germany and Italy are leaders in exports.

Conclusions

These conclusions briefly concentrate on some policy suggestions for the clusters development.

In the examination of the Italian experience, it is clear that almost no district originated through specific policy actions, but by spontaneous mechanisms of adaptation to the market; it is also clear that industrial districts change over time: they grow, they transform themselves, they open themselves to external relationships, they re-organise, or they decline. The role of industrial policy for districts is one of accompanying the process of evolution and adjusting it towards specific objectives (technology upgrading, innovation, internationalisation, etc.).

This evolutionary process implies that there is no specific, or typical, policy for clusters. It is necessary to adopt differentiated policy strategies for the different development stages of clusters. In addition, the same policy actions, in different contexts, may lead to different results and reactions by the local environment. For this reason, it is necessary

to continuously monitor policy interventions and their effects, in order to adjust them and make them more appropriate for the local industrial system; it is also predictable that policy actions, to obtain consensus, should be designed by the various relevant actors in the local environment.

There is a need for a very flexible approach. However, some general guidelines, according to the different stages of development of districts, may be indicated. We can, in short, consider three different stages in the development of clusters: the embryonic stage, the stage of consolidation, and maturity.

The main field of action for policy makers is that of eliminating obstacles, that is lowering barriers to entry. When the local market has been opened and there are local embryonic systems with some sort of specialisation, first of all it is necessary to remove any barrier to their expansion and to the start up of new firms. Market pressure induces firms to adjustment and, before making other policies, it is necessary to create conditions for possible spontaneous responses. In this field of action, forms of simplification of bureaucratic procedures for authorisation and control of the economic activity, the realisation of basic infrastructure for industrial location, the setting up of actions for supporting firms from the legal point of view may be included.

In the consolidation phase it is necessary to set up financial instruments for micro-enterprises, because the start up of new specialised firms is very critical due to informal financial sources are very poor and the institutional ones are difficult to access.

Finally, policy initiatives should be directed at promoting local products outside the local market, creating connections with new markets and, in this way, giving opportunities to the local system to specialise itself.

Publication Details

Published by: Nomisma

Publication date: 2001

Journal: -

URL: -

Revised: -

Notes: -

© 2001 Nomisma. All rights reserved.