The reconfiguration of traditional manufacturing areas affected by servitization processes: a perspective from Italy

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Aims

The present paper aims at exploring the servitisation processes affecting the structural configuration of traditional manufacturing areas, such as the industrial districts (IDs), employing Italy as a reference case study.

Literature

The interplay between manufacturing and services activities has assumed a growing attention in international debates. The increasing unpredictability of consumer demand, resulting from the globalisation processes (Lester and Piore, 2009), and the disruptive introduction of new technologies reinforced by Industry 4.0 phenomena (see Hermann et al., 2015; Berger, 2016), have enlarged much the importance of synergies between specialised manufacturing industries and service activities.

In many areas of the industrialised countries, characterized by local models of industrial organisation, such as the industrial districts – IDs, the productive configuration is changing (Becattini et al. 2009); and with this their labour markets. This structural reconfiguration process more and more service-based is not completely new; but both academia and practice have difficulties to understand clearly this transition because of the variety of its forms (see Kowalkowski, Windahl, Kindström & Gebauer, 2015).

In a first phase of this transformation, the role of services activities was strongly related to the function of renewal of mature industries (Gadiesh & Gilbert, 1998). However, as suggested by Cusumano, Kahl & Suarez (2015), service-based goods affect differently the industry structure, and service activities take on various configurations: (a) "smoothing services", which do not alter the product functionality (e.g. financial and insurance options, implementation issues, or basic

training); (b) “adapting services”, which significantly expand the product functionality and where knowledge required to provide the service is difficult to separate from detailed knowledge of the product itself (e.g. major customizations, training or consulting for new uses of the same product, or bundles of tailored products and services); (c) “substituting services”, which replace the purchase of a product (e.g. data processing services sold in lieu of mainframes, Software as a Service SaaS), or where consumer may purchase the use of goods instead of buying the product directly. These various levels of sophistication enter in different way the economic structure, supporting an increase of the value added of industrial goods, in particular because of the increasing weight of product customization in the global competition (Porter and Heppelmann, 2014; Vendrell-Herrero et al., 2014).

The existing business models are changing (see Weller and al., 2015; Bettiol and Micelli, 2014), and with them traditional industrial structures as the recent reshoring phenomena suggest (see Ellram et al., 2013; Bailey & De Propris, 2014). The competitive advantage is not only the result of firm-level economies of scale and scope, which support a price-based competition, but it is realised also by an integration of complementary contributions within a set of specialised firms able to build multiple products and services into customer-specific “solutions” (Cusumano et al., 2015). Such processes of increasing servitization affect multinational or large integrated firms, but extend to IDs and in general to manufacturing systems characterised by small and medium sized firms (SMEs).

Started at the end of the last century (Sforzi, 1994), the localisation of new service activities in old Italian IDs is nowadays reinforcing more and more. As result of a sophisticated expansion of the local division of labour (Muller & Zenker, 2001), knowledge intensive services (KIS) are developing into a knowledge-processing and knowledge-producing industry (Strambach, 2008). In this sense, KIS rooted on knowledge, innovation and spatial proximity dimensions (Muller and Doloreux, 2007), are characterised by place-based processes of agglomeration that affect in different ways the local manufacturing specialisations.

Methodology and preliminary results

Within the general themes just recalled, the present paper aims at exploring what shapes the servitization process assumes in different types of local systems in contemporary Italy. In particular, a primary objective of the analysis is the detection of localisation patterns of new service activities and their association with manufacturing activities. Secondly, the analysis explores differentials in firms’ productivity levels according to localization patterns of service activities.

Given the place-based approach of this investigation, the unit of analysis are local market areas (LMAs) as defined by Istat (2015a), and to detect servitization patterns, the location quotient (LQ) is used as basic tool applied to Business Census data for the year 2011. It is given by the following formula:

$$[1]\quad LQ_{i,j} = (Emp_{i,j} / Emp_{.j}) / (Emp_{i.} / Emp_{..})$$

where *i* is the LMA and j is the type of service activity.

This data base concerns the year 2011 and allows to fully make use of a set of indicators at the LMA level based on multiple data sources and exploring several economic aspects as export, unemployment, labour cost and labour productivity.

Employment data at the establishment level of enterprises, public institutions and not for profit institutions (i.e. all economic units) is used to derive localization patterns of service industries. In this work, Eurostat aggregations of services based on NACE Rev. 2 is adopted. This classification defines economic sectors as *knowledge-intensive services* (KIS) or as *less knowledge-intensive services* (LKIS) on the basis divisions of NACE 2-digit level (Eurostat, 2016). Our universe is therefore classified into the following categories of KIS: Knowledge intensive market services, High tech knowledge intensive services, Knowledge intensive financial services, Other knowledge intensive services; and LKIS: Less knowledge intensive market services; Other less knowledge intensive services. Finally, the category of Non-service industries involves the remaining activities not classified as KIS or LKIS (i.e. industrial activities, construction, agriculture, etc.).

Data processing has shown that the majority of employed persons is concentrated in Less knowledge intensive market services (33.5%) and non-service economic activities as manufacturing (29.3%). Similar values apply for plants and offices.

Tab. 1 - Persons employed by KIS. 2011, absolute values and percentage shares.

KIS	Persons employed	%
KIS - High tech knowledge intensive services	556,928	2.79
KIS - Knowledge intensive financial services	597,873	3.00
KIS - Knowledge intensive market services	1,467,174	7.36
KIS - Other knowledge intensive services	4,168,983	20.90
LKIS - Less knowledge intensive market services	6,686,444	33.52
LKIS - Other less knowledge intensive services	622,991	3.12
Non-service*	5,846,557	29.31
Total	19,946,950	100.00

Source: our elaborations on Istat - Business census 2011.

The paper goes on illustrating an explorative analysis based on a multivariate analysis at the LMA level. Firstly, LQ are calculated on KIS and LKIS categories over Italian LMAs. A Multiple

Correspondence Analysis (MCA) and a cluster analysis are conducted on the sub-population of manufacturing LMAs in order to verify the presence of synergies between specialised manufacturing industries and service activities. Preliminary results show specific localization and specialization patterns which can be summarized in terms of five types of Italian manufacturing LMAs in the year 2011:

- The largest group (69 LMAs) has a mixed industrial organization based on both IDs and large enterprises-based LMAs. These manufacturing LMAs are the most performing, have the highest aggregate average labour productivity rate and labour cost. In terms of service specialization, they are mainly specialized in Knowledge intensive market services and Knowledge intensive financial services, with the exception of two LMAs specialized in High tech knowledge intensive services (Padova e Pomezia).

- The smallest group (27 LMAs) is composed by large enterprises-based LMAs and foreign market oriented, with aggregate economic performance in line with national average. They are mainly specialized in Other knowledge intensive services.

- A group of 36 LMAs, is district-based with prevailing specialization in textile (8 IDs) and household goods (7 IDs) and economic performance below national average, but foreign trade oriented. In terms of services, their specialization is in Other less knowledge intensive services with the exception of two IDs specialized in High tech knowledge intensive services (Osimo, Matelica).

- A group of 43 LMAs, district-based with prevailing specialization in mechanicals (18 IDs) and household goods (9 IDs) shows economic performance in line with national average. Service specialization is limited to few cases of Other knowledge intensive services and Other less knowledge intensive services.

- The final group has a mixed industrial organization (although IDs are prevailing), the worst economic performance and the lowest level of international disclosure. The specialization in terms of services is in Other less knowledge intensive services.

Evidence so far have therefore highlighted the association between high-performing manufacturing LMAs, both IDs and large-enterprises based LMAs, and specific categories of KIS: Knowledge intensive market services and Knowledge intensive financial services.

The second part of the work is an econometric analysis based on a multinomial logistic regression analysis on a firm-level data base devoted to verify the increase in labour productivity related to

territorial specialization in KIS and the industrial organization mode. Multidimensional information at the firm-level, available since the year 2011, will be the basis to study the differentials in firms' productivity levels according to localization patterns of service activities within the identified local contexts.