Fostering local economies

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In this article, Professor Arturo di Corinto looks at how the Digital Business ecosystem (DBE) fosters local economic growth by maintaining a greater share of profits within the local economy.

As enlightened public administrations are increasingly moving their internal systems away from proprietary software in favour of open source solutions for reasons of economy and control, the DBE, as an open source ecosystem, not only offers the potential to redress widespread regional net deficits in software earnings, but at the same time offers new economic development models for SMEs who are otherwise constrained by the costs and rigidities of conventional ICT development.

Issues

According to the European Commission¹:

“Conducting electronic transactions via specialised e-marketplaces for businesses - the so called B2B e-marketplaces - may represent an efficient and cost-effective way to trade goods and services, both within and across national borders. By creating on-line communities of buyers and sellers, e-marketplaces can facilitate transactions over large geographical areas and with previously unknown business partners, thus generating cost savings through increased market transparency and a more efficient transaction process”.

As we know, SMEs are considered the backbone of the European economy but they are also facing many difficulties. Crucial obstacles to the actual unfolding of SMEs potential are the quality of their production and the weak penetration of their products and services.

For the IT industry a possible solution is to concentrate on e-business. General ICT usage contributes to productivity and efficiency gains, while e-business improves market dissemination by reducing the length of the value chain. Nevertheless, focusing only on technologies and e-commerce is not sufficient.

In fact e-business itself is related to information flows and in turn to productivity and growth. A rich flow of information helps the formation of a collaborative network – an environment in which to plan, share resources, and sell new products.

If this is true, in order to foster SMEs productivity and growth we need:

1. A better managerial understanding and skills for e-business in SMEs.

2. Availability of e-business friendly solutions, in order to facilitate a real participation of SMEs in electronic marketplaces and business networks.

In several circumstances, the European Commission has released statements regarding e-business solutions for SMEs:

“Enterprises, especially SMEs, need a business roadmap and ready-to-use examples of practical e-business solutions. A national test-bed or, even better, a network of national test-beds for e-business, preferably based on open source software solutions, would provide a practical venue for SMEs to develop their e-business processes.”

“Many of these collaborative networks are regional in character and based on close cooperation among former competitors, in order to operate as a new unit on the market. This requires SMEs to overcome their inherent resistance to sharing knowledge with others”.

We can easily see that a favourable local e-business environment for small enterprises can lower market thresholds and the costs of ICT investments.

**Problem 1: High costs**

For SMEs, the high costs of new technologies are barriers. The costs of human resources and IT infrastructure maintenance often become insurmountable. The
scarcity of SMEs investments increase the digital divide between large and small enterprises. In this respect, a critical factor is the access to tools that could help SMEs to enhance their business and recruit a skilled workforce.

**Problem 2: Different needs**

Regarding ICT applications, SMEs have different needs from large companies. They need cost effective solutions that can be up and running quickly and are scalable, interoperable, affordable, user friendly, and preferably based on open-source solutions. Most SMEs do not have the means to keep apace with technological developments, let alone to decide to test expensive, and often experimental, technical solutions without proof of concept and clear indications of return on investment. This is one reason why SMEs can benefit highly from their participation in e-business research programmes as technology users.

**Solutions**

By accessing an open platform for communication, resource sharing and interaction, SMEs have the opportunity to collaborate with both small and large ICT firms, identify user needs, test new technologies, and exploit them fully in their actual business environments.

The DBE is a cooperative system that can improve the kind of exchange underlying cooperation. Being a proof of concept environment, the DBE represents an international test-bed for a collaborative network and other potential forms of collaboration where new insights and new functionalities can emerge.

**Platform factors**

The adoption of an open source platform means that no organisation can ever dominate the digital ecosystem. All contributors will be given equal opportunities to compete, but at the same time it is important to have a holistic approach to software and service engineering for end users. A digital product or service incorporates support for testing, fault localization, and assertions integrated in a fine-grained and incremental manner with the environment. In particular, since the user is not necessarily required to have expertise in software engineering, this knowledge should be embedded into the system. Dynamic web service integration will be necessary to implement some techniques belonging to the domain of “Software Planning and Programming”, in order to expand and meet industrial web service standards aimed at e-business. This is possible with the DBE platform.
As we said before, one of the main issues for European SMEs is the lack of investment and, therefore, workforce. OSS-based DBE is a training environment that increases the earning capacity of the participants without any explicit investment in training. Is this a novel form of technology transfer?

The FLOSS survey*, the most comprehensive survey ever conducted amongst developers worldwide (Infonomics/University of Maastricht, 2004), highlighted some relevant facts about the FLOSS community. FLOSS developers expect of each other: 1) Share their knowledge (78%); 2) Respect my contribution (32%); 3) Write beautiful and aesthetic programs (24%). Furthermore, programmers participate in the FLOSS community in order to: 1) Learn new skills (70%); 2) Share their knowledge and skills with others (67%); Improve the products of others (40%); Improve job opportunities (30%); Make money: 12%.

These data demonstrate that Open Source Software encourages an active participation in the creative process. If it is true that OSS requires a relatively steep learning curve, if we enlarge the framework we can see it as a technology transfer from interest groups and corporations to SMEs that cannot afford or can invest little in formal training.

A part of the EU commercial deficit is represented by the costs of software royalties, whose licences are largely produced and released abroad. These licences are profitable mainly for large enterprises, while they represent a major obstacle for SMEs' capacity to compete and produce their own know-how.

OSS-based DBE is an economic environment that empowers the earning capacity of local economies by requiring small investments. Is this a novel form of “economy transfer”?

By allowing local entrepreneurs to contribute a greater share to the overall added value, the DBE fosters economic growth maintaining a greater share of profits within the local economy. As with proprietary software, free software platforms can be used as a modifiable base on which new services or software are built. Nevertheless in the OSS case, 100% of the added value is local. For example, the entire sale price can be retained locally, since there are no royalties to be paid. Support, integration, and customisation are also a local added value, since 100% of this kind of services can be provided locally.

OSS allows providers to reuse the code rather than build it from scratch, and to reuse a huge base of code written by others. Re-using (and modifying) the code allows the creation of much better end-user solutions than writing it from scratch. To sum up, OSS provides a higher value for profits and for customers, and higher margins for local service providers.
Local companies are limited in the integration and support services they can provide for proprietary software. Software improvements like fixing software bugs, customising software to meet user needs, or integrating extensively with other software requires deep access. This is possible with OSS. On the contrary, deep access to proprietary software is controlled by the owner, who naturally limits such access, or asks for royalties, thus diminishing the value retained locally.

**Open source and communities**

The success of OSS is demonstrating that the most important reason for developers participating in open source communities is to learn new skills – for free. To a considerable degree, therefore, the open source software community should be regarded as an informal and “costless” skills development environment that provides high-level training and competitive advantages on the labour market. It is “costless” for the costs of training are not explicitly sustained, in monetary terms, by any of the parties benefiting from the new skills made available in the market. Neither universities nor companies are paying for this training. They are the individual developers themselves who are giving their time and intelligence to learn and teach each other in an informal “apprenticeship” system.

This is particularly valuable for small businesses and for less wealthy regions and economies, where high direct costs of training ICT professionals may otherwise hinder the development of a local information economy, and where open source community participation can help to offset such costs.

**Conclusions**

**Mixing technologies**

If we want to focus on the mission of building a collaborative environment that would take into account the issues of trust, contracts, level of service, and common semantics, we need to input major efforts to create an effective cooperative infrastructure. We need to build a community and maintain a virtual network among all the stakeholders of the business ecosystem.

However, since companies and economies are composed of an ever-changing mix of open and proprietary systems, we have to consider as a resource their cohabitation, their interdependence, and their coevolution. If we want to create a faster and more effective path to innovation, we have to figure out which parts of the value creation
system have to take place in open and closed systems, and how these systems relate to each other.

The DBE would allow this “coopetition” (a mix of cooperation and competition), mainly through the promotion and availability of products, services, best practices and a cross-fertilisation. Kicking off or ‘bootstrapping’ such a system locally requires a regional leader to act as a catalyst to bring the DBE into a region and to sensitise and involve other regional actors and the SME base. This role in the DBE is known as ‘Regional Catalyst’. In the spirit of open systems it is open to regional organisations to step in and perform this role so as to bring the benefits of open source and the Digital Business Ecosystem to their region. Such an action leverages the benefits and resources of the global OSS community for local economic advantage.

*European Commission survey presented in Zagreb on September 27th 2004 by Rishab Aiyer Ghosh.*