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BACKGROUND PAPER

Digital Dividends

Enabling Digital Entrepreneurs

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Introduction

The term 'Digital Entrepreneurship' most commonly refers to the process of creating a new—or novel—Internet enabled/delivered business, product or service. This definition includes both start-ups—bringing a new digital product or service to market—but also the digital transformation of an existing business activity inside a firm or the public sector.

In the developed world, the emergence of utility-based cloud computing is shifting focus from technical barriers to the business environment challenges facing digital entrepreneurs. This shift reinforces the growing importance of implementing effective policies that foster the best climate for digital service incubation, growth and successful development. However, in many rural areas and developing countries, even basic infrastructure remains a challenge, from the hardware, the network, the content, the ICT eco-system, to the skills on both consumer and business sides.

Digital entrepreneurship may level the playing field in certain sectors, creating opportunities to work from remote areas, at different hours, from the home, or on the go. It can play an important role in promoting gender equality and social and economic inclusion, stimulate local development, and contribute to sustainable development, especially when new technologies are combined with the availability of open and public data. Think for example of cases where data, e.g. on climate/weather, crops and soil, or road and traffic conditions, are used to develop services and apps that alleviate local problems, be it the optimization of agricultural production, emergency and disaster relief response, road safety and accident avoidance, or reducing traffic congestion and parking difficulties. Simple price information of products and services can also greatly improve economic opportunities for local suppliers, and technologies bringing together and matching supply and demand for labor, goods and services improve economic efficiency, productivity and income opportunities.

However, digital entrepreneurship also highlights the scope for the emergence of new digital divides. In many developed countries, the digital divide is increasingly moving from one of (affordable, reliable, safe and high-speed) access (to digital technologies), to the ability to use and exploit them to create new opportunities. Perhaps surprisingly, many businesses are still not using technologies to their fullest potential (see the Appendix), often as a result of a lack of skills and/or vision, or regulatory barriers. A lack of competition can also slow down the diffusion of technology and entry barriers may prevent digital entrepreneurs from challenging incumbents and/or traditional firms. Additional divides are emerging for example in scale: certain services can only be supplied in sectors or geographical locations that offer the required scale (and/or density) and volume of transactions (e.g. certain types of logistical, transport and delivery types of services that need a sufficient base as offered by large and dense urban areas).

What are the issues?

The main barriers to digital entrepreneurship appear to include: skills, infrastructure, and various aspects of the business environment. In many parts of the world, access to affordable, reliable, high-speed broadband infrastructure is still a problem, including in parts of developed countries. It is also important to create a dynamic and competitive digital business environment and address concerns around digital entrepreneurship conditions in order to enable the creation of online services and applications. While these factors also matter for entrepreneurship more generally,

they are even more important in the fast changing and fast moving digital world, and for digital entrepreneurs in start-ups, smaller companies, and newer companies, in highly innovative—and therefore inherently riskier—sectors.

Energizing the business environment includes addressing issues related to entry and exit barriers, business creation (and closure), access to finance, bankruptcy regulation and legislation, data and privacy and security regulation, market fragmentation—especially for online and/or ICT-enabled services—and a perceived policy bias towards larger firms (Clayton and van Welsum, 2014). Inefficiency in all of these areas creates friction and costly regulatory uncertainty for (digital) entrepreneurs.

There are also some differences in the issues facing digital entrepreneurs, and entrepreneurs more generally. For example, many digital entrepreneurs are 'born global' (on the Internet or in the cloud), or have the ability to grow and scale across borders very quickly. Much of a digital entrepreneur's capital is often intellectual capital, which may raise Intellectual Property protection related issues (and less 'tangible assets' for creditors to fall back on in case of failure). Funding may also be difficult to obtain in cases where a successful innovation / start-up is the result of many initial failures (a learning process). Indeed, many well-known success stories are of digital entrepreneurs who are in fact 'serial entrepreneurs' with a number of failures to their name. While these learning processes through failures are valued in some cultures (e.g. Silicon Valley), there are cultures where it is very difficult to qualify for funding after a prior failure (e.g. in Europe).

Enabling growth impacts of ICT in businesses

In addition to ensuring the right infrastructure is in place, it is also crucial to continue to encourage the diffusion, uptake and integration of ICT, notably in (smaller) businesses that have been shown to lag.[1] Today it seems that consumers are often more eager and show a greater readiness to adopt new technologies, applications and devices than businesses. Thus, while the technologies and applications exist, there is often still a lack of societal or cultural readiness, which can include factors such as skills (in particular those related to digital entrepreneurship), corporate or organizational culture not only in in businesses but also in the public sector, as well as various types of restrictive regulation that introduce rigidities and barriers to change. Many of these are related to the implementation and adoption of the technology, not the technology itself. For example, trade barriers or other restrictions that lead to market fragmentation prevent companies from being able to achieve scale quickly. Rigidities and fragmentation in labor markets prevent companies from (cost-)effectively hiring the skills and talents they require and reorganize their business and labor structure to optimize the benefits the technologies can offer.

Empirical work, e.g. by Bloom *et al.* (2010) has confirmed that restrictive product and labor market regulations hamper the growth and productivity effects of ICT. Work comparing the ability of US

[1] For example, Eurostat figures indicate that firms in Europe are making slow progress in adopting ICT for e-business integration (Eurostat, 2015). While most firms now use computers and have an Internet connection, perhaps even a web site, the use these are put to varies greatly (and is often not very sophisticated when it comes to transforming the way business is done). The rate of adoption decreases with the level of sophistication of the e-business technology. The gap between large and small enterprises also increases the more advanced the ICT applications are, which, given the prevalence of small firms, should be of concern to policy makers and business leaders. See the Appendix for more details and data.

and European firms to take advantage of ICT found that for given levels of ICT, "approximately half of the US-EU productivity differential over the 1995-2005 period can be accounted for by organizational capital."[2] This finding echoes earlier work by the same authors (e.g. Bloom *et al.*, 2007) suggesting that US multinationals have different organizational structures and management practices, [3] particularly in the area of "people management", which enables them to better exploit the opportunities offered by ICT.

The existence of strong complementarities between ICT and organizational capital highlights the importance of skills issues, but also has a number of important policy implications. Indeed, removing barriers to the accumulation of complementary factors (especially people management and decentralization) is key to making more effective use of ICT. Bloom *et al.* (2010) suggest that this requires policies that promote product market competition, greater flexibility and faster adjustment in the labor market, and openness to trade. Similarly, in a study for Europe, Grajek (2012) concluded that "the areas in which the right policies could unlock the greatest ICT-led growth are product and labor market regulations and the European Single Market".

The importance of skills

Skills issues are extremely important for digital entrepreneurship. From the ability identify the talent that is required and recruiting that talent, including across borders, to having the skills to identify new technology-enabled business opportunities and bringing them to fruition, either as a new venture, or by transforming existing business models, skills issues are key to successful digital entrepreneurship, digital transformations, and even the successful conceptualization and implementation of most IT projects (in both the private and public sectors).

Having the ability to communicate or 'pitch' the business case, either to the bank or other investors, or to senior management in the case of transforming activities in existing organizations, is crucial. This is also referred to as the need for 'dual skills', or 'e-leadership skills' (van Welsum and Lanvin, 2012): people who combine an entrepreneurial mind-set with business and communication skills as well as technical skills, at various levels of management and enterprise activity/organization. The public sector also desperately needs these skills, not only to transform its own activities, both the administration of public organizations and the delivery of public services, but also to shape policies and decisions on how to enhance the impact of technology on various aspects of the economy.

Business leaders and entrepreneurs need to possess a degree of technological awareness that allows them to identify new technologies that will transform and shape their business model that will allow them to do new things, or do things differently, and to develop new products and services,

[2] The rest of the gap can be explained by US firms having higher levels of ICT (accounting for approximately another 25% of the gap) and by other firm characteristics such as skills (which accounts for the remaining 25% of the gap).

[3] Empirical work likening management practices to 'technology' (Bloom *et al.*, 2013) found that management accounts for up to half of the Total Factor Productivity gap between the US and other countries. Their model of management as a technology has three main predictions, supported by the empirics: (i) a positive effect of management on firm performance; (ii) a positive effect of product market competition on average management quality; and (iii) that the covariance between management and firm size will be stronger when distortions (such as trade and labor market frictions) are weaker. They find that reallocation is greater when trade barriers are low and labor regulations are weak. In addition to the selection and incentive effects of competition, poor governance, informational frictions and human capital play a role in explaining the variance of management practices across firms and countries.

ways of delivering them, and ways to communicate with their suppliers, customers and employees. At the same time, it is important for technically trained people to have business acumen and skills to identify new opportunities, as well as communication skills to convey them to management and other less technically inclined leaders and decision makers.

As more countries transform into knowledge-based economies, and as the cloud and big data continue to gain importance, having access to these skills will become ever more important. Having access to data and being able to exploit them will increasingly be factors of competitiveness and (market) power. Many countries are putting their hopes for economic development and innovation on investments in ICT. However, the impacts of ICTs depend on the use that is being made of them, which is in turn driven by factors such as skills, and whether or not the business environment enables people and businesses to take advantage of the opportunities offered by ICT. This is increasingly important in today's knowledge economies, in which "the creation, acquisition, dissemination, and utilization of knowledge" are key to economic performance (Kumar and van Welsum, 2013). Indeed, as the Internet makes access to knowledge virtually ubiquitous, being able to exploit knowledge and using it to your advantage will increasingly become a differentiating factor in obtaining the potential benefits.

In a fully enabled knowledge economy, different factors need to come together and mutually support each other to be able to maximize the opportunities for innovation, growth and competitiveness, and in particular: the physical ICT infrastructure, the soft infrastructure (the skills needed to exploit the physical infrastructure), the business environment (factors such as the cost and ease of starting a business, the degree of competition, entry and exit barriers, and product and labor market regulations), and the innovation environment (e.g. university and firm collaboration, ability to bring new ideas to market, treatment of R&D, and IP protection).[4]

Opportunities created by the Cloud

The emergence of cloud computing over the past decade or so has reduced barriers to entry and increased opportunities for digital entrepreneurs.

Cloud computing[5] offers several benefits:

- Delivers computing resource as a utility service removing the need to invest in dedicated hardware and software infrastructures.
- Provides as much capacity as needed 'on demand' where only the amount of resource used is paid for.
- Makes new services globally accessible by default.

[4] Similarly, see for example, the World Bank's Knowledge Assessment Methodology (KAM) framework which identifies four pillars to innovation processes (Chen and Dahlman, 2005): Economic Incentive and Institutional Regime (policies and institutions for the protection of intellectual property, the rule of law, the ease of starting a business, etc.), Education (human capital), Innovation (universities, firms, and research institutes), and ICT (physical capital).

[5] For a brief introduction to cloud computing see: Cloud Computing: A Short Guide for the Perplexed http://www.adamalthus.com/blog/2013/03/01/a-short-guide-for-the-perplexed/

- Reduces costs by removing the need to buy equipment, software and services, the physical space to house the equipment, the day-to-day running and maintenance costs of the equipment, and less need for in-house IT and technical support resources. This benefit has greatly helped startups and small firms in particular as it has reduced the cost of IT enormously, and has made more and better IT—including IT support—affordable to those who might otherwise not have been able to afford it.

The 'utility' nature of the new cloud computing model means that investment capital that would previously have been needed to build out dedicated computing infrastructure can now be saved or spent on developing better products and services. The use of cloud computing as the foundation for startups has become so ubiquitous that venture capital firms now refuse to allow investment funds to be spent on fixed computing infrastructure. There is also a cash-flow advantage to this model as rather than having to spend money on fixed capital ahead of revenue, buying on-demand computing resources is a 'real-time and on-demand/need' consumption expenditure, thereby improving the cash-flow of companies and start-ups in particular. Indeed, the 'on-demand' aspect of cloud computing means that the computing costs of delivering a new digital service will be directly proportional to usage of the service by consumers. This enables entrepreneurs to more effectively manage costs and capital utilization. Cloud computing is inherently 'elastic' so costs are only incurred when there is demand.

The previous generation of digital entrepreneurs whose services were built on fixed private computing infrastructure fought a constant battle to match the scale of infrastructure investment with user demand. Underinvestment might lead to service quality and availability issues while over-investment often led to inefficient capital utilization detracting from other critical investments in the business.

Acquiring the specialized expertise—and capital—required to design and implement computing infrastructure which can operate reliably at global scale was challenging in the past. But this capability is now available by default when services are built on top of cloud computing infrastructure. The 'Global by default' nature of cloud computing based services provides a significant advantage to digital entrepreneurs who wish to scale their services internationally in a short space of time.

These advantages of cloud computing enable digital entrepreneurs to more effectively utilize capital, manage costs, and scale reliably and responsively to growing user demand even when that demand comes from all over the world. In addition, firms now routinely today expose their business processes and functions to the outside world through cloud based interfaces. For example, UPS and Fedex do this to enable other firms to integrate with their logistics services. In a very real sense business processes and even whole businesses are becoming digital service platforms built on the cloud.

New startups such as Shyp[6] use the platforms of other logistics firms to build their own higher level service offerings. In Shyp's case they offer on-demand pickup, packing and shipping of goods for consumers. The travel booking service Trivago[7] is built on top of the platforms of other

[6] http://www.shyp.com/
[7] http://www.trivago.com/

travel services such as Expedia, Orbitz and others to offer consumers the ability to search for the best travel offers without visiting each individual website. With these developments we are now entering the era of the 'Meta' platform—or 'Metaform'[8]—where a new generation of startups increasingly construct new services by composing together the digital business functions and processes of other firms. The cloud is the underlying fabric that enables this.

On the cost side, there are also some new developments in venture capital fundraising, notably that the cost of startup is actually increasing again, at least in the US. Indeed, the cloud lowered the cost of startup,[9] and the Internet has made it much easier to start a business. As a result, there is now more competition for funding and startups are having to budget more for advertising and marketing, including in pitching their cases to VCs, driving the costs up again. In addition, startups and VCs are reporting that a growing war for talent with technical skills is also driving up costs. Whereas people were willing to accept a pay-cut in order to work for a cool or promising startup in the past (often in combination with an equity share), today they are demanding the same wages as paid in large established companies.

What can governments do to help?

A good dose of regulatory humility will be needed in the fast moving digital space. Figuring out how to regulate activities and players that could be as yet unknown—created by fast moving and evolving technologies and the emergence of new applications—requires a fine balancing act. It will be important to strive for consistency and harmonization of the rules governing digital entrepreneurship, while also limiting regulatory change and uncertainty going forward. Several areas are key, including:

- *Ensuring the supply of appropriate skills:* Simplify and speed-up procedures for cross-border recruitment of talent and reduce the associated costs (e.g. related to immigration rules and formalities); promote more interaction between the private sector and educational and vocational training institutions and organizations to ensure the skills supply better matches the skills needs in practice.

- *Fostering a competitive environment:* Reducing barriers to entry, and exit, where necessary is important in fostering a competitive environment and should help the diffusion of technology and reduce the power of incumbents. Reducing product and labor market restrictions will further help to energize the business environment.

- *Recognizing the self-interest of Incumbents:* Well-established businesses will often use policy influence to defend their market position against new disruptive technology based entrants. Policy makers need to be alert to these tactics and to ensure that policy intervention is not used as an unfair barrier to new competitive business models and (often) new entrants.

- *Clarifying the rules for use of data:* 'Big data' regulation / rules of 'ethical' conduct around the collection, storage and use of data. Until the implications and ramifications are better

[8] http://www.adamalthus.com/blog/2015/01/08/the-metaform-the-platform-of-everything/
[9] There are Venture Capitalists in the US who report that the cost-reducing impact of the cloud was strongest in 2005-2010, setting a new— lower— baseline for funding requirements.

known and understood it will be important not to over regulate data, which could stifle innovation and introduce unintended biases, while safeguarding privacy and security. It is also important to create trust in the online environment. Finding a balance between regulating for trust, and avoiding creating too much regulatory uncertainty and/or tie-downs will be an important and challenging task for governments, policy makers and regulators.

- *Promoting open standards and open data:* A new generation of evolved open standards will be required to unlock the full potential of the 'Internet-of-Things'. Policy makers should also 'prime-the-pump' for the creation of new digital services by ensuring open access to public data (e.g. weather, traffic, geography, public records, archives) to allow the creation of new and relevant localized digital content, services and applications.

- *Recognizing 'the Sharing Economy':* Ensure rapid adaptation of regulatory regimes to enable 'Sharing economy' based business models and services; this includes implementation of sensible IP protection and enforcement, adapted to the digital age.

- *Easing the business life cycle:* Simplify and harmonize regulation around starting and closing a business online (and offline)—including bankruptcy laws—and around doing digital business, including across borders. In some countries, enormous stigma is associated with bankruptcy, both formally with difficulties in obtaining finance again, but also informally with feelings of shame and failure.

- *Creating the best climate for incubation and success:* Promoting entrepreneurship and technology awareness and skills in schools, from early age and at all levels, including through the use of role models, promoting technology skills, and especially combinations of technical and soft skills (e.g. communication, management, and creative fields such as design), and providing information and a one-stop-shop to start a business online.

- *Enabling access to finance:* Promote access to finance for start-ups and scale-ups, and strive for a culture where it is ok to try-fail-and try again, which is very important as many successful—digital—enterprises have come about following many failed attempts. This is also important in a broader context of innovation, as thriving innovation has to come with a degree of acceptance of failure.

- *Facilitating market integration and demand aggregation:* Integrate markets for digital and online services by reducing fragmentation and other barriers, and help through the aggregation of demand where necessary to allow an increase in overall demand for ICT goods and services.

Conclusion

Digital technologies offer tremendous growth opportunities but require entrepreneurs to fully unlock their economic potential as the basis of new businesses or an enabler of the transformation of already established firms.

Cloud computing dramatically reduces technical and investment barriers to bringing new digital products and services to market. But with these barriers being reduced much greater emphasis must be placed on creating the right environmental conditions—including skills, business cycle regulations, infrastructure and access to capital—that enable digital entrepreneurs to be successful.

Ensuring affordable, reliable, safe and high-speed access to the technology—including at scale in the cloud—is in place is critical in removing barriers to digital entrepreneurial success. However, to enable digital entrepreneurs in maximizing the benefits that access to the infrastructure can offer, the role of policy makers in creating the right conditions for growth of new digital business models, products and services becomes ever more critical.

Enabling digital entrepreneurs in developing countries is especially important as this allows for the creation of new markets, the exploitation of existing markets and integration into global value chains. Infrastructure, skills, financial inclusion and market access appear to be the enabling factors policy makers in these countries should focus on, at least initially. At the same time, it is important to avoid the temptation to 'pick winners' or take early position on who will or will not be successful, and instead focus on creating an enabling environment that maximizes opportunities for digital entrepreneurs. The growth of online platforms that match demand and supply for tasks (by the task or by the hour) also offers increasing opportunities for people to offer their services regardless of their location. These tasks span the skills spectrum, from low- to high-end skills, and can be a first step into building a broader and experienced skills base to allow subsequent new opportunities for countries to move up the value chain and increase local content in international supply chains.

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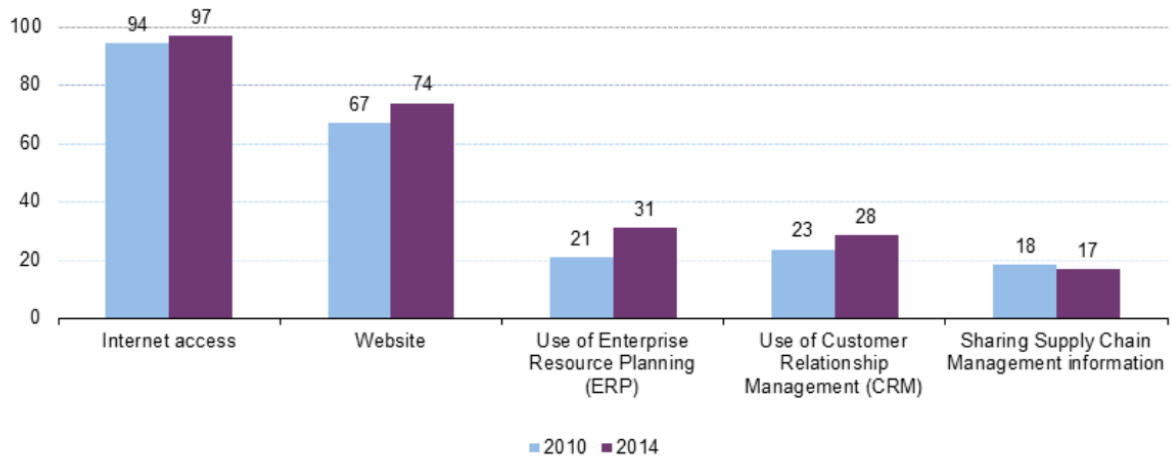
Appendix: Small and staying behind

Data on business adoption and use are sparser than for individuals. Let's look at the case of Europe as an example illustrating the case for improved technology use, especially in small businesses. Data from Eurostat for Europe indicate that firms in Europe are making slow progress in adopting ICT for e-business integration (Eurostat, 2015). SMEs form an important part of the European business landscape. In Europe in 2013, SMEs (<250 employees) accounted for 99.8% of all enterprises in the non-financial business sector, 66.8% of total employment and 57.9% of total value added generated by the non-financial business sector (Eurostat, 2014). Micro-enterprises (<10 employees) accounted for 92.4% of all enterprises in the EU28 non-financial business sector. However, apparent labor productivity is lowest in micro-enterprises, indicating the potential for gains to be achieved from the increased adoption and integration of ICT in business, and in particular in SMEs.

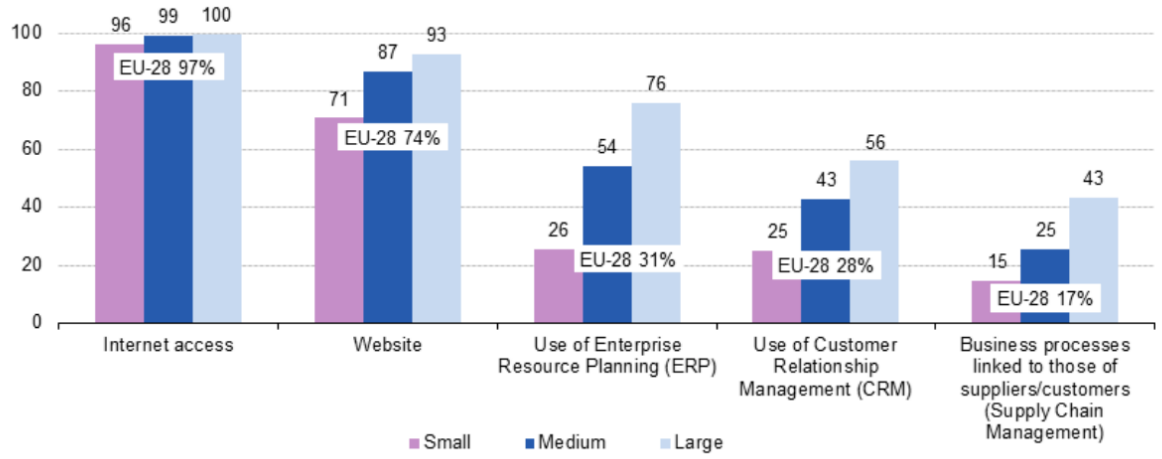
Even though most firms now use computers and have an Internet connection, and many have a web site, the use that is made of them varies greatly (and is often not very sophisticated when it comes to transforming the way business is done). The rate of adoption decreases with the level of sophistication of the e-business technology (figure 1), and the gap between large and small enterprises also increases the more advanced the ICT applications are (figure 2), which, given the prevalence of small firms, should be of concern to policy makers and business leaders.

Figure 1: Adoption of e-business technologies in enterprises, EU-28, 2010 and 2014 (% enterprises)



Source: Eurostat (2015), figure 1.

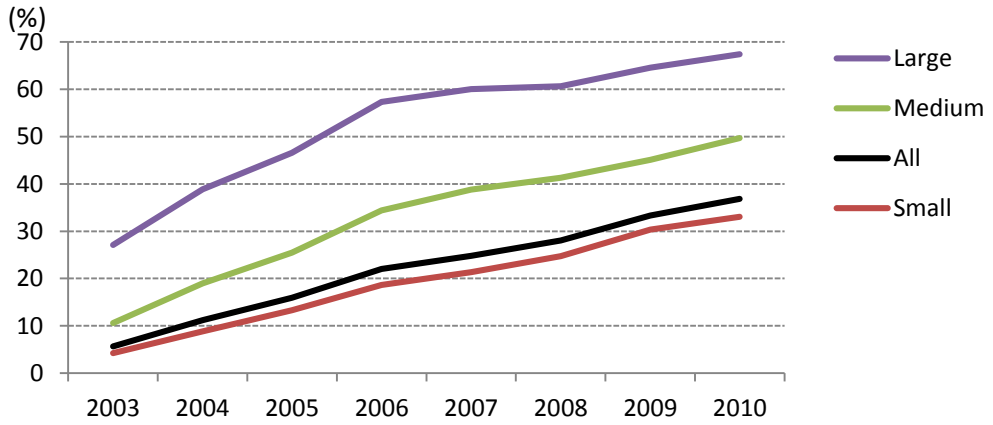
Figure 2: Enterprises adopting technologies for e-business, by size class, EU-28, 2014 (% enterprises)



Source: Eurostat (2015), figure 2.

Wireless connectivity is also gaining importance in the business context. OECD (2012) reports that wireless applications have come to play an important role in internal ICT deployment, providing flexibility and mobility to employees. In the European Union, by 2010, close to 37% of companies had deployed internal wireless connectivity (figure 3). The data also show that while many large firms operate their own intranet (more than 80% in EU15 in 2010), the numbers are still very low for smaller firms (25% of small firms in EU15 in 2010).

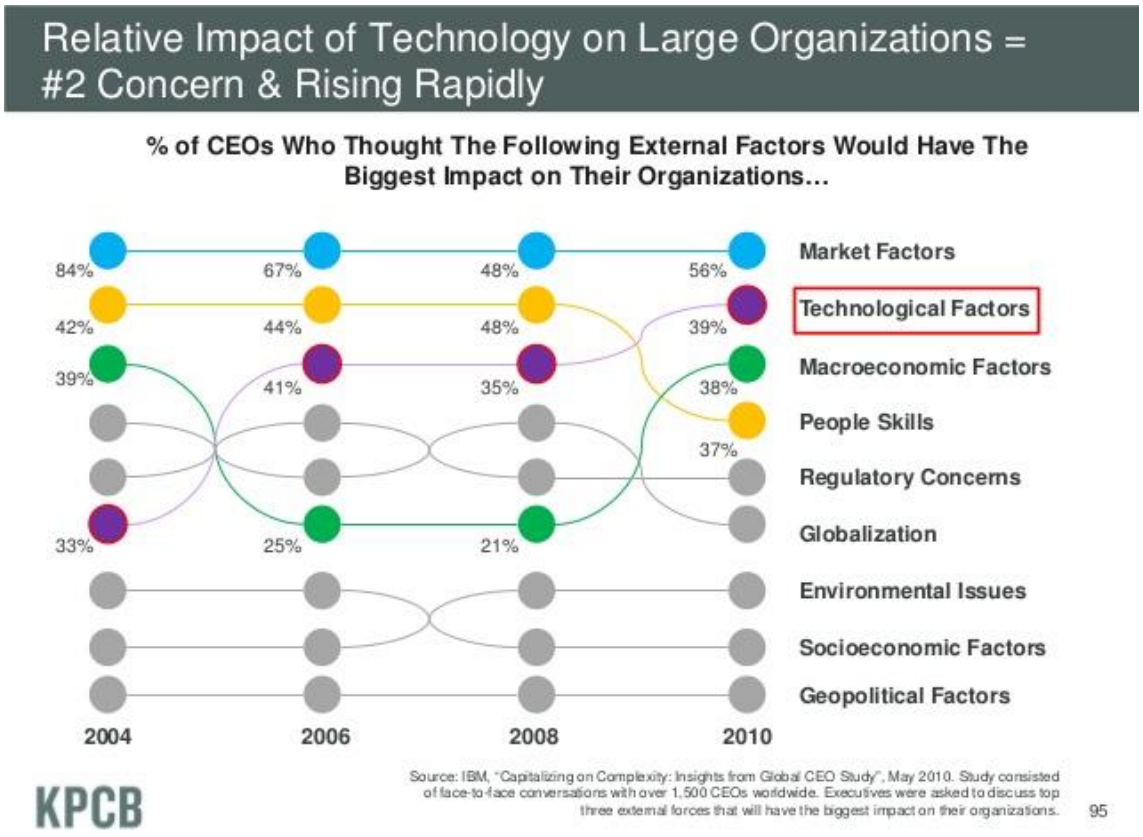
Figure 3: Wireless access use within internal computer networks in the EU15, 2003-10 (Percentage of companies by size)



Source: OECD (2012).

Over time, firms have increasingly adopted more sophisticated e-business technologies, notably also business-to-business applications over the Internet, but these developments are concentrated in large firms. It is possible that smaller firms start to use more of these technologies as cloud adoption increases, leveling the playing field in terms of access to ICT and ICT-related resources. Nonetheless, large firms report that technology is increasingly a concern for them (figure 4).

Figure 4: Technology is increasingly a factor of concern for (large) firms



Source: From a presentation by Mary Meeker and Liang Wu at the 2013 Internet Trends D11Conference, available at: http://www.slideshare.net/kleinerperkins/kpcb-Internet-trends-2013.