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Wired for Growth and Innovation

How Digital Technologies are Reshaping Small- and Medium-Sized Businesses

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'The future is already here. It's just not very evenly distributed.'
William Gibson

In the space of two decades, information and communication technology (ICT) has revolutionised the way we connect with family and friends, the way we work, and the way we inform, educate and entertain ourselves.[1] It has upended and reshaped major industries, from media and entertainment to financial services, from software to pharmaceuticals.[2] As both an enabler of innovation and a platform for a wealth of online services, it contributes massively to productivity and gross domestic product growth worldwide, including an estimated 21% of GDP growth in the world's most advanced economies over the past five years.[3] And, most crucially in the context of the economic malaise sweeping across Europe, the Internet has become a vital force in making small- and medium-sized businesses (SMEs) more potent contributors to economic growth and job creation.[4]

Among other things, small- and medium-sized enterprises can now do what they couldn't do before: take on global scale even with very limited human resources and harness emerging Web-based business platforms to dramatically slash cost and build up capacity which, in the Industrial age, would have only been available to larger outfits. Whether tapping into global talent pools, sourcing new ideas, selling services around the globe or collaborating with geographically dispersed teams, technology-enabled possibilities to connect, collaborate and streamline are endless. Savvy business owners can now manufacture and distribute entirely new product lines without having to own a physical plant or manage inventory. Put simply, modern communications technologies, and the cutting-edge business practices they engender, are now part and parcel of what it takes to run highly dynamic and productive enterprises – enterprises that are more competitive, more agile, and more capable of exporting their products and services across borders than anything Europe has previously witnessed.

1. The authors would like to thank two colleagues at the Lisbon Council: Paul Hofheinz, for outstanding editorial guidance, and Sylwia Stępień, for research assistance that went well beyond what might have been hoped for and expected. Thanks as well to Antoine Aubert, Simon Hampton, Angela Steen, Al Verney and Patricia Wruuck of Google, founding partner in the Single Market Entrepreneurs Centre, the collaborative research centre, where this policy brief was conceived, written and launched. As always, any errors of fact or judgment are the authors' sole responsibility.

2. Don Tapscott and Anthony D. Williams, *Wikinomics: How Mass Collaboration Changes Everything* (New York: Penguin, 2006).

3. Matthieu Pélissié du Rausas et al., *Internet Matters: The Net's Sweeping Impact on Growth, Jobs, and Prosperity* (San Francisco: McKinsey Global Institute, 2011).

4. Ann Mettler and Anthony D. Williams, *The Rise of the Micro-Multinational: How Freelancers and Technology-Savvy Start-Ups Are Driving Growth, Jobs and Innovation* (Brussels: Lisbon Council, 2011).

'One policy lever has the potential to trigger profound changes at minimal political cost – encouraging greater use of technology by SMEs.'

In this policy brief, we will argue that greater use of ICT could have a transformative effect on Europe's small- and medium-sized enterprises.

The policy brief is divided into three parts:

1) an overview of the SME landscape in Europe, laying out distinct features and key facts that characterise European companies;
2) a list of key technologies that are in principle available to SMEs, but whose potential is often not realised, with negative consequences for company growth, productivity and job creation; and
3) a look at Europe's "to-do" list in order for SMEs to realise their digital potential and contribute to completing the EU's digital single market.

Europe's SMEs: why they need the 'creative disruption' of digital technologies

Europe's economic landscape is heavily dominated by small- and medium-sized enterprises. More than 99% of companies in Europe are classified as SMEs, and more than 90% of them are so-called micro-enterprises, which employ fewer than 10 people.[5] In past years, even smaller entities, one-man or one-woman companies have been on the rise, with Europe now counting more than 23 million freelancers.[6]

More often than not, SMEs are perceived very positively by the public at large, because these companies are seen as closer to the community, more responsible vis-à-vis their employees and less driven by short-term profits than many of their larger counterparts, which face the pressure to deliver shareholder value and publish quarterly earnings. And on balance, these perceptions are true. However, the large number of small companies in Europe also poses certain challenges and masks the fact that many enterprises would like to grow but face serious hurdles. A few facts:

Many European SMEs start and stay small

The small size of companies, particularly in southern European countries, is actually a drag on productivity and the wider economy.[7] In a widely noted recent paper, economists at Carnegie Mellon University reported that Portugal had *more* small firms and fewer big ones in 2009 than it had in the 1980s.[8] This, in turn, is at least partially to blame for the country's "unusually poor" productivity performance in past decades, the researchers conclude, and is largely due to restrictive labour-market practices, such as difficulty in laying off workers, adjusting wages during economically challenging times and legally mandated high severance payments. Apart from obvious impediments that serve as a deterrent to company growth – particularly Europe's inflexible, costly and over-regulated labour market – there are also indications that many companies do not want to grow. Companies that are interested in growth tend to express a strong desire to internationalise, as they see it as a key strategy to open up new markets and

5 Eurostat, *Key Figures on European Business with a Special Feature on SMEs* (Luxembourg: EU, 2011).

6 European Commission, *Self-Employment in Europe 2010. European Employment Observatory Review* (Brussels: European Commission, 2010).

7 The US has a strikingly similar profile when it comes to the overall number of SMEs in the economy – 98.9% versus the EU's 99.8%. However, only 77% of these companies are micro-enterprises versus 92% in the EU. OECD, *Entrepreneurship at a Glance 2011* (Paris: OECD, 2011).

8 Serguey Braguinsky, Lee G. Branstetter, and André Regaterio, "The Incredible Shrinking Portuguese Firm," *NBER Working Paper N° 17265* (New York: NBER, 2011).

‘In the UK, sales at high- and medium-use Web businesses grew seven times faster than at low-and-no-Web-use businesses.’

opportunities. However, according to a study conducted by researchers in the United Kingdom, 56% of SMEs sampled across the Eastern part of the country were simply not interested in internationalising because they had a local niche market that they were satisfied with.[9]

Most SMEs grow and shrink slowly

In addition to the overall size of a company, one should also take into consideration the actual speed with which companies grow – and shrink. This is a good indicator for “creative destruction” in economies where a well-functioning market should weed out poor performers and reward well-managed companies that service customer needs. Here again, on this measure of meritocratic rise and fall, Europe scores rather poorly. 4.3% of firms in Europe can be classified as “high-growth companies” (versus 5.9% across the Atlantic). By the same token, US firms shrink more quickly, on average 5% faster than in Europe. The result is that European firms are more likely to stay the same size than their US counterparts. In the US, the share of firms that did not expand or contract between 2002 and 2005 is almost a third lower than in Europe (9.2% versus 13.6%).[10]

Many SMEs are held back by poor management

Partly as a result of the tendency of European firms to start – and stay – comparatively small, it is important to go to the roots of this trend and analyse the management structure and approach in individual firms. A study conducted by the London School of Economics and McKinsey did just that. It found that management practice is a key determinant in company success.[11] For instance, the researchers concluded that within Europe, Portuguese and Greek firms are the worst managed, while the UK, France and Italy are in the middle of the pack, and Swedish and German companies are on balance very well run. Similar conclusions are made in other studies, where for instance the international orientation – and thus growth orientation – of the owner-manager or other key decision makers in SMEs are described as a key determinant of the nature and extent of internationalisation.[12] While it may seem a remote possibility for policymakers to be able to influence individual managers or companies, the LSE researchers point to a set of levers that can be utilised, such as competition and free trade (which translated in the European context would equate to the completion of the internal market), as well as meritocratic promotion systems, modern labour market regulation and increasing skill levels in the population at large.[13]

One can conclude that, on balance, Europe’s economic landscape is dominated by small- and medium-sized enterprises, some of which exhibit poor productivity and growth performance. The degree of creative destruction in many countries, particularly in southern Europe, is insufficient to weed out poorly run companies or reward superior enterprise performance, leading often to “static firms,” or economic incumbents that are often highly dependent on political patronage and protectionism. At the same time – and most likely in the countries that have the

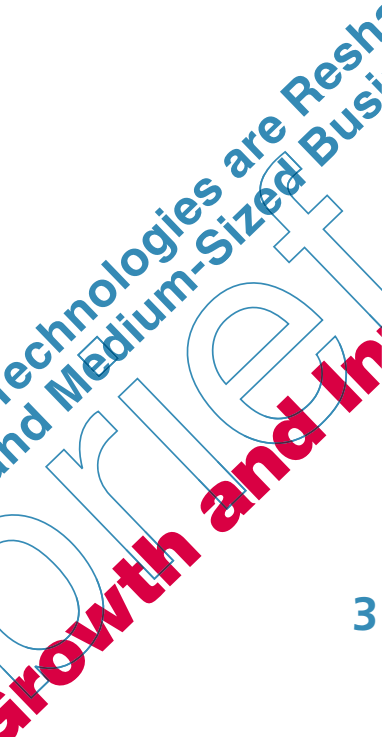
9 Leigh Sear, Terry Mughan and Lester Lloyd-Reason, “The Global SME: Understanding and Segmenting the Experiences of ‘International’ Small- and Medium-Sized Enterprises in the UK” Paper presented at the Institute for Small Business Affairs 27th National Conference, November 2004. See also Karen Wilson, “Encouraging Internationalisation of SMEs,” *Promoting Entrepreneurship in South East Europe: Policies and Tools* (Paris: OECD, 2007).

10 Albert Bravo Biosca, *Growth Dynamics: Exploring Business Growth and Contraction in Europe and the US* (London: NESTA, 2010).

11 Nick Bloom, Stephen Dorgan, John Dowdy, John van Reenen and Tom Rippin, *Management Practices across Firms and Nations* (London: London School of Economics and McKinsey, 2005).

12 Wilson, *op. cit.*.

13 Bloom et al., *op. cit.*.



‘Start-ups intuitively understand the benefits of ICT; established businesses should be the primary target of policymakers.’

highest number of small and static firms – poor management practices compound the overall problem and make some businesses’ resistance to creating better economic framework conditions more likely. In other words, in many of Europe’s hardest hit economies, such as Greece and Portugal, business is sometimes as much an impediment to change as it is a driver of change.

None of the above observations take away from the paramount importance that SMEs play for the wellbeing and prosperity of the European economy – quite to the contrary. On balance, SMEs are a reflection of the incentive structures and framework conditions that they are subjected to. If the overall policy “eco-system” for growth, productivity, innovation and management is poor – and if European markets are fragmented and protected along national lines – it is not surprising that many companies cannot live up to their potential and seize new opportunities.

Using technology to create the right conditions for growth and productivity

Against the backdrop of an economic crisis that has held Europe in its grips for several years, it is an evident – but overlooked – fact that SMEs are in many ways the key lever to bring about renewed growth and productivity. A “business as usual” attitude from both policymakers and the companies themselves will quite literally sustain and even deepen the crisis. Coming to grips with this reality, some of the hardest-hit countries, such as Greece and Italy, are finally taking measures that could make a pronounced difference over time, among them creating conditions for greater competition, opening up hitherto closed sectors and protected professions, and injecting greater dynamism and meritocracy into labour markets. While many of these measures are deeply controversial and politically difficult, there is another policy lever that has the potential to trigger profound changes at minimal political cost – encouraging greater use of technology by SMEs.

Even if the digital economy is far from the forefront of many policymakers’ minds, the Internet is extremely important to individual companies and the economy at large. One key reason is technology’s role in reducing firm costs and overhead. A study by Dr. Robert Hendershott, a professor at the Leavey School of Business at Santa Clara University, found that the availability of open source tools, cloud computing, and the rise of virtual office infrastructure has driven the cost of launching an Internet venture down from $5,000,000 in 1997 [€4.4 million at the exchange rate of the time], to $500,000 in 2002 [€530,000], and to $50,000 in 2008 [€34,000].[14] But even non-tech ventures stand to benefit handsomely from the availability of cloud computing services that require no up-front investment and can scale instantly as business demands. McKinsey estimates that at least one-third of *all* SMEs make extensive use of cloud technologies, and those that do have benefited tremendously, using new Internet-based services to perform the functions that entire departments once performed for large corporations.[15]

14 Claire Cain Miller, “Do Web Entrepreneurs Still Need Venture Capitalists?,” *The New York Times*, 14 May 2009.

15 Pélissié du Rausas et al., *op. cit.*.

‘With the aid of technology, SMEs can now go global from day one, reaching overseas markets and talent pools with a few clicks of a mouse.’

And technology’s impact on firm-level productivity and competitiveness goes well beyond cost reduction. With the aid of technology, SMEs can now go global from day one, reaching overseas markets and talent pools with a few clicks of a mouse.[16] Modern collaboration technologies not only put a much larger and more diverse talent pool within reach of any entrepreneur starting or scaling a business; they allow talented individuals to work together in a seamless, global operation, despite being separated by time zones and geography.[17]

Shifting retail operations online, meanwhile, can increase cross-border sales and boost profitability. In the UK, for example, the overall sales of high-and-medium-use Web businesses grew by 4.1% annually from 2007-2010 – about seven times faster than the sales of low-and-no-Web-use businesses. And in many countries, including Germany and France, SMEs that have engaged actively with consumers on the Internet have also experienced three-year sales growth rates up to 22 percentage points higher than those companies in countries with low or no Internet presence.[18]

The Web’s extensive marketing and logistics infrastructure allows firms to focus on their core competencies by outsourcing non-essential and low value-adding back office functions. As we will explain, everything from market research to back-office support to contract manufacturing is available on tap – and most, if not all of it, can be managed over the Web. In addition to improving company performance, these platforms are also increasingly important in finding new clients, accessing international markets and matching talent pools with job opportunities. What follows are just some of the capabilities that today’s small- and medium-sized enterprises can take advantage of:

E-commerce platforms

E-commerce platforms have opened up the world of retail to a global network of smaller producers and a long tail of niche products and services. In the past, large vendors, importers, distributors and product manufacturers dominated retail outlets to consumers. Opportunities to sell products to the masses were limited by the product placement fees demanded by powerful retailers, while the long chain of middlemen squeezed the margins available to product developers. Today, e-commerce platforms such as eBay, Amazon, Etsy and Apple’s App Store enable nearly unlimited opportunities to sell an infinite variety of products directly to both mainstream and niche audiences – from the craftsperson who sells one-of-a-kind furnishings from his workshop in the depths of the Amazon to the dorm room developer creating location-based photo sharing apps for the iPhone.[19] Take the Apple App Store, for instance. In a few weeks, developers can easily build an application, submit it to the store and immediately find out whether it has any traction. In other words, they can vet the idea in the marketplace, thereby radically reducing their time-to-market. Moreover, they can do so with only a few thousand dollars and, in some cases, they can end up quitting their day jobs.

16 Mettler and Williams, *op. cit.*.

17 Google, *The Decisive Decade. How the Acceleration of Ideas Will Transform the Workplace by 2020* (Mountain View: Google, 2010).

18 David Dean et al., *The Connected World. The Digital Manifesto: How Companies and Countries Can Win in the Digital Economy* (Boston: Boston Consulting Group, 2012).

19 See, for Arte com Ciência, a project to stimulate the creative economy in Brazil.

'With 3D modelling, micro-manufacturing and social media, savvy businesses are prototyping products and services in public.'

After all, with a population of approximately 315 million users, the global pool of potential customers is very tantalising and the rewards to successful developers can be very rich indeed.[20]

One of the main benefits of e-commerce for SMEs is that they can use the Web to expand their customer base and enter new markets more cost effectively than in the days when international expansion entailed setting up branch plants or regional headquarters, building a distribution network, and hiring a local sales force. Today, much of this physical infrastructure is unnecessary, while the important components like distribution and customer fulfilment can be outsourced to suppliers like DHL, UPS and Fedex. But while e-commerce can "dis-intermediate" middlemen and level the playing field for artisans and small players, SMEs still face considerable challenges in retailing on the Web: getting your product noticed amongst the millions of competing offerings; earning the credibility and trust of your customers when they can't see or feel your product; uncertainty and pricing when shipping across borders.

Digital utilities and cloud computing

Digital utilities and cloud computing make incredibly powerful IT and communications capabilities – the kind that only big companies could once afford – accessible to just about everyone. Unlike previous generations, today's entrepreneurs can buy, right off the shelf, practically any computing and communication function they need to run a company, from storage to word processing to free video chat services. Users of Amazon's cloud computing services, for example, pay 10 cents an hour to harness its nearly unlimited computing capacity, allowing anyone to leverage the size and reach of the world's greatest e-commerce engine – from the computer geek testing a new algorithm from her dorm room to a Mumbai-based start-up that wants to roll out a new call centre service without spending all its capital on computers. With each passing day, the list of productivity-enhancing tools gets longer and longer, with apps for everything from file sharing and bookkeeping to salesforce management and customer support. And it's not just Internet companies that are benefitting from the declining costs of computing and communications. In fact, an estimated 75% of the economic value created by the Internet arises from traditional companies that are using Web-based technologies to lower the costs of running their businesses.[21]

Professional services marketplaces

Professional services marketplaces are expanding access to the global talent pool and bringing unprecedented flexibility to today's labour markets. Business process outsourcing is no longer just for big multinationals looking to shed costs. For entrepreneurs, marketplaces like Elance, oDesk, PeoplePerHour.com and Guru.com provide flexible, on-demand access to talented people and business capabilities for much less than it would cost to hire or build

20 Michael Liedtke "Apple's Market Clout Likely to Draw More Scrutiny," *Associated Press*, 12 March 2012. Although just 20% of developers are estimated to earn about 97% of revenue from app sales, the developers who do succeed in creating a popular app are richly rewarded. For example, Steve Demeter, developer of the vastly popular $5 [€3.8] iPhone game Trism, made $250,000 [€191,137] in profit in just two months and nearly $2 million [€1.52 million] in his first year of operations. Brian X. Chen "iPhone Developers Go From Rags to Riches," *Wired*, 19 September 2008.

21 James Manyika and Charles Roxburgh, *The Great Transformer: The Impact of the Internet on Economic Growth and Prosperity* (San Francisco: McKinsey Global Institute, 2011).

'ICT is not the exclusive purview of tech start-ups, but rather an accelerator of all businesses.'

internally. The "talent-as-a-service" model is both attractive to employers who can get access to valuable skills on-demand, and to freelancers, who can build reputations as reliable service providers and earn money from the comforts of their homes. Xenios Thrasyvoulou, the founder and CEO of PeoplePerHour.com, a UK-based company, points out that the vast majority of his 70,000 clients are small companies that do not want to hire a full-time accountant or human resources professional but need to occasionally use these services.[22] Business owners can browse detailed work samples and customer ratings for thousands of vendors in service categories ranging from accounting to web design. Elance provides built-in software to track works in progress and handle billing, payment, and tax records, while Guru.com allows buyers to put funds in escrow until work is received. oDesk has even negotiated benefits packages for contractors using its site.[23]

22 Initially founded in London, the PeoplePerHour.com network now has about 250,000 active users, of whom 180,000 are freelancers and 70,000 are clients.

23 In July 2011, some 250,000 companies paid 1.3 million registered freelancers on oDesk for over 1.8 million hours of work, up from half that amount a year earlier.

Innovation marketplaces

The growing value of intellectual property, combined with the connectivity provided by the Web, is fuelling the creation of new online marketplaces to facilitate patent licensing and IP transfer across firms, industries and regions. These marketplaces for innovation are opening up scientific research and facilitating intellectual property transfers on a global scale. In doing so, they yield tremendous competitive and economic advantages for firms both large and small. Firms without deep R&D capabilities can license leading-edge technologies for much less than it would cost to develop in-house. Firms that are strong innovators, on the other hand, can increase their return on R&D by licensing inventions to innovation-hungry companies. There is even potential for freelance researchers and specialised companies to profit from innovation marketplaces, too. More than 40% of registered "solvers" on InnoCentive, for example, come from Brazil, Russia, India and China; 30% from the US; and the remainder from over 150 other countries. Many have jobs in university labs where seemingly obscure research pursuits could have applications that they hadn't thought of or hadn't yet monetised. In fact, InnoCentive has been taking steps to ignite more entrepreneurial activity among seekers and solvers by expanding the tools available to users to manage rights, communicate with other registered users, and self-organise into *ad hoc* freelance organisations. Indeed, where innovation problems are highly integrated, it may be preferable to offer problems to skilled external teams rather than or in addition to posting them in an open market for individual solvers. Imagine, for example, European disaster response teams seeking ready-made solutions for bio-latrines and housing in the aftermath of another episode of intense flooding (like the flash flooding that devastated southern Poland, parts of the Czech Republic, Slovakia and northern Hungary in 2010) or the Republic of Cyprus seeking help to sustain its fresh water resources in the face of dwindling supplies. The fact that InnoCentive structures its problems in a modular way means that there are opportunities for individuals and organisations to build a business around this model of innovation.

‘Tech-intensive SMEs grow and export twice as much as others, and create twice the number of jobs.’

Big data mining services, online advertisers and social networking platforms

Big data mining services, online advertisers and social networking platforms are creating interactive and highly targeted marketing opportunities for companies, while often rendering traditional advertising obsolete. In the offline world of advertising, a publisher or broadcaster gathered particular types of people into something called an audience, and then advertisers purchased ads to reach that audience. Ads in highly coveted publications or broadcasts were very expensive, but the return on investment (ROI) on ad buys was famously illusive. Today, a standard ad targeting company that uses real-time bidding can offer targeted ads based on how users act (behavioural), who they are (demographic), where they live (geographic), and who they seem like online (lookalike), as well as something called “social proximity,” a measure of the type and quality of the customer’s interactions within his or her existing social networks. Metrics like these give advertisers the ability to choose the types of sites on which their ads will run based on parameters like publisher brand equity, contextual relevance to the advertiser and content quality. And though the boundaries of online privacy are routinely being stretched to uncomfortable limits, online marketers can increasingly fuse disparate databases together to build fully fleshed out digital portraits of their existing and potential customers. These highly-targeted, data-driven methods of marketing not only work better than traditional media advertising, they are also far more cost effective. An SME can not only buy an online audience for one-fifth the price of traditional media buys, they can bid on “eyeballs” in real-time across millions of sites without ever having to talk to ad salesman. Expanding product reach into overseas markets has never been easier. With a few clicks, an SME in Uppsala, Sweden can be marketing solar-powered tablets 10,000 kilometres away in Rio de Janeiro, Brazil. Savvy marketers can also use the power of social media to engage with customers directly, co-creating their next marketing campaign or getting input on product innovation.

Micro-manufacturing and three-dimensional printing

Micro-manufacturing and three-dimensional printing bring the power of the global plant floor to SMEs. Until recently, only large companies had the manufacturing muscle to bring physical goods to the mass market. But as the machinery of factory production become available to individuals, anyone with a good idea and some ingenuity can design and sell goods globally without a physical plant or even inventory. Thanks to contract manufacturing in places like China and affordable 3D printing, virtual micro-factories now make everything from bike components to bespoke furniture in any design you can imagine. A search on Alibaba.com, the largest aggregator of China’s manufacturers, pulls up a long list of suppliers that will manufacture product designs in batches as small as a single unit. Alibaba’s instant messaging services even translate between Chinese and English in real time, so customers can communicate with suppliers using their native language. With a few key strokes, a clever product designer can set assembly

'When businesses invest in ICT, they generate bigger returns on productivity growth than from most other investment.'

lines in China into motion, and after a few weeks of prototyping they can be in full production, making hundreds, thousands, or more.

As much as contracting manufacturing has changed the game for start-ups, the most revolutionary developments in manufacturing will manifest when 3D printers reach price points attractive to ordinary households – a reality that could see consumers swapping product designs over the Internet and printing out physical copies in the convenience of their living rooms. MakerBot's Thing-o-Matic (the company's most affordable 3D printer) comes close already. Literally a factory for your desktop, this laser printer-sized appliance retails for $1299 [€993] and can print just about any 3D shape into plastic (five years ago, you couldn't get anything like this for less than $125,000 or €95,500). From custom chess sets to decorative lampshades, MakerBot enthusiasts seem to have endless imagination when it comes to dreaming up new uses. Users who like to tinker can share their custom modifications with like-minded "makers" who congregate on Thingiverse.com, a collaboration and discussion platform where users swap product designs by the thousands. True, these makers may be in the vanguard, for now. But momentum is building quickly. Terry Wohlers, who produces an annual in-depth study of the advances in additive manufacturing technologies, estimates 3D printing will grow to become a $5.2 billion [€4 billion] industry by 2020, up from $1.3 billion [€1 billion] in 2010.[24] And there are European examples as well. Shapeways, a Dutch 3D printing company which started in 2007 as the incubator unit of Philips, in 2010 allowed people selling their designs on Shapeways.com to earn a total of $270,000 [€206,000].[25] Meanwhile, the most recent Maker Faire in San Francisco – an event that caters to a growing population of makers and their fans – attracted more than 100,000 engineers, tinkerers, programmers, hackers and general-interest do-it-yourselfers. With local "hackerspaces" and Maker Faires now booming in urban centres around the world, it's only a matter of time before the technology matures to a point where the mainstream market follows.

Crowd financing

By expanding access to capital, crowd financing creates a more dynamic and liquid funding ecosystem, particularly for start-ups but also SMEs at large. Companies can't breathe without a steady supply of oxygen in the form of investment capital. In the past, entrepreneurs could turn to their friends and family, their bankers, or seek a venture capitalist. Venture capitalists, in particular, constitute a critical link in a long chain of innovation where nascent ideas and technologies morph into market-ready products and services. For starry-eyed entrepreneurs, attracting venture capital is often seen as both a rite of passage and badge of honour validating their work and their viability. But even venture capitalists admit that the current mechanisms are pretty poor at getting money to where it will create the greatest value.[26] "The problem," according to a 2009 report by North Venture Partners, "isn't the number of opportunities investors are presented with, but it is rather the lack of an efficient means of filtering the options." Throughput, not

24 Terry Wohlers, *Wohlers Report 2011: Annual Worldwide Progress Report* (Ft. Colins: Wohlers Associates, 2011).

25 Siobhán Dowling, "Rise of the Roaming Empires," *CNBC Business Magazine*, March 2012.

26 Paul Kedrosky, *Right-Sizing the US Venture Capital Industry* (Kansas City: Ewing Marion Kauffman Foundation, 2009).

'Crowd financing creates a more dynamic and liquid funding ecosystem, particularly for start-ups but also SMEs at large.'

supply, argues the report, is placing unnecessary constraints on today's innovation system. "How do investors find, filter and fund the most promising new opportunities in a deep ocean of possibilities? The truth is they can't," the report concludes.[27]

Now with the rise of collaborative venture funding platforms such as Kickstarter, IndieGoGo, Y Combinator, TechStars, and the London-based Seedrs, entrepreneurs can not only seek out short-term funding from a broader and more international community online; they can find like-minded collaborators, get access to resources, seek out mentoring and connections, and even win new customers. In other words, community-powered venture capital models can both filter the global wealth of opportunities and channel more intellectual horsepower into making each investment successful. In a typical crowd funding example, a company looking to raise €100,000 uses an Internet site to invite investors to buy as much as €100 of shares each.[28] This way, the company can raise funds inexpensively, while early investors can buy a stake in an innovative business with limited downside risk. While crowd financing has the potential to run amok of securities laws, the US House of Representatives recently passed a package of measures designed to make it easier for small companies to access capital and go public. Specifically, it voted to remove restrictions on crowd funding by allowing companies to raise up to $1 million [€760,000] from investors not registered with the Securities and Exchange Commission. This is a concrete step that will significantly improve the chances of small businesses to seek equity funding in capital markets.[29] The ultimate promise is that these more open financing structures and relaxed regulatory rules will deploy capital more widely and effectively to the swelling universe of start-ups and SMEs looking for funding. This in turn could provide an enormously powerful engine for job creation, innovation and growth.[30]

The adoption imperative

Whether searching for capital to fund an expansion or sourcing low-cost manufacturing options, virtually every aspect of starting and running a company has changed beyond recognition in recent years. For the entrepreneur seeking to start a business, the breadbasket of Web-enabled capabilities described above is wonderfully empowering – so much so that a newer, more agile model for launching and growing a business has recently come to attention. The new model – one exemplified by firms in Stockholm's booming tech sector or New York's Silicon Alley – relies on much greater hypothesis-testing and experimentation in the marketplace from the day a company is founded. That represents a sharp break with the traditional approach of drawing up a business plan, setting financial targets, building a polished product and then rolling out the business and hoping to succeed. That model has proven time-consuming and costly in age where speed and agility are paramount. Now, with digital tools such as 3D modelling, micro-manufacturing and social media, savvy business owners are literally prototyping

27 North Venture Partners, *Breaking Through The Broken: The Transparent Guide to Overcoming Inefficiencies in Early Stage Venture Capital* (Oakland: North Venture Partners, 2009).

28 On Kickstarter, for example, Scott Wilson (a former creative director at Nike) posted a project to build a designer watchband for the 6th generation iPod nano and set a goal to raise $30,000 [€23,000] in fifteen days. The project attracted $6000 [€4583] of pledges on the first day. One month later, the project closed with $942,578 [€720,078] pledges from 13,512 backers across 50 countries. Scott sold in excess of 21,000 watchbands directly through kickstarter and another 20,000 through lunatik.com, the website for Scott's new company. See Thomas Ricker, "Kickstarted: How One Company is Revolutionising Product Development," *TheVerge.com*, 20 December 2011.

29 James Politi and Robin Harding, "US Set to Help Small Businesses Go Public," *Financial Times*, 05 March 2012.

30 The numbers on Kickstarter alone are impressive. To date, one million people have combined to pledge more than $100 million [€76 million] to fund ideas and projects since Kickstarter launched in April 2009.

‘The capacity to turbo-charge innovation, boost productivity and create jobs makes ICT pivotal to accelerate economic growth.’

their products and services in public – a feat that was harder to pull off in the past when physical and financial capital were costlier. Moreover, with the business platforms described above, entrepreneurs can layer-in services and capabilities on an as-needed basis, thereby avoiding costly and potentially unnecessary long-term investments in firm-specific capital. If a business prototype fails in the marketplace, it’s easier and less costly to unwind it and start again.

Looking at the various technologies at firms’ disposal, however, one easily recognises that the opportunities for innovation are not limited to start-ups. True, a new company without any institutional legacy and a young, Web-savvy chief executive might have an easier time understanding and adopting available technologies; however, from a macro-economic point of view, particularly with regards to stimulating growth, job creation and productivity, it is vital that established businesses do not forgo the potential that these technologies offer. In fact, one might argue that established businesses should be the primary target of policymakers, as young start-ups usually intuitively understand the benefits of ICT and need no converting or extra incentives to adopt them, while the former often fail to understand the incredible opportunities and revolutionising effects of ICT.

Any European recovery strategy that does not take these new realities into account is bound to fail, no matter how great the effort is to build up financial firewalls and better economic governance systems. This is even more true because Europe likes to consider itself among the vanguard of the advanced economies in the world. Falling behind on ICT and the Internet, the new engine of economic growth in the 21st century – much like electricity was in the 19th century or steam power in the 18th – would have devastating, long-term consequences. Indeed, as this policy brief has shown, ICT offers unprecedented opportunities to change business performance dramatically and boost productivity across many different sectors. That is the reason why it is important not to view ICT as an exclusive purview of tech start-ups, but rather as an accelerator of *all* businesses, particularly SMEs, across *all* economic sectors.

In fact, evidence suggests that greater adoption of technology by SMEs not only benefits individual companies but also the economy at large through increased job creation, productivity improvements and economic growth. Though policymakers and media commentators have sometimes bought into the popular narrative that Internet-based business infrastructures and technological automation are harming rather than aiding job creation, the opposite is true. Tech-intensive SMEs not only grow and export twice as much as others; they also create twice the number of jobs.[31] Indeed, a detailed review of the French economy over a 15-year period found that while the Internet may have led to the loss of some 500,000 jobs, it actually created 1.2 million jobs in other places – a net accumulation of

31 Pélissié du Rausas et al. *op. cit.*.

'High-speed broadband is the lifeblood of technology-savvy SMEs.'

700,000 jobs in areas ranging from software engineering and online marketing to logistics and parcel delivery.[32]

When businesses invest in ICT, they generate bigger returns on productivity growth than any other forms of capital investment. While the returns on other forms of capital investment are about 15% on average, investment in ICT may generate up to 25% of productivity growth.[33] For example, in wholesale and retail trade, a 10% increase in e-sales leads to a 3.1% productivity increase, while in business and financial services, a 10% increase in the number of employees using high-speed broadband raises productivity by 0.9%.[34] Regardless of the sector, however, the most decisive gains in productivity often result from the capacity to use the Internet to conjure up radical new business models, eliminate middlemen and strip out inefficiencies. This kind of creative destruction has always been the most reliable driver of long-term productivity growth – and with the Internet we now have the most powerful platform for creative destruction the world has ever seen.

Taken together, the capacity to turbo-charge innovation, boost productivity and create jobs makes the Internet and other modern communications technologies absolutely pivotal in Europe's quest to accelerate economic growth. The data accumulated to date suggests that countries with high levels of technology adoption are already reaping the benefits. In the UK, 71% of SMEs use the Internet with medium or high intensity and the Internet contributes about 5.4% to British GDP. In Russia, on the other hand, only 41% of SMEs have medium or high Internet usage and the Internet contributes only 0.8% to Russian GDP.[35] Indeed, in developed markets, such as the EU, the Internet economy is forecast to grow at approximately 8% annually. However, compared to some of its most technology-savvy counterparts, the EU could stand to do better. In 2010, the Internet contributed on average only 3.8% of GDP in the EU, compared to 4.7% in the US and 7.3% in South Korea.[36] These figures alone warrant policymakers' urgent attention. If Europe wants to be counted among the regions that are defining and leading the industries of the future, it must recognise the degree to which the depth of technology adoption influences overall GDP growth, an effect that will only increase as digital technologies continue to penetrate and reshape every economic activity and every sphere of society.

Europe's 'to-do' list: unleashing the digital potential of SMEs

All of the tools described in the previous section are in principle easily accessible to European SMEs. And the benefits they could bring to individual companies and the economy at large are well documented. So why is there not more take-up of these technologies? And why is policymaking so slow to realise the potential and create frameworks that would accelerate speedier adoption? In a nutshell, it's because many stumbling blocks remain in Europe and in individual EU member states. Above all, the lack of a coherent and well-functioning digital single market

32 *Ibid.*.

33 Oxford Economics, *Capturing the ICT Dividend: Using Technology to Drive Productivity and Growth in the EU* (Oxford: Oxford Economics, 2011).

34 Wouter Bonte, Filiep Deforche, Wim de Bruyne and Bruno Van Tuykom, *Economy.be at the Crossroads: How the Internet is Transforming the Belgian Economy* (Boston: Boston Consulting Group, 2011).

35 Pélissié du Rausas et al. *op. cit.*.

36 Dean et al., *The Internet Economy in the G-20: The $4.2 Trillion Growth Opportunity* (Boston: Boston Consulting Group, 2012)

'The growing ICT skills shortage in Europe should send alarm bells ringing among policymakers.'

is perhaps the most decisive fact. While the limited adoption of technology in many sectors is often portrayed as a niche issue, pertaining mostly to ICT companies or tech start-ups, the reality is the creation of a digital single market is key for the modernisation of the overall economy, including the many companies that don't have ICT at the core of their business model but that are highly dependent on a world-class digital infrastructure to be successful and competitive.

Consider a few facts: Only 21% of retailers sell their goods in other EU member states (though nearly 50% of retailers are online).[37] What's more, when a consumer attempts to buy goods from a website located in another EU member state, statistics tell us the transaction fails six out of ten times (For an item such as computers or electronics, the failure rate is eight out of ten times).[38] Perhaps not surprisingly, nearly one in two European consumers (46.7%) say they are not interested in making a cross-border transaction because of worries about delivery.[39] And the businesses themselves that wish to sell their goods across borders are stuck trying to live within and adapt to 26 different contract laws, a feat which costs on average €10,000 per country of export.[40] The result: 75% of European traders currently do no cross-border trading at all while those who do limit their exports to a few countries; the average European company doing business across borders does so in 1.8 territories.[41]

Against this backdrop – and as a matter of utmost priority – the EU urgently needs to embrace the following "to-do" list to unleash the digital single market:

1. Accelerate the spread and adoption of ultra high-speed broadband

High-speed broadband, particularly Next-Generation Access (NGA), the super-fast fibre networks that are eventually supposed to replace the slower copper lines currently in use, is the lifeblood of technology-savvy SMEs. In the Europe 2020 Agenda – the EU's growth blueprint for this decade – there is a target to have 100% coverage for high-speed connections (30 Megabits per second) and at least 50% penetration of super-fast internet (NGA), which has a minimal speed of 100 Mbps.[42] However, at present, only 6.5% of fixed broadband connections operate on at least 30 Mbps, while ultrafast connections of 100 Mbps are still only marginally available.[43] In fact, only about 2% of connections operate on fibre, meaning that that EU is lagging behind other advanced countries such as the USA, Japan and South Korea.[44] While the enormous cost of upgrading the network from copper to fibre, estimated to range between €181 to €268 billion to deploy fibre to at least half of the EU population, may seem daunting, policymakers should be aware that these numbers are comparatively modest in comparison to falling behind in the digital revolution, with negative repercussions for all of the economy, particularly SMEs.[45] That is why new, innovative financial instruments, such as EU project bonds, deserve urgent attention and rapid action.

37 Meglena Kuneva, "A Blueprint for Consumer Policy in Europe: Making Markets Work with and for People," *The 2009 Jean Monnet Lecture*, delivered at the Lisbon Council, 05 November 2009.

38 *Ibid.*.

39 Eurobarometer, "Consumer Attitudes Towards Cross-Border Trade and Consumer Protection. Analytical Report," *Flash Eurobarometer 299*, March 2011.

40 Viviane Reding, "A Common Sales Law for the European Union: Helping Start-Ups to Drive Growth, Jobs and Innovation," Keynote address delivered at The 2011 Innovation Summit, hosted by the Lisbon Council, 06 October 2011.

41 *Ibid.*.

42 European Commission, "A Digital Agenda for Europe," *Communication COM(2010) 245 final/2* (Brussels: European Commission, 2010).

43 European Commission, "Broadband Access in the EU: Situation at 01 July 2011," *Working Document COCOM11-24* (Brussels: European Commission, 2011).

44 *Ibid.*.

45 European Commission, "Commission Staff Working Document on the Implementation of National Broadband Plans," *SWD(2012) 68 final/2* (Brussels: European Commission, 2012).

'ICT and the Internet are to the 21st century economy what electricity was to the 19th century.'

2. Create reliable, safe and efficient online payment systems

Another stumbling block towards unleashing the potential of internationalisation, facilitating greater e-commerce and working towards a fully functioning digital single market is the lack of consumer confidence in online payment systems on the one hand and high costs charged to businesses for electronic payments on the other. With regards to the former, 35% of Internet users reportedly avoid shopping online because of concerns about the security of payments (even those willing to forgo these concerns, may not be able to shop online because they do not have a credit card, which is generally required).[46] The latter problem – high charges – affects primarily businesses, many of which complain about the excessive costs they have to shoulder, especially for micro-payments (press, music, online films, etc.). This situation arises from a number of factors, among them high market fragmentation, barriers to market entry, insufficient standardisation, and interoperability problems between service providers.[47] European policymakers could remove many of these obstacles by deepening the Single Euro Payments Area (SEPA), the EU's payments integration initiative for simplification and harmonisation of bank transfers, with a particular focus on payment cards, Internet payments and mobile payments.[48]

3. Establish a single Europe-wide sales contract law

Currently, contract law is heavily fragmented in the EU. For all practical purposes, it is a patchwork of 27 different legal systems – in particular with regards to consumer protection law – that requires SMEs to respect not only the rules in its country of establishment but also the rules that apply in the country where the consumer is resident. Imagine the complexity for a small organisation to decipher the rules and laws of 26 other countries, often drafted in foreign languages. Not surprisingly, this complexity results in a lack of legal certainty that has proven a formidable drag on internationalisation efforts by SMEs (and ultimately their growth prospects in EU markets), as well as a *de facto* break on consumer choice (it arbitrarily limits access to cheaper and often better goods offered in other EU member states). This is clearly an untenable situation as well as an embarrassing state of affairs for a community of countries that pride themselves on their "single market."[49] The optional common sales contract, which European Commission Vice-President Viviane Reding proposed in October 2011, is an excellent first step and should be given the whole-hearted support of all EU member states and progress-minded stakeholders.[50]

4. Streamline and simplify complex and overlapping VAT systems

Currently, SMEs must be aware of the tax thresholds beyond which they must register in the country of sales. Even when they manage to get this information, which is often not easy to come by, they then face the administrative burden related to fulfilling unharmonised value-added tax obligations, such as invoicing, completing VAT returns and payment of the VAT due. This is clearly a deterrent to cross-border activity. And the solution has to emanate from Brussels, given

46 Anna Lööf and Heidi Seybert, "Internet Usage in 2009 – Households and Individuals," *Eurostat Data in Focus 46/2009* (Luxembourg: European Union, 2009).

47 European Commission, "A Coherent Framework for Building Trust in the Digital Single Market for E-Commerce and Online Services," *Communication (2001) 942* (Brussels: European Commission, 2012).

48 See the info sheet on the Single Euro Payment Area (SEPA) and the Payment Services Directive on the European Commission website.

49 Reding, *op.cit.*.

50 *Ibid.*.

'Helping SMEs become bigger, more profitable and competitive is one of the most promising ways out of the crisis.'

that it is the central authority capable of working with member states on a pan-European solution that serves both SMEs as well as the need of tax authorities not to forgo revenues.[51]

5. Lower cross-border shipping costs and increase certainty of delivery

For consumers and businesses alike, there is still great uncertainty when shipping products across borders to other EU member states. SMEs which internationalise have to face additional burdens linked to unstandardised prices, which are on average twice as high for cross-border delivery as domestic shipments. This is a travesty for a single market where the actual geographical difference between countries – for, say, a shipment from the Netherlands to Belgium – in no way warrants the additional cost, delay in delivery and difficulty to track, not to mention the lack of certainty that the shipment will actually arrive in the place to which it has been sent.[52]

6. Develop a Europe-wide framework for cloud computing

Cloud computing can significantly boost the efficiency and productivity of SMEs. Despite its obvious – and growing – importance to the wider economy, the EU lacks a coherent framework for cloud computing, which often results in negative consequences for SMEs. Given their size, SMEs for instance have the least resources and market leverage to negotiate a strong contract with suppliers, which would avoid user lock-in and ensure data portability. At the same time, there is a plethora of cloud standards across the EU, calling for greater consolidation and a more uniform and transparent legal framework, for instance guiding data protection.[53]

7. Boost digital skills in the labour market

There is huge competition for digital talent in the labour market and SMEs are reporting great difficulty in attracting highly-educated employees in possession of the latest technological skills. As SMEs have to compete for digital talent with larger businesses, which can routinely offer better pay and conditions, they often miss out on the skills they need to become more ICT-savvy. This is of course first and foremost a drag on the SME itself, but extrapolated throughout the entire economy, it has negative consequences for macro-indicators, such as GDP growth, productivity and job creation. That is why the growing ICT skills shortage in Europe, forecast to be as high as 700,000 professionals by 2015, should send alarm bells ringing among policy makers.[54] And it should be a wake-up call for Europe's growing legions of un- and under-employed to consider new, more promising career paths at a time of growing despair about the state of the labour market, particularly for young people, most of whom have "grown up digital." [55]

51 European Commission, "A Coherent Framework for Building Trust in the Digital Single Market for E-Commerce and Online Services," *Communication (2011) 942* (Brussels: European Commission, 2012).

52 eBay, *Towards Commerce 3.0: Roadmap for Building Sustainable Growth into Commerce* (San Jose: eBay, 2012).

53 Neelie Kroes, "The Digital Agenda: Europe's Key Driver of Growth and Innovation," *The 2011 Guglielmo Marconi Lecture*, delivered at The 2011 Digital Agenda Summit, hosted by the Lisbon Council, 04 October 2011.

54 European Commission, "A Digital Agenda for Europe," *Communication COM(2010) 245 final/2* (Brussels: European Commission, 2010).

55 Don Tapscott, *Grown Up Digital: How the Net Generation is Changing Your World* (New York: McGraw Hill, 2009).

‘Despite the crisis, the Internet economy in Europe is projected to grow steadily and healthily in coming years.’

A strong, sustained recovery in Europe depends on the ability of public and private sector leaders to work together to deliver on this digital “to-do” list, with the aim to unleash growth, jobs and innovation and build a new foundation for prosperity. Simply put, the European economy needs a greater proportion of its large cadre of SMEs to morph into high-growth, productive firms with the potential to expand and reach scale. Achieving this goal will require not only a continuous stream of new ideas capable of being commercialised, as well as more bold entrepreneurs who can launch, nurture and scale new 21st century companies; it will also require fewer roadblocks and better infrastructure to support the growth of *existing* enterprises – enterprises that might otherwise remain too small and unproductive to make a meaningful contribution to net job creation and growth.

Despite the crisis, the Internet economy in Europe is projected to grow steadily and healthily in coming years. But the reality is that more growth, more productivity and more jobs would be possible if companies in general and the EU in particular would facilitate greater adoption of ICT in SMEs. As is, policymaking focuses heavily on high-tech start-ups in the hope of creating a European rival to Google or Apple. Without taking away from the importance of these efforts, two observations ought to be made: the weak link in our economies are not the start-ups but the vast majority of companies that already exist which are struggling to realise the potential of the digital age. ICT and the Internet are essentially the 21st century equivalent of what electricity was in the 19th century – a vital new industrial component, which all industries must urgently strive to adopt and take advantage of. Policymaking needs to focus more on the general adoption of technology in *all* companies across *all* sectors, as well as laying the regulatory framework that makes this possible, such as EU-wide legislation and high-speed, affordable and easily accessible Internet access and data services.

With the eurozone in the second recession in less than three years, the urgency to adopt many of the measures and embrace the technologies laid out in this policy brief could not be more pressing. As is often said, SMEs are the backbone of the European economy. Assisting these enterprises in becoming bigger, more profitable and competitive, able to utilise the full potential of Europe’s single market of 500 million consumers, is perhaps one of the most promising ways out of the crisis. The time for action has come.

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