Carpe mutationem – seize the transformation!

ICT has the potential to transform industries, economies and societies – **but it can never succeed in a vacuum**. Benefiting fully from ICT disruption requires sound public policy-making that shapes and determines the duration, cumulative strength and sustainability of the gains that can be achieved. **So policy makers – it's time to act**.

"Public policy will shape the size and duration of the rewards realized from ICT-driven transformation…and "policy-making on auto-pilot" is not an option."

WE ARE ON THE BRINK of the next technological revolution. ICT is expanding into more areas of society and business, and remarkable opportunities for radical and disruptive innovations are emerging across industries, public services and private life. By enabling fundamentally new ways for people to create, learn, produce and innovate, ICT can have a positive, long-term and sustainable impact specifically on our economy – and more generally, on our world.

However, it is only when technologies are widely adopted by people, businesses and public institutions that these benefits can be fully achieved. Technological progress is always shaped by society, and technology itself does not possess deterministic, built-in properties that will automatically result in the creation of specific socio-economic results.

TURNING OFF THE AUTO-PILOT

"If society does not determine technology, it can, mainly through the state, suffocate its development. Or alternatively, again mainly by state intervention, it can embark on an accelerated process of technological modernization able to change the fate of economies and social well-being in a few years" – Manuel Castells, *The Rise of the Network Society*, 2010.

WE NEED TO UNDERSTAND that while technologies hold the promise of creating positive change, it is the specific institutional and public-policy frameworks prevailing in a society that ultimately determine which opportunities can – or cannot – be realized. Public policy will therefore shape the size and duration of the rewards that can be realized by businesses and societies from ICT-driven transformation. This is why policy makers facing transformational change have a responsibility to act as socio-economic accelerators. There is also little doubt that attempting to maintain the status quo through "policy-making on auto-pilot" is not an option.

Above all, it is imperative for every policy process and policy maker to adopt a long-term perspective that achieves broad, deep and long-lasting change that is also sustainable from an economic, environmental, societal and cultural point of view. Policy makers must cater for the long-term well-being of citizens, focus on improving qualitative as well as quantitative standards of living, and strive to improve national competitiveness and encourage social progress. However, reaping the full benefits of technology-led structural transformation depends on how successfully policy makers can address a number of fundamental public-policy, as well as ICT-policy specific, considerations.

Three examples of fundamental public-policy challenges associated with technology-led transformations are briefly presented below:

PUBLIC-POLICY CHALLENGE #1: *societies often undervalue the power of technology-led long-term economic growth.*

In the short-term perspective, an annual growth rate of 1 or 2 percent makes little difference from one year to another for an average citizen, and hence is not strong enough to shape the political agenda or electoral discourse. At the same time, the dilemma of long-term growth suggests that contemporaries pay most of the costs (in terms of jobs, values, and so on) of a technology-led transformation while the benefits are mostly enjoyed by future generations who are absent from the ongoing political process. More formally, the challenge is caused by temporal asymmetry in distribution of costs and benefits.

PUBLIC POLICY CHALLENGE #2: *some organizations are prepared to sacrifice benefits of technology-led long-term growth.*

The incentive structure of organizations, whether private or public, can result in short-term, incremental thinking that might be rational from a private interest point of view, but not from a socio-economic perspective. In other words, an incumbent interest will often oppose transformational changes when private short-term gains achieved from maintaining the status quo are at stake, regardless of the size of the long-term private and/or socio-economic benefits associated with these changes.

PUBLIC POLICY CHALLENGE #3: *addressing market failures is not enough – regulatory and systemic failures must also be prevented.*

Market failures such as market power, natural monopolies, externalities, asymmetric information, and public goods are broadly understood and policy makers have established tools to identify and rectify such challenges. Although addressing market efficiency issues is desirable, it can in itself be insufficient to enable a technology-led transformation. Two additional failures must also be considered.

Regulatory failures result from public policy being captured by narrow private interests or by agency problems; for example, policy makers or public institutions pursuing private interests at the expense of the public interest. This failure can result in policy outcomes unable to deal with genuine public policy problems associated with transformation, such as the dilemma of long-term growth or self-interested contemporary driven incumbent interest *(see challenge #1 above)*.

Systemic failures can also generate significant limitations. Technological progress is determined by a system of inventions, innovations, diffusions and adoptions shaped by different public institutions and sector-specific policy frameworks. Conflicting objectives associated with these institutions and frameworks can restrain or halt the economic potential. For instance, lack of alignment between supply-side (inventions, innovations) and demand-side (diffusion and adoption) policies will result in systemic failures, since the internal conflicts within the system limit the potential for transformational change.

ICT-specific policy issues

Having considered some examples of generic public-policy challenges associated with technology-led structural change, we now turn our focus to ICT-specific policy issues.

On the supply side:

- *National broadband plans* aim to increase the roll-out of broadband infrastructure within a region or a country, typically specifying objectives in terms of broadband service speeds, the service roll-out time plan, and sometimes adoption. They may also include funding and cooperation mechanisms.
- *Network regulation* aims to address technical (standards), market (incumbent and new entrant) and consumer-specific (protection and pricing) conditions with the intention of improving market efficiency, public interest (universal access) and consumer protection (contract terms).
- *Spectrum management* aims to effectively manage scarce resources and efficiently allocate spectrum for the greatest financial return. It also includes coordination and harmonization of spectrum usage to decrease the cost of technology by increasing economies of scale.

Estonia: the canary in the coalmine

WITH 25 PERCENT OF VOTING – and nearly 100 percent of tax returns – completed online, Estonia is one of the most digital countries in the world. In the words of the country's President, Toomas Hendrik Ilves, this makes Estonia the proverbial canary in the coalmine. The country's approach to questions of ICT disruption, governance and security can provide valuable lessons to policy makers far beyond the picturesque streets of Tallinn – and so far, it's a case of watch and learn. Ilves has long talked in terms of ICT as an ecosystem in which everything is interconnected, and stresses the need for new business and government paradigms that enable the full benefits of connectivity to be realized on the widest possible scale. It's a compelling and timely message that more policy makers should embrace.

SEE MORE AT: *http://www.president.ee/en/official-duties/speeches/9796-qre-booting-trust-freedom-vs-security-in-cyberspaceq/index.html#sthash.jyy5DpLW.dpuf*

On the demand side:

▶ *Industrial Internet/Internet of Things* is an emerging policy topic that groups a number of industrial sectors currently experiencing an accelerated rate of digitization, such as health care and utilities. Increased use of ICT may result in changing relationships in the value chain and the emergence of new business models that upset the status quo.

▶ *Media/content regulation* aims to regulate the obligations of media services and content providers and their roles and responsibilities in creating, aggregating and making audiovisual content available.

▶ *Data protection* aims to regulate the rights of data subjects and the obligations of data processers in terms of collecting, processing, using and disseminating personal data.

Horizontal policy frameworks impacting both supply and demand sides:

▶ *Internet governance* deals with the rules governing how the internet functions, such as the qualifications of governing stakeholders, and the mandate, organization and responsibilities of governing functions.

▶ *Trade policies* aim to regulate trade (financial, products, services and technologies) between countries and regional blocs. Trade policies can facilitate increased trade liberalization – resulting in more trade, economic and social integration and the transfer of technologies and innovations.

▶ *Intellectual Property Rights (IPR)* is an umbrella term including trademarks, patents and copyrights. The regime aims to protect private interests and increase investment in new knowledge creation and innovations on the one hand, and stimulate diffusion of new knowledge and innovation for greater societal benefit – thereby limiting private interests – on the other.

SOCIO-ECONOMIC BENEFITS AT RISK

How policy makers respond – or do not respond – to these ICT-specific policy issues, combined with their approach to the generic public policy challenges associated with technology-led structural change discussed above, will decisively shape both the cumulative size and sustainability of the socio-economic benefits that ICT can realize. The socio-economic benefits at risk come in three forms, of which the final two are of utmost importance to society.

▶ *Direct effects* result from investments in ICT and infrastructure rollout. The short-term economic stimulus effect – usually lasting a year or two – differs little from other investment expenditures, but these infrastructure investments are fundamentally necessary to realize the indirect and induced effects described below.

▶ *Indirect effects* come from all aspects of economic activity affected by ICT use that drive economic growth and prosperity. Examples include industry and public sector efficiency and increased productivity, reduced costs, more innovation, increased market reach, and new employment opportunities. Indirect effects typically include evolutionary and radical changes in economic activities facilitated by ICT use. The duration of indirect effects on the economy is typically between two and five years.

▶ *Induced effects* come from transformative or disruptive uses of ICT. For example, ICT increases diffusion of information at lower cost, improves market access, allows people to work from multiple locations with flexible hours, and enables fundamental redesigns and optimization of procedures and processes, boosting the economy's dynamism. There can be further positive spillovers – when companies adopt broadband and ICT and transform their supply chains, they prompt other companies to change too; either because they are part of the chain, or because they copy an innovative leader. Finally, by its nature, ICT also creates positive network externalities whereby the benefits that accrue from using technologies increase as diffusion increases. The duration of indirect effects on the economy is typically a minimum of five years and can last for one, two or three decades.

CARPE MUTATIONEM!

ICT-led technological progress comes with the opportunity to transform industries, economies and societies. It encompasses forces that possess the capacity to drive structural change that results in positive, long-term sustainable growth. In fact, ICT has the potential to decisively shape the competitiveness of nations, the pace of social progress and qualitative and quantitative measures of standard of living.

Policy-makers' capacity to manage ICT-led transformation in the most advantageous direction is therefore of strategic significance. Benefiting from transformational change requires sound public policymaking that positively shapes and determines the duration, cumulative strength and sustainability of the socio-economic benefits that can be achieved. This puts policy makers in a unique position – and gives them a unique responsibility.

One thing is for sure, the plentiful benefits of ICT will not arrive by themselves. The message to policy makers is clear – seize the transformation. Carpe mutationem! ●

ABOUT THE AUTHOR

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▶ FURTHER READING

Hotwire & 33 Digital, Digital Trends Report, February 2014

Swedish National Board of Trade, No Transfer, No Trade, January 2014

The Information Technology & Innovation Foundation, 100 Data Innovations, January 2014

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