

Impact of Information and Communication Technologies and their Application to Challenges of Migration

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Abstract

Migration is a powerful phenomenon, impacting on virtually all aspects of society. Therefore, it inherits a high grade of complexity and associated set of challenges, such as socio-economic and cultural integration, as well as the broader challenge of data collection, sharing and analysis. Information and Communication Technology (ICT) as integrated part of today's digital society therefore touches upon these areas frequently. Thus, this paper investigates the impact of ICT on challenges of migration and sheds light on current initiatives and potential solutions towards resolving some of the arising issues of regular migration.

Introduction

Migration is a powerful phenomenon, impacting on virtually all aspects of society. While the proportion of migrants compared to the global population is very small at 3.3% (United Nations International Migration Report 2015), migration itself greatly influences and is influenced by the wider processes of political, economic, cultural, and technological change. At every level - from municipal to federal – governments dedicate resources, policies, finances and election campaigns to the issue of migration.

Simultaneously, information and communication technologies (ICT) have a crucial role in societal progress (Majchrzak, Markus and Wareham 2016). The application of digital technologies in sectors such as governments, non-governmental organizations and organic social movements has the potential to improve participation, transparency and accountability (Majchrzak, Markus and Wareham 2012). The digital society also challenges and raises societal problems like the digital divide, unemployment, increasing economic disparity, instability of financial markets, as well as the need to deliver quality public services and renew the legitimacy of public policy-making, including relevant policies, from humanitarian assistance, to development cooperation, to migration (Walsham and Sahay 2006, Majchrzak, Markus and Wareham 2012, European Commission 2017).

While both fields of migration and ICT are broad and evolving, they are inherently interlinked. ICT both facilitates regular and irregular migration, and creates the means to enforce the borders against irregular arrival while improving and fast-tracking the experience of regular arrivals (Hamel 2009, pp. 15-16). While not by any means a comprehensive account of the interaction of ICT and migration, the work at hand strives to identify some of the developments of ICT and highlight their potential to address a few of the challenges faced in international regular migration.

After the introduction, the chapter will begin with sections presenting both the general challenges of migration (2) and the development of ICT (3). The fourth section will focus on the role of ICT in addressing the challenge of border control (4). The following three sections will elaborate on the impact of ICT on economic growth and how that can be utilised to address the challenges of economic integration (5); the impact of ICT on social capital and community development and its effect on the challenge of cultural integration (6); as well as ICT's impact on good governance and the delivery of public services and how these factors can improve the provision of reliable, timely and accurate data collection, sharing and analysis on migration (7).

Challenges of Migration

Regular migration poses its own set of challenges, including the areas of border control, both socio-economic and cultural integration as well as the broader challenge of data collection, sharing and analysis. Due to the complexity of issues associated with migration, it is important to clarify that when discussing global migration, unless otherwise specified, the figures and resulting policy considerations in this chapter refer to international regular rather than internal or irregular migration.

Border Control

While battling irregular migration has increasingly been on the agenda of governments, the refugee crisis of 2015 has kicked off an escalation of efforts with the European government resorting to various measures to secure and protect their borders. The so-called migration crisis hit its peak during summer of 2015, with the highest number of people seeking to enter the European Union (EU) to find shelter and protection due to disaster events or war situations in their home countries. This has created tensions among the EU states, not least of all within one of the overarching issues, being the task of harmonisation of policies, processes, and technologies over all EU member states, which is already a complex endeavour as, e.g., only 22 out of 28 EU member states fully implement the Schengen Acquis, yet have to find common ground with the remaining six member states (Lehton and Aalto 2017).

To add to the complexity of the border control challenges, the flow of regular migration is continuously increasing, with high transit rates of individuals in and out of the European Union, expected to reach up to 900 million by the year 2025 – with around 300 million being third country nationals (European Commission 2016). This situation poses a set of challenges for existing border control policies, processes, and technologies.

Integration

Recent terrorist attacks in London Paris and Brussels by second generation migrants have raised concerns regarding the failure of integration policies in Europe. Together with border control, integration is now seen as one of the biggest challenges of migration. In fact, it has been shown that *“improving the outcomes for immigrants will significantly contribute to achieving the Europe 2020 Strategy’s overall goals”* (Huddleston et. al. 2013, p. 13). The EU Common Basic Principles defines integration as *“a dynamic, two-way process of mutual accommodation by all immigrants and residents of Member States”* that also involves *“the receiving society, which should create the opportunities for the immigrants’ full economic, social, cultural, and political participation.”* (Council of European Union 2004, Annex).

The difficulty of designing, implementing and assessing the success of integration policies at the legal/political, socio-economic and cultural levels (CSES and CoR 2013, p. 13) is further exacerbated by the wide range of countries, development levels and education that exists between migrant populations in any particular state. Even while taking differences into account, the EU migrant unemployment rate was higher than that of other OECD countries (OECD and EU 2015, p. 11). Challenges also arise from the perspective of cultural integration, specifically, a lasting perception of discrimination by the second-generation migrants, especially in Austria, Belgium, the Netherlands and the United Kingdom (OECD and EU 2015, p. 218).

Data on migration

For efficient governance, both in ordinary and times of crises, it is essential to have readily available, reliable information. In that sense, appropriate collection of and access to accurate, consistent and timely data is of great concern (Laczko 2015, p. 1). In fact, building up the capacity of developing states to *“increase significantly the availability of high-quality, timely and reliable data disaggregated by income, gender, age, race, ethnicity, migratory status, disability, geographic location and other characteristics relevant in national contexts”* is target 17.18 of the Sustainable Development Goals (UNGA 2015, emphasis added). Nonetheless, migration-related data suffers a myriad of challenges at every stage of collection, sharing and analysis.

Despite recent attempts to standardise collection procedures, varying methods are used by different actors to collect data on migratory movements (Laczko 2015,

pp. 5-6). Different countries have differing standards. For example, the United Kingdom is one of the last countries in Europe to collect its migration data utilising the flawed collection of International Passenger Surveys of incoming and outgoing flights, which has been shown not to represent actual in- and out-bound movement of persons accurately (Warrell et. al. 2016). In the majority of countries, migration data collection is spread across a number of agencies and departments (Laczko 2015, p. 7). One of the flaws of this system, in addition to data being collected according to different disaggregation categories, can be seen in the inconsistency between the figures on emigration and immigration (United Nations Department of Economic and Social Affairs Population Division 2016, p. 10).

There are also challenges at the analysis level, due to the lack of funding, capacity and expertise of a large number of states in being unable to undertake meaningful analysis of the collected data (Laczko 2015, p.5). Analysis is naturally affected by the challenges of collection, and results in many outcomes of analysis being presented as estimates. Additional problems arise from the varying and inconsistent definitions, of even the basic terms - who is a migrant, and what is migration - as well as types of migration, geographical areas and other crucial terms. For example, Germany no longer considered anyone who has obtained citizenship as a migrant, while a large number of other countries count as migrants, those that are foreign-born, irrespective of citizenship status (Connor 2013).

As can be seen by the above brief introduction, the challenges of migration are many and varied. They are not, however, insurmountable. The development of ICT, discussed in the section below, and its ability to foster a more robust and responsive provision of administration and services through E-Governance, can be used to improve the experience of the migrants themselves and the host community in which they reside.

Impact of Information and Communication Technologies

Over the last few decades, unprecedented advances in telecommunications technology have, in collapsing vast differences of space and time, made it possible for people around the world to think, work, share, and interact in previously inconceivable ways (Virkar 2015). These so-called new information and communication technologies or ICT have ushered humanity into a highly interconnected world; one in which action is not and cannot be limited by physical boundaries, and where constrained physical spaces have been gradually replaced by a virtual 'cyberspace' that is not subject to traditional rules, hierarchies, or power relations. Popular and academic literature has long been telling us that we live data-driven societies poised, in the midst of the 'Information Age', where both information and technology have become 'symbol(s) of political potency and economic prosperity' (Martin 1998, p. 1).

It is not surprising therefore, that advances in ICT have been, and still are, regarded by many as the impetus behind radical socio-economic and political changes (Virkar 2015). Three fundamental technical reasons set ICT apart from earlier technological counterparts (Gage 2014, p. 4). The first is the *plummeting cost of smart devices*, wherein as a consequence more people are able to access and utilise communications hardware and software. The second is the *expansion of access to the network*, or a growth in the interconnectedness of people and devices giving rise to innovation and efficiency. The third is the *emergence of powerful human-computer interfaces*, allowing for ease-of-use and plug-and-play.

ICT possess many basic characteristics that enable them to play a significant role in the development process. These are *increased and faster access to knowledge* through the gathering and processing of large quantities of data; *increased efficiency and precision* through streamlining workflows and organisational processes, *overcoming geographies* such as physical and temporal boundaries, and *openness* to people and organisations without constraints on number or physical proximity (Virkar 2015, pp. 239-240).

In considering these characteristics of information and communication technologies, questions need to be further asked about their contribution to the creation of economic, social and political capital. In a broad sense, therefore, the significance of ICT may be examined more closely under the broad headings of their *impact on economic growth*, their *impact on social capital and community development*; and their *impact on good governance and the delivery of public services*.

Prior to embarking on the abovementioned categories together with their potential impact on the challenges of migration, it is important to identify the point at which the development of ICT in the area of E-Governance directly meets that of migration. Specifically, the area of border controls.

Smart border control: The use of ICT in the area of migration policy

One observation that can be made considering the development of migration policies within recent years is that they, like many other government processes, more and more extensively utilise ICT. However, this trend is not only perceived positively, as it is not only seen as an enabler for harmonization as a critical aspect in the context of border security, but also as an economically-related problem. As technology is an inherent and compulsory part of border security, a rapidly-growing market within the European Union for security and surveillance technology has emerged, which is currently under intense discussion between scholars, activists, and journalists, whether this development, the included actors, and the entire ecosystem are ethically and politically acceptable (Baird 2017).

Yet, along the argumentation of Broeders & Hempshire (2013), the core movement of digital transformation in the context of border control is towards the implementation of domestic politics of immigration. It is the logical consequence

of governments to adopt technology to ensure fulfilment of their responsibilities of securing national borders as well as to not only control migration flows but also to provide the required capabilities to also support individuals in the process of entering and leaving a member state. In this regard, current technology is providing the basis for efficient and effective E-Governance (Prins et al. 2011) in the context of migration.

This section is focused on the currently on-going EU research initiatives and projects in the area of border security, in particular, the development and application of smart border control. The main representative in this regard can be found in Automated Border Control (ABC) gates, which are nowadays present throughout numerous airports within the European Union. The main goal behind the installation of these ABC gates is to increase the overall speed at the airport security checkpoints, while at the same time also to increase security by reducing false rejections and to extend automation of the control in general – border control based on a self-service technology (Labati et al. 2015).

The project BODEGA (Proactive Enhancement of Human Performance in Border Control)¹ for example focusses on the increase of efficiency regarding border security, while preserving a high level of traveller satisfaction. In particular, the project investigates changes within the traveller process through border controls via the introduction of ICT-based smart border technologies, such as automated gates and biometric-based self-service control systems. The project therewith tackles an open point of technologies development in the area of border control. BODEGA targets four main stakeholder groups: The first group is represented by *Core Operational stakeholders*, as these are responsible for the operationalization of all relevant tasks associated to border control activities within the EU. The second group is present via *Policy stakeholders*, setting the basis for the border control activities, based on the issued regulations and legal requirements. The third group is comprised out of *Technical stakeholders*, who are working on the task of designing suitable systems for enabling the establishment of automated and ICT-enhanced boarder control systems, as well as to provide ways of integration of legacy systems and existing processes. The final group of stakeholders includes *Societal stakeholders*, who are actually affected by the work of all before-mentioned groups. Examples of these individuals are travellers, industry partners, or – basically – civil society as a whole.

While there is an increasing quality and coverage regarding security checkpoints in, for instance, airports, there still exists a variety of challenges and issues regarding the security of land and seaport checkpoints due to the inherit complexity of migratory movements. The project EFFicient Integrated SECURITY Checkpoints (EFFISEC)² therefore strives for the provision of high-security equipment in the area of border control, for example, identification and luggage control – especially in vehicles – on both maritime and land-based checkpoints. This ena-

¹ <http://bodega-project.eu>.

² <http://www.iffisec.reading.ac.uk/about.htm>.

bles agents at the borders to improve the flow of individuals and vehicles, while still being able to conduct in-depth inspection in an efficient, effective and also ergonomically-improved way – an aspect that is often neglected but strongly influences on-site working conditions. In particular, EFFISEC will push development in four main technical areas, namely, identity check, detection of illicit substances, video surveillance and secured communications.

Based on the lessons learned so far, harmonization of existing technologies and processes is key to achieving a sustainable environment regarding border security, especially in the areas of electronic passports, biometrics, the technical and functional design of gates as such, together with the interfaces for the acting border agents. The ABC4EU³ project therefore tackles the open challenge of harmonization of e-passports, with a special focus on individuals from third countries. The project strives to integrate new technologies in the field of anti-spoofing, including biometric facial markers and fingerprints, as well as the possibility to fuse this information with the addition of biometric features. In addition to the improved e-passport, the project seeks to develop mobile handheld solutions of identity control for application scenarios such as trains and buses. The Intelligent Portable Control System (iBorderCtrl) project⁴ also pushes towards this direction, yet with a special focus on land border crossing points such as roads, walkways, or train stations.

Developments in the area of border control – irrespective of whether it is implemented to stop irregular arrivals, facilitate a smoother experience for regular migrants, or enhance the data collection capabilities of governments – are intrinsically linked to advances in ICT. Other areas impacted by the growing availability, sophistication and use of ICT, such as economic growth, social capital and community development, and good governance and delivery of public services, are discussed in the following section, together with their applicability in fostering socio-economic and cultural integration as well as improved collection, sharing and analysis of migration data.

Impact of ICT on Economic Growth

Economic data and anecdotal evidence suggest that the economic growth and development of countries worldwide are increasingly being influenced by the availability of telecommunications hardware and informatics infrastructure, and that the economic benefits that ICT can bring to national economies are manifold (Andrianaivo and Kpodar 2011, Vu 2011, Katz 2009). The deployment of ICT within constituent firms across a national economy can result in increases of productivity and demand, of employment, of foreign direct investment flows, of supply chain management, and of improved financial service coverage.

³ <http://abc4eu.com/project/>.

⁴ <http://www.iborderctrl.eu/>.

Widespread use of technology is seen to level the economic playing-field, as large firms lose one of their key innate privileges – the unrestricted access to raw materials, human resources, and resource rich markets worldwide (Virkar 2015). In their study of the impact of ICT on the international business-to-business marketing activities of small- and medium-sized enterprises (SMEs) in Norway and Denmark, Moen et al. (2008) discovered that these enterprises used technology predominantly for market information search and to develop long-term relationships with customers. In both cases, the use of ICT appeared to reduce entry barriers for SMEs through enabling access to information and the development of knowledge (Moen et. al. 2008).

ICT also directly influence employment; both by creating new jobs and by acting as a tool that empowers workers to manipulate data and innovate (Raja et. al. 2013, Datta and Agarwal 2004). Telecommunications infrastructure generates employment across a wide range of sectors and within a variety of professions by aiding in the creation and maintenance of networks of communication (Andrianaivo and Kpodar 2011). Employment, according to Andrianaivo and Kpodar (2011), is also generated through the use of ICT to establish new retailing networks. Further, when taken as tools, ICT empower workers by making labour markets “*more transparent, innovative, and inclusive*” (Raja et. al. 2013, p. 9).

Application to socio-economic integration

Migration is often promoted as a contributing factor to a country’s economic growth, especially over the long term (OECD 2014). This is at times conflated with two of the key indicators of socio-economic integration, namely education and employment. This is particularly so as a larger proportion of migrants in the EU are un- or underemployment in the short to medium term. A 2015 report by the OECD and EU has identified that, while a larger proportion of third country nationals (18% compared to 4% of host-country nationals) were under-educated, the migrants with a low level of education faced similar levels of unemployment as the host-country nationals at a comparable education level.

This equivalency is not seen in migrants who had attained higher education qualifications. Highly educated migrants who are least likely to find employment are those who attained their diplomas overseas. While migrants improve their chances of employment by attaining their diplomas in the host country, they are still less likely than their host-country counterparts to find employment or, alternatively, are more likely to be employed in positions requiring lower qualifications (OECD and EU 2015, p. 301).

There are a number of areas where ICT can play a role in improving the socio-economic integration of migrants. For instance, vocational courses have been shown to be instrumental in improving the chances of employment of migrants (OECD and EU 2015, p. 25). These can be in ICT itself or as a way to bridge overseas education and experience with that of the host country. The benefits of

ICT for businesses also translate to migrants, who often start small businesses as an alternative to obtain traditional employment (OECD and EU 2015, p. 118).

Another concern of socio-economic integration is that due to the un- and underemployment of migrants, they are liable to remain in situations of poverty and low socio-economic positions (OECD and EU 2015, p. 161). While ICT can mostly benefit the economic integration of migrants and as a consequence, the economic growth of the host country, it also has the potential of keep migrants from rising to a higher standard of living. This is due to the ease with which remittances are now able to be sent back to the country of origin. While the economy of remittances is beneficial to the migrant's family as well as country of origin, the ease with which, thanks to the developments of ICT, remittances can now be demanded and sent, has meant that migrants are often unable to retain money earned in order to raise their own standard of living (Hamel 2009, p. 22).

The economic growth of a country, together with the socio-economic integration of migrants, can be facilitated through the developments in ICT and their ability to foster the participation and improved efficiency of individuals and small businesses as well as the development of trade between the country of origin and host nation.

Impact of ICT on Social Capital and Community Development

Information and Communication Technologies have given new powers and new responsibilities to those actors who are fast becoming central to the new electronically networked civil society (Virkar 2015). More specifically, ICT may be used by individuals, governments, and non-profit organisations to tackle social exclusion, a phenomenon defined as “...a process of marginalisation, whereby citizens do not fully participate, have little access to decision making, and feel unable to take control over decisions affecting their lives” (Ala-Mutka et al. 2009, p. 97).

The idea of social exclusion, together with the role played by ICT in its alleviation, may be explored from the perspective of individuals and groups in society, and the deployment of ICT to generate social capital. Ala-Mutka et al. (2009) contend that some social groups are more at risk of becoming socially excluded than others; including immigrants and ethnic minorities, disabled and elderly people, women, disadvantaged youth, and people living in poorer areas. Whilst there is general consensus that the use of ICT will have a significant impact on the building of social capital and the development of networks within a society (Norris 2003), there remains considerable disagreement about whether technology will exacerbate isolation through the replacement of face-to-face interactions or foster community building through the creation of channels of communication between people (Ibid., p. 2).

Norris (2003) examines the dual theoretical proposition that increased ICT use is altogether positive for a society, and will contribute to both the *widening* and *deepening* of the experience of community through the building and maintenance

of social capital. Evidence from her study on the impact of technology on post-industrial societies suggests that ICT use enables the multiplication of human interactions and information exchange, leading to the establishment and maintenance of social relationships between social groups that already share commonalities and the formation of new ties across diverse social actors creating new channels of interaction (Ibid., p. 6).

Increased technology use also has the potential to mitigate social exclusion by supporting the activities of civil society organisations (or CSOs – charities, non-governmental organisations (NGOs), voluntary groups, citizens associations) involved in catering to the daily life and social needs of marginalised groups (United Nations, 2010). In particular, ICT as tools can be used by CSOs to create awareness about their work, to disseminate and share knowledge widely and rapidly, to improve the collection and management of financial resources, to broaden volunteer participation across borders, and to enhance their transparency and responsiveness (Ibid., pp. 1-2).

Aside from the question of social inclusion, the societal impact of ICT use may be felt in different sectors of the national economy concerned primarily with social development and the promotion of social welfare (Virkar 2015). In education, ICT can be adapted to support the activities of students, educators, and educational institutions in a number of different ways (Punie et.al. 2006); ranging from their use as tools to support traditional teaching methods to their deployment in fully ICT-enabled courses that involve the extensive use of digital tools, platforms and applications (Ibid., p. 9). Punie et al. (2006) argue that while ICT use generally has a positive impact on teaching and learning at both school and university level, the expectation that ICT could in some way revolutionise the education sector has not been fully realised.

Application to cultural integration

Unlike socio-economic and legal/political integration, which can be measured through employment and levels of education or voter participation, cultural integration is difficult to quantify. It is often assessed through surveys questioning a person's perception of discrimination as well as the host-communities' perception of the benefits of immigration (OECD/EU 2015, p. 224).

Nonetheless, ICT developments and their impact on social capital community and development can be used by governments and/or CSOs to facilitate better cultural integration by migrants and acceptance by the host-community (CSES and CoR, 2013, p. 97). This is already being attempted at the CSO level through the facilitation of cultural exchanges through the sharing of food.⁵ Social connection can also be achieved through ICT by connecting to same-group social media groups or to groups hosted and participated in by host community nationals.

As mentioned above, ICT's use in educational settings benefits not only socio-economic inclusion through vocational training but also social capital through

⁵ For example, <http://refugeeswelcometodinner.com/>.

language training and participation (OECD and EU 2015, p. 22). It is important to take into account that the diversity of migration brings with it a diversity of ICT literacy, often linked to the level of development of the country of origin (Hamel 2009, pp. 4-9). Additionally, it has been shown that even where access and use of the Internet is near universal, there remains a gap in usage between youth of low income families, compared to their middle to high income counterparts. The latter are more likely to use the internet for educational, news and research purposes, while the former have been found to use the online time for social media and online gaming (Hutt 2016). This divide is relevant to note, considering that migrants are more likely to remain in situations of poverty despite being employed.

Taking the above into account, cultural integration can be facilitated through better use of ICT and improved programs by CSOs and governments in the provision not only of education in the use communication technologies, but of beneficial use of those technologies.

Impact of ICT on Good Governance and the Delivery of Public Services

The notion of ‘good governance’ has become, in recent years, an important criterion to determine a country’s credibility and respect on the international stage (Virkar 2011). Worldwide enthusiasm for ICT, and recognition of the role that these new technologies, platforms, and applications can play in the attainment of institutional efficiency, public transparency and robust democratic accountability, has prompted their widespread adaption and adoption within public institutions. New possibilities for innovating governance have been created and are demanded on the one hand by the increasing complexity of public issues and on the other hand by the growth in data, computational power and social media (Janssen and Wimmer 2015, Wang, Medaglia and Zheng 2017). These new possibilities include for instance improving government services, automated process in non-stop government, and decision support systems for policy-making. This trend is known as E-Governance, defined as “...*the use of ICT by government, civil society and political institutions to engage citizens through dialogue to promote greater participation of citizens in the process of institutional governance*” (Bhatnagar 2003, p. 1).

Broadly speaking, therefore, the new information and communications technologies have the potential to improve institutions and processes of governance. Their increased integration and use might have a significant positive impact in three distinct ways:

Firstly, ICT help *enhance decision-making and the administration of the public good* (Virkar 2015, Michel 2005). Known in scholarly and practitioner circles as *e-Administration*, the application of technology to internal workflow processes within public institutions positively impacts the adopting organisation by streamlining internal processes, reducing administrative costs, speeding up the day-to-day processing of information, and increasing transparency and accountability.

Secondly, ICT *improve the provision of public services to citizens* via multiple electronic interfaces (Virkar 2015, Giritli Nygren 2009). Referred to as *eServices*, such initiatives involve the delivery of public utilities such as water, electricity, and sanitation, and help speed up the allocation of permits and the dispensation of complaints. Projects are further often benchmarked along the dimensions of quality, convenience, and cost. Among the emerging digital technologies that have been adopted in governments' innovative applications are artificial intelligence, smart things, and machine learning (Panetta 2006). Machine learning, for instance, has been applied to improve government services in many ways. Some applications of Chatbots can be used in government to optimize customer service provided by government employees or to facilitate collective intelligence, increasing the possibilities for citizens to engage and interact with data (Turban et al. 2018).

Automated decision-making has also been implemented in government, representing one of the main applications of collaborative governance. Viale Pereira et al. (2017) identified that information sharing and cooperation are the main elements in framing the use of ICT to enable collaborative governance along with participation and engagement practices in decision making. The Automatic Family Allowances (ALF) without Application⁶ is a successful no-stop-shop government solution for parents to get family allowances for new-born children automatically. Launched in 2015, this solution has already received several international awards and supports about 80,000 families per year. The solution aims at saving hours for Austrian citizens and reducing the time and cost for the Austrian public administration. This case illustrates how smart governance can be applied by sharing databases among government agencies.

Thirdly, the proliferation and use of ICT in political processes can also *bring a government closer to its people*, altering the relationship between public sectors actors, private sector organisations, third sector bodies, and individual citizens (Virkar 2015, Jayashree and Marthandan, 2010). Falling under the umbrella of *eSociety*, these initiatives focus on allowing for popular access to decision-making and facilitating communication on three levels – citizen to citizen, citizen to government, and government to business.

Application to collection, sharing and analysis of data on migration

There are a number of ways in which E-Governance is helping to address the challenges of migration and, in particular, the management of data, through its collection, sharing and analysis.

For instance, to date, there is a small, but growing number of databases on migration, set up by the UN, OSCE, the World Bank and Eurostat. The IOM and the Economist Intelligence Unit (EIU) are also scheduled to release their Global Migration Data Portal,⁷ which has been touted as the “*one-stop-shop ... for migration information, data ... and analysis*” (Laczko 2015, p. 12). However, the success of

⁶ <https://english.bmf.gv.at/e-government/projects/alf.html>.

⁷ <https://gmdac.iom.int/global-migration-data-portal>.

global migration databases depends on the information provided to them primarily by governments and organisations such as the United Nations High Commissioner for Refugees (UNHCR). While steps are being taken to standardise the collected data, and have at minimum aggregation according to age, sex, origin and destination (Laczko 2015, p. 5), it is the progress of ICT and E-Governance that encompasses user participation and shared databases, that has the potential to make migration data accurate, consistent and timely.

Decision support systems for policy-making include the use of techniques such as scenario simulation, visualization and mega-modelling. Open data and social media have been also recognized in literature by its great potential for government to, among other things, promote democratization of public policy making (Höchtel, Parycek and Schöllhammer 2016; Höchtel, Schossböck, Lampoltshammer and Parycek 2017). An example of decision support tools is the SmartGov project, which aims to create simulation of real world scenarios by exploiting the potential of social media feedback and open data to support smart cities decision making (Goraczek et al. 2016).

An example of multi-benefit partnership between E-Governance and data management can be seen with the implementation of the Finish government's distribution of a pre-paid mastercard (or debit card) to asylum seekers and refugees. Using distributed ledger technology (otherwise termed blockchain technology that has been successfully utilised by bitcoin), the method overcomes a number of challenges. Primarily, the use of the card is a textbook example of E-Governance through the provision of improved administration and services. Additionally, the use of the card and its associated technology allows asylum seekers and refugees to re-establish their identities, which then allows for their faster integration into the labour market. This is especially so, as the card permits for deposits not only by the Finish government but also by potential employers (Orcutt 2017).

This technology has the potential for broader application, especially as it fosters faster integration into the banking system. A version of this technology and its implementation can be of benefit to migrants in general, who are often excluded from banking services (OECD and EU 2015, p. 161). In fact, the system is being looked at for implementation across the European Parliament (European Parliament, Committee on Economic and Monetary Affairs 2017) and by the United Nations (Irrera 2017), targeting not only asylum seekers and refugees and their faster integration into the labour market, but also people of developing countries. The ability of the card to help establish a financial identity can be seen as a step forward towards improved chances of regular migration.

Finally, the card also addresses a number of issues of data management. Primarily, it overcomes one of the key challenges of data collection, being the sharing of information between the private sector and government departments. This is due to the fact that implementation of the reception allowance card is a result of a partnership between the Finish government and a private company that designed the system (Ibid.).

Conclusions

The development of information and communication technologies has impacted significantly on all areas of life. These areas have broadly been defined as economic growth, social capital and community development, and good governance and the delivery of public services (or E-Governance). Interlinked with these broad areas is the role of ICT as not only the driver of migration but also the facilitator of governments' migration management policies.

Due to the contentious nature of migration and the emerging tensions as a result of the 2015 migration crisis of irregularly arriving asylum seekers, refugees and migrants, together with the expansion of EU member states, countries in the European Union face a myriad of challenges. A few of these challenges have been identified in this chapter for discussion. Namely, these are border control, socio-economic integration, cultural integration and data management through the accurate, consistent and timely collection, sharing and analysis of data.

While the impact of ICT on the broader areas of economic growth, social capital and E-Governance can only be discussed in generality before narrowing down their application to the challenges of migration, the interaction of ICT and border control implementation by governments can only be discussed as a single topic. In particular, while it must be acknowledged that the primary use of border controls is stopping irregular arrivals, advances in and implementation of technologies and smart border controls such as BODEGA, EFFISEC and ABC4EU, also work toward automating and enhancing the border experiences of regular migration.

With regard to the impact of ICT on economic growth, it has been shown that it facilitates efficiency and productivity in employment, greater entrance and competition opportunities in small businesses through improved access to information, as well as facilitation of exchange of goods and services. The impact of ICT on economic growth is directly applicable to the issues of migration and in particular to the challenge of socio-economic integration. This is particularly so as migration has been shown to benefit the economic growth of the host nation in the long term.

Nonetheless, more can be done to assist migrant populations to integrate into the labour market, where they are currently un- or underemployed. Those particularly affected are migrants with a higher education, whose qualifications are not transferrable or recognized in the host country. Language and vocational courses have been shown to make a marked difference towards increasing labour participation of highly educated migrants.

It is also important to note that while it has been shown that ICT can bring benefits to the economic growth of a country (and, reciprocally, the country of origin), it can also perpetuate continuing poverty of migrants through the sending of remittances to maintain and assist their family in the country of origin.

The impact of ICT on social capital and community development has also been profound, with increased potential to tackle social exclusion as well as bring civil society organisations and their efforts to the forefront of the social consciousness. This is particularly applicable to the cultural integration of migrants, through cul-

tural exchange programs with host-country nationals. The use of ICT itself by migrants, although varied depending on the economic development of the country of origin, needs to be addressed through education. This is particularly so as many migrants remain in poverty situations despite being employed. It has been shown that low socio-economic status has an effect on the manner in which ICT is used. It is therefore necessary not only to provide programs that educate in the use of ICT but in a more beneficial use of ICT.

Finally, the impact on E-Governance has been particularly pronounced, with a myriad of applications, from streamlining processes, to machine learning and automated decision-making. More sophisticated developments in data processing through scenario simulation and mega-modelling is facilitating the improvement of the collection, sharing and analysis of migration data that in turn informs relevant policy decisions that are also applicable to migration.

An example of E-Governance in action that also improves the collection, sharing and analysis of data has been seen in the implementation by the Finnish government of a pre-paid mastercard for receipt of financial benefits and, where applicable, wages at refugee reception centres. The card, using distributed ledger technology, creates a financial identity for the refugee and accelerates their entry into the labour market and banking system. This technology has applications beyond the receipt of refugee allowances, with potential benefits for migrants that lag behind host-country nationals in their participation in the banking system. The technology also allows for data sharing between the private company implementing the cards and permits the government to analyse the data for improved provision of services.

It is therefore clear that the connection between the impacts of ICT and their application to the challenges of migration is of great interest and in need of further research and development.

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