

Sammanfattning

Innovationskraft i offentlig verksamhet är ett område vars betydelse för tillväxt har pekats ut som ett viktigt område av regeringen. Internationellt är detta ett etablerat område och organisationer som EU, OECD och FN arbetar aktivt med dessa frågor. En viktig del av innovationsprocessen är tillgången till lösningar som stödjer arbetet med att ge samhällsservice. E-hälsoinnovationer beskrivs globalt som en av drivkrafterna för att förnya vård och omsorg genom dess potentiella bidrag att förbättra kvaliteten och tillgången till vård och genom möjligheten att engagera patienter i beslut som rör deras egen hälsa och välbefinnande. EU-länderna har antagit strategier för att skapa infrastrukturer och nationella e-hälsoprogram till stöd för e-hälsoinnovationer och på detta sätt underlättat övergången till ett mer patientcentrerat hälso- och sjukvårdssystem.

Fyra megatrender anges som avgörande för att stödja en hållbar tillväxt av e-hälsa. De är:

- Växande ekonomi nödvändigt för att förbättra produktiviteten
- Ökat åldrande och sjukdomsförekomst
- Digital hälsa och den nya konsumenten
- Personlig vård

Trots ett ökat antalet rapporter som visar potentiella besparingar och fördelar som e-hälsa kan ge, har ännu inte generiska implementeringsprocesser av e-hälsoinnovationer rapporterats. Dessa skulle kunna bidra till att utveckla nya sätt att leverera vård och omsorg. Orsaken till detta verkar vara det faktum att implementeringsprocesser av e-hälsoinnovationer är komplexa. Vi har lärt oss från tidigare forskning kring implementering av IT-baserade applikationer inom vård och omsorg att det är viktigt att skapa en gemensam förståelse av implementeringsprocessen hos intressenter, att tillämpa professionell projektledning och resurshantering i implementeringsprocessen, att använda och förnya riktlinjer samt att erbjuda slutanvändarna mervärde från den förändringen. Vanliga hinder för implementering av innovativa lösningar har varit bristen på finansiering, ledarskap och styrning, utbildning, ersättningsystem som inte stödjer innovation, bristande intressenthantering, tekniska problem och slutanvändare som inte fann något mervärde i den implementerade förändringen eller innovationen. För generisk implementering av e-hälsoinnovationer är det viktigt att;

- utveckla riktlinjer som tydlig visar hur resurserna ska omfördelas
- skapa incitament som stödjer användningen av nya lösningar i det dagliga arbetet
- tillämpa principer som visar vem som ansvarar för att utveckla, implementera och integrera e-hälsolösningar i organisationen.

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Introduction

E-health innovations are globally described as one of the major driving forces to innovate health and social care because its potential contribution to improve quality and access to care, and to engage patients in decisions related to their own health and wellbeing (European Commission, 2013 and 2014; OECD, 2011). Countries across Europe have, for this reason, adopted strategies to create infrastructures and national e-health programmes in support of e-health innovations and in this manner facilitate the transition to a patient centered health system.

Four megatrends are repeatedly indicated as crucial to support a sustainable growth of e-health (EU 2014, WHO 2016).

They are:

- **Growing financial imperative to improve productivity**

The rise in healthcare costs and an increasing aged population combined with a pressure on healthcare budgets and the need for more cost-effective service delivery demand the need to develop innovative delivery models and integration of information with focus on the single individual.

- **Increasing aging and disease prevalence**

Health systems worldwide are struggling to adapt to a changing disease mix: populations' lifestyles are growing less healthy, swelling the ranks of chronically ill patients. Promising e-health innovations to manage this trend include improving access to primary care, promoting care coordination and self-management, and enhancing the quality of care for chronic diseases.

- **Digital health and the new consumer**

Healthcare is reaching new levels of connectivity, automation and analysis. Leading providers are driving quality and efficiency with common technologies such as remote monitoring and clinical decision support, as well as next-generation innovations in analytics, genetic testing, 3D printing, etc. Consumers are empowered to manage their own health and navigate the health system more effectively. This affords new opportunities for innovative funding models to reward healthy behaviors, consumer education, and bottom-up momentum for change.

- **Personalized care**

The promise of precision medicine has only been partly fulfilled over the past decade, but recent advances in diagnostic technologies and disease heterogeneity may accelerate the impact on clinical practice and health outcomes in coming years. The translation of scientific

breakthroughs into improved clinical outcomes depends on more efficient approval pathways, value-based reimbursement models and closer links between genomic research and medical institutions.

However, despite the increasing number of reports that indicate the potential savings and benefits that e-health can bring to the sector (McKinsey, 2015), generic implementation of innovations that contribute to develop new ways to deliver health and social care are not yet reported. The cause of this seems to be the fact that the implementation and adoption of e-health innovations within or between institutions involves a number of factors that require proper planning. Many of these cannot be addressed without the support of well-defined policies, rules, standards, or guidelines at the institutional, jurisdictional, and global levels and without an effective implementation strategy. Realizing the importance of identifying and understanding the need of policies, and the need of effective implementation strategies, it is necessary to learn from previous empirical experiences from the implementation and use of IT-based applications to avoid failures in achieving the intended goals and of bringing inefficiencies at the organizational and managerial level as several research reports noted.

Lessons learned from the implementation of IT-based applications

Evaluation reports of the introduction and implementation of IT-based applications, as for instance EHR, (electronic health records) and other similar applications have globally identified some areas of concern that leads to non-optimal use of scarce resources, pointing out the importance of governance issues and the importance of to innovate policies.. Globally, EHRs have been implemented to enable the effective circulation of timely medical information in paperless form among all concerned parties. EHRs are also expected to assist health and social care organizations with a variety of uses, including direct patient care, patient care management, patient care support processes, real-time management of assets and administrative processes, in part to improve operational performance, but also to become the most importance source of information to support of patient self-management, and clinical and epidemiological initiatives. Unfortunately, the theme of the complexity of the implementation process of such innovations and the huge number of failures both at the organizational and the societal level is repeated in several studies (Vimarlund, 2014; Vimarlund, S. Koch,2012. Levis, 2010):

How implementation of EHRs influenced hospitals, healthcare units' work-flow processes, as well as its effects and implications on safety requirements or how the absence of specific legislation governing the use of national EHR-systems, and the lack of measures to capture effects of implementation and effects on individual behavior, (preferences because IT-literacy, design and usability and confidence on the accuracy and sustainability of the services implemented) becomes an issue for the stakeholders and decision makers. Previous reports remarked that all focus when analyzing the implementation of EHR is today put on the users of such innovations, which does not make it possible to separate implementation effects from other issues, such as governance, leadership, etc. Similar issues (i.e. non-optimal use of scarce resources, the importance of governance and the need of policy innovation) have been discussed in the case of telehealth-applications and m-health.

Telehealth has become one of the largest areas of growth in health care delivery. The evaluations of the effects of implementations of telehealth applications have, however, typically been small scale, short term and often hampered by technical issues and organizational barriers. Many projects require more evaluation and evidence of telehealth positive impact for the delivery of remote monitoring and management of patients with acute and chronic illness. Further, the absence of policies about how to integrate telehealth into care practices, and policies that stimulate the development of quasi-public structures to incentivize private service providers is mentioned as one of the major constraints for a generic implementation of telehealth applications today.

Mhealth is another example of the need of implementation policies and guidelines at the national and regional level that regulate apps' usability, safety and reliability and accuracy. The continued advances in mobile technologies, the reduction of hardware costs and the maturing market of health-related apps have contributed to a recent increase in mHealth and its integration into e-health services. Many individuals are now able to use their mobile devices to access health information and search for health care services such as online booking (Finland), Mind Health Connect (Australia) The digital meeting (Sweden). Mhealth is, however, usually not distinguished from other strategic e-health initiatives. According to the WHO report about the status of eHealth in the WHO European Region (From innovation to implementation of e-health, 2016) a strategic guidance of health apps is not being offered at the national level in the EU-member states. A lack of evidence on cost-effectiveness, competing health system priorities and lack of regulations on m-health as well as the difficulty in use and

acceptance of different applications, and the absence of generic implementation, seems to be, similarly to other areas, an issue for the further development and use of e-health innovations.

Challenges for a sustainable and generic implementation of e-health innovations in complex organizations as health and social care

As organizations develop, they amplify the need for renewal, specialization and accounts of functionalism in various organizations and their respective societies. In the twentieth century, large and vertically integrated organizations in manufacturing firms as a consequence of the production of mass-market consumption goods were developed in different areas. Similarly, in the public sector, the implementation of e-health innovations in health and social care has necessitated to renew the way of delivering services, and the demand of knowledge and technological maturity of the users. A source of concern is however the fact that almost 70 % of the projects in the area of e-health seems to fail in achieving their goals (Leviss, 2010). This is however, not only an issue for health and social care organizations. Similar concerns are discussed in publications in other areas (Bax et al., 2010; Hage et al., 2013;). Further, several research publications highlighted the gap between our knowledge of how an implementation of e-health innovations should be performed and how these implementations have been received by organizations, users, consumers and stakeholders in real-life. These studies agree that we know much about the complexity of implementation processes, but make little use of the outcomes of the studies that suggest the importance of the issues that affect the implementation of e-health innovations and its importance for sustainability and effective outcomes, especially in complex organizations as health and social care. This claims for applied research to better understand service delivery processes and contextual factors to improve the efficiency and effectiveness of e-health implementation at both the micro and macro-level and for to increase the number of implementation of e-health innovations in everyday care processes, interoperability and decision making.

Some examples of the most important issues that repeatedly appear in previous research reports as risks areas that influence the sustainability of implementation of e-health innovations in health and social care are presented in Table 1.

Table 1. Risks areas that influence the sustainability of implementation for e-health innovations

Area	Issue	Needs	Specific requests
Procurement barriers	Clear governance	Legal clarity	Document standards, access rights, rules for inter-operability and rules for qualified as supplier of e-health solutions.
	Leadership	A strong guiding coalition and change champions	Cooperation and mutual understanding between stakeholders and leaders
	Effective Contracts	Contracts should clearly state the goals and objectives of the business relationship between a vender and customer.	Include an addendum in your contract to ensure the vendor meets all of their verbal commitments. Project vigilance and transparent communication that stimulate vendor engagement

Area	Issue	Needs	Specific requests
Ex-post implementation	Change management and technical management process transformation	Reduce resistance to change due to inevitable changes in workflows	Create a management plan and executed it at the moment to implement e-health innovation to be able to prevent that organizations changes stimulate resistance.
	Don't call it a "pilot", Consider using a rapid implementation	Avoid selection of units with low volume of transfer as first mover and as good example to other units.	Go -live support quickly to avoid failure to scale, including changes in hardware, software, policy user and contact
	Lack of funding and adequate governance	Adequate funds and adequate data sources	A detailed budget and a data pool including all data needed
	Failed system performance	A continuous process which runs 24/7 all year long and that avoid to maintain obsolete applications	Develop certification criteria that support interoperability of innovations and apps.

Easier said than done

We learnt, further, from previous research that the implementation of IT-based innovations in health and social care demand: a) to develop structures that ensure the privacy, security, completeness and integrity of the information that is transferred between institutions b) renewal and development of policies and guidelines for sustainable development, planning and implementation of such applications to move in a new direction, c) that there are some specific request that are of relevance even ex-post implementation to achieve sustainable effects. Implementation of e-health innovations is, nevertheless, as implementation of IT-based applications, also complex in many aspects. In part because e-health innovations are often of a different nature, they have different goals, and are used with different aims (improve exchange of information, make services available without geographical barriers, or empower and engage patients). Further, some issues related to the implementation process of e-health innovations have also a temporal dimension (ex-ante and/or ex-post implantation) and are related to an apparently discrepancy between time and resources needed, expected outcomes and factual outcomes at the organizational and societal level.

This claims for developing strategies and policies that ensure the diffusion of e-health innovations, to improve the efficiency and effectiveness of the implementation process at both the micro and macro-level as well as clear policies on the type and the processes for sharing information between providers and users, and in specific guidelines on how to ensure that the patient information is comprehensive, comprehensible and transferrable.

The need of enablers and renewal of guidelines and policies to create an environment that supports generic implementation of e-health innovation

A generic and sustainable implementation of e-health innovations in health and social care should benefit from considering enablers that can facilitate implementation processes: as well as to renew some guidelines and policies.

Table 2 : Enablers and demand for renewal of guidelines and policies to support generic and sustainable implementation of e-health innovations.

Enablers	Demand for renewal of guidelines and policies
Dedication of time and resources	Workforce with the human capacity and potential should have the chance to dedicate adequate time to implement e-health innovations in everyday routines. Human, financial, and technical resources to ensure change in policy and practice should be allocated before the implementation of any innovation.

Changes in work patterns	Use of e-health innovations may bring changes in the work patterns of several staff members, and may also lead to changes in the way staff is recruited, trained, and retained in any organization. Information on which type of competence is needed to match the challenges of digitalization should be communicated
Continuity of care	Guidelines for ensuring the continuity of the patient-practitioner relationship are a key issue for successful implementation of e-health applications. Many users are concern about the potential impacts of e-health innovations in the interaction with health and social care and an eventual negatively impact the relationship between health care providers and patients.
Ensure that information is interpreted in the way as it was intended	Sharing knowledge and information from patients to the practitioners has been a core issue for m-health that demand semantic interoperability to ensure that the information transferred between users and providers is interpreted in the same way as it was intended. To proactively attract innovators to the area, a priority should be clear guidelines about the prerequisites that e-health innovations have to fulfill to facilitate transferability of information and interoperability
Development of incitement programs	Generic policies and guidelines as well as incitement programs that enhance the use of e-health innovations among the population are also needed. Furthermore, institutions and government should introduce policies to encourage their health care providers and other user groups to freely exchange their knowledge in order to benefit others organizations and/or stakeholders
Facilitate the integration of e-health innovations	Facilitating the integration of e-health innovations in everyday work routines is a pre-requisite for successful implementation. To do this it is necessary to define the scope of e-health services and a proper deployment of resources and an innovation of business and payment models. An explicit and in-depth understanding of changes that the use of e-health based business and payment models should bring to the organizations is also necessary for successful integration of e-health innovations in health and social care
Management support	Another decisive element affecting the success of any innovation is the availability of comprehensive and skilled administrative and management support. For implementing complex projects or complex processes (such as implementing e-health innovations in complex organizations), leadership must be executed at every level. The leader's commitment, dedication, support, and ability to articulate the vision and motivate and inspire others are one of the most important keys for success.
Priority, strategic investments and capital investments	Making e-health a strategic investment priority without limiting progress to only pilot projects is of much importance to achieving an aligned outcome for e-health. Developing an adequate source of capital funding is critical to creating, implementing and adopting innovative e-health initiatives. Capital investment is currently a limiting factor in the move towards integrated, collaborative e-health initiatives and must be made a priority, if the benefits of e-health are to be realized. Unless strategic investment is made a priority, e-health capital will, more often than not, lose out when competing for dollars with short-term clinical capital needs like MRIs or new beds
Open source software	Since many open-source technologies are now considered fairly stable, the institutions and governments should introduce policies for their decision-makers to consider open source e-health software as an option.

General remarks

As previously noted, it is generally accepted that e-health has great potential to revolutionize health and social care. The good news seems to be that there is general acknowledgement that the priorities of e-health are laudable and that change is required to implement them. There is, however, a certain disillusion creeping into the e-health debate because examples from other countries seem to indicate that successful generic implementation of e-health innovations is easier said than done.

Experiences from the past seem to indicate that neither policies nor e-health innovations will be implemented on any useful scale without the support of political, financial, and human service systems, and that this support is important throughout all implementation stages (Vinnova, 2014). An implementation process involves complexity and changes in several aspects and requires changes in the overall practice environment. Sustainable and generic implementation of e-health innovations in complex organizations can thus only occur once the innovations become integrated into practices, policies, and procedures. Further, any implementation work, independent of the kind of organization in which it is performed, includes some steps, not necessarily linear or separate, rather dynamic and embedded in the implementation process, that need to be followed to stimulate a successful adoption of the implemented innovation and the sustainability of the expected outcomes (Fixsen et al., 2005, Fixsen et al., 2010).

Creating an enabling environment for smooth adoption of e-health applications implies high level decisions, commitment of institutions and management engagement programs as well as clear guidelines both at the administrative, managerial and financial level. Since e-health is an interdisciplinary field, it is rational to argue that experts from different areas should participate in the development of the implementation strategy applied in order to build evidence that can be generalizable in other situations.

Finally, an important pre-condition to stimulate the growth of the area is to diminish the information asymmetry that today exists between providers, developers and consumers. It is currently not clear if e-health innovations will be offered as public services by health and social care organizations, and consequently be free to all individuals that are willing to use them, or if some applications will be subsidized or if they will be regulated by the market (Wass, Vimarlund, 2015). The absence of policies and guidelines that promote and enforce the use of e-health innovations in everyday work routines, and the absence of categorization of the kind

of applications that will be the responsibility of the tax-financed health and social care organizations is an issue that constrains the willingness of entrepreneurs to develop and produce e-health applications and the willingness of end-users and practitioners to adopt them in everyday activities.

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