

Chapter 7

Holistic eHealth Value Framework

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7.1 Introduction

Canadian jurisdictions have been investing in health information technology (HIT) as one strategy to address healthcare sustainability. Investments have included the migration to electronic patient records, and the automation of service delivery to improve the efficiency, access and quality of care provided. In this context, eHealth emerged over 10 years ago as a shared priority for the federal, provincial and territorial jurisdictions in their health care renewal effort. To date, the federal government has invested over \$2 billion in Canada Health Infoway (Infoway) through incremental and targeted funding. Provinces and territories have also invested in the cost sharing of eHealth projects. Progress has been made towards achieving the eHealth vision. Examples are: (a) the adoption of pan-Canadian approaches among provinces and territories in the planning and development of common EHR architectures and standards; (b) the creation of jurisdictional registries, such as patient and provider registries; and (c) the creation of jurisdictional repositories of patient data, such as imaging, lab and drug information systems.

Yet there is conflicting evidence on eHealth benefit. Some reports suggest strong benefit while others showed few to no benefits in spite of the eHealth investments made. For example, in their 2009-2010 performance audit reports, the Auditor General of Canada and six provincial auditors' offices raised questions on whether there was sufficient "value for money" from the EHR investments (e.g., Office of the Auditor General of Canada [OAG], 2010). In light of the investments made, an effort is needed to make sense of the evidence on eHealth benefits. To do so, we created a high-level conceptual eHealth Value Framework as an organizing scheme to examine the current evidence on

Canadian eHealth value, and the underlying reasons for the conflicting evidence so that future eHealth investment and work is better informed.

This chapter describes a proposed holistic eHealth Value Framework to make sense of the value of eHealth systems in the Canadian setting. The chapter contains an overview of this framework, its use in a Canadian literature review on eHealth value, and implications on policy and practice.

7.2 A Sense-making Scheme for eHealth Value

The proposed holistic eHealth Value Framework is described in this section in terms of its conceptual foundations and the respective framework dimensions.

7.2.1 Conceptual Foundations

The eHealth Value Framework incorporates several foundational frameworks and models from the literature. The underpinnings of this framework are the following: the Infoway Benefits Evaluation (BE) Framework (Lau, Hagens, & Muttitt, 2007); the Clinical Adoption Framework (Lau, Price, & Keshavjee, 2011); the Clinical Adoption and Maturity Model (eHealth Observatory, 2013); Canada's Health Informatics Association [COACH] Canadian EMR Adoption and Maturity Model (COACH, 2013); the HIMSS EMR Adoption Model (HIMSS Analytics, 2014); Meaningful Use Criteria (Blumenthal & Tavenner, 2010); and the Information Systems Business Value Model (Schryen, 2013). By combining features of these models, this framework provides a comprehensive view of eHealth, incorporating, for example, the EHR and its value.

7.2.2 Value Framework Dimensions

The *eHealth Value Framework for Clinical Adoption and Meaningful Use* (hereafter referred to as the *eHealth Value Framework*) describes how the value of eHealth components, such as an EHR, is influenced by the dynamic interactions of a complex set of contextual factors at the micro, meso, and macro adoption levels. The outcomes of these interactions are complex. The realized benefits (i.e., the value of an EHR) depend on the type of investment made, the system being adopted, the contextual factors involved, the way these factors interact with each other, and the time for the system to reach a balanced state. Depending on the adjustments made to the system and the adoption factors along the way, the behaviour of this system and its value may change over time.

Specifically, there are four interrelated dimensions that can be used to explain the benefits of EHRs. They are: *Investment*, *Adoption*, *Value*, and *Time*. Each is made up of a set of contextual factors that interact dynamically over time to produce specific EHR impacts and benefits (see Figure 7.1). These dimensions are described next.

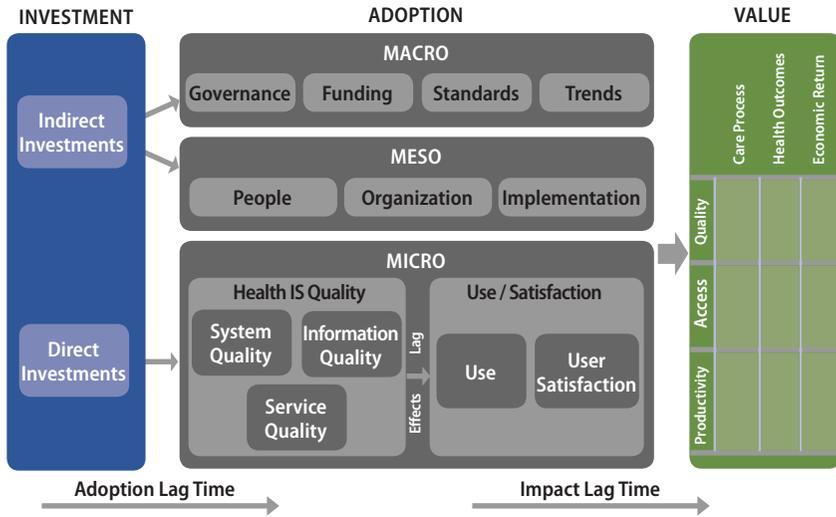


Figure 7.1. A proposed holistic eHealth value framework for clinical adoption and meaningful use.

7.2.3 Investment

Investments can be made directly towards achieving EHR adoption or indirectly to influence larger contextual factors that impact adoption.

7.2.4 Adoption

Adoption can be considered at a micro level, consistent with the Infoway BE Framework. It also has contextual factors at the meso and macro levels, ranging from people and organizational structures to larger standards, funding structures, and pieces of legislation.

- Micro – The quality of the system and its use can influence the intended benefits. The technology, information, and support services provided can influence how the system performs. This can impact the actual or intended use of the system and user satisfaction. If a system does not support certain functionality (e.g., system quality), or is not used appropriately or as intended, value is not likely to be seen.
- Meso – People, organization, and implementation processes can influence the intended benefits of the system. People refer to those individuals/groups that are the intended users, their personal characteristics and expectations, and their roles and responsibilities. Organizations have strategies, cultures, structures, processes, and

info/infrastructures. Implementation covers the system's life cycle stages, its deployment planning/execution process, and the system's fit for purpose.

- Macro – Governance, funding, standards and trends can influence the benefits. Governance refers to legislation, policies and accountability. Funding includes remunerations, incentives and added values for the system. Standards include HIT, performance, and practice standards. Trends cover the general public, political and economic investment climates toward EHR systems.

7.2.5 Value

Value of EHR is defined as the intended benefits from the clinical adoption and meaningful use of the EHR system. Value can be in the form of improved care quality, better access, and increased productivity affecting care processes, health outcomes, and economic return. It can be measured by different methods and at various times in relation to adoption.

7.2.6 Lag Time

There is an acknowledged lag time to implement and realize benefits from EHR adoption. Lag effects occur as EHR systems become incorporated into practice, where adoption factors at the micro, meso and macro levels can all impact lag time until benefits from the adoption are evident.

7.3 Framework Use and Implications

This section describes the use of the eHealth Value Framework to make sense of eHealth benefit with respect to a literature review undertaken in 2014 on a set of Canadian eHealth evaluation studies published between 2009 and 2013. Three Canadian literature sources were included: 12 Infoway co-funded benefits evaluation studies; 25 primary studies in peer-reviewed journals; and one federal government auditor's report. The systems evaluated were EHRs, drug information systems (DIS), lab information systems, diagnostic imaging (DI/PACS), ePrescribing, computerized provider order entries (CPOES), provincial drug viewers, and physician office EMRS (Lau, Price, & Bassi, 2014).

7.3.1 Use

The eHealth Value Framework was applied to organize the review findings; eHealth benefit was examined through the value dimensions of care process, health outcomes, and economic return. Factors that influence adoption were examined at the micro, meso and macro level of the adoption dimension. Of the 38 Canadian studies reviewed, 21 had reported benefit findings, 29 had reported adoption factors, and 21 had evaluated and reported on the adoption factors. Of the 21 studies on benefit, there was a combination of positive, mixed,

neutral and negative benefits reported (see Figure 7.2). Overall, there appears to be a small but growing body of evidence on the adoption, impact and value of eHealth systems in Canada. These benefits are summarized below according to the value dimension of the framework.

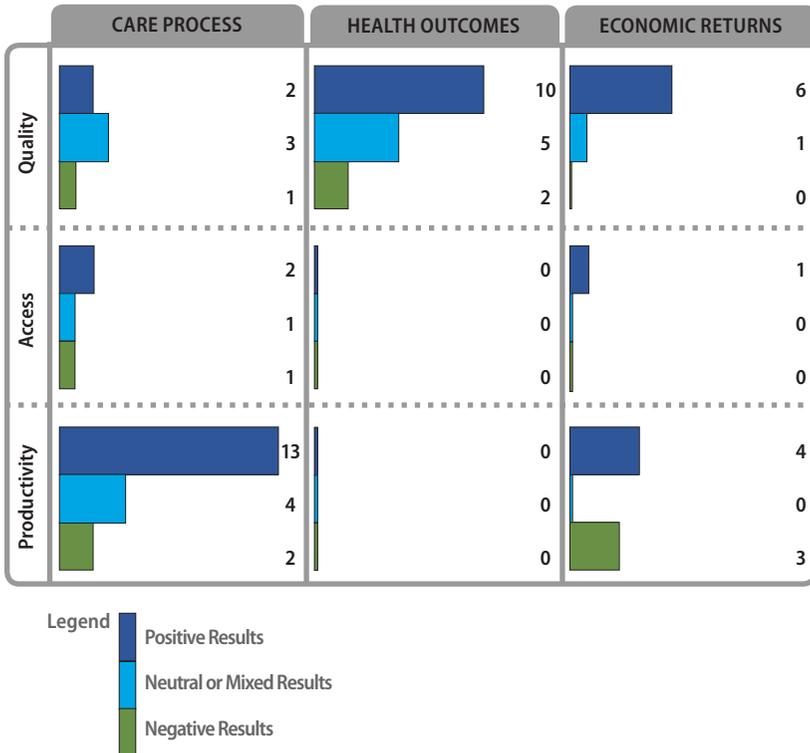


Figure 7.2. Summary of eHealth value findings from Canadian studies.

- 1 Care Process – Most of the studies reported benefits in care process (actual or perceived improvements). These care processes involved activities that could improve patient safety (Tamblyn et al., 2010; Geffen, 2013), guideline compliance (Holbrook et al., 2009; PricewaterhouseCoopers [PWC], 2013; Geffen, 2013), patient/provider access to services (Geffen, 2013; Prairie Research Associates [PRA], 2012), patient-provider interaction (Holbrook et al., 2009; Centre for Research in Healthcare Engineering [CRHE], 2011), productivity/efficiency (Prince Edward Island [P.E.I.] Department of Health and Wellness, 2010; Paré et al., 2013; CRHE, 2011; Lapointe et al., 2012; Syed et al., 2013), and care coordination (Paré et al., 2013; PWC, 2013; Lau, Partridge, Randhawa,

& Bowen, 2013). There were also some negative impacts which included poor EMR data quality that affected drug-allergy detection (Lau et al., 2013), perceived inability of the EMR to facilitate decision support (Paré et al., 2013), increased pharmacist callback in ePrescribing (Dainty, Adhikari, Kiss, Quan, & Zwarenstein, 2011), and reduced ability of a DIS to coordinate care and share information (P.E.I. Department of Health and Wellness, 2010).

- 2 Health Outcomes – The overall evidence on health outcome benefits is smaller and is more mixed. Two controlled DIS studies reported improved patient safety with reduced inappropriate medications (Dormuth, Miller, Huang, Mamdani, & Juurlink, 2012) and errors (Fernandes et al., 2011), while a third study reported low accuracy of selected medications in a provincial medication dispensing repository (Price, Bowen, Lau, Kitson, & Bardal, 2012). On the other hand, two descriptive studies reported user expectations of improved compliance and reduced adverse events with full DIS adoption and use. For EMR, Holbrook et al. (2009) reported improved A1c and blood pressure control levels, while Paré et al. (2013), PWC (2013) and Physician Information Technology Office [PITO] (2013) all reported expectations of improved safety from the EMR. At the same time, PITO (2013) reported that less than 25% of physicians believed EMR could enhance patient-physician relationships and Paré et al. (2013) reported few physicians believed EMR could improve screening. For ePrescribing and CPOE there were no improved outcomes in patient safety reported (Tamblyn et al., 2010; Dainty et al., 2011; Lee et al., 2010).
- 3 Economic Return – The overall evidence on economic return is also mixed. For EMR, O'Reilly, Holbrook, Blackhouse, Troyan, and Goeree, (2012) reported a positive return on diabetes care from Holbrook et al.'s original 2009 RCT study that showed an improved health outcome of 0.0117 quality-adjusted life years with an incremental cost-effectiveness ratio of \$160,845 per quality-adjusted life year. PRA (2012) reported mixed returns where the screening of breast and colorectal cancers was cost-effective but not in cervical cancer. In Paré et al.'s (2013) survey less than 25% of Quebec physicians reported direct linkage between the EMR and financial health of their clinics. The PITO (2013) survey also reported that less than 25% of British Columbia physicians believed EMR could reduce overall office expenses. The PWC study (2013) estimated the combined economic return from productivity and care quality improvements to be \$300 million per year with full EMR adoption and use. For DI/PACS, MacDonald and Neville (2010) reported a

negative return of the P.E.I. PACS system from their cost-benefit analysis with an increased cost per exam, which was estimated to take six years to amortize with the higher cost. On the other hand, Geffen (2013) estimated a positive return of \$89.8 million per year in DI/PACS based on its full adoption and optimal use in B.C. For DIS, both the Deloitte (2010) and Geffen (2013) studies estimated positive returns in excess of \$435 million and \$200 million per year nationally and in B.C., respectively. Their predictions are based on full adoption and use of the systems.

7.3.2 Clinical Adoption of eHealth Systems

To better understand why the value of eHealth is not consistently being realized, it is prudent to consider the contextual factors surrounding adoption that influence these findings. Put differently, the value derived from eHealth is dependent on these contextual factors, which affect the extent of system adoption that takes place in an organization. Not all studies addressed issues of adoption to explain their findings; 29 of the Canadian studies did report contextual factors for adoption. The identified factors were mapped to the adoption dimension of the eHealth Value Framework, with specific examples in each category. They are explained below and summarized in Table 7.1.

- 1 Micro level – The design of the system in terms of its functionality, usability and technical performance had a major influence on how it was perceived and used, which in turn influenced the actual benefits. For instance, the P.E.I. DIS (P.E.I. Department of Health and Wellness, 2010) users had mixed perceptions on the system's ease of use, functionality, speed, downtime and security that influenced their use and satisfaction. The quality of the clinical data in terms of accuracy, completeness and relevance influenced its clinical utility. The actual system use and its ability to assist in decision-making, data exchange and secondary analysis also influenced its perceived usefulness. For instance, seven of the EMR studies involved the development and validation of algorithms to identify patients with specific conditions (Tu et al., 2010a; Tu et al., 2010b; Tu et al., 2011; Harris et al., 2010; Poissant, Taylor, Huang, & Tamblyn, 2010; Roshanov, Gerstein, Hunt, Sebaldt, & Haynes, 2013), generate quality indicators (Burge, Lawson, Van Aarsen, & Putnam, 2013), and conduct secondary analyses (Tolar & Balka, 2011). The type and extent of user training and support also influenced adoption. Shachak, Montgomery, Tu, Jadad, and Lemieux-Charles (2013) identified different types of end user support sources, knowledge and activities needed to improve EMR use over time.

- 2 Meso level – For people, the level of user competence, experience and motivation, the capability of the support staff, and the availability of mentors all influenced adoption. For instance, Lapointe et al. (2012) found providers had varying abilities in performing EMR queries to engage in reflective practice on their patient populations. The end user support scheme identified by Shachak et al. (2012) directly influenced the confidence and capabilities of the users and support staff. Even after implementation, time was still needed for staff to learn the system, as was reported by Terry, Brown, Denomme, Thind, and Stewart (2012) with respect to users of EMRs that had been implemented for two years. For organizations, having management commitment and support, realistic workload, expectations and budgets, and an interoperable infrastructure influenced adoption. These factors were reported by McGinn et al. (2012) in their Dephi study on successful implementation strategies with representative EHR user groups. For implementation, the ability to manage the project timeline, resources and activities, and to engage providers all had major influences on successful adoption. An example was the health information exchange (HIE) study reported by Sicotte and Paré (2010), where the implementation efforts had major influences on the success or failure of two HIE systems. The Auditor General's report (OAG, 2010) raised concerns with EHR implementation initiatives in terms of insufficient planning, governance, monitoring and public reporting that led to unclear value for money.
- 3 Macro level – One study addressed the standards, funding, and policy aspects of the Canadian eHealth plan to adopt an interoperable EHR (Rozenblum et al., 2011). Rozenblum and colleagues acknowledged Canada's national eHealth standards, EHR funding, registries and DI/PACS as tangible achievements over the past 10 years. Yet these authors felt the Canadian plan fell short of having a coordinated eHealth policy, active clinician engagement, a focus on regional interoperability, a flexible EHR blueprint, and a business case to justify the value of an EHR. As recommendations, their study called for an eHealth policy that is tightly aligned with major health reform efforts, a bottom-up approach by placing clinical needs first with active clinician and patient engagements, coordinated investments in EMRs to fill the missing gap, and financial incentives on health outcomes that can be realized with EHRs. Similarly, McGinn et al. (2012) and PITO (2013) suggested physician reimbursement and incentives as ways to encourage EMR adoption. Burge et al. (2013), Holbrook et al. (2009) and Eguale, Winslade, Hanley, Buckeridge, and Tamblyn (2010) all emphasized

the need for data standards to improve interoperability. Note that Infoway received additional funding in 2010 to expand their scope to include support for physician EMRs, which include clinician engagement through such efforts as the Clinician Peer Support Network (Infoway, 2013).

Table 7.1

Summary of Adoption Factors that Influence eHealth Values from Canadian Studies

Adoption/Impact Factors		Canadian Studies
Micro Level		
System	Functionality/features; System design; Usability; Technical issues; Privacy and security concerns.	Dainty et al. (2011); Eguale et al. (2010); Poissant et al. (2010); Price et al. (2012); PRA (2012); Paré et al. (2013); Lapointe et al. (2012); Deloitte (2010); McGinn et al. (2012); Paterson et al. (2010); G. Braha & Associates (2012); Holbrook et al. (2009)
Information	Database completeness; Structured data; Data quality; Volume of data; Enhanced information; Information capture.	Eguale et al. (2010); Tu et al. (2011); Lau et al. (2013); Deloitte (2010); MacDonald and Neville (2010); Fernandes et al. (2011); Burge et al. (2013); Tu et al. (2010a; 2010b)
Service	Resources and support; Training; Learning curve; Support personnel; Communication/information to end- users; Infrastructure support; Learning space.	McGinn et al. (2012); Mensink and Paterson (2010); P.E.I. (2010); MacDonald and Neville (2010); PITO (2013); Lapointe et al. (2012); Lau et al. (2013); Paré et al. (2013); Deloitte (2010); Shachak et al. (2012)
Use	Use/variability in use; Perceived usefulness.	Paterson et al. (2010); Terry et al. (2012); Tolar and Balka (2011); McGinn et al. (2012)
Satisfaction	Familiarity/confidence with system; Interaction with computer; Learning to use system; Perceived ease of use.	McGinn et al. (2012); Terry et al. (2012); Eguale et al. (2010); Paré et al. (2013)
Meso Level		
People	Client/user population; Individual user behaviours; Champions/super users; Confidence with computers; User expectations; Roles and responsibilities; Meaningful engagement of clinicians.	Shachak et al. (2012); MacDonald and Neville (2010); Deloitte (2010); Dainty et al. (2011); G. Braha and Associates (2012); Terry et al. (2012); Mensink and Paterson (2010); Lau et al. (2013); Rozenblum et al. (2011)
Organization	Business requirements/planning; Implementation strategy/change management; Vision/long term planning; Participation of end-users in implementation strategy; Organizational readiness; Defined value; Commitment; Individual workplace type; Management; Communication; Leadership; Workplace size; Physician salary; Scanning in documents; Internet connectivity; Current/prior technology in use; National infrastructure; Entry of information; Interoperability/connectivity; Cost issues/benefit.	Lau et al. (2013); PEI (2010); Paterson et al. (2010); Sicotte and Paré (2010); G. Braha and Associates (2012); Mensink and Paterson (2010); PITO (2013); Deloitte (2010); McGinn et al. (2012); PRA (2012); Dainty et al. (2011); MacDonald and Neville (2010); Shachak et al. (2012); Lapointe et al. (2012); Terry et al. (2012); Holbrook et al. (2009); Rozenblum et al. (2011); Paré et al. (2013); CRHE (2011); O'Reilly et al. (2012); PITO (2013); OAG (2010)

Meso Level		
Implementation	Uptake; Loss of productivity; Choice of system; Response to risks; Implementation team; Experience in IT project management; Implementation effort; Complexity; Confidence in system developer or vendor/communication with vendor; Workload/workflow; User vs. vendor needs; Change in tasks.	P.E.I. (2010); G. Braha and Associates (2012); Deloitte (2010); McGinn et al. (2012); Sicotte and Paré (2010); Lau et al. (2013); CRHE (2011); Paré et al. (2013); PITO (2013); Paterson et al. (2010); Shachak et al. (2012); MacDonald and Neville (2010); PRA (2012); OAG (2010)
Macro Level		
Standards	Standards for interoperability; Standards for data structure and extraction; Security standards; Standardized coding; Quality standards; Clinical best practices; Standardization of data entry.	Deloitte (2010); Rozenblum et al. (2011); Burge et al. (2013); Holbrook et al. (2009); P.E.I. (2010); Tu et al. (2010b); Egualé et al. (2010)
Funding/Incentives	Physician reimbursement; Motivation; Secondary uses; Education; Gated funding; Peer competition; Financial incentives.	McGinn et al. (2012); PITO (2013); Paterson et al. (2010); PRA (2012); Deloitte (2010); Lapointe et al. (2012); Rozenblum et al. (2011); PRA (2012)
Legislation/Policy/Governance	Legislation to guide use (e.g., electronic signatures); National policy for effective adoption strategies; Alignment with healthcare transformation agenda; System certification; Flexible blueprint adaptive to feedback from implementation; Framework for collaboration across jurisdictions; Coordinated national leadership and investment; Accountability through public reporting.	Dainty et al. (2011); Deloitte (2010); Rozenblum et al. (2011); Paré et al. (2013); OAG (2010)
Time lags		
Adoption	Lack of time; Time to integrate system into daily practice; Project time.	McGinn et al. (2012); Tolar and Balka (2011); Sicotte and Paré (2010); PITO (2013); Deloitte (2010)
Impact	Short follow-up time; Early stage of implementation; Lag time for benefits.	Holbrook et al. (2009); Lau et al. (2013); P.E.I. (2010); Paré et al. (2013); Deloitte (2010)

7.3.3 Evaluations of Clinical Adoption Factors

In addition to mentioning the contextual factors that may have been facilitators or barriers to achieving value in care, process and return, 21 studies actually evaluated some influencing adoption factors themselves. For example, in the three papers by Tu and colleagues (2010a, 2010b, 2011), the primary focus was on the content of the EMRS and its ability to help identify patient populations. While this may not be an example of a health value outcome, it is an example of an information content measure that contributes to care provision. The rationale is that the value of the EMR is dependent on the quality of the data. If data quality is lacking, then value at the health outcome level will be impacted. Therefore, looking at individual factors from an evaluation perspective may also help to make sense of the evidence. Simply having the factor present — for example, training for end users — does not ensure successful outcomes. The findings for factors examined in the Canadian studies are summarized in Figure 7.3.

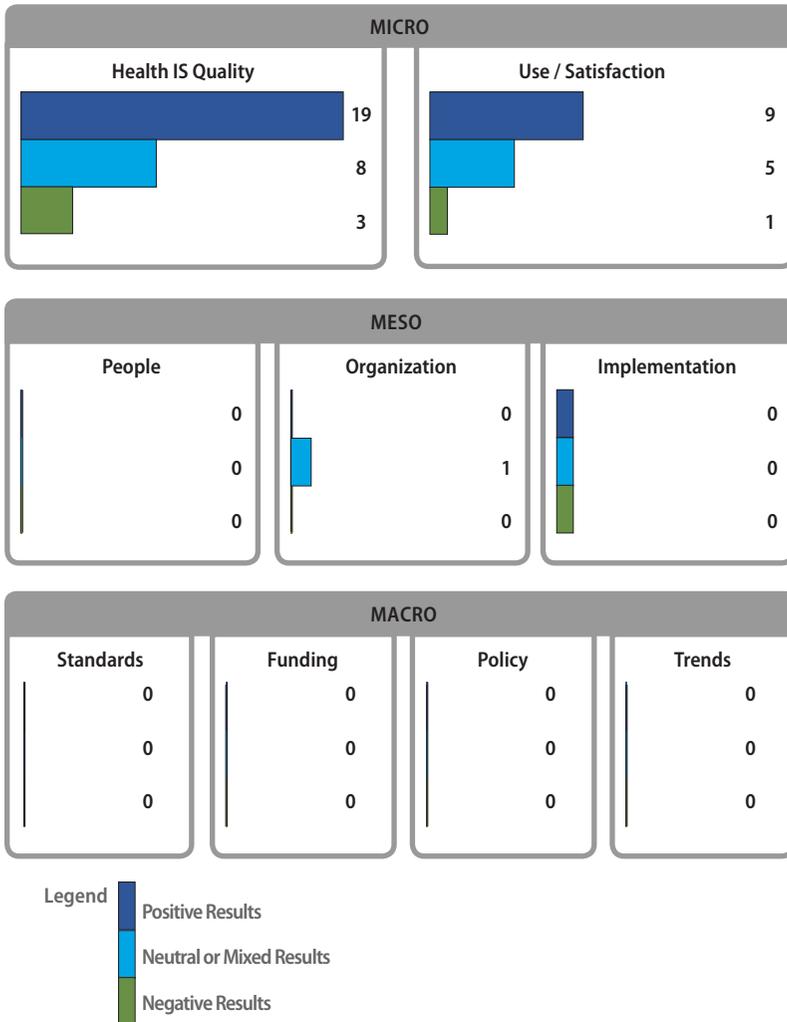


Figure 7.3. Summary of adoption factors assessed in micro, meso, and macro categories. There is a considerable focus on micro factors and it was challenging to find assessment of macro level factors.

7.4 Implications

The current evidence on Canadian eHealth benefits is confusing and difficult to interpret even for the experienced eHealth researcher and practitioner. There are four types of issues that should be considered when navigating the eHealth benefits landscape. These are the definition of eHealth, one's views or perception of the eHealth system, the methods used to study benefits, and system adoption

that can influence eHealth benefits. These issues and their implications for healthcare organizations are discussed below.

- *Definitions* – The field of eHealth is replete with jargon, acronyms and conflicting descriptions. For instance, eHealth refers to the application of health information and communication technology or ICT in health. It is a term often seen in the Canadian and European literature. On the other hand, health information technology or HIT describes the use of ICT in health especially in the United States. The terms EHR and EMR can have different meanings depending on the countries in which they are used. In the U.S., EHR and EMR are used interchangeably to mean electronic records that store patient data in healthcare organizations. However, in Canada EMR refers specifically to electronic patient records in a physician's office. The term EHR can also be ambiguous. According to the Institute of Medicine, an EHR has four core functions of health information and data, order entry (i.e., CPOE), results management, and decision support (Blumenthal et al., 2006). Sometimes it may also include patient support, electronic communication and reporting, and population health management. Even CPOE can be ambiguous as it may or may not include decision support functions. The challenge with eHealth definitions, then, is that there are often implicit, multiple and conflicting meanings. The Canadian eHealth literature is no exception. Thus, when reviewing the Canadian evidence on eHealth benefits one needs to understand what system and/or function is involved, how it is defined and where it is used.
- *Views or perceptions* – The type of eHealth system and function being evaluated, the care setting involved, and the focus of the evaluation are important considerations that influence how the system is viewed or perceived by different stakeholders as to its intentions, roles and values. Most evaluation studies would identify the eHealth system and/or function being investigated, such as an EHR with CDS and/or CPOE. The care setting can influence how a system is adopted since it embodies the type of care and organizational practices being provided. The focus is the clinical area being evaluated and the benefit expected, such as medication management with CPOE to reduce errors. The challenge with eHealth views as articulated in these studies, then, is that the descriptions of the system, setting and focus are often incomplete in the evaluation write-up, which makes it difficult to determine the relevance of the findings to the local setting. For example, in studies of CPOE with alerts, it is often unclear how they are generated and to whom, and whether a response is required. For a setting such

as a primary care clinic it is often unclear whether the actual site is a hospital outpatient department or a stand-alone community-based practice. For focus, some studies include such a multitude of benefit measures that it can be difficult to decide if the system has led to overall benefit. The Canadian eHealth studies face the same challenge of having to tease out such detail to determine the relevance and applicability of the findings.

- *Methods of study* – There is a plethora of scientific, psychosocial and business methods used to evaluate eHealth benefits. At one end of the spectrum are such experimental methods as the randomized control trial (RCT) used to compare two or more groups for notable changes from the implementation of an eHealth system as the intervention. At the other end is the descriptive method used to explore and understand the interactions between an eHealth system and its users. The choice of benefit measures selected, the type of data collected and the analytical method used can all affect the study results. In contrast to controlled studies that strive for statistical and clinical significance in the outcome measures, descriptive studies offer explanations of the observed changes as they unfold. There are also economic evaluation methods that examine the relationships between the costs and return of an investment, and simulation methods that model changes based on a set of input parameters and analytical algorithms. The challenge, then, is that one needs to know the principles and rigour of different methods in order to plan, execute, and appraise eHealth benefits evaluation studies. The Canadian eHealth evidence identified in this chapter has been derived from different approaches such as RCTs, descriptive studies and simulation methods. The quality of these studies varies depending on the rigour of the design/method used. The different outcome measures used has made it difficult to aggregate the findings. Finally, timing of studies in relation to adoption and use will influence benefits, which may or may not be seen.
- *System adoption* – There are mixed and even conflicting results from evaluation studies on eHealth benefits. To understand these differences one has to appreciate the context surrounding the implementation, use and impacts of eHealth systems in organizations. The success of an eHealth system in producing the expected benefits is dependent on many contextual factors. Examples are the usability of the system involved, prior experience of its users, the training and support available, the organizational culture and commitment toward eHealth and the system, how well the implemen-

tation process is managed, the funding and incentives in place and the overall expectations. The contextual factors are described in detail under the investment, micro, meso, macro and value dimensions of the proposed eHealth Value Framework presented in this chapter. These contextual factors apply equally well to the Canadian eHealth systems being evaluated. The challenge, then, is whether the level of detail provided in the evaluation write-up is sufficient, and whether it can explain why the system had worked or not, and if not, what could be done to achieve the benefits.

7.5 Summary

This chapter introduced the holistic eHealth Value Framework to make sense of eHealth value in the Canadian setting. This framework is made up of four dimensions of investment, adoption, value and time lag. It was applied in a review of Canadian literature on eHealth evaluation studies to examine eHealth value within the Canadian context. The framework helped to make sense of the conflicting evidence found in the literature on eHealth benefits in Canada.

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