

# Chapter 6.15

## A Metric for Healthcare Technology Management (HCTM): E-Surveying Key Executives and Administrators of Canadian Teaching Hospitals<sup>1</sup>

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### ABSTRACT

Among key drivers of healthcare reform in Canadian society are the challenges faced by the rapid rate of technological change and its impact on organizational performance in terms of efficiency, cost-effectiveness, and innovation in business and operational processes. However, despite the noted significance of the impact of technological change on healthcare organizations, the challenge of healthcare technology management (HCTM) has received only scattered and marginal attention

in the technology management (TM) literature. The lack of formalization in HCTM construct, attributes, and measures motivated an empirical study to develop a metric for HCTM. This metric was then used to assess HCTM practices in teaching hospitals across Canada. The project began with an analysis of developments to date in the fields of Management of Technology and Management of Medical Technology. An extensive literature content analysis generated a set of definitions and attributes of the conceptual TM construct, which was eventually extended to

HCTM. A measuring instrument was developed through a formal design process involving expert panel review, pilot testing, instrument refinement, and field-testing to extract and measure HCTM performance indicators. Administration of this metric with the help of the Association of Canadian Academic Health Organizations via a Web-based survey of senior healthcare administrators provided insights into the HCTM status of Canadian teaching hospitals and its relationship with organizational performance.

## **INTRODUCTION**

Amazingly, the history of digital computing and automated information processing technology has unfolded before us, for only a brief period of no more than several decades. In the last decade, we began to witness a gradual convergence of computing, telecommunications, and Web-based networking technologies, augmented by high-speed global access to an explosion of information on the Internet and increased global competition (Geisler, 2000; Ramanathan, 1990; Ulhoi, 1996). A key challenge with this trend is to unravel how management of technology innovation can impact business and operational performance of healthcare organizations in today's environment.

Business strategists, analysts, and researchers as well as economists have pointed to technology innovation as a catalytic change agent in the structure of industries and competition. Indeed, technological innovation can shift the competitive balance within an industry and create opportunities for growth. A technology management (TM) problem arises when business strategy does not fully incorporate technology-based threats and opportunities. Countries around the world are recognizing that the competitiveness of their private sector industries in the global market depends on their attention to TM. Technology has become a competitive tool in national and

corporate survival, especially in an environment of global and more intense competition (Perrino & Tipping, 1989; Sharif, 1994). The issues are similar in the public service arena in that, "public expectations for the level and quality of government services... have grown while satisfaction with their fulfillment has steadily declined. In the past few years, it has become evident that cutting fat, eliminating waste, and preventing abuse is not nearly enough. Government needs to rethink its methods and restructure its approach to public services." As identified by Canadian healthcare CEOs, the task of managing healthcare organizations and systems is particularly complex, demanding that healthcare executives master many different skills, including government relations, community liaison, human resources, finances, patient care, research, and teaching. Communication skills, culture management, creativity, shared leadership, and alliance building rank among the top (Armstrong, Brunelle, Angus, & Levac, 2001). Healthcare technology management, therefore, adds one other dimension to these challenges.

In this paper, we review the extant literature with an attempt to link the more established field of Management of Technology (MOT) to emerging fields of Management of Medical Technology (MMT) and Healthcare Technology Management (HCTM). HCTM research domain and questions, focusing on the lack of alignment between healthcare technology strategies and healthcare systems goals and objectives, are first reviewed. Next, we outline the significance of HCTM research and attempt to link the published literature on MOT, MMT, and HCTM. We then discuss the methodological approach and statistical techniques used in the study. In analyzing and reporting the findings, we attempt to provide insights into characteristics and comparative performance of Canadian healthcare organizations and address key questions raised by this research with respect to aggregate views and perspectives of senior teaching hospital executives on HCTM. We close

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