

A CONCEPTUAL FRAMEWORK FOR DESIGNING A MODEL HEALTH  
PROMOTION INFORMATIC SYSTEM FOR IMPROVING THE  
HEALTH STATUS AND QUALITY OF LIFE OF AMERICANS

by

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ABSTRACT

This study used a conceptual framework to examine how advanced information systems should be developed and used to improve the health and quality of life of Americans. In this study the problem was defined as the poor lifestyle choices and health habits of Americans. The research problem was defined in terms of how to develop and use a conceptual framework for the design of a system that is based on the best theoretical science, that features the right mix of technologies, and that is sufficiently sophisticated and comprehensive to be able to address the health problem in a highly effective manner. The goal of this study was to produce a design for a model informatic system that could be used as a blue print for the multidisciplinary development teams and researchers who will be working on or evaluating the next generation of health promoting technologies.

A mixed-methodology design and the Systems Development Life Cycle (SDLC) model were used to develop the conceptual framework, design the model system, and, in the process, indicate how and why this particular framework and innovative design would be superior to the other products and systems that are on the market today. The

recommended state-of-the-art informatic system design is based on the concepts and principles of health promotion and the Transtheoretical model. It was designed so that it would be capable of improving the health status of individuals and reducing the economic burden on organizations and the society as a whole.

The discussion covers the void that this framework and design fills as well as the implications of and potential for building and deploying advanced informatic systems on a population-wide basis. The implications of this research for health practitioners, consumers, healthcare providers and agents of care, information systems developers, researchers, and policy makers are reviewed in the discussion. Suggestions for areas of further research are included.

## PREFACE

This dissertation project has evolved into an ambitious exploration of the future space where advanced information technologies and health promotion might intersect. Specifically, this investigation was designed to develop a conceptual framework for a system that exploits the full power and potential of technology and that is based on the principles of health promotion theory. The primary purpose of the system is to help individuals, health practitioners, and agents of change promote personal and population-wide health-enhancing lifestyles.

This study was designed to fill a void that currently exists in the burgeoning area of health promoting informatics. However, because of the rapid advance of technology and the multidimensional forces that characterize this era of the Information Age, it has been a challenge to try to devise a conceptual framework for a system that is comprehensive, implementable, and yet will not be made redundant in a short period of time.

The scope of this study is very broad in that it encompasses three domains: health or more specifically health promotion, informatics, and the behavioral sciences. The primary purpose of this study is to contribute to the body of conceptual and practical research by advancing a conceptual framework for an innovative design that can be used as a foundation for the next generation of informatic systems in the healthcare arena.

This dissertation project was conceptualized and has been written for a diverse audience of stakeholders who play many roles including: consumers and users in the general public, healthcare professionals and practitioners who act as agents of care, institutions who provide or pay for the care of their employees or constituencies, informaticists, developers, and entrepreneurs who are developing health-related information systems, research teams who evaluate the efficacy of the models and systems, and the senior-level decision and policy makers who must evaluate the value, potential, and worth of these new systems and then make the critical decisions about how to best allocate resources for the good of their organization or the society as a whole.

Several recurrent themes that are related to the conceptual framework for the system design will be found throughout the chapters that follow. First, as a highest priority, the system must be empowering and have the users, their safety, and their unique needs at the center of the system design. Second, the system is founded on the principles of health promotion which call for moving the process of care upstream, extending it throughout the lifespan, and reaching for optimal levels of health and quality of life for the entire population. Third, the system must be able to extend into all aspects of the spectrum of care and reach mass audiences in the best, most practical, theoretically sound, and culturally appropriate ways. Fourth, the system must be evaluated according to standards and criteria that take into account its potential, reach, and return on investment for long-term and systemic change, as well as its contribution to making the entire healthcare process more efficient and effective. Fifth, the proposed model system has been designed for constant change and evolution so that it will be able to function optimally with the mix and types of technologies that are named as well as those that will

become available several years in the future. Sixth, the system must continually strive to base all products and services on the best practices of multiple domains and forge linkages among the users and entities across the entire healthcare spectrum. Seventh, the system has been designed to capture and exploit the full value of personal and system-wide object-oriented data and use "intelligent software" to maximize the capabilities of the system. Finally, the system must be based on concepts of collaboration and synergy among all of the healthcare entities.

The deliverable for this research project is a conceptual framework for a constraint-free design for the next generation of health-promoting technology systems. However, because of the complexity of the design, types of technologies that are proposed, and a host of real-world issues, many readers might conclude that this type of system is too big, too radical, or too speculative to actually bring into reality. For that reason several viable alternative paths to adoption are discussed in Chapter IV and V.

The intent of this discourse is to provide the reader with a thought-provoking milieu, one that encourages and challenges the reader to think deeply and critically about the worth, practicality, issues, and implications of developing the next generation of advanced informatic systems. The premise of this study is that these best-of-the-breed systems may lead to a new paradigm for health-related behavioral change and a fully-integrated and information systems-based healthcare sector.

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First, I have benefited greatly from the tutelage of a splendid dissertation committee. They provided enduring patience, superb guidance, and an enormous amount of faith in me throughout this process. My committee supported and encouraged me while I progressed through the dissertation process and worked to crystallize my vision +for the future of health-promoting technologies. They enlightened me about the nuances of applying scientific methods while trying to push the envelope and developing a conceptual framework for a system design that the healthcare sector can use for the transition into the next stage of the Information Age. They have inspired me with their wisdom, prodded me with a series of meaningful intellectual exercises, and kept me balanced with a stream of support and humor. Thank you Dr. Jacobs for always being there. Thank you Dr. Karch for challenging me to pursue my Ph.D. and making it possible. Thank you Dr. McDonald for opening doors into the world of advanced information technologies.

Second, I have received enormous support from my family, friends, and colleagues throughout the Herculean dissertation process. This journey would not have

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Early in my educational career I was inspired by a quote from Horace Mann that said, "Be ashamed to die until you have won some victory for humanity." Although this research clearly does not rise to that level of significance, I hope it will help to move the field forward and I am honored to be able to pass the knowledge that I have accumulated and the scholarly torch on to others. I hope that others will find this work to be a worthwhile contribution to the body of science in this inchoate area.

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