Chapter I
Introduction to the Field of Technology Innovation Management

INTRODUCTION

This book differs from other academic works on the management of technology and innovation because it focuses on the seminal research of the field. Such work continues to be returned to by many authors over time because it supplies information considered to be core and foundational in nature. Consequently, the focus of this book is on older work that appears to be of increasing relevance over time and newer work that has quickly become highly influential. For the specialist practitioner interested in a specific technology or the academic who is interested in innovation from the perspective of a specific traditional discipline, this book will provide you with a strong foundation that cuts across traditional fields and boundaries. With the foundational knowledge in place, readers have a solid base over which to place the specialist knowledge that is of importance to them. Although the focus of the book is on foundations, the section on technology and management information systems offers additional insight into MIS, which many information systems professionals, universities, and professional organizations consider to be an independent discipline of increasing importance to fields that use information to develop and alter business policies and procedures. The final chapter focuses on the future of technology innovation management. By conducting a textual analysis of recent research from the top specialty journals in technology innovation management, we offer the reader

sufficient information to consider what topics and directions recent research in the technology innovation management specialty is taking.

The first step in considering the field of technology and innovation management (TIM) is to offer some very basic definitions to ensure that it is clear what is meant by the authors when certain terms such as 'technology' and 'innovation' are used. Over the last few years, these terms have been overused and in some cases abused. Because these terms are fashionable and have a positive connotation, they tend to be used somewhat less than sparingly. Consideration of technology often focuses on how science is different from engineered or technology-based products. Stokes (1997) considers the difference of understanding for the purpose of increasing knowledge (science) vs. understanding for the purpose of application or problem solving (technology). He suggests that it is possible to make a contribution to knowledge that offers no practical application. For example, Bohr's model of the atom is important to our understanding of science, but it does not contribute to the development of products. Such a discovery is termed as basic science.

At the other extreme, some advances result in the development of product, but no increase in knowledge occurs; this is applied science or technology. An example is the development of the light bulb by Edison through experimentation with a huge number of materials, until he found one—tungsten—that performed satisfactorily.[1] These two examples offer the extreme points of the spectrum. Technology does not need to increase knowledge, but must offer some applied benefits.[2] Science involves an increase in knowledge or understanding, but does not need to offer applied benefits. In many cases, however, scientific discovery offers both advances in knowledge and one or more applied benefits. For example, the process of pasteurization offers both applied benefit and scientific understanding regarding the presence and existence of micro-organisms.[3] Having given an initial consideration of what technology is, innovation is now defined. Innovation is considered here as anything that involves a change that is new or novel to the individual or organization involved.[4] The critical idea here is *new.* Anything that is not new to the organization falls under the heading *change management.*[5] Having considered the meaning of innovation and technology, we now consider the interaction of innovation and technology with management.

Technology and innovation management is challenging to consider from the perspective of a field, since it is outside of and crosses the boundaries present in the traditional disciplinary structure used by most academics and universities. Consequently, there are communities within different traditional fields that study technology and innovation management. However, these communities study technology innovation management from very different perspectives. Many of these differences in perspectives are fundamental and foundational. As a result, these communities are often isolated from each other, with researchers' findings having much more in

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