

Engagement Through Information: Supporting Technology Commercialization

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ABSTRACT. This article provides a framework for encouraging further dialogue concerning the role of information professionals in supporting the technology commercialization efforts of entrepreneurs, researchers, and small businesses. After a brief introduction to the technology commercialization process, the roles of university engagement in commercialization activities are discussed. The paper concludes with questions for consideration focused on the role of the information professional.

KEYWORDS. Commercialization, information seeking behavior, outreach, extension

INTRODUCTION

Globalization and new technologies have created a highly competitive environment for countries, business organizations, and individuals. Technology has produced flattening effects by facilitating intellectual capital development that can be produced, disaggregated, and delivered instantaneously across the globe (Friedman 2005). This environment enables work to be moved to anywhere in the world at anytime. One governmental

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policy response has been to stimulate and facilitate the entrepreneurial spirit through the development of innovations in intellectual property that can be captured and legally protected, thus creating competitive advantage in this environment. Innovation and entrepreneurship are foundations upon which a knowledge economy is being built.

The role of innovative entrepreneurs in economic development has gained extensive attention from government policy, the media, and academia (Wennekers and Thurik 1999). The commercialization of new technologies, or the process of introducing new technology to market, has been a particular facet garnering much attention. Patent protection and capital investment are necessary components for the effective commercialization of innovations. The importance of commercialization is evidenced by rapidly increasing patent requests and increased governmental policies that promote early-stage capital investments in concepts with potential commercial applications (WIPO 2007; National Governor's Association 2008). Successful commercialization provides economic value through the creation of high-skill, high-wage jobs—a necessary component of sustained economic development. The economy is growing ever more reliant on the application of knowledge through commercialization of new technologies. These trends have impacted all industries, including agriculture.

COMMERCIALIZATION OF AGRICULTURAL TECHNOLOGIES

Traditionally known for the production of safe and abundant supplies of food and fiber, agriculture is increasingly looked upon to apply science-based innovation and entrepreneurial spirit to the production of safe, efficient, and environmentally friendly renewable resources, including food, industrial raw materials, and renewable energy supplies. The growing attention to renewable energy, nutritional food, feeding a growing global population, productivity, and yield improvement, as well as value-added agriculture provides tremendous opportunity for commercializing new technologies. Universities, especially the land-grants, serve a vital role in the commercialization of new agricultural technologies. Engaged faculty and staff, research facilities, and Extension systems provide a vital network for the development and distribution of resources that support commercialization.

Commercialization entails a sequence of steps to achieve market entry of new technologies, processes, and products. Jolly (1997) outlined a

five-stage model of the commercialization process. Technology exploration begins with the imaging stage. This stage primarily addresses the basic research related to a new concept. The second stage proposed by Jolly is the incubating stage in which generic market applications and technology concepts are examined. In the demonstrating stage, the technology is moved into products with market application through various means such as prototyping. The promoting stage is the beginning of market entry and expansion. Finally, the sustaining stage focuses on the long-term market placement of the products. New technologies are a part of each of these stages at some point in their development.

Decisions throughout the process may include moving to the next stage, adapting the idea and returning to a previous stage for further investigation, or ending the process. Therefore, moving through these stages is best characterized as an iterative and unsystematic process rather than a clearly defined and linear movement. Making decisions within these stages requires information from various streams of knowledge, including technological and science research, business management acumen, market research and identification, and financial know-how. However, accessing appropriate information in all of these bodies of knowledge at various points of the process can be a complex effort. This heavy information demand in an iterative process may lead to information seeking behaviors that are unsystematic and responsive primarily to immediate need.

It can be hypothesized that an ability to acquire information systematically can positively impact decision making and, consequently, the success rate of commercialization. If commercialization is an important feature of the knowledge economy and is reliant on timely and useful information, yet the information-seeking processes are unsystematic, then there is an opportunity to improve support for information seeking behaviors of entrepreneurs and researchers. Improved decision making, based on systematic information-seeking processes, can reduce the total time to move a new idea or technology to market by efficiently providing comprehensive information.

OHIO'S ENTREPRENEURIAL SIGNATURE PROGRAM (ESP)

A representative scenario of the dynamics between public policy promoting new technologies and university engagement is provided by a program in Ohio. The state government implemented a policy that invests

1.6 billion dollars for innovations and commercialization development that supports research, early stage capital formation, and advanced manufacturing technologies (Third Frontier 2008). The purpose of this policy investment is to significantly increase the technology-based entrepreneurial commercialization outcomes in Ohio. The efforts focus on strategic technology-based sectors that offer exceptional prospects for sustained economic development in various regions of the state. One specific program within this extensive policy investment for innovation is the Entrepreneurial Signature Program (ESP). This program supports entrepreneurs and small firms by providing necessary resources to commercialize research and new products. ESP investments were made to six regional consortiums throughout the state designed to provide comprehensive support to entrepreneurs seeking assistance.

One of the six ESP investments is led by a university collaborative effort to serve a rural area of Ohio. This region does not contain the necessary infrastructure for commercialization, such as angel investment networks, patent attorneys, and expansive research facilities found in larger population areas. The Ohio State University South Centers, a research and extension center within the rural region, is one of the collaborative university partners to implement this project. One of the South Centers' primary emphases with the ESP is to support moving agricultural innovations into the marketplace, resulting in economic growth and development. Potential focus areas include the wood industry, advanced food development, biocapacity development, and environmental-related technologies.

The collaborative partners focus on providing direct one-on-one operational assistance by university professionals, as well as funding to acquire necessary expertise—such as a patent attorney—that an entrepreneur may not have readily available. One representative project of this effort is an entrepreneur seeking to commercialize a new gluten-free food product. While the entrepreneur identified the market opportunity for this high quality gluten-free product, they did not have the expertise to conduct the necessary food science research. The entrepreneur received operational assistance from the university to clarify the business model. This included examining data sources for information regarding the food market potential for this product. Additionally, the university provided the faculty expertise necessary to conduct the research.

In policy decisions such as the ESP, universities serve three primary roles. First, universities serve an important role to commercialize new technologies through basic research. This research may be commercialized through university spin-out, or technology transfer, as well as collaborative

efforts with industry and entrepreneurs. Second, universities serve a vital role through Extension and other outreach efforts in supporting the commercialization efforts of firms. Finally, the university provides diffusion of knowledge and information through many forms of engagement. This includes the provision of formal degree programs, Extension-based systems, and expansive library resources. However, the relatively new role of the university-based information professional to support commercialization processes has received limited attention.

THE ROLE OF INFORMATION AND THE INFORMATION PROFESSIONAL

The quest for knowledge and information for commercialization presents questions regarding the role of the information professional. Regardless of the nature of the project, effective information seeking approaches is a necessary feature of decision making in the commercialization process. Given the various streams of knowledge, the information seeking process is challenging. Information and knowledge of the technology, market, and financial aspects of any new technology is vital for decision making throughout the commercialization process. Knowing which reliable sources to use can be even more daunting, given the proliferation of access to resources on the Internet.

Therefore, the role of information resources in commercialization is a topic that deserves further attention in the field. Faiks (2002, 21) wrote that making “institutions accessible and more responsive is key to the process of engagement.” Engagement is the essence of aligning the vast information needs of researchers and entrepreneurs with the tremendous resources of universities. Faiks outlined how the seven characteristics defined by the Kellogg Commission can be implemented in library systems in order to “support the citizens of their states by enhancing their work with information provided by the library” (Faiks 2002, 27). Addressing the complex needs of entrepreneurs commercializing new technologies can add to the engagement of universities with the citizens they serve.

PUBLIC VERSUS PRIVATE GOOD

However, the notion of engagement in commercialization activities should spark a discussion about the role of the public and private goods.

Undoubtedly, the public resources provided by university libraries may be used to facilitate moving a new product to market with entrepreneurs being private benefactors. The outcome of successful commercialization directs financial benefits to the private investors of the firm. Additionally, successful commercialization provides increased high-skill, high-wage jobs that serve the public good. Understanding these complex dynamics, as well as the local context of each institution, is important for understanding the information professional's role in support of commercialization. The difference between public and private appears to narrow when the overall economic impact of successful commercialization is fully taken into account.

THE ROLE OF GREY LITERATURE

Another area for discussion and investigation is the role of grey literature (McKimmie and Szurmak 2002). Grey literature, including extensive governmental research and technical reports, can be valuable resources in the commercialization of new technologies. McKimmie and Szurmak suggest that, given the trends of technology, grey literature will expand while conventional publishing will decrease. Given the complexities of seeking information related to new knowledge, the additional complexity of searching through grey literature can result in grey questions or "unanswered questions for which an answer is presumed to exist somewhere in the realm of grey literature" but remain unanswered (McKimmie and Szurmak 2002, 73). As described by the authors, these grey questions represent tremendous opportunity for future research and potential commercialization projects. However, it necessitates exploration of ways to track and manage such important information resources.

CONCLUSIONS AND QUESTIONS FOR FURTHER STUDY

The role of the information professional, the views of public versus private good, and the rising importance of grey literature are three topics that deserve exploration in order to establish approaches to support the commercialization of new technologies. Some questions for further inquiry include:

- What is the information professional's role in university engagement for projects such as privately initiated commercialization?

- Given the context of globalization and rapid technological innovation and government policy initiatives to promote innovation, how engaged should the university information professional be in projects involving private firms and entrepreneurs?
- How do policies and views need to change regarding the nature of private and public goods, given the context of the knowledge economy and its potential impact on employment incomes and future revenue streams, to support public institutions of education?
- How can grey literature be made more formally and widely available? What processes can be established to facilitate future research aimed at accelerating the commercialization process?

By examining these and related questions, information professionals can further explore their potential role to assist an important and growing facet of the knowledge economy.

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