Chapter 7
Evaluation of Strategic Opportunities and Resulting Business Models for SMEs:
Employing IoT in Their Data-Driven Ecosystems

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ABSTRACT

This chapter focuses on ubiquitous sensing devices, enabled by Wireless Sensor Network (WSN) technologies, that cut across every area of modern day living, affecting individuals and businesses and offering the ability to measure and understand environmental indicators. The proliferation of these devices in a communicating-actuating network creates the internet of things (IoT). The IoT provides the tools to establish a major global data-driven ecosystem with its emphasis on Big Data. Currently, business models may focus on the provision of services, i.e., the internet of services (IoS). These models assume the presence and development of the necessary IoT measurement and control instruments, communications infrastructure, and easy access to the data collected and information generated. Different business models may support creating revenue and value for different types of customers. This

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chapter contributes to the literature by considering, innovatively, knowledge-based management practices, strategic opportunities and resulting business models for third-party data analysis services.

INTRODUCTION

The much-discussed Internet of Things (IoT) provides a set of tools enabling a major, global data-driven ecosystem to develop devices (or *Things*) encompassing everything from pedometers to seismographs, collect data and produce unprecedented amounts of information about the parameters and items in the world around us. When put in the hands of people and businesses, this information can make every area of life, including business, more data driven, completer and more efficient.

Things are not really a new concept. We've been using sensors to collect scientific data for centuries. What's different now is the interconnection of all these devices, producing ever more granular data sets, all while that data is becoming more and more accessible, potentially to everyone. To put that data to work, we need to make sense of it. When massive amounts of data become accessible and understandable, the implications are enormous for civic life, personal health and business.

Until now, much attention and effort have gone in the development of business models for the provision of services in this data-driven ecosystem in the context of the IoT, sometimes referred to as the Internet of Services (IoS). These business models assume the existence and development of the necessary IoT measurement and control instruments, communications infrastructure, and easy access to the data collected and information generated by any party. However, not every business model may support opportunities that generate revenue or value or are suitable for different types of customers. Other business models should also be considered.

In this chapter, the authors investigate knowledge-based management practices, business models, new ventures and potential business opportunities for third-party data analysis services. The goal is to give a reasonable, qualitative evaluation, from theoretical and practical viewpoints, of knowledge-based management practices and business models, strategic implications and new business opportunities for American and European small and medium enterprises (SMEs) that use IoT and Big Data techniques to support their innovative performance.

A discussion of the infrastructure is outside the scope of this chapter. The authors assume that a significant time will be needed for deployment. Regulatory clarity and appropriate permissions in addition to possible privacy and national security issues must be addressed.

This chapter makes several important contributions to the literature. First, the chapter considers knowledge-based management practices, business models, new