

Preface

In many industrialized countries we have witnessed over recent decades the long-term decline in the percentage of employment in the manufacturing sector. We increasingly talk in terms of the “post industrialized” epoch. However, manufacturing in many respects is as important in industrialized nations as it has ever been. The need for products and services is increasing not decreasing. What is also happening is that due to increased efficiencies and automation, fewer people are producing more, than ever before. In addition of course new developing countries such as China, Brazil, and India are beginning to compete over a much wider range of competencies in manufacturing processes. China for example is no longer competing solely in the area of inexpensive products on the basis of low labour costs. Developing countries are now also competing for the design and manufacture of high quality products. The changes we are witnessing in the business environment, in society and life in general are making manufacturing more complex and are changing the basis of competition. Consequently, manufacturing is beginning to receive greater attention among politicians, businessmen, researchers, and the public in general in what Skinner once called a ‘competitive weapon’ for the growth and development of the economy through jobs creation and growth of economic output.

The basis for competition among industrialized economies for the continued growth of the manufacturing sector is changing and is shifting toward a strong focus on knowledge and in particular knowledge creation. Governments and politicians at different levels are beginning to engage in the enablement of innovations and continuous learning through educational systems, and skills development but also through various incentives to individuals and companies. We believe, however, that the manufacturing companies themselves have a key role to play and have the main responsibility for continuous innovation and knowledge creation that can make them more competitive in the global market place. One important reason for the focus on knowledge is that companies are becoming increasingly global in their outlook and how they manage their operations and that with new information and communications technology national borders are not the

same barriers as they were before. Knowledge and knowledge creation can and will become the new ‘competitive weapon’ for industrialized countries.

This book focuses on manufacturing companies and how they can deal with an increasingly complex and changing business environment. It takes a fresh view of manufacturing from a knowledge management perspective that is both imaginative and practical in its potential to create competitiveness for most manufacturing organizations. The first two parts of the book present global trends and issues that together represent opportunities and treats for manufacturing organizations. We show that the traditional governance struggles to deal with many of the challenges that are emerging. One example of a major threat is the global financial crisis and yet another is the global environmental crisis. Individual companies need to consider strategies that reduce risks and vulnerability associated with these issues and the dramatic changes they imply. Companies can also develop strategies that open up windows of opportunities, for example related to sustainable manufacturing. What is important here is that manufacturing companies are able to develop strategies that accurately capture the manufacturing context and then develop capabilities that make the company a winner in the continuously changing market place.

Developing capabilities and positioning of the manufacturing company are based on a focus on knowledge, and ability to innovate in key areas. When we talk about capabilities we are increasingly talking about people, people that carry knowledge, create knowledge and translate knowledge into innovation. This knowledge is to a large extent ‘tacit’ and we often need to find ways of transferring the knowledge and making it more explicit. We see that different kinds of knowledge, knowledge from different sources and contexts, often need to be merged to create basis for innovation and more continuous improvement in manufacturing. We discuss how knowledge is one of the main strategic issues for manufacturing companies. When companies make major strategic decisions such as outsourcing or off shoring, knowledge aspects must be dealt with in a structured and strategic way. Outsourcing decisions are extremely important for a company, the pros and cons often have a complex interaction. Adding the knowledge dimension to an outsourcing decision for example, can have the effect of transforming the decision. This book will enlighten some key aspects related to knowledge and its importance in decision making.

The book covers both general and global trends in manufacturing and key aspects of knowledge from the strategic down to the shop floor level. When necessary, we have used aggregated statistics for knowledge in countries and regions for topics such as competitiveness, innovation, education, and environment. But we also want to bring the knowledge dimension down to a more practical level and present examples, frameworks, methods, and templates that can be applied by managers in their own environments. The last part of the book presents a number of ‘cases’ that show how manufacturing companies in different industries and contexts face different challenges when it comes to knowledge. These ‘cases’ are based on real companies, real situations, and real strategies.

The book is divided into five parts. Although the parts have a focus on knowledge, they aim to emphasize different facets of knowledge in manufacturing:

Part I: This part gives an overview of the book, our approach and the key issues that we discuss. The different chapters within this part describe the trends in manufacturing and forces we have to deal with in developing manufacturing strategies. This part also introduces key issues and terms that will be further investigated in the book including sustainability, paradigms, types of knowledge, and so on.

Part II: In this part we also present statistics about how companies and regions are doing when it comes to competitiveness, education, environment, and a number of other indicators. Important government initiatives and projects are presented that can be of interest to a number of policy makers in different industrialized nations. Important research fields that set the direction for innovations and knowledge creation financed by governmental bodies are also presented.

Part III: Developing manufacturing strategy can be a difficult and complex activity. It entails continuous decision making, which will ultimately lead to implementation and positive change. In this part of the book strategic decisions are discussed that focus in particular on outsourcing decisions. The knowledge dimension of the strategic decisions on structure and infrastructure are outlined.

Part IV: Innovation and knowledge are closely related and in this part we investigate both innovation and innovation theories and knowledge, and especially the link between innovation and knowledge. This part also presents several methods and approaches to deal with innovation and knowledge creation. The challenges we meet in strategies attached to different manufacturing paradigms are also discussed.

Part V: The final part of the book, presents chapters that show how the different aspects of manufacturing, outsourcing, and knowledge can have strategic, but also practical implications for companies. A number of ‘cases’ based on real companies show how they have to deal with different challenges depending on their strategic contexts, strategic decisions, and so on.