Foreword Prof. Dr. Dres. h.c. Arnold Picot

Information technology has the potential to significantly enhance firm performance. However, firms differ heavily in their capability to leverage the full value of IT. These disparities may be a consequence of elements that strengthen IT's performance impact and that are not present in all firms.

The author of this book investigates combinations of IT, organizational structures, human resource management practices, and corporate strategies that are qualified to unlock IT's full potential for performance increases. The issue of complementarities between IT, organization, and strategy is both up to date and of fundamental importance as this concept supports general managers in designing the organization and technology required to implement the strategy they have set. After presenting a thoroughly developed theoretical model, the author provides large scale empirical analyses of two specific phenomena related to complementarities between IT, organization, and strategy.

Based on an extensive review of previous studies on factors that are complementary to IT, the author develops an overarching theoretical framework to guide empirical research on the role of complementarities in the relationship between IT and firm performance. The author highlights that IT has to be aligned with complements both inside the organization such as organizational structure and human resource management and with complements that determine the characteristics of the organization such as a firm's strategy, environment, and culture.

For his empirical research, the author sets up two unique datasets. He matches three fully unrelated datasets on IT, firm performance, and organization/strategy, because avoiding statistical bias from collecting all information from a single source is all important to draw reliable conclusions on complementarities. The data on organization and strategy were collected by two extensive telephone surveys which were specifically designed and conducted for this study.

The author adds a thorough empirical analysis to the centralization versus decentralization debate that takes place in the research on IT's organizational effects. Since information is a source of power and IT enhances information transfer and processing, researchers have recurrently asked if IT tends to be related to a shift of decision authority upward or downward the organizational hierarchy. The author's findings suggest a synthesis of both perspectives. Firms that focus on efficiency and

rationalization unlock IT's positive performance effects by combining it with centralized decision rights that ensure the minimization of slack resources and redundancies. In contrast, firms with a focus on innovation and differentiation benefit from combining IT with decentralization which enables autonomous employees to experiment with new ideas.

The author also contributes to another long standing debate: The question whether hybrid strategies which mix the contradicting efficiency and innovation orientations are beneficial or detrimental to a firm's performance. The author argues that hybrid strategies may be as beneficial as pure strategies if suitable means to solve organizational tensions are in place. He shows that both a combination of certain organizational structures and human resource management practices as well as a specific composition of IT types are suitable means to mitigate the conflicts that arise from mixing efficiency and innovation orientation.

Overall, this book is a remarkable contribution to the research on complementarities between IT, organization, and strategy on the frontier of the management and economics literature.

Prof. Dr. Dres. h.c. Arnold Picot

Foreword Prof. Dr. Tobias Kretschmer

The importance of information technology (IT) for households as well as businesses has grown significantly in the last decades. IT has changed the way firms conduct their business, it has opened up entirely new markets, distribution channels and business models. But even in "traditional" manufacturing firms, IT has had a tangible impact. Interestingly however, not all firms have benefitted equally from using IT, and earlier studies have found that firms that make IT work well with their organization to support their corporate strategy benefit the most. This is the starting point of Ferdinand Mahr's book, which sets out to shed further light on the interdependencies between IT, strategy and organizational structure, and succeeds brilliantly.

Ferdinand Mahr makes both a significant theoretical and an important empirical contribution with his book. Theoretically, he makes use of the theory of information processing to consider the impact of IT on firm success. Information processing theory views an organization as an entity that consists of elements or individuals that send, receive and process information both vertically and horizontally – that is, information can be used to give and receive orders or for coordination between hierarchically equal elements. IT has the potential to support both vertical and horizontal information flows, which gives an appealing theoretical proposition about the benefits of IT.

However, while it is undisputed that IT helps transmit and process information, uncovering the real effects of IT and potential complementarities between IT and other firm characteristics poses considerable empirical challenges. Not only is it necessary to gather information at the level of the technology rather than the amount invested – pure investment statistics would not possess the required level of detail to study interactions between IT and specific organizational factors – but even more importantly a competent and relevant study also calls for information on "intangibles" like organizational structure and strategy. Ferdinand Mahr tackles and solves these problems by using a highly sophisticated method of data gathering through semi structured telephone interviews. This method has the advantage of generating more detailed information than paper questionnaires, but at the same time is sufficiently structured to allow robust statistical analysis with large samples.

However, as with most applied research, the method is not helpful if it does not address questions practitioners actually ask, or if the results do not ring true to their potential users. Ferdinand Mahr's work does both – the vast number of IT consultants that align IT systems to strategy and organizational structure demonstrates that this is a problem

firms think about and for which they do not have simple, obvious answers. At the same time, Ferdinand Mahr's results also show that the role of IT as part of an organization is by no means trivial, and that one size fits all solutions can be ineffective at best, and value destroying at worst:

First, more IT is not always beneficial. Even general purpose technologies like personal computers cannot compensate a general misalignment between strategy and organizational structure. In other words, if the non technological elements of a firm are not aligned, throwing money at technology cannot help overcome this disadvantage. For managers, this implies that to make productive use of IT, firms have to make sure their other structural elements are aligned. In a sense, IT can work as an *amplifier* for the performance of already well aligned firms.

Second, the challenge of finding a balance between the exploitation of existing markets or strengths and the pursuit of new opportunities is made much easier with the support of IT. In fact, firms that attempt this delicate balancing act without IT that helps them collect, process and interpret the vast amount of different information typically perform worse than if they had focused on either new or existing markets only, while firms that make use of the opportunities presented by IT perform on par with focused firms. For managers in such firms this implies that novel, challenging strategies involving complex tradeoffs are only made possible through successful use of IT. Thus, IT acts as an *enabler* of such strategies.

Ferdinand Mahr dissects and analyzes these two roles of IT in a very thorough and original way. The blend of solid, exhaustive theory and state of the art empirics applied to unique data makes for a series of insightful studies on the complex effects of IT on performance. I am convinced that the questions, methods and insights contained in this book will inspire practitioners and researchers in their work.

Prof. Dr. Tobias Kretschmer