1. Introduction

Maureen McKelvey and Astrid Heidemann Lassen

1.1 INTRODUCTION

*How Entrepreneurs Do What They Do* presents 13 case studies of knowledge intensive entrepreneurship. The book focuses on what we call ‘doing’, meaning what happens when entrepreneurs are engaging practically in venture creation processes.

The case studies cover a broad range of different types of firms, in different sectors and distributed around the globe. The reason being that this type of entrepreneurship can be found in many sectors and countries. The cases range from low-tech industries like food, to design firms like advertising, through service firms like software, and also high-tech sectors like biotechnology and pharmaceuticals. The cases are grouped into the broad headings of ‘Transversal technologies, engineering and software’, ‘Lifestyle technologies’ and ‘Human health care and food’.

These cases as well as a companion conceptual book focus on knowledge intensive entrepreneurship, which is shortened to KIE. They describe and define KIE as a particular type of start-up venture and phenomena. Their business models and organizational forms are particularly dependent upon the intersection of different types of knowledge, including three types discussed in the cases. They include (1) the scientific, technological and creative knowledge, which helps produce novel ideas; (2) the market knowledge, which relates to an understanding of customers and potential markets and (3) the business knowledge, which is related to running the venture and firm. Given the level of novelty involved, the market often needs to be ‘created’ rather than already existing.

Entrepreneurship can refer to both the persons and the phenomena, so this book uses some consistent definitions. The individual person and team who start the venture are called entrepreneur and founder. We use the term ‘KIE venture’ for the company, business project or new
organizational form created in this way. The KIE venture may have significant linkages to the previous organizations where the founder worked, like universities or large existing companies. So to highlight these linkages, the ventures can be labelled as ‘academic spin-offs’ and ‘corporate spin-offs’ or they may be started by independent inventors and creative individuals.

Each case has been chosen to illustrate specific aspects in the different phases of a venture creation, and is related to the KIE model. This includes renewal through KIE ventures that are small companies. But some cases also follow the actions of larger organizations, usually firms, to develop new organizational forms and meeting points, in order to manage the challenges of innovation such as the need to access the Chinese market and information or the need to renew traditional industries like food.

All cases also demonstrate how and why the actual doing of this type of entrepreneurship rarely confirms to standard solutions or strict business planning. Instead, taken together, these 13 cases show that the phenomena of KIE are achieved through a series of decisions, which lead to the balancing of alternative logics between business planning and the emergence of unexpected opportunities.

Most chapters focus upon individuals and KIE ventures, but they also link to the broader context of the innovation system, such as networks, industrial dynamics and the role of universities or large firms in stimulating innovation. These ventures are highly linked to their ecosystem and external environment, especially for accessing resources and ideas but also understanding their potential users and market. Therefore, the chapters may also use the concept of KIE for this overall phenomenon of entrepreneurship. This captures these broader dynamics.

The next section presents our KIE model, including the key processes and variables involved in this particular type of entrepreneurship. The concluding section introduces each case study.

1.2 CASES STUDIES IN RELATION TO THE KIE CONCEPTUAL MODEL

Understanding the KIE model and phenomena should enable the reader to use them as a knowledge platform for learning about, engaging in and evaluating performance. The reader interested in the details of the KIE conceptual model is referred to Managing Knowledge Intensive Entrepreneurship (McKelvey and Lassen, 2013).
Figure 1.1 The KIE conceptual model
The KIE model is firstly useful to place the 13 case studies in context, in terms of phases and variables of this type of entrepreneurship.

Figure 1.1 provides a visualization to facilitate the discussions and details of the model and of the special characteristics and starting points of this type of entrepreneurship.

The first phase we consider in the conceptual framework of KIE addresses accessing resources and ideas: inputs to KIE ventures. Four related variables are included as particularly crucial: financing, characteristics of founder, sources and endowments and the influence of institutional forces.

The second phase concerns managing and developing the KIE venture. This phase refers to the processes of managing and developing KIE. This is largely an internal process, referring to the internal competences, resources and approaches affecting the management and growth of the new venture after initial formation. However, many of these variables require interaction with the external environment, but the combination of knowledge and internal and external processes and organizations is what results in the design of opportunities and their realization through business models.

The third and final overall phase is related to evaluating performance and outputs. This discussion focuses upon the different types of outcome generated through KIE, and more broadly, the effects of this output on economic growth and social well-being as well as how to measure performance and outputs.

Another way to summarize how the KIE conceptual model leads us to stress certain aspects in the case studies (Table 1.1).

Table 1.1 thus illustrates the topics and types of data that will be used to understand our case studies.

Of course, writing a case study is usually more complex than depicted in a model. The point of a conceptual model is to clarify the key descriptive variables and if possible, explain the relationships between variables over time. Writing a case study involves, in contrast, what is sometimes called ‘the messy empirical reality’. By that, we mean that one and the same case study may address multiple variables and phases, due to the complexity of these types of processes. Thus, another way of understanding the KIE conceptual model as found in Figure 1.1 and Table 1.1 is to understand how the KIE venture is involved in designing and the realization of innovative opportunities as a design process. By viewing KIE as a design process we are able to understand how the dynamic interactions between the variables outlined in the conceptual model are proactively approached and utilized by entrepreneurs, and that
Table 1.1 Key aspects found in case studies

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<th>Accessing resources and ideas</th>
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<th>Managing and developing the KIE venture</th>
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<td>Application of resources to growing the firm</td>
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<td>Decision-making and strategies</td>
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<td>Continuing to access resources and ideas</td>
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<td>External networks</td>
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<td>Internationalization and globalization</td>
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<th>Evaluating performance and outputs</th>
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<td>Sales, performance, employment</td>
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<td>Innovation in products, services and organizational forms</td>
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<td>Knowledge spillovers to other firms or to society</td>
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of internal capabilities and ideas with external opportunities and networks. That is the reality facing entrepreneurs. However, to make the cases useful and interesting, each chapter defines a set of questions and provides answers through the case studies. This approach allows each case study to focus upon somewhat different issues, which may cross several dimensions of the model per se.

1.3 STRUCTURE OF THE BOOK

The book is entitled *How Entrepreneurs Do What They Do* because the chapters represent real case studies, as the KIE ventures change and develop over a series of years. The case studies involve firms located in different places globally, and many also work across national boundaries.

1.3.1 How the Case Studies were Chosen and Written

Each chapter illustrates how processes within the KIE conceptual model presented above work in detail. The structure of each chapter also relates the case study to concepts. Each is easy to read, and written according to the same structure, involving four sections. Each chapter poses a few questions, found in the introduction. These questions are addressed throughout the case study descriptions, and also summarized, followed by questions for further development of the ideas.

In telling these stories, the phases in the model are intertwined but so are the types of knowledge valuable to the venture. It is not always easy to tell, either, where the scientific, technological or creative knowledge stops and where the market and business knowledge starts. Indeed, many case studies demonstrate that initially the KIE venture thought that the scientific and technology knowledge was useful in one area, only to find its market application in a different industry or product.

Organizational forms are somewhat varied. The chapters primarily address the founding of independent ventures, but some chapters deal with more than that, because industries and countries differ. Some chapters include large firms and industrial dynamics. The reason for including them is that industrial and national contexts differ, and some are more conducive to starting small companies than other contexts. Thus, while case studies are intended to illustrate more general dimensions of KIE phenomena, some of them refer to the importance of the industrial and national context (or innovation system) when directly relevant.
Therefore, due to the differential nature of innovative opportunities in different industries and countries, the book also includes cases where the large firms are working to innovate – usually through interactions with KIE ventures or universities or starting their own subsidiaries. In some industries, not so many new firms are started, but the processes of renewal may be similar in terms of starting up new organizational forms – albeit as subsidiaries of larger companies – and so certain parts of the KIE conceptual model are applicable.

Most of the KIE ventures studied are anonymous. Two cases that address the history of the evolution of the whole industry are not anonymous, due to the large amount of data gathered involving company names. That gave us reason to include the real names of these sets of firms. Our rationale for keeping the firm names anonymous are for other reasons, for example, to keep the reader focused upon the analysis of what is going on, and the main lessons learned, rather than to try to familiarize himself or herself with the specific company.

Three broad sectors have been used to group the case studies, namely ‘Transversal technologies, engineering and software’, ‘Lifestyle technologies’ and ‘Human health care and food’. The reason is to help demonstrate that there is a broad range of highly relevant sectors, and that these technologies may lead to further development of products or services in different, unexpected sectors.

1.3.2 Case Studies in Transversal Technologies, Engineering and Software

Transversal technologies, engineering and software refer to technologies that are useful across a range of applications or uses, and they also represent sectors in the economy. These technologies are often possible to adapt to different products and services. But at different levels of aggregation, they could be classified as high tech, low tech or medium tech. Economists looking at the industrial level would classify the firms into these three categories, depending upon the industrial average of sales invested into research and development (R&D). In these types of classifications, engineering industries are often classified as low or medium tech. Business economists, however, would look at the firms, and see that many of the firms could be classified as high tech, due to the fact that the firms use advanced technologies and hire highly educated employees. Thus, many of the cases in this book are dependent upon scientific and technological knowledge, even if economists would consider these industries as rather medium- to low-tech ones.
We find this discrepancy (or difference) in perspective, which arises due to the level of analysis, to be quite interesting and relevant to understanding KIE. It also has implications for which types of firms and industries to stimulate through public policy and to focus upon when starting a business. The reason is that using scientific and technological knowledge to renew industries and to develop new products and services can occur across the board. Indeed, one of the meanings of ‘transversal technologies’ is that they can be applied to many uses, which for the firm translates into many different categories of users, and of relevant products and services. This renewal through higher value services and products can occur through innovation in larger firms as well as through KIE ventures.

Renewing industrial leadership in this sense is often also related to new ways to innovate in large firms, but also to develop KIE ventures. The focus should be on moving from low value products and services to high value ones, and often by using scientific and engineering knowledge to renew the more traditional industries.

The five case studies of KIE ventures within Part I discuss technologies that may find many applications or uses. Several illustrate that a key issue for the KIE venture is to decide which users and markets could currently, or potentially, be relevant. These five cases also illustrate the interrelated nature of decision-making inside the firm with regard to developing markets, finding financing and developing the technologies in directions relevant to find new products and services.

Chapter 2 is entitled ‘How tensions between exploration and exploitation drive the development process of KIE: the case of Sensor Inc.’ and is written by Astrid Heidemann Lassen. This chapter explores how and why KIE ventures deal with the tensions and differing logics between technological knowledge, market knowledge and business knowledge. Sensor Inc. is initially heavily reliant upon specialist technological knowledge, and gradually moves into production and sales. This move requires changes in strategy, management practices, human resources and network collaborations, and financing sources alike. Such changes are experienced as tensions due to differences in focus, skills and priorities from both the founders of the venture, the human resources base of the venture and the external stakeholders. The key message of the chapter is that managing the KIE venture requires setting up organizational processes and management practices to allow the shifting foci. Moreover, an important driving force in the development of the venture includes these attempts to manage and address the tensions between exploitation and exploration.
The results of the chapter help us understand the interrelatedness of several of the variables illustrated in the KIE conceptual model (McKelvey and Lassen, 2013). The reason is that the case study illustrates how KIE is achieved through a series of decisions, which lead to the balancing of alternative logics between business planning and the emergence of unexpected opportunities. This supports the understanding of KIE as an iterative process of integration between variables affecting the founding of KIE ventures, variables affecting the management and growth of KIE ventures and variables measuring output of KIE in different dimensions.

Chapter 3 is entitled ‘Collaborative strategies: how and why academic spin-offs interact with engineering university centers’ and is written by Maureen McKelvey, Daniel Ljungberg, Olof Zaring, Jens Laage-Hellman and Stefan Szücs. This chapter follows the management and development of two KIE ventures that are academic spin-offs, in relation to collaborative strategies. The perspective is on how and why academic spin-offs continue to engage in collaborative strategies with engineering centers located at the university. The KIE ventures use the centers to access scientific and technological knowledge, as expected, but they are also interested in accessing other resources and networks to help further develop their research, product and market development. The key message is that networks with research centers at the university help shape the venture. Even after the founding phase, these KIE ventures can use collaborative strategies for research to access resources and ideas – involving scientific and technological knowledge but also market and business knowledge.

The results of the chapter help us understand in particular how the venture needs to continue to access resources and ideas, even during the management and development phase of the KIE conceptual model (McKelvey and Lassen, 2013). The KIE ventures are academic spin-offs, heavily involved in the development of technologies, and yet they greatly benefit from these university networks to access market knowledge from other established firms, and to access business knowledge through the recruitment of experienced managers.

Chapter 4 is entitled ‘Interaction as a strategy in knowledge intensive entrepreneurship: the case of an ERP software company’ and is written by Olof Zaring. This chapter illustrates how managing growth in an entrepreneurial enterprise is about balancing ups and downs, over time, which arise due to uncertainty in market conditions, technology and the supply of risk capital well beyond the initial founding of the venture. The case study follows a software company longitudinally over a 20-year period, and it demonstrates that growth of such a venture might well
follow a non-linear process that defies original planning efforts. Hence, business planning becomes secondary to flexibility within the management team. The key message of the chapter is that the successful management during expansion and consolidation in KIE ventures may be a prolonged process requiring financial as well as management stamina and flexibility, where a company develops products, expands its market reach and faces crisis.

The results of the chapter help us understand the dynamics of KIE illustrated in the KIE conceptual model (McKelvey and Lassen, 2013), especially the processes. These uncertainties in market conditions, technology and the supply of risk capital lead to different ways of trying to manage the venture. Even as the KIE venture grows and matures, it may be facing dynamic external conditions that place continuous demands for adaptability, renewal and change.

Chapter 5 is entitled ‘Managing international expansion in a KIE venture: going global in Alpha Composites’ and is written by Dmitrij Slepniov and Brian Vejrum Waehrens. The case describes an international expansion of a small high-tech company seeking to apply its knowledge resources globally, despite its lack of international operations experience and scarce managerial resources. By exploring the process of green-field production start-up in China, the case illustrates many of the considerations behind how to best exploit the international opportunities related to highly specialized technical knowledge. The key message of the case is that the actual internationalization process of KIE seems to unfold in different ways and for different reasons than those normally found in international business theory. Furthermore, the case study shows how KIE is not restricted to new ventures, but can also be a process of organizational change in larger companies, which reflects the continuous pursuit of innovative opportunities by established firms.

The results of the chapter are related to the development phase of the KIE conceptual model (McKelvey and Lassen, 2013), which argues that internationalization of KIE is often brought on by the search for new opportunities, access to new knowledge and access to new markets.

Chapter 6 is entitled ‘The nexus between technology, organizational and market development: the case of NanoSpace Inc.’ and is written by Astrid Heidemann Lassen. This chapter explores how KIE ventures develop under conditions of technological, market and organizational uncertainty and immaturity. The case follows the development and gradual growth of NanoSpace Inc. This KIE venture develops, produces and sells nano-satellites, which are a new product. This implies that they have to work simultaneously on the development of the technology, the identification and development of possible applications or products, and
the development of customers and ways to sell through market mechanisms. In particular, the market is immature and much uncertainty remains about possible applications and products. This is, on the one hand, a serious challenge in relation to growth, but, on the other hand, enables creative ways of collaborating in networks. The key message of the chapter is that network collaboration is imperative for KIE ventures, even one highly oriented towards technology, and these networks are built and utilized in a variety of manners.

The results of the chapter help us understand in particular the variables of the KIE conceptual model (McKelvey and Lassen, 2013), which address the development and growth phase of KIE. The case study shows how the business venture and the external ecosystem are dynamically related to one another in different ways and through different types of knowledge exploration and exploitation.

1.3.3 Case Studies in Lifestyle Technologies

Lifestyle technologies represent firms and industries involving technologies that are used in and help develop the modern society. In the digital society, many people invest in lifestyle and experiences, which are generally facilitated by information technology (IT) and telecommunications. Such contemporary technologies offer more flexible forms of social and economic activity, whereby the advanced nations begin exhibiting lifestyle-led and leisure-oriented development of the society. These sectors represent a growing part of many economies, largely because people are willing to change lifestyles, spend significant resources on hobbies, and this leads to shifts in consumer behaviour. Many of these aspects relate to societal well-being and lifestyle in the use of these technologies and ideas, although they may also represent significant segments of an economy.

The three cases in Part II represent fairly different types of sectors as related to lifestyle. In different ways, they demonstrate how endowments as well as access to resources and ideas impact not only the founding of one venture, but also the later development and management phases. In particular, all three chapters address how resources and ideas are transferred to other KIE ventures at a later stage, which leads to interesting observations about how and why KIE ventures affect the external environment, over time. In one case, the exit of a global large firm from a region opens up opportunities for new KIE ventures, while in another case, the exit of a KIE venture opens up opportunities for the individual founders to move to a global large firm. This suggests that interesting relationships exist between individuals, KIE ventures and large firms in
ways that impact the external environment and the propensity or likelihood for new KIE ventures to start.

Chapter 7 is entitled ‘Knowledge intensive entrepreneurship from firm exit in a high-tech cluster: the case of the wireless communications cluster in Aalborg, Denmark’ and is written by Christian Richter Østergaard and Eunkyung Park. This chapter explores how the existence of a cluster of firms with a specific knowledge base in a region affects future KIE in that region. The chapter addresses what happens to the regional knowledge base in the wake of declining cluster activity, specifically when large global firms leave the region due to global crisis. The case study takes its point of departure in the decline of a once highly successful wireless communication cluster in Northern Denmark. It demonstrates how the decline does not mean the end of wireless communication ventures in the region, but rather the decline may spur new types of KIE ventures.

The results of the chapter reflect on several points related to the output variables of the KIE conceptual model (McKelvey and Lassen, 2013). The results demonstrate that KIE outputs cannot be adequately measured only in terms of absolute amounts (for example, number of firms in a cluster). Instead, a more accurate measure of output could be assessed through analysis of the types of jobs created and through analysis of the knowledge diffusion into new areas. The knowledge that is the output of one stage of KIE may lead to an input, and renewed start up of KIE ventures in a later stage, and they may even be stimulated in other industrial sectors.

Chapter 8 is entitled ‘Entrepreneurial exploitation of creative destruction and the ambiguity of knowledge in the emerging field of digital advertising’ and is written by Oskar Broberg, Ann-Sofie Axelsson and Gustav Sjöblom. The case study addresses how KIE in service firms is affected by the fact that knowledge is an uncertain asset, and it explores how ambiguity often arises in terms of technology, business and market potentials alike. The case traces the professional history of two individuals from the early 1990s up until 2010, and demonstrates how they, through their actions and interactions during their careers, handle the elusive knowledge in order to create a successful KIE venture. They later move on to jobs in global large firms. The key message is that the different phases call for very diverging managerial skills from the entrepreneurs in order to manage the ambiguous knowledge at hand, and that this is highly affected by identity, image and social relations.

The results of the chapter are related to the development and management phase of the KIE conceptual model (McKelvey and Lassen, 2013), and how resources may be transferred between organizations, and in this
case, through individuals and their competencies. This chapter also illustrates how the KIE venture is continuously affected by the traits and personalities of the entrepreneurs, and their ability to translate ambiguous knowledge into tangible opportunities for the venture.

Chapter 9 is entitled ‘Knowledge reallocation and challenges for KIE: the case of the European roller coaster industry’ and is written by Bram Timmermans, Rudi Bekkers and Luca Bordoli. The case study discusses flows of knowledge within this industry, and especially how existing knowledge can be reallocated and applied in new situations. The mechanisms for doing so may be starting a new venture – either an independent one or one controlled by the parent company – or by a large firm diversifying its existing product portfolio through innovation. The focus is on the influence of pre-entry knowledge on the development of the European roller coaster industry. This chapter provides insights into different modes of entry as well as different characters of pre-entry knowledge. The key message of the chapter is that pre-entry knowledge functions both as a driver of industrial development and as a prerequisite for entry into the industry.

These findings also support the point in the KIE conceptual model (McKelvey and Lassen, 2013) that KIE is a dynamic phenomenon, which spans wider than the context in which the knowledge is originally developed. The results are similar to the results in the chapter by Østergaard and Park, although here the results are extended also into impacts on the large firms’ renewal through spin-offs and diversification.

1.3.4 Case Studies in Human Health Care and Food

Human health care and food represent sectors that seem both extremely localized regionally and nationally in terms of delivery of services, on the one hand. On the other hand, these industries are also ones in which there are very strong trends to organize the supply chains and innovation processes globally. They may also be very high tech and quite low tech simultaneously, depending upon where one looks in those supply chains and innovation processes. For example, biotechnology represents a very high-tech and science-based side of health care, whereas provision of basic health care to the poorer segment of the population is usually based upon routines and skilled care providers instead. Human health care and food are also sectors where a large percentage of individual and societal expenditures are made. However, there are problems with rising costs and rising demands for quality. Thus, these sectors also represent areas probably requiring much innovation in the future, in order to solve grand
societal challenges like ageing populations and environmental degradation. The old ways of doing things and old ways of organizing knowledge flows and the delivery of products and services will not be sufficient in the future.

The five case studies in Part III on health care and food reflect the diversity of these sectors globally. The chapters discuss a range of issues, relevant for understanding KIE ventures. One set of contributions is related to how cost and price affects innovations and KIE ventures. For example, the chapter on sequencing and bioinformatics in China shows how a KIE venture can reduce costs and still offer very valuable services and products. Another set of contributions has to do with the cost of doing basic science, and the alternative organizational forms and ways of financing further development that the KIE venture may pursue. A final set of contributions relates to networks. The networks are used initially, before the venture is started, but also in later phases of development and management. The networks may be strongly oriented towards scientific and technological knowledge, but many chapters find that a key role of networks is to develop market and business knowledge. Networks also link global large firms to KIE ventures and to universities in low-tech and traditional sectors like food and agriculture.

Chapter 10 is entitled ‘How cross-fertilization of high-tech and low-tech sectors creates innovative opportunities: the case of the wearable electrocardiogram’ and is written by Alexandra Rosa, Ricardo Mamede and Manuel Mira Godinho. The chapter describes a KIE venture operating in the new area of electronic textiles. The focus is on how the cross-fertilization of different types of knowledge and activity – including academic science, high-tech business and a mature industrial sector – contributes to the development and commercialization of this cross-boundary product. The key message of the chapter is that proximity between scientific and technical organizations with apparently unrelated industrial activities can foster innovation through the integration of their knowledge bases. In this case, it is the proximity and individual interactions between universities, technological centres and hospitals with textiles and clothing that stimulate cross-fertilization.

These findings demonstrate a point also raised in the KIE conceptual model (McKelvey and Lassen, 2013), namely that opportunities for KIE are generated in the combinations of different types of knowledge. The renewal of traditional industries is also very interesting in relation to our claim that KIE occurs throughout the economy. Here, academia has a significant role to play in the development of not only new knowledge, but also the integration of knowledge in commercial solutions in collaboration with firms for more mature industries.
Chapter 11 is entitled ‘Building of collaborative network relationships: the case of a corporate spin-off in the medical technology industry’ and is written by Jens Laage-Hellman. The chapter describes the founding and development of a corporate spin-off over a period of 20 years. This chapter highlights the importance of different types of collaborations and networks along all stages of the development and management of the venture. All opportunities pursued by the venture are shaped in the interaction with the external ecosystem, including interactions with the parent organization, the academic environment, suppliers and buyers. These longitudinal results form the key message of the chapter, which is that establishing and developing network relationships is a strategically important activity for KIE firms in order to achieve commercial success. The assessment of which network is most valuable may, though, shift over time.

In the KIE conceptual model (McKelvey and Lassen, 2013), the importance of networks is primarily discussed in relation to the development and management of the KIE venture. Networks are also related to accessing resources and ideas during inputs of course. As well illustrated through this chapter, networks also exercise strong influences on KIE in terms of generating and facilitating input, and are an important mechanism for the diffusion of knowledge.

Chapter 12 is entitled ‘Collaborative research in innovative food: an example of renewing a traditional low-tech sector’ is written by Maureen McKelvey, Daniel Ljungberg and Jens Laage-Hellman. This chapter focuses upon how collaborative research helps develop particularly scientific and technological knowledge for innovative foods. Innovative foods represent one way to develop higher value added products and services in a traditional, highly competitive one like the agriculture and food industries, with trends in recent decades including areas like ‘functional foods’, ‘intelligent foods’, ‘ecological/green products’ and ‘nutritionals’. Public policy initiatives for collaborative research between large firms, KIE ventures and universities were designed to stimulate the development of a series of related products, competencies, specific technologies, instruments and measuring techniques. The chapter discusses how primarily the larger firms later develop those ideas into market and business knowledge through new products and services.

In the KIE conceptual model (McKelvey and Lassen, 2013), the focus is largely upon the KIE venture and its relationship to the external environment, including access to resources and ideas. In this chapter, our attention is drawn to the reverse, and how the large firms in traditional industries can also access resources and ideas, for renewal and higher value products and services. In this case, they do so through collaborative
research, which involves large firms, public research institutes and universities, as well as occasionally a KIE venture. This chapter demonstrates the importance of renewing not just products or commercialization science but also finding value in other types of technologies, like instruments, measuring techniques to prove the validity of expected benefits and the like.

Chapter 13 is entitled ‘Financing and privatizing a visionary research endeavour in proteonomics: the case of ProSci in Australia’ and is written by Johan Brink and Maureen McKelvey. This chapter addresses the close linkages between how the firm can use public and private financing to act upon innovative opportunities as well as the complex linkages that founders but also venture capitalists exert upon the later phase of venture management and development. The case study follows an Australian university spin-off venture over a period of 16 years. It illustrates how that venture is continuously shaped and reshaped by the availability of opportunities to finance its research activities, leading it to change organizational form between a research group and a company. The shifting financial milieu not only affects the growth process of the KIE venture, but also shapes the development of knowledge strategies for KIE ventures as a whole. In particular, it affects their ability to finance their visions and the roles and relationship positions of the players in the industry. Over time, the firm and the university act both as competitors, customers and collaborators, due to the changes in financing possibilities. The key message of this chapter is that financing is not only a necessity for the KIE venture to develop, but also shapes the choices made and the opportunities pursued. Hence, the financing strategies have far-reaching consequences for KIE.

In the KIE conceptual model (McKelvey and Lassen, 2013), the importance of financing is discussed as an input variable to KIE, but the model also emphasizes that input is a necessity not only at the early stages of KIE founding, but must be considered at every turn of event. This chapter clearly demonstrates how financing has significant influence on which and how opportunities will be pursued, and the influences on choices of how to manage and develop the venture. This chapter discusses the sometimes complex relationships between investment and performance but also between public knowledge and private knowledge. The academic spin-off was initially a way to keep the research group together, and by the end, the KIE venture was disbanded and the senior researchers moved back to academia.

Chapter 14 is entitled ‘Business models in Big Data in China: opportunities through sequencing and bioinformatics’ is written by Yanmei Zhu and Maureen McKelvey. This chapter addresses how a KIE
venture in China develops its business model and acts upon new global opportunities related to the new technological opportunities afforded by sequencing and bioinformatics, as applied to human health care. What is particularly interesting is why the venture spends so much money to do basic research, and how the same venture moves from focusing on basic research to more private market terms to apply their research results into practical areas and then obtain profit to support their research. This case study is of a Chinese venture, which is outspokenly focused upon a business model organized around 'science and technology push' in areas of genetic sequencing and bioinformatics, although the firm is also affected by the dynamics of basic science and the market. Thus, there may be issues of being active in China, which may be the same or may differ from other parts of the world.

In the KIE conceptual model (McKelvey and Lassen, 2013), the focus is particularly on the KIE venture, but this chapter shows how the entrepreneurial decisions and actions can take different organizational forms, but still follow the same general pattern. In this case, the KIE venture shifts between different organizational forms over time, and this is partly due to demands placed by new opportunities both in scientific research and market prospect.

1.3.5 Further Developing the Ideas

In the final chapter ‘Further developing the ideas’, we pinpoint and summarize some of the numerous suggestions for further research that have been identified throughout the book. It is our hope that this will inspire the reader to continue his or her studies of the KIE phenomena. The suggestions for further reflections can be used as inspiration for class discussions, Master’s thesis projects or academic research projects.

REFERENCE
