1. Introduction

Among the economic macro trends that have marked the beginning of the new millennium, the opening of markets and economic globalization are the forces which have worked more than others to promote a radical rethink of the world’s economic, political and social relationships. As in the past some of the most important changes in the relations between economies have benefited from technological innovations, such as the art of navigation in the 16th century, the railways in the 19th century and the growth of air transportation in the 20th century, so too it is a shared opinion that the most recent globalization phenomena would not have been possible without the involvement of today’s pervasive, fast and low-cost digital electronic technologies.

The economic globalization and the diffusion of information technologies are mutually supporting phenomena which have contributed to an increased transparency in the global markets, a reduction in the uncertainty of transactions and information asymmetries, a higher speed in exchanges and an increase in the competition level in all economic sectors. Thanks to electronic and telecommunication technologies, the market today is more similar to the ‘perfect market’ described in treatises on the economy, compared to what it was at the end of last century. The reductions of companies’ and consumers’ costs are visible and have not yet been run. Similar to the information technology and communication sectors, the electronics industry is ubiquitous in the economic context because of the pervasiveness of its own applications, not only in manufacturing, through its support to automation and industry, but also in consumer fields, where everyday life is affected.

Electronic technologies have also contributed to the cultural and social changes which have led to the so-called ‘information society’, where the exchange and the processing of multimedia information contents take place in an ever cheaper, faster and geographically extended way. The information society is characterized by the spreading of information technology; changes are catalyzed by the diffusion of computers and new communication media, whose peculiarity is the ability to connect everyone, instantly, at low cost, at any time and everywhere. In this stage of development of global markets,
electronic technologies have fostered a kind of space–time compression, where both distance and time have been reduced to the point of transforming the world into a global village, full of economic interdependences never experienced so intensively by earlier generations.

The use of terms like e-commerce, e-business, e-mail and e-government or words containing the adjective ‘electronic’ (electronic control, electronic guide, electronic passport, electronic sheet, electronic ticket, electronic book) has become so widespread that they have entered the common vocabulary, showing how electronics is being applied to all sectors: from the car industry to telephony, from computer science to industry automation, from safety to biomedical life support systems. Sometimes, the word ‘electronic’ identifies objects with superior performances or even a certain degree of ‘intelligence’ (intelligent washing machines, intelligent traffic lights, intelligent devices, intelligent instrumentation), referring to the fact that the device has a seed of intellectual ability based on an operational decision-making logic and is thus somewhat self-governing. Unlike most technologies, electronics represents not only the expression of human intelligence, but it also simulates its behavior. The development of electronics technology involves not only an improvement in performance and efficiency in comparison with the past, it also means doing more and in an absolutely different way.

The relationship between the availability of electronic technologies, which are becoming increasingly powerful and pervasive, and market globalization is not unidirectional. Not only has been the opening of the markets initially fostered by new media, but the subsequent diffusion of electronic applications has been, in turn, supported by the availability of newly industrializing global markets. Through a mutual support mechanism, new electronic technologies have facilitated the globalization, which in turn has made available new low-cost manufacturing resources and new markets for electronics. Again, the increased competition has sustained the development of new technologies and widened the worldwide availability of communication tools.

The mutually supportive virtuous relationship does not yet seem to have come to an end. In particular, the wide and diversified development of the electronic industry applications would not have been possible without recourse to a strategy of globalization in the electronics industry. One of the most important elements has been the growth of electronics outsourcing, that is, the contracting out of electronic technologies and a world-based value chain.

A global strategy of outsourcing is one of the catalysts of the impressive growth in the electronics sector and in its applications. Businesses that rely on external companies for the electronic technologies crucial to their products include in their business model some competitive advantages in
structure flexibility: they do not need to invest in specific production plants, providing financial resources for materials and semi-finished products, nor maintain a workforce skilled in electronics. Electronic products are subject to a high-speed evolution, directed towards higher technological levels and growing constructive complexity, requiring production and organizational processes that are more and more sophisticated. Therefore, those companies that incorporate electronic technologies in their products encounter serious problems in maintaining adequate technological competence that is not inherent to their distinctive skills. Electronics outsourcing thus appears to be a natural solution and it has generated a new industrial domain whose dimension is so wide that it includes companies that are among the largest in the world in terms of turnover and number of employees.

Outsourcing is constantly evolving across different fields, industrial and service, and shows a trend towards the undertaking of complex activities and products with a higher level of intelligence. For instance, regarding the outsourcing of services related to information technology, if in the beginning they include standard and simple activities, such as the management of information systems or client profiling (Business Process Outsourcing), scholars now agree that more and more complex activities will be outsourced in the future, such as product profitability analyses and company merger studies (Knowledge Process Outsourcing).

In particular, the outsourcing of electronic technologies, both in activities with a high content of intelligence, such as design and engineering, and in processes for the construction of components and electronic systems, is increasingly looked at as a strategic solution for the improvement of companies’ competitive positioning, at the same time maintaining the flexibility required of enterprises in the new millennium. Considering the growing and pervasive presence of electronics in most industrial fields, it is not surprising that the trend related to outsourcing has led to the creation and development of a new sector, which includes companies that supply services for the design, engineering and production of electronic devices.

This book aims to provide a strategic interpretation of the global outsourcing phenomenon in relation to the internationalization of the electronics industry, covering the origin and the availability of the new technologies over recent decades, to the changes that have occurred in the competitive positioning of businesses. It is meant for those academics and scholars who observe and analyze patterns of global growth and the interactions of companies with the technological innovation. It is also intended for entrepreneurs and professionals who are involved in the enterprises’ decision-making processes aimed at outlining competitive strategies within globalization processes.
This book is comprised of three parts. Firstly, it starts with a description of the electronics industry, focusing on the related supply chain and on the relationship among the main players of economic transactions. It examines in depth the correlation between strategic paths and outsourcing processes, highlighting determinants and criticalities, considering above all the economic globalization phenomena which, starting from the last decade (the 2000s), have been redefining the relationship between the world economies. Therefore, special emphasis has been paid to global outsourcing and to the relations between Western countries and Asian economies, which are increasingly in charge of the manufacturing segment of the supply chain.

In the second part special attention is given to electronics outsourcing; the definition of the peculiarities of its value chain is carried out through an analysis of the electronics supply chain and through a description of the role of the individual actors, to which specific chapters of the book are dedicated. A detailed quantitative analysis of the economic-financial aspects assigns a dimension to the economic and strategic positioning of the companies operating in this field.

The dynamics of the growth of electronics outsourcing has strongly benefited over the last decade from the pervasive strategy of business aggregations between companies with different kinds of specialization. In the third part of the book we highlight the merger and acquisition (M&A) operations, their determinants and the subsequent criticalities. The facts represented here derive from a specific database that has collected all of the information related to operations in this sector over the last decade. The economic profile of the phenomenon as well as a consideration of strategic facts are explained in order to set some indications to define the paths of growth of the companies. The next chapter deals with business models and competitive scenarios, and it also defines the present position of this sector within the theory of the corporate life cycle. Despite the normal and expected slowdown of the growth of this sector after the start-up phase, there is a continuous trend of the economic system towards an increasing use of outsourcing, thanks to the non-stop rise of electronic components, in both industrial and consumer appliances, and to the technological innovation processes.

Discussion of sector trends and some hypotheses about the evolution of strategic models are described hereafter. The market ranges from mega-firms, which show a turnover of tens of billions of US dollars, to small companies with sales of not more than a few million dollars each. There is a need for strategic positioning to acquire clients who, due to their different size, sector, geographic area, intellectual property and organization, can benefit from a choice of levels of electronics outsourcing.
This book is structured on a quantitative basis and developed from a wide range of information and data. The aim is to build a useful scenario of one of the leading sectors of the world economy, the electronics industry, in relation to the global outsourcing strategic trends along a worldwide value chain. The considerations of business strategies, the evaluations of the growing paths and the macroeconomic analyses were therefore inspired from and found their starting point in empirical analysis.