

Sauro Longhi · Andrea Monteriù ·  
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Silvio Cardinali · Maria Serena Chiucchi ·  
Marco Gallegati *Editors*

# The First Outstanding 50 Years of “Università Politecnica delle Marche”

Research Achievements in Social Sciences  
and Humanities



UNIVERSITÀ  
POLITECNICA  
DELLE MARCHE

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# Foreword

Università Politecnica delle Marche (UNIVPM in short) celebrates its 50th anniversary as an institution in 2019. It is a young, dynamic, and active University on multiple fronts, which in the first half-century of its life has been able to achieve important goals in many scientific areas. Hence, the idea of proposing a book is for celebrating the first 50 years, “UNIVPM50”, and the natural choice is to divide the book into three thematic volumes: “Social Sciences and Humanities”, “Physical Sciences and Engineering”, and “Life Sciences”.

The contents of these three volumes document the research activities of our University, both fundamental, applied, and clinical. “The ability to think together and to produce research, through differentiated thought and culture collaboration, is the main reason for the existence of an academic structure”—from “L’Università di Ancona, 1969/1989”, a book celebrating the first 20 years of our University. The objective of “UNIVPM50” is therefore to present the most important research results achieved so far by our scientific community, with particular attention to the current frontiers of research and what future prospects might be. The contributions collected in the book summarize the main research efforts undertaken by the current faculty members and represent the outcome of a constant effort in the present, supported by past experiences, with the perspective to new emerging ideas in the three scientific areas in which UNIVPM plays a significant role.

The book, however, is not to be considered only as a collection of research works: the contributions also represent a sample of the knowledge which is daily taught in our classrooms and laboratories. Indeed, from the research, the University constantly draws inspiration for high-quality teaching and has the great responsibility of preparing young people for the world of professions. To train professionals, it is necessary that the link between academia and professional world is strong. The relationship with the territories is strengthened with actions to boost research and innovation, the so-called third mission, made up of technology transfer, patents, and entrepreneurship. These activities have led to the development of a contamination lab, followed by an incentive and promotion policy for university spin-offs that draw ideas from the best research results.

Founded 50 years ago as “University of the territory”, UNIVPM must now confront itself in a perspective as broad and international as possible. Our research was, and still is, inspired by the territories, with the aim of increasingly open to the world. Internationalization is therefore a key to the present and future development of our University: international research, active student/teacher mobility policies, and the start of international degree courses, even as double degrees, are all measures aimed at projecting the University into an international dimension.

In conclusion, “UNIVPM50” presents the main goals achieved in the first 50 years of story of our University, and imagine a future of which UNIVPM will, hopefully, be an integral part.

Ancona, Italy

Sauro Longhi  
Rector of the Università Politecnica delle Marche

# Preface

Università Politecnica delle Marche (UNIVPM in short) celebrates its 50th anniversary as an institution in 2019.

Historically, UNIVPM was first established in Ancona in 1969 as Faculty of Engineering, followed by the Faculty of Medicine the next year. In 1971, the university was granted the status of State University, with the name of “University of Ancona”. The Faculties of Engineering and Medicine were later merged with the Faculty of Economics and Commerce in 1982. Further on, in 1988 and in 1991, respectively, the Faculty of Agriculture and the Faculty of Sciences were established. In 2003, the name of the university was changed to “Università Politecnica delle Marche”.

Focusing on the present, the Faculty of Engineering is composed of four departments: “Construction, Civil Engineering and Architecture”, “Materials, Environmental Sciences and Urban Planning”, “Information Engineering” and “Industrial Engineering and Mathematical Science”. The Faculty of Medicine and Surgery has four departments: “Biomedical Science and Public Health”, “Experimental and Clinical Medicine”, “Molecular and Clinical Sciences” and “Odontostomatologic and Specialized Clinical Sciences”. The Faculty of Economics is composed of two departments: “Management” and “Economics and Social Sciences”. Finally, the Faculties of Agriculture and Sciences count a department each, “Agriculture, Food and Environmental Sciences” and “Life and Environmental Science”, respectively.

UNIVPM placed fifth in the 2018/2019 Censis Italian University Ranking among the medium-sized public universities. Being a “young university”, this must be considered as a good result. On the other hand, there is still a lot of work to do in order to position UNIVPM at higher levels of research, but thanks to our growing faculty’s expertise remarkable progress is being made each year.

This book is dedicated to the celebration of 50 years of UNIVPM and has been motivated by the desire to present the most representative research results of our scientific community achieved so far, with particular attention to the current frontiers of research and to what the future perspectives could be, in order to build a better society providing a dynamic road map for the future. The contributions

collected in the book summarize the main research efforts undertaken by current faculty members, from a vast range of researches. They represent the outcome of a constant effort in the present, supported by past experiences, with the perspective to new emerging ideas in the three major cores where UNIVPM plays a significant role, namely Life Sciences, Physical Sciences and Engineering and Social Sciences and Humanities.

In the present volume, the scientists working at the UNIVPM in the Social Sciences and Humanities branch describe the major results obtained in their research work and the expected future progresses.

The development and the success of the Faculty of Economics of UNIVPM are mainly due to Giorgio Fuà, who personally guided all the activities starting from the recruitment of the teaching staff. Over the years, the far-sighted recruitment policy adopted by Fuà brought in Ancona the best scholars in various disciplines. Giorgio Fuà was so relevant for the faculty that it was named after him in 2002.

The aspects that characterized the faculty and allowed it to stand out at the national level are closely linked both to Fuà's activities as an applied economist and to his research interests. Fuà's contribution was characterized by the will to interpret the process of Italian economic development and its territorial aspects from a historical perspective, the attention to the concrete problems of his time, the attempt to combine the political economy and the social reforms. These distinguished features were reflected in the contamination between scholars from different disciplines and in the creation of a strong link with the territory that led to the foundation in 1966 of the Institute for Economic and Social Studies Adriano Olivetti, later renamed ISTAO. Fuà was its founder, manager, factotum, president and financial promoter.

The strong openness to interdisciplinary skills, in contrast to the currently predominant thematic specialization, and the contribution to the economic and civil development of the society continue to be relevant aspects, and this is highlighted by the strategic projects funded by UNIVPM and the attention to activities related to relationships with the territory, the so-called Third Mission.

In line with this interdisciplinary approach, the present volume starts with a contribution by Chelli, Gregori, Marasca and Papi that highlights the main trends in teaching and research activities carried out at the Faculty of Economics from 1959 onwards in four main areas: Business Administration, Economics and Business Management, Economic Statistics and Economics.

Gallegati, Palestrini and Russo discuss the origin of the agent-based model's school in Ancona. Heterogeneity of economic individuals and their interactions mediated by networks were introduced in traditional economic modelling in order to analyse complex systems.

The contribution by Chiapparino, Ciuffetti and Giulianelli describes the main research topics in economic history at the Faculty of Economics "Giorgio Fuà". The original and innovative nature of these research activities contributed to the prominent position gained by University of Ancona in the recent Italian historiographic debate.



Along the same line, Ascoli, Carboni and Vicarelli explain how sociological studies developed in Ancona. Starting from the economic development, the range of topics widened rapidly by including public policies and the welfare state, healthcare professionalism and civil and social mobilization.

The experience of the Money and Finance Research Group is depicted by Alessandrini, Papi and Zazzaro along three main strands of research: the international and European monetary systems, the relationship between the banking structure and local development and the potential discriminatory effects of regulatory policies.

Sothe, Esposti and Coderoni describe the contributions of agricultural economists based at the Faculty of Economics of UNIVPM. Their focus was on the transformation of the primary sector in Italy and in the Marche region, with a critical perspective towards the prevalent model of development and the role played by the European Union in this context.

The active contribution to the debate on the transition from GDP to alternative measures of well-being is described by Chelli, Ciommi and Gallegati. In line with Fuà's thought, the construction of composite indicators, as well as the application of new statistical techniques, has been proposed to measure well-being at national, regional and local levels.

From the law side, Mantucci, Di Stasi, Torsello, Giuliani, Trucchia, Zarro, Zuccarino, Putti, Calamita and Califano present the research stream on arbitration taking into consideration the positive effects that the spread of arbitration would have on society, growth and competitiveness of Italian companies.

Productivity differentiation, international specialization patterns and the organizational model of firms and industrial districts are the topics discussed by Cucculelli, Lo Turco and Tamberi from the empirical micro-level perspective adopted by the scholars of the Ancona school of economics.

Ballestra, Brianzoni, Colucci, Guerrini, Pacelli and Radi contribute to the studies on quantitative methods in economic and finance bringing two different perspectives: from one side, they analyse the development of new theoretical models and new numerical and analytical methods for computing the default risk, for pricing financial derivatives and for conducting empirical tests to validate the models and, from the other side, they deal with nonlinear dynamic systems in both discrete and continuous time for studying important stylized facts in economics and finance.

Sustainability of real and financial markets is the topic of the paper presented by Manelli, Branciari, Montanini and D'Andrea. The authors contribute to the debate on the agricultural commodity prices, and they present a preliminary analysis on the impact of the financial derivative instruments.

The contribution of Chiacchi, Giuliani, Poli, Gatti, Montemari and Del Bene sheds light on the evolution of the financial and non-financial disclosure particularly focusing attention on the quality of the disclosure of intangible assets. The aim of the chapter is to try to understand the possible evolution of this field of research also by considering the recent introduction of the integrated reporting framework.

De Angelis, Fiordiponti, Giorgini, Lucarelli, Mazzoli and Perna present an interesting research on the impact of the information and communication technology in finance and law; Fintech and Big Data are changing the shapes of the financial industry, and the legal and economic questions deriving therefrom need to be answered.

Following the same vein, Pascucci, Temperini, Marinelli and Marcone describe how SMEs benefit from digitalization in facing the intense global competition, finding market opportunities and developing profitable relationships in business-to-business markets.

Ancona, Italy

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# 50 Years of Teaching and Research Trends at the Faculty of Economics of the Università Politecnica delle Marche



Francesco Maria Chelli, Gian Luca Gregori, Stefano Marasca and Luca Papi

**Abstract** This section aims to provide an overview of the research and teaching activities carried out at the Faculty of Economics of the Università Politecnica delle Marche over the last 50 years. In particular, its objective is to show the development of subjects taught and researched with regard to the four main areas of the Faculty: Business Administration, Economics and Business Management, Economic Statistics and Economics. Besides showing how the main areas of research and education have changed over time, this section also aims to stimulate reflections on the future of these areas, shedding light on new streams on which research activities could be focused. In doing so, this chapter combines the past, the present and the future of the Faculty of Economics of the Università Politecnica delle Marche and it shows how changes which have characterised the national and the international context over the last 50 years affected both the teaching and the research activities carried out by the Faculty and the contribution that the latter aims to provide over the next few years.

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# 1 Teaching and Research Trends in Economic Statistics

In our department, the field of economic statistics (SECS-S/03) has undergone considerable changes in the last 40 years. Originally, there were two main statistics courses: Statistics, as in methodological issues, and Economic Statistics, tied to matters dealing with statistical methodologies and models and the processing of data and indicators.

Today these two main categories have fragmented into nine different courses: Statistics 1 and 2 and Multivariate Statistics with R, which belong to Statistics, in its methodological meaning; Actuarial Statistics, Business Statistics (Italian & English courses), Economic Statistics, Statistics for Financial Markets and Statistics for Business Decisions, which belong to the category of Economic Statistics. This evolution also involves research carried out by the faculty, starting with contributions by professor Ornello Vitali in the 1970s.

The original formation of the Economic Statistics research group dates back to prof. Ornello Vitali, and in particular to his attendance in the program for economic development organized by the Social Science Research Council; coordination of the Italian group was attributed to Giorgio Fuà and general coordinators M. Abramovitz and S. Kuznets. Relevant contributions, the result of decades of study, are represented by the reconstruction of the active population based on a deep, annotated work. The results constitute the basis for the critical reconstruction and interpretation of the Italian economy's developmental process with reference to the service branch.

Relevant theoretical and empirical contributions have been made in the field of territorial statistics, which have led to a substantial growth of the discipline. They have also brought a radical change to studies with the introduction of discriminant analysis to identify rural and urban areas, going beyond the rural–urban dichotomy and considering the continuum for the first time, developing a new way of thinking that is still relevant (Merlini 1978; Vitali 1983). By studying several stochastic models, some relevant internal migration dynamics are gathering attention (Mattioli and Merlini 1983).

The field of research explored in the eighties and nineties relates to the functional distances through an initial work (Chelli et al. 1988a) that aims to delimit areas by using both functional and geographical areas and substitutes classical zoning algorithms using discriminant analysis. Another paper (Chelli et al. 1988b) analyses functional regions obtained by disaggregating the matrix of migration flows in the Province of Catania according to economic sector. It also illustrates a comparison of the four different regionalizations (agriculture, industry, commerce, and other activities) and a classification obtained following the areal typologies approach. Another work worthy of mention (Chelli et al. 1988c) describes the use of functional distances to delimit metropolitan regions. The results of the experiments are shown for the Strait area using the Brown–Holmes algorithm and an algorithm proposed by the authors. The latest results are more effective in cases where it is necessary to determine separate broad regions.

Finally, the last research in this area (Chelli et al. 1992) develops a first attempt at the joint analysis of urbanization that combines the two classical components of this kind of study: the identification of functional regions and areal typologies.

In 2000, attention was brought to price dynamics, with the estimation of consumer price indexes (Chelli and Mattioli 2007). In this work, consumer price indexes for the entire country and those for individual households are weighted arithmetic averages of relative prices, which differ essentially in terms of their weighting systems. Whereas the former use proportions of total expenditure on goods and services, the latter use proportions of expenditure by each household. In the usual calculation of the country-wide index, each household contributes to determining the national index with a weight proportional to its expenditure. In other words, households that spend more—that is, wealthier ones—are represented in the calculation of the national index with a greater weight, which explains why it is termed the plutocratic index. In contrast, in *democratic indexes*, the same weight is assigned to each household. This paper presents an initial estimation of democratic price indexes for Italy in the period 1995–2002. The results are extremely interesting in that they highlight significant differences between the two calculation methods. A distinction between *democratic* and *plutocratic prices* was shown in Chelli and Mattioli (2008). The paper presents a first estimation of the democratic price indexes for Italy in the period 1995–2002 and for Marche Region in the period 1995–2005. The two methods, *democratic* and *plutocratic*, for calculating the national index, which are based on different weighting systems, lead essentially to results, invariant with respect to the territorial definition and of the considered level of aggregation.

From prices, the attention shifts to expenditure in Italy (Chelli et al. 2009). This paper explores the determinants of heterogeneity in the expenditure behavior of Italian households, using the Households Expenditure Survey provided by the Italian National Institute of Statistics (ISTAT) for the year 2005. Authors assume that differences among consumers are associated with differences in their economic and socio-demographic characteristics (such as gender, employment status, and age of the householder, number of household components, presence of components under 18 years), and they look for those characteristics that better differentiate groups of households according to their purchasing patterns. They apply a *nonparametric discriminant analysis* based on the various expenditure budget components, and detect the most discriminating partitions of families. This technique also allows them to identify the specific consumer goods that differ significantly across the groups identified by the best partitions. They then study the different effects of price dynamics on subgroups of households, and propose consumer price indices specific for the optimal households groups. Another relevant work measures how consumption distribution was polarized among Italian families during the years 1997–2006 (Chelli et al. 2010). Since a polarization measurement requires a precise definition of groups, they consider the household partition that best explains the variability of households in their purchasing patterns. In particular, authors use a *discriminant analysis* technique to examine the determinants of the heterogeneous expenditure patterns of Italian households, using the Households Expenditure Survey provided by the Italian National Institute of Statistics.

Another field of research we have examined is index numbers (Mattioli and Lamonica 2010). This paper presents an empirical analysis of the response of several methods proposed in the literature to rank the alternatives, determine their weights, and perform accurate comparisons among economic phenomena. The various scaling methods are evaluated using real data provided by the Italian National Institute of Statistics (ISTAT). The most relevant results are the close agreement of the weights obtained with the various methods and the robustness of the evaluation.

Finally, economic statistics research in this period evolved to include *interregional input–output tables* (Mattioli and Lamonica 2012). The fundamental information used in input–output tables concerns the flows of products from each industrial sector, considered producers, to each of the sectors, both itself and others, considered consumers (Lamonica and Chelli 2018). This basic information from which an input–output model is developed is contained in an interindustry transactions table. The rows of such a table describe the distribution of a producer's output throughout the economy (Bonfiglio and Chelli 2008). The original Leontief model is set at the national level, and does not disaggregate transactions between and within subnational regions (Mattioli and Lamonica 2015a). Interest in the subnational economy has led to the introduction of a regional dimension in the input–output framework (Mattioli and Lamonica 2015b). The fundamental contribution provided by the group of economic statisticians in the analysis of interregional input–output tables is related to the performance of various non-survey techniques for constructing sub-territorial input–output tables and the empirical analysis of the world's economic structure, the degree of interaction between the economic systems of countries, and their evolution over time (Mattioli and Lamonica 2015c).

Some statistics and demographic contributions emerge from Lamonica and Zagaglia (2013). In this paper, authors studied the determinants of internal migration in Italy from 1995 to 2006. To conduct this investigation, they applied an augmented version of the gravity model to migratory flows of Italians and resident foreigners. In addition to the classic determinants of migration—i.e., population sizes and the distance between places—the model considers a possible autocorrelation of flows and a set of socioeconomic and demographic explanatory variables that may influence migratory flows. Different results were obtained for the two subpopulations. Among the Italians studied, both economic conditions and regional demographic features were found to operate as both push and pull determinants of migratory flows, although the demographic characteristics were shown to have affected migratory flows to a lesser extent. Among the resident foreigners studied, the demographic characteristics of the regions did not appear to have acted as push factors, but they were found to have an effect as a pull determinant. While the economic conditions of the destination regions were shown to have been particularly important in attracting the resident foreigners, the economic conditions of the sending regions were not found to have had a clear-cut effect on the decision to leave.

Very recently, our research has focused on new objectives that are still in line with Vitali's since they aim to solve practical social/financial/economic problems by investigating social/financial/economic behavior. This is done by inferring the behavior from its effects on financial and social dynamics. The idea of formulating



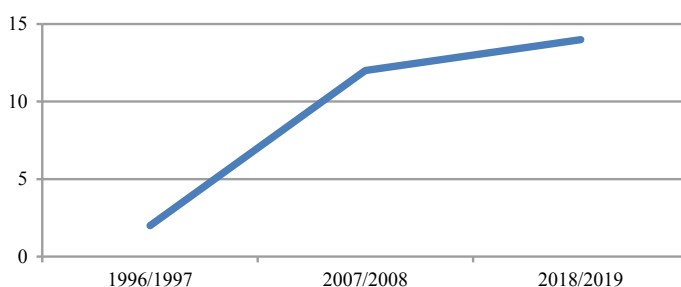
*behavioural* statistical models falls in line with Fuà's teachings, the agent-based school of thought developed in the Faculty of Economics in the last 10 years, as well recent lines of research concerning intangibles. Specifically, the main research lines focus on two main areas. The first is the analysis of welfare dynamics with specific attention to the definition of well-being and its measurement. This research has embraced a multidimensional perspective in the study of well-being, promoting and actively contributing to the debate on *beyond GDP*, with a focus on two key aspects: (i) The space dimension, by studying Italian well-being on the national (Chelli et al. 2016), regional (Chelli et al. 2018; Gigliarano et al. 2014), and local levels (Chelli et al. 2016; Ciommi et al. 2017a); and (ii) The time dimension, by proposing a measurement of well-being in the long (Chelli et al. 2018; Ciommi et al. 2017a) and short terms (Ciommi et al. 2017b).

The second line of research relates to the analysis of financial market dynamics by using behavioral models, that is, models with parameters capable of interpreting agents' beliefs. Panel data analysis is used to obtain time series of the estimated parameters, which are used to interpret the changes in investors' moods in terms of risk aversion and risk premium (Mariani et al. 2018) and to detect financial institutions' instabilities/strategies (Tedeschi et al. 2018; Recchioni et al. 2017a, b; Recchioni and Sun 2016).

## 2 Teaching and Research Trends in Economic and Business Management

During the last 50 years, our faculty has witnessed a considerable growth of Economics and Business Management (SECS-P/08) related teachings, both from a quantitative and qualitative perspective.

From a quantitative perspective, the numerical growth of teachings within the degree courses is clearly visible in Fig. 1. Until the late 90s there were solely two teachings related to our disciplinary grouping: *Tecnica Industriale e Commerciale* (literally, Industrial and Commercial Technique), dealing with topics related to all the



**Fig. 1** Evolution of SECS-P/08 related teachings

functional areas of the company (from production to marketing), as well as strategic and organizational problems; and *Tecnica del Commercio Internazionale* (literally, International Commerce Technique), dealing with international marketing topics.

During the following years, the university teaching programs broadened considerably, so to reach 14 Economics and Business Management related teachings in the academic year 2018/2019, three of which are in English. Among these, marketing teachings have accelerated in a significant way, also coherently with the national scenario and considering the evolution of skills required in the job market.

From a qualitative perspective, the growth in teachings' heterogeneity with increasing specialization levels is worth noting. Alongside specific teachings related to the *traditional* subjects focused on functional areas (e.g. Production and Logistic, Marketing, International Marketing, Sales Management, etc.), additional specialized subjects have been introduced, whereby lecturers have also prompted specific research paths (e.g. Internet and Marketing, Business Marketing), and teachings focused on specific types of companies (e.g. Economics and Business Management of Tourism Companies, Economics and Business Management of Trading Companies).<sup>1</sup>

The teachings evolution of the last years has mirrored the evolution of the research topics of the Economics and Business Management research group, with a focus on Marketing and Operations (Silvestrelli and Bellagamba 2017). Adopting mainly a qualitative methodology, based on in-depth case studies and personal interviews with managers, entrepreneurs and trade associations (Runfola et al. 2017), the studies have regarded different topics; however, *price* and *distribution channels* have been the two main investigated marketing mix elements. Some interesting contributions have deepened the relationships between industrial firms and commercial firms, with the aim of understanding the implications of the distribution system evolution on the marketing strategies of industrial firms (Gregori 1995) and on the sales management and organization (Perna et al. 2013). The growing strategic role of commercial firms in the economic landscape, as a consequence of the *commercial revolution* related to the coming of *mass consumption*, has transformed the relationships between industrial and commercial firms; a complex distribution network made up of manufacturers, wholesalers, retailers and transportation channel specialists, all of whom collectively enabled goods to flow to consumers, was established. Among these actors, complicated relationships developed, both competitive and collaborative. This revolution drastically changed established methods of marketing and distributing both goods and services. New retail and wholesale formats had a profound impact on the economy of the twentieth century and transformed the way that consumers purchased goods and services. More recently, the exponential rise of e-commerce, as a new electronic distribution channel, has further modified the structure of distribution system; this phenomenon provides a myriad of opportunities for conducting both theoretical and empirical future research, for example on the role of existing middlemen and the role

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<sup>1</sup>It is worth remembering that in the past, eminent scholars have taught in our faculty, such as Aldo Burresti, Gennaro Cuomo, Giorgio Eminente, Gaetano M. Golinelli, Sergio Silvestrelli and Riccardo Varaldo.

of new electronic intermediaries. In particular, small and medium-sized manufacturers could benefit from e-commerce in a significant way, expanding their geographical scope and establishing new and direct relationships with customers (Gregori et al. 2016). However, Small and Medium-sized Enterprises (SMEs) are lagging behind in e-commerce (and, more in general, in ICT) adoption (Pascucci et al. 2017). This is a serious issue, considering that SMEs represent the backbone of the European economy and they play a key role in national economies around the world. According to this, great attention was paid by the research group to studies concerning small and medium-sized firms; these studies have been often aimed to understand how SMEs could cope with the emergent challenges of globalization and, more recently, of digitalization (Pascucci and Temperini 2017).

It is worth noting that a significant part of the empirical researches carried out by the research group is focused on a specific industry, such as the furniture industry (Silvestrelli 1979), footwear industry (Gregori et al. 2012), wellbeing industry (Gregori and Cardinali 2015), coffee industry (Pascucci 2018; Giuli and Pascucci 2014), knitwear industry (Marcone 2013), integrated circuits industry (Marcone 2004), kitchen hoods industry (Bellagamba 2018). Particular attention was given to Made in Italy and to the problems of counterfeiting and Italian sounding (Gregori 2016). These studies have allowed deepening the knowledge of the dynamics and the relationships in specific contexts, taking in consideration that each industry shows the own strategic, operative, organisational characteristics.

A common trend among all these contexts is the relevance of inter-organisational relationships.

In the Marketing field the relationship and network perspectives have become increasingly important (Ferrero 1992; Hogan et al. 2002): the first one focuses on the supplier–customer relationship, which is a sustainable source of competitiveness and profitability (Gummeson 1997; Grönroos 2004; Perna et al. 2015); the second one focuses on inter-organizational relationships, network structures and network types (Möller 2013).

Relationship marketing first developed in the BtoB and service markets, however, following the digital revolution and Web 2.0 developments, which facilitate interactions between businesses and consumers and among consumers, now it can also be applied in BtoC markets (Pascucci 2013). From this standpoint, a close connection exists between the opportunities created by the digital and the relational perspective, typical of a marketing service-dominant logic (Vargo and Lusch 2004, 2008), rather than good-dominant. The use of new communication media (particularly social networks) offers companies the opportunity to intensify and deepen their interactions with customers, laying the groundwork for the development of medium and long term trust relationships, which can result in a real *customer engagement* (Youssef et al. 2018).

Therefore, from a thematic perspective, *relationships*, *knowledge* and *digital technologies* are the keywords inspiring the current marketing teachings' programs and marketing research, to emphasize the increasingly important role of intangible resources (intangibles) (Marchi and Marasca 2010) in the economy and in business management.

It is not surprising that the Department of Management has also grounded on these keywords to build the project *Dipartimenti di Eccellenza 2017* (literally, Outstanding Departments 2017), awarded by MIUR in 2018. The focus of the project on intangible resources arises from the tremendous changes resulting from the *digital revolution*, which is foreshadowing a new industrial era, also labelled as Fourth Industrial Revolution (Schwab 2015). The phenomenon *Industry 4.0* implies a radical reconfiguration of production and distribution processes, in both real and financial markets, making *immateriality* increasingly pervasive (Bellagamba et al. 2018; Arnaboldi et al. 2017). Finally, it should be noted that the trend towards increasingly data-driven marketing, fueled by big data from multiple and heterogeneous sources (Mandelli 2017), will impose in the near future to invest resources also in university teaching programs aimed at developing skills related to the management and the analysis of (quantitative and qualitative) data for corporate decision-making processes. Marketing analytics is an important skill for marketing students and it is urgent for schools to design marketing analytics courses in order to accommodate market demand for these new skills (Liu and Burns 2018). Since 2000 the integration of quantitative methods in marketing education textbooks and teaching practices has been a quite evident trend, which was facilitated by the availability of much more data thanks to the digital revolution (Ferrel et al. 2015). Big data is “the new capital in today hyper-competitive marketplace” (Mayer-Schönberg and Cukier 2013); however, many firms fail to exploit its benefits, because of the complexity in the process of converting Big Data in marketing insights first, and marketing decisions then: this is one of the most important challenges recognized by marketing executives (Leeflang et al. 2014). The main obstacle is the shortage of data scientists, as marketing departments in business schools have been slow to design curricula to generate such skills (Erevelles et al. 2016). As a consequence, this *digital talent gap* represents a big challenge also for business school, which should develop a strong focus on analytical skill and the use of data in marketing decision making (Liu and Burns 2018; Leeftang et al. 2014). These are transversal skills that require a systemic and integrated approach in the design of effective university teaching programs, where marketing (and more in general management) studies have to be integrated with Statistics, Economics and Management Accounting. The analytical and quantitative skills are not enough; they should be complemented with a strong background in business disciplines.

### 3 Teaching and Research Trends in Business Administration

Research and teaching activities carried out by the Department of Management in the field of Business Administration—*Economia Aziendale* (SECS-P/07)—over the last 50 years have evolved significantly. This development can be largely traced

back to changes in both the national and the international scenario at normative and competitive levels.

With regard to teaching, in the 1980s financial accounting was the object of the two main courses offered in Business Administration at the Università Politecnica delle Marche: *Ragioneria I*, which covered financial accounting, and *Ragioneria II*, which dealt with extraordinary corporate transactions.<sup>2</sup> Starting in the 90s, attention paid to these issues gradually increased, leading to seven courses being offered by the end of the decade and twelve by the end of 2000. Over the last ten years, the number of courses taught in this field has increased to fourteen and they are now offered both in Italian and in English. Nevertheless, what should be noted is that, in the wake of the evolution of Business Administration, there has also been a gradual growth in the variety of subjects offered over time.

With regard to research, in the early stages it predominantly concerned financial accounting. The lack of specific and complete regulations concerning financial statements made necessary an exploration of how company economic results, assets, credits and liabilities could be measured, evaluated, represented and communicated. This initial focus derived from the need to fill a practice gap that had been caused by the absence of laws aimed at regulating the main objectives of the financial statement and the way it should be prepared. Therefore, the contribution made by research and the academic debate was fundamental in this stage because of the abovementioned lack of laws for regulating a relatively new field.

It was through Law no. 216/74 that the abovementioned gap was partially filled also, and especially, thanks to the contributions of research carried out during the previous stage. The Law established the structure of the balance sheet and of the income statement. This attempt to introduce a set of rules aimed at standardizing the preparation of the financial statement also favored the rise of new research avenues which were linked to the auditing activities that Law no. 216/74 required in order to ascertain financial statement preparers' degree of compliance with what the Law itself established (Branciarri 2000).

Nevertheless, the introduction of Law no. 127/91, which transposed the IV and V Directive of the European Commission in Italy, essentially rewrote the laws which, up to that moment, had regulated the financial statement. Moreover, it was during this time period that the *Economia Aziendale* research group was established at the Università Politecnica delle Marche, thanks to the fundamental impetus provided by Prof. Luciano Marchi.

The establishment of a set of principles and rules and of a fixed and very detailed structure of the balance sheet and of the income statement led to a deep change in research interests (Marchi and Marasca 1994). Attention shifted to the evaluation processes that the new reform made necessary. In fact, they were no longer understood as a means to *mystify* reality but rather, as an unavoidable practice in a normative context in which legislators require preparers to evaluate in a discretionary way some

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<sup>2</sup>It should be underlined that some of the foremost Business Administration scholars, like Vittorio Coda, Antonio Tessitore and Isabella Marchini, taught at the Faculty of Economics of the Università Politecnica delle Marche.

of the most relevant items represented in the financial statement (Marasca 1999). In the meantime, a stream of research was also devoted to the analysis that the new financial statement allowed, namely of the set of indicators and information that can and should be communicated to internal and, in particular, to external stakeholders. This research interest stemmed from the perception that a trade-off was gradually emerging between the quantity of information requested by financial analysts and other external stakeholders, and its actual quality and relevance.

It should be argued that this stage of the evolution of legislation on the financial statement opened up important avenues of research in which the Department of Management was deeply involved. One of these was focused on the analysis of the financial statement and of its disclosure function to external stakeholders in different contexts, like that of financial intermediaries (Branciarì 2003), of small enterprises (Branciarì 2011) or of company groups (Marchi et al. 2010). Another significant research path concerned the adoption of national and international accounting standards and, in particular, their effects on the comparability of financial statements (Branciarì and Poli 2009).

The shift in the research activity in the Department of Management from one predominantly focused on financial accounting to a new stage is in part also attributable to the widespread international diffusion of studies carried out by Harvard Business School scholars. In particular, the seminal work by Robert Anthony “Planning and control systems: A framework for analysis”, published in 1965 and translated into Italian in 1967, shifted the attention of a large number of scholars from financial to managerial accounting, e.g. management accounting. This should be understood as something more than a mere change of research interests. Rather, it was the consequence of adopting a different way of understanding and interpreting companies and the function that accounting systems can play within them. Starting from the work by Anthony, performance was no longer understood only in a unitary way, namely at the company level. It began to be considered, instead, as the consequence of the analytical contribution given by every organizational unit within the company. According to this view, performance measurement should entail the adoption of indicators aimed to provide both an overall picture of the company performance and a detailed picture of the results achieved by each organizational unit. In addition to this, to ensure the use of information for decision-making purposes, the accounting system had to move from the provision of extremely accurate information based on the results achieved to the production of timely and forward-looking information. In other words, from a management accounting perspective, the internal use of information provided by the accounting systems started to gain relevance since management accounting systems were, and still are, primarily seen as systems aimed to support managerial decision-making processes rather than external stakeholder’s evaluation processes.

Contributions in the field of management accounting have covered a wide range of topics. Particular attention was paid to the analysis of the design as well as the functioning of management accounting systems in specific contexts, like that of small and Medium Sized Enterprises (SMEs) (Branciarì 1996; Marasca 1993) or that of trading companies (Marasca 1989). Moreover, research has also been directed to