

Discursive analysis and pragmatic metadiscourse in four sub-areas of Economics research articles

Concepción Hernández Guerra and Juan M. Hernández Guerra

Universidad de Las Palmas de Gran Canaria (Spain)

chernandez@dfm.ulpgc.es & jhernandez@dmc.ulpgc.es

Abstract

English for Specific Purposes (ESP) and English for Academic Purposes (EAP) are two disciplines whose importance has been growing lately. This is due to the ever-increasing interest in the language that describes the most recent developments in varying disciplines and the need to communicate in and understand that language. One of the means for the spreading of those new developments in the different technologies is through research articles in specialised journals. These impose certain rules that must be fulfilled by all researchers who want to see their papers published. Much literature has been written about this, covering most linguistic areas (see, for instance, Bazerman, 1988; Bhatia, 1993; Dudley-Evans, 1994; Fortanet, 2002). Many articles contrast different genres but rarely distinguish different sub-areas within a genre (Bridgman & Carlson, 1984; Malcolm, 1987; Hyland, 1988; Neff Van Aertselaer, 2006). In the present case, we will consider texts within the discipline of Economics. The aim of this paper is to show a structural, grammatical and metatextual analysis of ten articles recently published in very prestigious specialised publications, covering the most important areas of study in Economics. We conclude by making a contrastive rhetorical analysis of the four sub-genres analysed here. These are: Applied Economy, Quantitative Economy, Financial Economy, and Management and Business.

Key words: metadiscourse, genre, rhetoric, economics, discourse analysis.

Resumen

Análisis discursivo y metadiscursivo pragmático de cuatro sub-áreas de Economía en artículos de investigación

Este artículo se inscribe en una línea de trabajo cuya importancia ha ido en

aumento en los últimos años. Se trata del Inglés para Fines Específicos y del Inglés para Fines Académicos, disciplinas que han experimentado un desarrollo considerable debido al interés que despierta la lengua inglesa como vehículo de difusión de los nuevos avances científico-técnicos, y a la consideración actual de esta lengua como herramienta de comunicación común. Desde esta perspectiva, es bien sabido que uno de los mecanismos esenciales para la difusión de los nuevos avances científico-técnicos son los artículos de investigación publicados en revistas especializadas, que son las que establecen las normas que deben ser aceptadas por los investigadores que deseen publicar en ellas. A este respecto, disponemos de numerosos artículos: unos contienen un estudio contrastivo de diferentes géneros con el objetivo de precisar sus rasgos definitorios (véase, por ejemplo, Bazerman, 1988; Bhatia, 1993; Dudley-Evans, 1994; Fortanet, 2002); pero muy pocos ahondan en los distintos subgéneros en que puede manifestarse un género en particular (Bridgman & Carlson, 1984; Malcolm, 1987; Hyland, 1988; Neff Van Aertselaer, 2006). Con tales planteamientos, este trabajo desarrolla un análisis estructural, gramatical y metatextual de un corpus de textos constituido por diez artículos aparecidos recientemente en prestigiosas publicaciones especializadas en Economía y, particularmente, en las ramas siguientes: Economía Aplicada, Economía Cuantitativa, Economía Financiera, y Gestión y Administración Empresarial. Concluye esta investigación con un estudio retórico contrastivo de las cuatro ramas objeto de análisis.

Palabras clave: metadiscurso, género, retórica, economía, análisis del discurso.

Introduction

The need for communication through different means in order to explain the advances in a specific technical area has meant that linguistic disciplines such as English for Specific Purposes (ESP) and English for Academic Purposes (EAP) are increasingly important to researchers specialized in fields other than linguistics. For this reason the literature of these disciplines has been quite prolific recently. We can mention Bazerman's (1988) historical approach, Swales' (1990) work on academic discourse, or Bhatia's (1993) study on business, legal and academic genres as three well-known examples of literature published on these matters. Also noteworthy are Hyland's (1998) paper, basing his study on four different disciplines from a metatextual viewpoint, and Valero-Garcés' (1996) interesting paper on Economics texts written in English by native and non-native speakers. Research has not been so prolific when dealing with the same genre and its

different sub-areas. We consider it important, as the identification of those differences can mean successful publication and a wider knowledge of the specific conventions required. For this reason this paper will focus on ten articles from four different sub-areas on Economics to analyse their structural, grammatical and rhetorical conventions. The first two will serve us as an introduction to the most important one, the rhetorical convention, as the functional perspective is considered the most useful in this type of text. To do this, we must briefly refer to some relevant background notions: genre, rhetoric and metadiscourse.

“Genre” is a term related to the description of language use in academic or professional settings. Texts are no longer considered as merely a matter of form and content, nor genre as simply the form into which the content is put. Nowadays when we identify a text we make assumptions not only about its form but also about its purposes, its subject matter, its writer and its intended reader. So, according to Devitt (1993: 575), “genre entails purposes, participants, and themes, so understanding genre entails understanding a rhetorical and semiotic situation and a social context.” For this reason, research papers can be said to constitute a genre within the scientific world with different conventions across different disciplines.

“Rhetoric”, in the framework used here, is understood as persuasive discourse; that is, the strategies writers use not only to convince readers of their claims but also to increase the credibility of their research. In this way, the analysis for the reasons of changes in expressions belongs to rhetoric. Genre and rhetoric can be seen as two different dimensions, the latter being conditioned by the former (Valero-Garcés, 1996).

Lastly, Hyland (1998: 437) defines “metadiscourse” as follows:

Based on a view of writing as a social and communicative engagement between writer and reader, metadiscourse focuses our attention on the ways writers project themselves into their work to signal their communicative intentions. It is a central pragmatic construct which allows us to see how writers seek to influence readers’ understandings of both the text and their attitude towards its content and the audience.

Taking into account that “discourse” refers to “language use in institutional, professional or more general social contexts” (Bhatia, 2004: 3), “metadiscourse” can be considered as the original application of those norms. It is more personal than genre and rhetoric. Metadiscourse can make the text more friendly and considerate but, on the other hand, as it can be

realized through all kinds of linguistic units (from affixes to whole sentences), it is quite impossible to classify them solely according to linguistic criteria. In other words, it is relatively easy to accept the concept of metadiscourse but more difficult to establish its limits (Swales, 1990).

For all that has been said above we may understand that some features of scientific discourse are determined by the genre the text belongs to, whereas others are influenced by the writer's own style. We shall analyze both features in the different types of texts to conclude which should be considered as common when writing for a research paper within particular Economics sub-areas.

Materials

We have selected ten research articles on Economics with a high impact factors of the official database within the studies of social sciences (Social Science Citation Index, SSCI in ISI Web of Science and Condit) and that cover four of the largest areas in Economics research: Applied Economy, Quantitative Economy, Financial Economy, and Management and Business (for a full list of titles, see Appendix). Following the JEL (*Journal of Economic Literature*) classification that divides the different areas from A to Z it could be stated that our articles cover the theory of Economics (corresponding to the letter A in the classification), Mathematical and Quantitative Methods (C), Financial Economy (G) and Business Administration and Business Economy, Marketing and Accounting (M). Generally speaking, Quantitative Economy bases its research on mathematical methods in Economics while Applied Economy looks at the application of theory and methods in economic practice. In other words, Applied Economy analyses and interprets reality and looks for policy implications of the results. Business Economy deals with different problem-solution matters in businesses and Financial and Management with business administration.

These ten articles have been fully detailed in the appendix and can be classified as follows: three articles (i.e., those by Nickell, Siciliani, and Hoxby) are found in Applied Economy, published in two reviews placed in the top 20 of the whole Economics area in the SSCI, with impact indexes over 1.5; two papers (i.e., those by Kim, and Bianchi) are in the Quantitative Economy area, in journals with medium and high impact index, or located in the searcher Condit; two (i.e., those by Nowlis, and Andersen) in the Business

area, published in leading journals; and three (i.e., those by Frooman, Brigo, and Singh) in Management and Financial Economy, also with a high impact index in their field.

Textual Features and Grammatical Pattern

Textual features

Textual features are the characteristics that mark a genre and include the layout, the organization, and so on. Such formal features are the physical markings of a genre, its traces, and hence may be quite revealing regarding genres even though they comply with the form, not with the content. Our comments will be based on an analysis of Tables 1 and 2, which have been developed after a comprehensive reading of the papers selected, focusing on the different items stated.

Table 1 provides the general facts of the articles, that is, the skeleton of the paper. As we can see, the number of pages varies between 30 (Hoxby, paper 4, Applied Ec.) and 7 (Siciliani, paper 3, Applied Ec.) but the average is 20. Normally the maximum number of pages is established by the publishers' guidelines so it is not a matter of personal decision or habit. The number of authors also varies from one to three, prevailing single authorships. The abstract may be between 5 and 13 lines long but the average length is 9 lines. Again, this is imposed by the publication. Not all of them have keywords after the abstracts. In just half of the articles reviewed 3 to 6 words appear. As we can see, differences between sub-areas are not significant. In this sort of publications, introductions are quite rich regarding content. They are not very strict in the moves –by “moves” we mean the different aspects the author deals with in the different sections (Swales, 1990). In this way, Table 1 shows a summary of these different moves used in the introduction and conclusion sections. It is easily predictable that the introduction will describe the background and summary of the purpose of the paper but the variation of moves in this section is quite surprising. Five different moves can be found (as in paper 5, Nowlis, Business Area), that include: problem to solve, objective of the paper, state of the art, hypothesis and results. Other moves named in different articles can be the contribution (in five of ten papers), the structure of the paper (in four of them), the usefulness of the study (in two samples) and the background (in five). The most common move is the

objective of the paper but, interestingly enough, it is not named in the introduction of all the papers, as would be expected, but in seven, all of them belonging to Applied and Business.

Applied Economy			
Authors' name	2. Nickell	3. Siciliani	4. Hoxby
No. of pages	27	7	30
No. of authors	3	1	1
Lines in abstract	5	11	8
Key words incl.	No	3	No
Items in introduction	Problem to solve <i>Objective of paper</i> Hypothesis Structure of paper	Context <i>Objective of paper</i> Contribution Structure of paper	Context <i>Objective of paper</i> Utility of paper Justification of methodology (no section title)
Items in conclusions	Work done <i>Results</i>	Work done <i>Results</i> Policy implications New empirical evidences	<i>Results</i> Implications
Acknowledgements	Yes	Yes	Yes
References	Yes	Yes	Yes
Appendices	Yes	No	No
Bibliography	No	No	No
Quantitative Economy			
Authors' name	1. Kim		10. Bianchi
No. of pages	20		24
No. of authors	1		1
Lines in abstract	8		12
Key words incl.	6		No
Items in introduction	<i>Problem to solve</i> <i>Contribution</i> Utility of study Structure of paper		Background <i>Problem to solve</i> <i>Contribution</i>
Items in conclusions	Problem to solve Work done Utility of paper Analysis of results <i>Future extensions</i> Limitations		Contribution Opinion based in experience <i>Future research</i>
Acknowledgements	Yes		No
References	Yes		Yes
Appendices	Yes		No
Bibliography	No		Yes

Business Area			
Authors' name	5. Nowlis		6. Andersen
No. of pages	9		18
No. of authors	3		1
Lines in abstract	9		13 (sections)
Key words incl.	No		5
Items in introduction	Problem to solve <i>Objective of paper</i> Brief state of the art Hypothesis Results (no section title)		(Discussion) Work done Testing the hypothesis (work extended) Contribution <i>Future research</i>
Items in conclusions	Background <i>Objective of Paper</i> Characteristics of the paper (strengthness) Structure of paper		Consequences and no consequences of the work <i>Future research</i>
Acknowledgements	No		No
References	Yes		Yes
Appendices	No		No
Bibliography	No		No

Management & Financial			
Authors' name	7. Frooman	8. Brigo	9. Singh
No. of pages	14	14	12
No. of authors	1	2	2
Lines in abstract	8	10	7
Key words incl.	No	5	6
Items in introduction	<i>Background</i> Aim of the paper Objective of the paper (no section title)	Propose of the paper Contribution <i>Background</i>	<i>Background</i> Definitions Contribution
Items in conclusions	Summary of results Utility of theory Contribution	Work done Future research	Work done Opinion New description of results General conclusion
Acknowledgements	Yes	No	No
References	Yes	Yes	Yes
Appendices	No	No	No
Bibliography	Yes	No	Yes

Table 1. Textual features across sub-areas in Economics.
(Italics correspond to the same title used by the author)

The second most frequent move is the contribution and background, named in five (Quantitative and Management). It is remarkable that no move is repeated in all the papers studied. There is quite a wide degree of freedom in this regard. In the conclusions section of Applied Economy results and conclusions are not clearly defined. In Quantitative Economy the contribution/usefulness of the paper is named, which is quite striking, as this is a theoretical discipline; and future research is just expressed in Quantitative Economy and Business.

In Table Two the different moves in the remainder of the sections are described. The articles we are dealing with are not homogeneous in

structure. The standard structure of the research article in English, that is, Abstract – Introduction – Method – Results – Discussion/Conclusion (IMRD) is not completely fulfilled in social science papers. A first view indicates that the number of sections is not constant except in Business. Although not following the IMRD model strictly, it is Singh (paper 9, Management) who most closely follows it.

Applied Economy			
Authors' name	2. Nickell	3. Siciliani	4. Hoxby
Section 1	Description of data/reality	Description of the model Empirical evidence Theoretical analysis of the model	Importance of the study
Section 2	Model-empirical economic strategy	Policy implications and Conclusions	Previous theoretical insight of the problem
Section 3	Analysis of results		Description of the model
Section 4	Summary and Conclusions		Problem identification
Section 5			Analysis of possible alternative measures
Section 6			Propose of a measure Goodness of measure
Section 7			Extended description of the model
Section 8			Description of data sources
Section 9			Description and analysis of results
Section 10			Conclusions
Quantitative Economy			
Authors' name	1. Kim	10. Bianchi	
Section 1	Description of model	Extended problem to be solved Literature review	
Section 2	Numerical experiments Simulations of the model	Description of the propose theory	
Section 3		Extended argument of the theory	
Section 4		Extended argument of the theory Example	
Section 5		Shorter argument of the theory	
Section 6		Conclusions and further research	

Business Area			
Authors' name	5. Nowlis	6. Andersen	
Section 1	Prior research (state of the art) Objective of the paper Hypothesis (extension) Structure of the rest of the paper	Description of the theoretical model	
Section 2	Method 1 Result 1 Analysis of results	Hypothesis Testing hypothesis with real examples	
Section 3	Method 2 Result 2 Analysis of results	Hypothesis Testing hypothesis with reasoning and real examples	
Section 4	Method 3 Result 3 Analysis of results	New points of discussion	
Section 5	<i>General discussion</i>		
Management and Financial			
Authors' name	7. Frooman	8. Brigo	9. Singh
Section 1	Brief state of the art <i>Contributions</i>	Previous knowledge to the model, with background	Literature review around main argument
Section 2	State of the art Aim of the paper	Description of the model Calibration Numerical simulation	Literature review around main argument
Section 3	Hypothesis Description of what follows Example to be used	Artificial example of application	Literature review around main argument
Section 4	Description of theory Literature references around theory No example	<i>Conclusions and further research</i>	Description of method
Section 5	Structure of the argument- theory Example		Description of results
Section 6	Follow the argument to build the theory Example		Description of results
Section 7	Conclusion of theory References description Example		Interpret ate the results according previous theory
Section 8	Four propositions, consequence of theory Discussion around empirical validation		Conclusions
Section 9	Conclusions		

Table 2. Textual features across sub-areas in Economics.
(Italics correspond to the same title used by the author)

As we can see, Business and Management is the sub-area that dedicates longer sections to the explanation of their research (8 or 9 sections), while the other three sub-areas have fewer chapters (with the exception, of course,

of Hoxby, who has written 10 sections). Traditionally, technical areas are not usually very extensive in their literature, and Management and Financial, dealing with problems in businesses, could be considered to be half way between pure technical areas and more literary ones. But it is also true that the same could be said of Business Area, which in our sample conforms to the pattern IRMD. Business area, on the one hand, and Management and Financial, on the other, express the method, results and analysis of results in the same section, having applied different methods or theories. This is different to the case of Applied Economy and Quantitative Economy, which base their research on an experiment.

Grammatical pattern

There has been much literature explaining all the aspects that must be taken into account when writing an academic paper (Weissberg & Buker, 1990; Swales & Feak, 1994; Day, 1995; Fortanet, 2002; among others). All of them give advice about the need to write plain English and be as accurate and clear as possible. Day (1995), for instance, is quite general but offers interesting clues for writing plain English from a semantic and syntactic point of view. He recommends the avoidance of the passive voice as the active voice is more direct and always less wordy although it does not mean that on some occasions it is better to use the passive voice. With reference to tenses, it is admitted that present and past tenses are the most frequently used. The future tense might be used in pointing to the need for further experimentation, for example, and only rarely should one use the so-called “perfect” tenses.

Next, we shall consider how grammatical features are presented in our corpus. To do this we shall analyse the frequency in use of tenses, passive voice, modal verbs and first person. We consider them to be the most important aspects to deal with in the grammatical analysis of a text, as they are basic when writing any scientific paper due to their frequency and the importance in the meaning and purpose of the work.

Table 3 shows that the coincidence in the tense used in the abstracts is quite remarkable. Only in one case (paper 9, Singh, Management & Financial) is the simple past used but, curiously enough, at an even higher frequency than the simple present. This is due to the fact that this abstract makes a comment on a survey. In Business and Applied Economy papers something striking happens. The only tense used is the simple present, and the former category is limited in other grammatical tenses, mood or voice; but in Applied

Economy, the simple present in passive voice is also used on five occasions. As we can see in Table 3 they combine both voices, and this means it is richer in the combination of different elements.

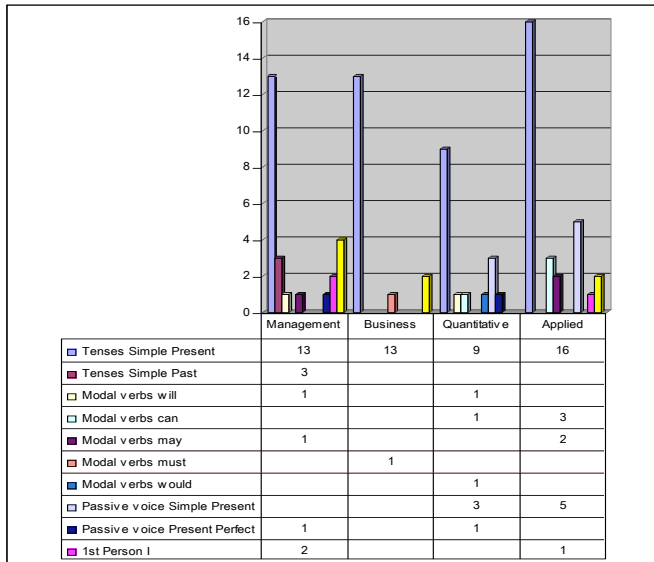


Table 3. Grammatical pattern in abstracts.

With reference to modal verbs, something different happens. The use of modal verbs in abstracts is very rare as abstracts must express what the paper will be about and modal verbs generally encode meanings connected with degrees of certainty and degrees of necessity. That is, it seems somewhat contradictory to express a summary of the research done in a less than categorical way. But, as Carter states (2006), modals are used to say whether something is real or true, or whether it is the subject of speculation rather than definite knowledge.

About the passive voice, Tarone et al. (1981) concluded in a paper that investigated the use of the active and passive forms in astrophysics journal articles that within the conventions of the genre studied it was the writer's communicative purpose that governs choice at the grammatical and lexical levels. This can probably be also applied to the discipline we are studying. The use of the passive voice in abstracts is very odd, and we can find several examples in which not one instance appears, although Applied Economy is an exception, as we said above.

The use of the first person singular in abstracts is almost non-existent even though the abstract is the summary of the intention of the author when writing the paper. This may be the case because, as Parkinson and Adendorff (2004: 381) state, "propositions made impersonal by removal of people (often achieved by passivisation and nominalization) give the impression of objectivity".

The frequency of use of present tenses in the introduction and following sections is also remarkable (see Tables 4 to 7). Distinguishing every sub-category in the introduction, Quantitative Economy also makes use of tenses other than the simple present. This is due to the explanation they offer of the problem to solve. To do this they use the simple past even though present is more frequent (17 to 4 in paper 1; 18 to 7 in paper 10). Kim (paper 1, Quantitative Ec.) explains "Moreover, the effects of uncertainty on optimal policy formulation has not yet received much attention in the CGE modelling literature" (page 98) but, for instance, Siciliani (paper 3, Applied E.) writes in the Introduction "Long waiting times and waiting lists remain issues of major concern in several national health services" (page 17) as Applied Economy starts from a current problem and not from previous research.

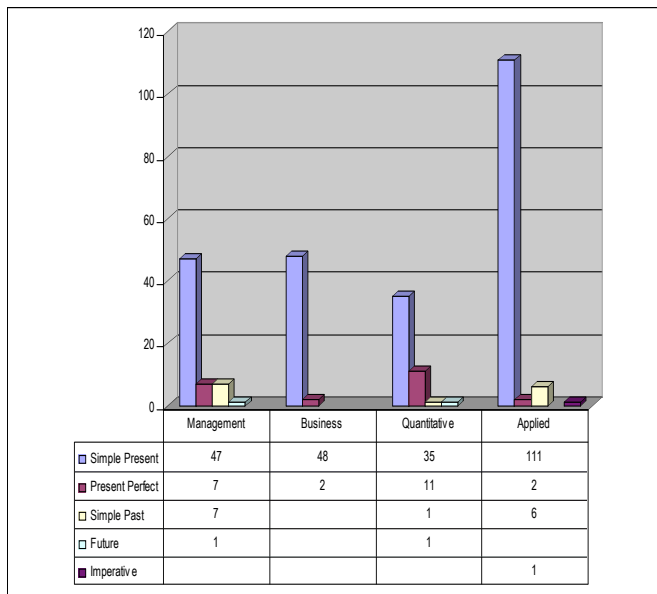


Table 4. Tenses in Introductions.

In the description and results sections, Management is the richest sub-area in the use of tenses, as they use ten different tenses in these sections. The other disciplines focus mainly on the simple present as this expresses a description performed at “a time around now”, or the more general, permanent time relating to truths and general facts (Carter, 2006: 410). This is the most widely used tense in research papers.

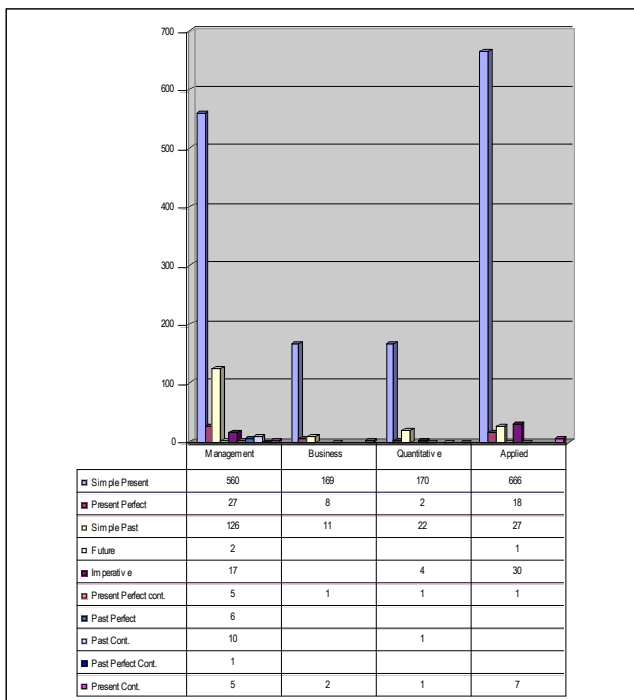


Table 5. Tenses in Descriptions.

In the conclusions section, as shown in Table 7, the use is quite balanced although the use of the simple present is noticeable. In Business papers, they appear almost in the same number as the simple past. This is due to the fact that they include a summary of the research done. For instance in Nowlis (paper 5) we can read “Our studies found that when the first factor...” (page 509); or in Houman (paper 6), “Malone *et al.* expected that...” (page 161).

Finally, Management is the sub-area that employs more varied tenses in mid-sections. In every paper we found five different tenses in every section; that is, simple present, simple past, past perfect, past continuous and past perfect continuous.

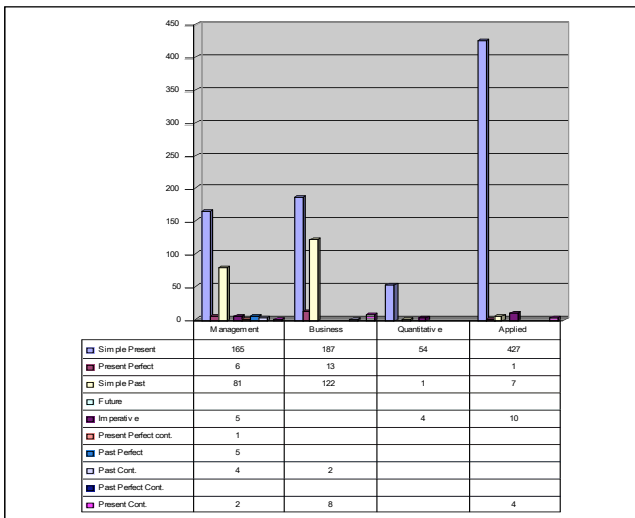


Table 6. Tenses in Results.

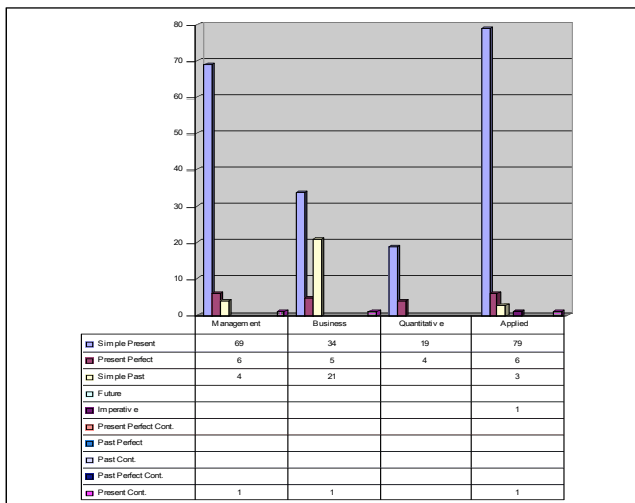


Table 7. Tenses in Conclusions.

Now, let's turn to Tables 8 to 11. The use of modal verbs in introduction and conclusions sections is not so frequent as in mid- sections but this is due to the difference in length rather than to other causes. As we have already said, this grammatical aspect must be considered of great importance by researchers in their publications because of its extensive use in the explanations of the development of the research done.

Modal verbs, except for the sections named above, are quite varied. In fact, a minimum of four different modals are used in every section. In some of them, there are up to eight, while the differences between sub-areas are very slight. Foreign researchers should be aware of the importance of their use in these papers. To give an example, Brigo (paper 8, Management) uses eight different modal verbs in the section “Model”, employing them 33 times in 7 pages. Even though it could seem to reflect a lack of clarity in trying to avoid general truths, what it really reflects is more elaborated structures, where every modal expresses a subtle difference in the meaning of the proposal.

It is also remarkable the use of modal verbs in the Descriptions section. Not surprisingly, the modals “can”, “will” and “may” are the most widely used but, as we can see in Table 9, no less than eight different modals are named. By contrast, in Table 10 we can check that not only the number of modals is lesser but also the number of times used. Exception to this is the use of the modal “can” in Business, appearing 21 times in the Descriptions section and 27 times in the Results section. The case of Business is interesting if we compare it with the other sub-areas. Also, if we add the times used as a whole we shall see that Management uses the different modals 135 times in the Descriptions section (Table 9) and 79 times in the Results section (Table 10); Quantitative Economy uses a modal 82 times in the Descriptions section and 18 in the Results section; Applied Economy 136 to 31 but only Business doesn’t follow this pattern: it uses the modals 82 times in Descriptions and 91 times in Results even though the modal “must” is not used in the Results section. It must be stated that the modal “must” hardly appears in the different sub-areas studied. The case of the modal “may” is also striking as it is much more used in Descriptions than in Results except for Business again that can be read twenty times more in the Results section (29) than in the Descriptions section (9).

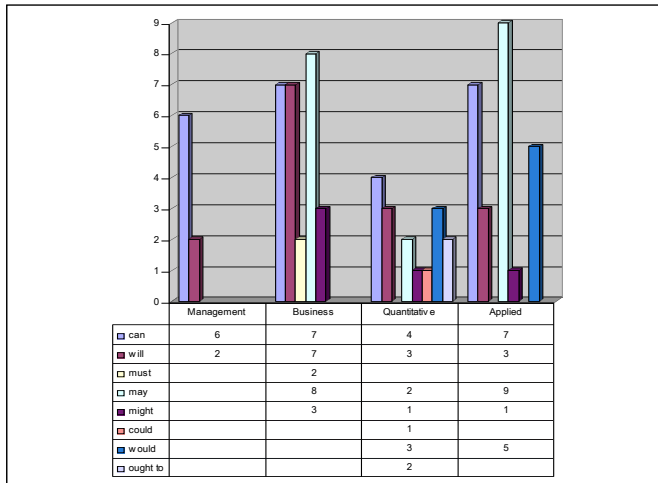


Table 8. Modal verbs in Introductions.

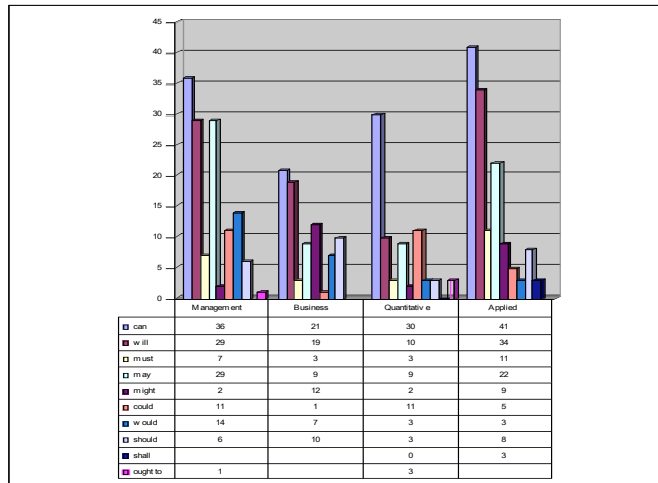


Table 9. Modal verbs in Descriptions.

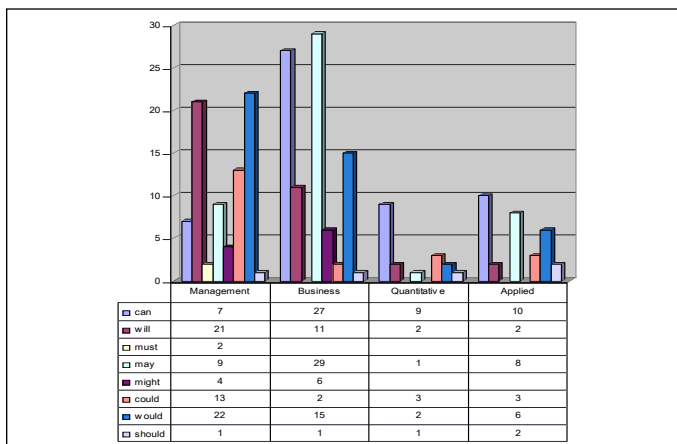


Table 10. Modal verbs in Results.

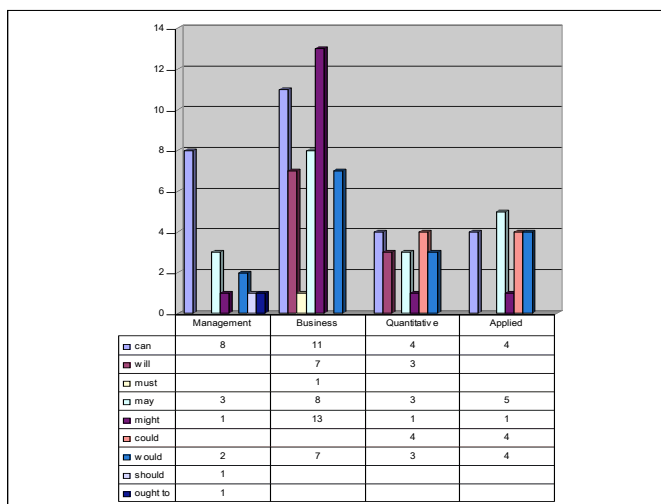


Table 11. Modal verbs in Conclusions.

Tables 12 to 15 comprise the use of the passive voice and the first person. Contrary to what happened with modal verbs, passive voice is mostly used in the present tense but in a very low number. This is due to the fact that complex tenses could mean a troublesome proposition and the main objective of every researcher must be to express the research as clear as possible, not only in the conclusions but in the development of the

investigation. Curiously enough, something similar happens in the next sections where the few examples that we can find are in the present tense. In section five and in the conclusions of Applied Quantitative and Business there are some more examples but they cannot be considered meaningful.

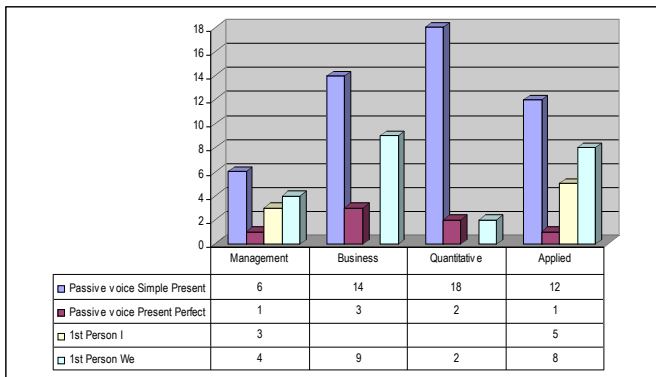


Table 12. Passive voice and first person in Introductions.

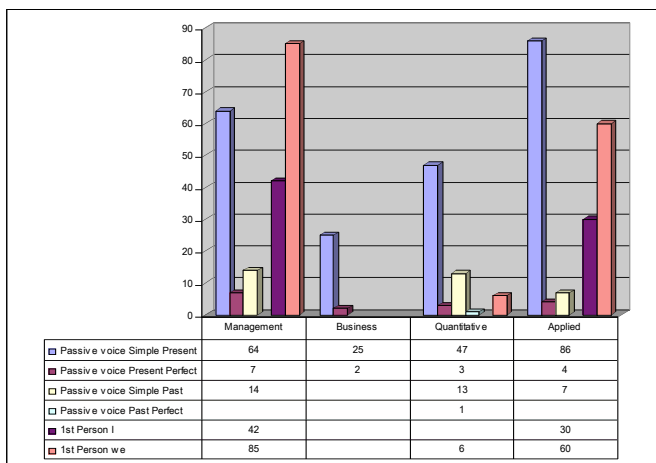


Table 13. Passive voice and first person in Descriptions.

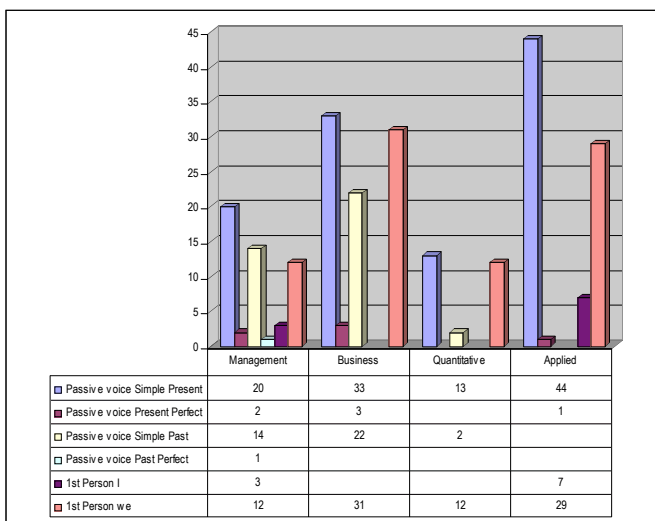


Table 14. Passive voice and first Person in Results.

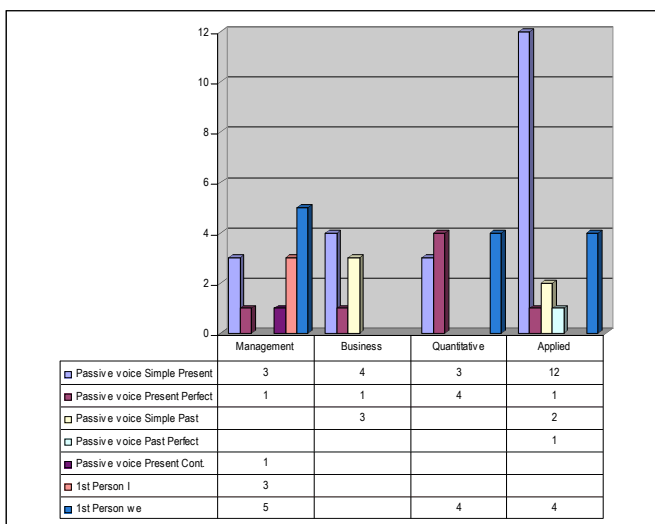


Table 15. Passive voice and first person in Conclusions.

With reference to the use of the first person, singular and plural, in these texts what is remarkable is the irregular use of this form in Business papers as there are sections, like descriptions and conclusions, where no examples can be found. Added to this, authors only use the pronoun “we”. This characteristic can also be traced in Quantitative Economy texts but in the

other disciplines both are combined (although “we” is more frequent than “I”).

It must be stated that the use of the personal pronoun “we” in paper number four (Applied Ec.) is used in a very general way, so as not to indicate that the subject is the research team but people in general. We can quote “My goals are to shed light on the system we have and to demonstrate general properties of school choice that are helpful for thinking about reforms” (Hoxby, 2000: 1209).

Rhetorical Elements

Several metadiscourse taxonomies have been proposed in the literature so as to classify metatextual elements according to their form, meaning, or function. Salager-Meyer (1994), for instance, offered a research based on hedges in medical English written discourse with didactic purposes. A preceding important research was carried out by Myers (1989). To “help understand the interactions between writers and readers in written texts” (Myers, 1989: 3), he distinguishes between positive politeness and negative politeness. The first one is based on the strategic use of pronouns to stress solidarity, of modifiers assuming common ground, of emotional responses to indicate solidarity, and other devices as joking and giving gifts. On the other hand, negative politeness is expressed through hedging, impersonal constructions and the assertion of general rules. As we can see, both scholars focus their research on the attitude of the writer mixing the elements from different grammatical categories that they consider relevant to fulfil their purpose.

We shall base our study of rhetorical features on Vande Kopple’s (1985) functional classification, which at the same time is based on Halliday’s (1985) macro functions of language. He distinguishes seven different categories, arranged in two main functions (textual function and interpersonal function). Crismore and Farnsworth (1990) adapted this classification and later offered a new one in which they included interactive elements (tactical and lexical metadiscourse). In a third stage Hyland (1998: 442) adapted this last proposal “to accommodate the meanings expressed in academic articles. These modifications also helped to more clearly identify rhetorical functions by eliminating formal categories and minimising functional overlap”. He offers the schema depicted in Table 16. We have adopted Hyland’s (1998) classification with the adaptations made to Crismore and Farnsworth (1990),

as we consider it splits the strictly metadiscursive elements from the pure grammatical ones and better fits within the structure of this paper. The main difference between both categories is that while textual metadiscourse refers to “devices which allow the recovery of the writer’s intention by explicitly establishing preferred interpretation of propositional meanings” (Hyland, 1998: 442), interpersonal metadiscourse alerts readers to “the author’s perspective towards both the propositional information and the readers themselves, thus contributing to a writer-reader relationship and anticipating the subjective negatibility of statements” (Hyland, 1998: 443). Therefore, textual metadiscourse connects sentences in a meaningful way, enabling the writer to emphasize what needs to be made explicit to the academic audience. In turn, interpersonal metadiscourse expresses a personal attitude and a degree of reader involvement.

Category	Function	Examples
Textual metadiscourse		
Logical connectives	express semantic relation between main clauses	in addition /but/ therefore/
Frame markers	explicitly refer to discourse acts or text stages	finally/ to repeat/ we try
Endophoric markers	refer to information in other parts of the text	noted/ above/ below / see
Evidentials	refer to source of information from other texts	according to X/ Y, 1990
Code glosses	help readers grasp meanings of ideational material	namely/ e.g. / such as
Interpersonal metadiscourse		
Hedges	withhold writer’s full commitment to statements	might/ perhaps/ about
Emphatics	emphasize force or writer’s certainty in message	in fact/ definitely/ obvious
Attitude markers	express writer’s attitude to propositional content	surprisingly/ I agree
Relational markers	explicitly refer to or build relationship with reader	frankly/ note that/
Person markers	explicit reference to author(s)	I/ we/ my/ mine/ our

Table 16. Functions of metadiscourse in academic texts (Hyland, 1998).

But, before applying this classification into our corpus, a previous analysis will be described following Valero-Garcés’ (1996) proposal in which the number of sentences, the number of paragraphs and their length, plus the approximate number of words are stated to have an idea of how much of the text is a metatext.

	Applied Economy	Quantitative Economy	Business	Management
No. of pages	57	33	24	35
Sentences	980	460	539	826
Total words	21622	9708	13448	18381
Paragraphs	186	129	104	184
Metatextual words	728 = 3.36%	404 = 4.16%	534 = 3.97%	877 = 4.77%

Table 17. Number of examples with the percentage per sub-area.

If we divide the total number of words by the number of sentences from Table 17, the result will show that the number of words per sentence is almost constant: 22.6 in Applied Economy; 21.1 in Quantitative Economy; 24.9 in Business, and 22.2 in Management, which reveals that no one makes use of a bigger number of complex sentences than others. If we apply the same mathematical operation in the other items of this table we can check that Applied Economy uses 5.2 sentences in every paragraph but only 3.2 paragraphs per page; that is, they are more keen on longer paragraphs than the rest. In the other end we find Management, that prefers 5.2 paragraphs per page and 4.4 sentences in every paragraph; that is, shorter paragraphs. This information is detailed in Table 17a:

	Applied Economy	Quantitative Economy	Business	Management
Words per sentence	22.06	21.1	24.9	22.2
Sentences per page	17.1	13.9	22.4	23.6
Sentences per paragraph	5.2	3.5	5.1	4.4
Paragraphs per page	3.2	3.9	4.3	5.2

Table 17a. Average of instances per sub-area.

If we consider the percentage of metatextual words employed in every discipline (Table 17) we can see that Management makes a wider use (4.77%), while Applied Economy shows a narrower use (3.36%) and, as shown in Table 18, the four different sub-areas use the interpersonal metadiscourse elements more often than the textual ones. If we sum up all the different metadiscourse elements of every type (textual and interpersonal) we shall see that Business shows a narrower difference in the use of one type or the other (41% of textual examples to 51% of interpersonal examples) while

Quantitative Economy shows a wider difference (30% to 70%). This probably reflects the common aspect in all of them as being part of the social sciences. They are characterized by not fulfilling the conventions when writing a paper so strictly as the experimental research (Fortanet, 2002).

	Textual Metadiscourse					Interpersonal Metadiscourse				
	Log.	Fra.	End.	Evi.	Cod.	Hed.	Emp.	Att.	Rel.	Per.
A	76 =	78 =	30 =	23 =	52 =	232 =	4 =	35 =	35 =	163 =
E	10.43%	10.71%	4.12%	3.15%	7.14%	31.8%	0.54%	4.80%	4.80%	22.3%
Q	30 =	24 =	33 =	14 =	20 =	190 =	5 =	-	6 =	82 =
E	7.42%	5.94%	8.16%	3.46%	4.95%	47%	1.23%		1.48%	20.2%
B	76 =	111 =	15 =	5 =	56 =	210 =	3 =	-	-	58 =
	14.2%	20.7%	2.8%	0.9%	10.4%	39.3%	0.56%			10.8%
M	158 =	139 =	33 =	6 =	58 =	237 =	29 =	31 =	1 =	156 =
	18%	15.8%	3.76%	0.68%	6.61%	27%	3.30%	3.53%	0.11%	17.7%

Table 18. Number of examples and percentage per sub-area (in initials) and following Hyland's (1998) classification presented in Table 16.

Focusing on the different rhetorical preferences we can see that Applied Economy tends to use more examples of logical connectives and frame markers than any other variable within textual metadiscourse. Both are related insofar as the first helps to interpret links between ideas and the second provides interpretive framing information about longer elements of the discourse. Business papers use the same percentage but only for frame markers (20.7%), and Management rather lower for logical connectives (18%). So, Applied Economy uses logical connectives and frame markers a slightly more balanced way, while Quantitative Economy is the discipline that makes less use of them. It provides the text with a more neutral tone in the exposition.

The number of examples for endophoric markers, evidentials and code glosses is not so meaningful in any of the sub-areas. Remember that the first two make reference to external texts and the third one gives examples. As we said, the number is not remarkable as the examples seen are in the introduction of the papers but most of the explanation is devoted to the new research done.

If we now focus on the second group, Interpersonal metadiscourse, the use of hedges is the most prominent in all of them. They mark the writer's reluctance to present or evaluate propositional information categorically (Holmes, 1988; Hyland, 1998). The second category most used is person

markers as they reflect the importance of the degree of authorial presence in contributing to the variability in tenor of a text. This has been simply judged by the frequency of first person pronouns and possessive adjectives to present both propositional and metadiscoursal information. Emphatics and relational markers do not own a relevant number of examples and they can be considered a quite personal option as emphatics serve to emphasise the force of the proposition and relationals serve to address readers. Added to this, no examples can be found of attitude markers in two of the sub-areas. Attitude markers are used to “express the writer’s affective attitude to textual information in a more varied way than hedges” (Hyland, 1998: 444) and, as we can see in Table 18, Quantitative Economy and Business use an important number of hedges; that is, they are not so much interested in using a wide range of instances to express specific feelings such as surprise, obligation, agreement, importance, and so on.

Conclusions

Writing scientific papers within a specific sub-area can involve many specificities, perhaps more than could be seen initially. An appreciation of these slight peculiarities may mean the difference between a successful or unsuccessful publication as well as producing a wider understanding of the conventions required. After a detailed analysis of the texts from a structural, grammatical and rhetorical perspective, all three of these aspects provide revealing conclusions.

In terms of layout it is common for all scientific papers to provide the abstract and the references but not the keywords, the acknowledgments or the bibliography. In a way, references substitute the bibliography chapter in other disciplines. In fact, only three out of ten authors give references and bibliography in the same paper. Added to this, the introduction explains what the text will be about. We can see that authors feel quite unrestricted in their expression of the moves even within the same sub-area as they do not follow a common pattern. The remainder of the sections within the same sub-area can have from two to ten sections, with Business being the discipline which has the most similar number of sections. The explanation could be that we are dealing with a genre which can base its research on an experiment, method or theory. For further research, an analysis of a corpus following the same procedure could be revealing.

Textual features do not follow the same model. Not all the papers express the objective of the paper in the introduction. Quantitative Economy prefers to start off with the problem to solve but Management and Financial is not very strict in the moves included in the introduction. This is due to the fact that the aim in every discipline is not the same so this has a direct consequence in the organization of the paper. Consequently, the differences discovered in the structure are not significant and cannot be considered as rules.

From the grammatical perspective we have seen that some authors prefer not to separate grammatical pattern from metadiscursive analysis as many elements are quite interlinked. For our purposes the analysis of each category better explains every aspect of our aim. In any case, it is quite striking that linguists do not completely agree about the reasons for the use of these different grammatical elements. In general, they try to offer the different options future scientists can choose from but, in the end, it is the personal style that is reflected.

The use of the simple present is remarkable but the first and most urgent conclusion must be the wider use of simple over perfect tenses. Management takes the most risks, in terms of dealing with different tenses. We have explained that Management deals with business administration so the personal viewpoint plays an important role in the exposition. The same could be said of Business, but it does not comply with this feature. Contrary to what happened in the introduction where hardly any modals were used, in the body of the papers all the sub-areas use a rich and varied number of modals. This can have two interpretations: on the one hand, to enrich the literature offered and, on the other hand, to reflect the uncertainty of the author towards what s/he is explaining. The excessive number of examples could lead to this second option. In any case, the handling and knowledge of the modal verbs are outstanding as researchers give great importance to mood.

The frequency of the passive voice is not meaningful and the use of active voice is twice that of the passive; the simple present tense stands out over the rest. There is a correspondence between the use of the passive voice and the use of the first person pronouns in the sentences and, focusing on the latter, the use of the first person in the plural form doubles its use in the singular form. Even though, as we have seen, there are linguists that encourage the use of them, the tendency is to avoid the personalization of the text. This is probably due to a fashionable attitude rather than to linguistic criteria.

In sum, Social Sciences are quite literary in the expression of their research as the moves named in every section cannot be described as common in every sub-area. There is a degree of freedom in the papers accepted for publication so every researcher expresses the development of it in the most appropriate way according to their aim and characteristics.

As we said above, the first two aims eventually gave us the clues to the resources that must be fulfilled by the authors, but with the third aim, that is, rhetorical analysis, the paper shows the writers' personal style throughout. Indeed, despite the low percentage use of metatextual words in these texts, this aspect is considered to be very important in a paper as it allows us to see how writers seek to influence readers' understandings of both the text and their attitude towards its content and audience. Thus, Management and Applied Economy appear in both ends, with Applied Economy being the most theoretical discipline. In this way, although in previous chapters no meaningful differences could be traced, it is in this analysis where the gap widens. Interestingly enough, the most theoretical sub-area (Quantitative Economy) does not use fewer metatextual words than the others, including the Interpersonal category. Applied Economy and Management share in the textual sample the use of metatextual words on Logical connectives and Frame markers, and, in the interpersonal sample, Hedges and Personal markers. Quantitative and Business use Hedges in an important number.

All the sub-areas studied prefer the use of interpersonal over textual words and Management makes a wider use of metatextual words than the rest. Hence, by this use, the author will be tempted to convince or assure the reader of the successful results and the personal attitude performs a remarkable role in the exposition of content.

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Dr. Concepción Hernández Guerra is a Doctorate Teacher at the University of Las Palmas de Gran Canaria. She is currently teaching English at the Faculty of English Philology in that university and has published her research on Business and Computing. Her doctorate thesis dealt with Contrastive Literature (2002). Her current research interest is Discourse Analysis in technical and political texts.

Dr. Juan M. Hernández Guerra is Associate Professor of Mathematics since 2001 in the Faculty of Economics of the University of Las Palmas de Gran Canaria. He obtained his doctorate degree in 1997 with a PhD dissertation about entrainment and synchronization of economic cycles. As regards research, his current fields of interest are environmental economics and optimization applied to tourism dynamics and aquaculture.

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