# DETERMINANTS OF THE PRODUCTION OF MANAGEMENT KNOWLEDGE IN LATIN AMERICAN BUSINESS SCHOOLS

Ernesto R. Gantman

Universidad de Buenos Aires y Universidad de Belgrano

Escuela de Economía y Negocios Internacionales UB

M. T. de Alvear 1560, (C.P. 1060), Capital Federal, Argentina

E-mail: egantman@ub.edu.ar

## ABSTRACT

This paper examines the productivity of Latin American business schools in the creation of management knowledge. To this end, two distinct aspects are taken as dependent variable: the publications of articles in refereed journals and the publication of books. The results indicate that the number of professors with Ph.D.'s has a positive effect on the publication of scholarly articles, while the number of full-time professors has a similar effect on the publication of books.

**KEY WORDS**: Management Knowledge, Latin America, Business Schools, Higher Education.

## INTRODUCTION

The study of production, diffusion and consumption of management knowledge has been object of increasing academic attention during these last years (Álvarez, 1997; Sahlin-Andersson and Engwall, 2002; Engwall, 2007). However, and in spite of some exceptions (Usdiken, 1997; 2004; Ibarra Colado 2006), there is much less information on the characteristics of said processes in peripheral or underdeveloped countries. The present work aims to increase our knowledge in this matter, through an analysis of knowledge generation within Latin American business schools.

Thus, the presentation is structured as follows. In the first section, I made some general appreciations about types of management and the factors that influence their creation in the context of higher education in the discipline. The second section presents the methodological aspects of the study. In the third section, I report and discuss the results obtained. Lastly, the conclusion summarizes the study's findings.

### Generation of Academic Management Knowledge in Latin America

Previous studies on the academic productivity of higher education institutions, particularly those focused on economic sciences, indicate that variables such as the number of full-time professors, the academic formation of professors, and the amount of research funds obtained are directly correlated to productivity. Other aspects such as student/professors ratio are inversely correlated to it (Ramos et al, 2007). The underlying causal mechanism behind these results is simple: greater resources (human, symbolic and material) generate more academic productivity. In fact, be it when the professors have more time devoted to research, which they privilege over teaching (Taylor et al. 2006), more financial resources, better formation and training in their subject matter (as could be indicated by the obtention of a PhD), or simply a more oiled network of academic connections, we are always speaking of a resource-productivity relationship.

Another important factor in academic productivity is undoubtedly the kind of available incentives for doing research. If a higher education institution adopts the necessary incentives to induce its faculty to seriously perform research tasks (either because of its own decision or because it is part of a public university system that supports and prioritizes research work, establishing an appropriate incentive system for that), it can be expected that productivity in scholarly knowledge generation will increase. An interesting case on this matter is that of the United States, a country in which university professors' professional careers, at least in the more famous universities, are governed by a much-maligned system of rewards and punishments associated to their personal productivity: the "publish or perish". Until some years ago, this categorical option was not a problem, for example, in European universities, in which the management professors' prestige was more closely associated to their professional activity or consultancy than to their scientific productivity (Baruch, 2001).

In this regard, Latin American Business Schools are more similar to their European peers, since knowledge generation does not seem to be one of their central objectives. Indeed, some observers highlight the importance gained by postgraduate business studies, particularly beginning in the 90s; but they suggest that business schools (either the independent ones or those associated to universities) simply try to replicate the American business school model, copying its more superficial features such as the offer of executive education and the highly sought-after MBA degree, but without developing a similar structure dedicated to generate scholarly knowledge (Alvarez et al., 1997). In terms of Trieschmann et al. (2000), who apply James March's conceptual distinction, this means that the exploitation of management knowledge (teaching) is privileged over its exploration (research activities).

Although Latin American schools, which lack resources in comparison to their American and European counterparts, are more focalized in exploitation than in exploration, some research actually takes place within them. This is logical since many of them, in order to earn prestige, undergo international institutional accreditation processes, which seriously take into account the development of research activities

and their effective communication through publications. Also, as we will see next, the quality rankings of business schools also considers knowledge production, in their multiple aspects, as a particularly relevant factor.

On the other hand, in terms of the kind of management knowledge produced, we believe that two basic types can be identified: 1) a more academic or scientific knowledge, which typically appears in refereed publications, thus following the canon of methodological rigor characteristic of any social science, and (2) a knowledge targeted to a more professional audience, which is mainly transmitted through books aimed at an audience of students or practitioners. There can be, naturally, books that constitute monographs of the first type, but within the context of the bibliographical production of Latin American authors, due to reasons of editorial nature, almost the absolute majority of titles published constitute works of the second type. Considering both types of knowledge, it is presumed that the production generated within the realm of Latin American business schools gives higher priority to the professional aspect, much demanded by the editorial industry, than to the academic one. At least in the sample of schools on which we have worked, this is exactly what happens, since the total of books published in a three year lapse amounts to 376 against only 150 academic articles.

Naturally, the analysis that I will present next does not consider all the variables that can potencially influence the academic productivity of business schools. We lack relevant information on many variable that could be of interest (see, for example, Maske et al., 2003). However, and following the discussion presented above, there are data to test the following hypotheses:

H1) The greater the number of professors, the higher the academic productivity

H2) The greater the number of full-time professors, the higher the academic productivity.

H3) The greater number of professors with PhD formation, the higher the academic productivity.

An interesting question, which I will also triy to answer, is if the knowledge creation of a more academic character is determined by the same factors as the more practitioner-oriented knowledge creation.

**Data and Methods**

To test empirically the aforementioned hypotheses, I have used a dataset from a sample of business schools of different Latin American countries. The source is the magazine América Economía, (2004) in its annual survey on the most outstanding business schools of the region.

The number of business schools in the sample is 37. These are four from Argentina (Universidad Torcuato Di Tella, Univ. del Cema, IAE, and Univ. de Belgrano), seven from Brazil (Fundação Getúlio Vargas-EASP São Paulo, COPPEAD-Universidade Federal do Rio de Janeiro, Universidade de São Paulo, Fundação Dom Cabral, IBMEC, Pontifícia Universidade Católica do Rio de Janeiro, and Business School São Paulo), nine from Chile (Universidad de Chile-Ingeniería Industrial, Universidad de Chile-Programa Univ. de Tulane, Pontifica Universidad Católica de Chile, Universidad Adolfo Ibáñez, Universidad Alberto Hurtado, Universidad del Desarrollo, Universidad de Santiago de Chile, IEDE, and Universidad Técnica Federico Santa María), seven from Mexico (TEC de Monterrey-Campus Monterrey, ITAM, IPADE, TEC de Monterrey-Campus Ciudad de México, Universidad Anáhuac del Sur, Universidad Anáhuac Poniente, and Universidad de las Américas), five from Peru (CENTRUM-Pontificia Universidad Católica del Perú, ESAN, Universidad del Pacífico, Escuela de Dirección de la Universidad de Piura, and Universidad San Ignacio Loyola) and one from Uruguay (ORT), Paraguay (Universidad Americana), Costa Rica (INCAE), Venezuela (IESA), and Colombia (Universidad de los Andes). Some are independent institutions and others are university units. Seemingly, some of the most prestigious schools in the region are in the sample, or at least this is what said magazine seeks to reflect in its ranking that is based on diverse criteria. The

participation of business schools in this ranking is voluntary and the data on publications in refereed journals indexed in the Science Citation Index and the Social Sciences Citation Index have been audited by América Economía. The sample, therefore, is not a random one. In general, the greatest scientific production has been carried out in the schools that occupy higher positions in the ranking. Therefore, if we believe that indeed the exclusions of productive schools are minimum, the sample is also biased towards the schools that show greater productivity in books and articles in scientific publications. This does not present a problem, since the research's goal is to know what factors facilitate production where there is actually a will of producing it. Nevertheless, some universities in which research takes place are not present in the sample. In the case of Argentina, for example, the University of Buenos Aires and the University of San Andrés are not considered. However, the absence of important institutions does not necessarily reduce sample representativeness.

The academic production has been operationalized by means of two indicators. The first one is the number of articles published in refereed journals indexed in the Science Citation Index and the Social Sciences Citation Index (ISI publications) during the last three years by professors who teach in the MBA programs (excluding the production by visiting professors from foreign universities). This indicator gathers the production level of a more academic order. The other indicator is the number of books published by the same professors during the last three years, which according to what was expressed in the previous section is a way of measuring the more practitioner-oriented production.

The independent variables are the total number of professors in the MBA professorial body (again excluding visiting professors), the number of full-time professors, and the number of professors with European and North American university PhD's.

Lastly, it is necessary to point out that the information corresponds to 2004. More recent data was available, the year 2005, but in said year the sample did not include the Getulio Vargas Foundation, a leading institution in Brazilian business higher

education. So, I preferred to lose more updated data instead of representativeness of important business schools. As from 2006, the magazine América Economía changed the format of the information offered, and they have stopped publishing the necessary data for the kind of quantitative analysis that I will carry out in the next section.

To test the hypotheses of this study, a count data model was used. Due to the discrete nature of the dependent variable, the literature does not suggest the estimation of a traditional multiple regression model (Greene, 1997; Zeileis et al., 2007). The model that is usually recommended initially for count data is based on the Poisson distribution. However, this model has a very restrictive assumption, demanding that the mean and the variance be equal (equidispersion). When this does not happen, which is frequent, since the variance is usually larger to the mean (overdispersion), other models should be used to estimate the parameters of interest. The most common alternative, in such cases, is the use of the negative binomial distribution model.

Following Cameron and Trivedi's (1996) recommendation, both regression models, Poisson and negative binomial, were estimated with the LIMDEP software; and I carried out a likelihood ratio test under the null hypotheses that the dispersion parameter in the binomial model was equal to 0. The result of the test rejects this null hypothesis, indicating that the Poisson model is not appropriate. Consequently the reported results correspond to the negative binomial distribution model.

**Results and Discussion**

Next, I present the results of the statistical analysis. In the first place, Table 1 contains the correlation coefficients of all the variables. The highest bivariate correlation (0.74) is between the number of full-time professors and the number of professors with PhD's, probably because the business schools that hire more full-time professors in their educational staff are also those that opt to hire professors with PhD's from American and European universities. The number of professors is also associated positively to the number of full-time professors (professors .69) and to the

professors with PhD's (.65). This suggests that the business schools with more resources to hire a greater number of professors are also those that hire more professors with PhD's and are full-time.

**Table 1 -** Coefficients of simple correlation of the variables

| | Number Artic. | Number Books | N°.Prof. | N°.Prof. FT | N°.Phd. |
|---|---|---|---|---|---|
| Number Artic. | 1.00000 | .26370 | .16968 | .30725 | .41892 |
| Number Books | | 1.00000 | .29549 | .57302 | .34870 |
| N°.Prof. | | | 1.00000 | .68909 | .64741 |
| N°.Prof.FT | | | | 1.00000 | .74116 |
| N°.Phd. | | | | | 1.00000 |

The results of the negative binomial regression for each one of the two operational variants of academic productivity (academic articles in Table 2 and books in Table 3) are presented in 7 models. The first three analyze the independent variables in an individual way, then models 4 to 6 take the variables by pairs, and finally model 7 contemplates the simultaneous effect of the three.

**Table 2 -** Production of scientific articles

| Independent Variable | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 | Model 7 |
|---|---|---|---|---|---|---|---|
| Constant | .7447 (.7348) | .4041 (.6147) | .6664 (.4548) | .6048 (.6436) | .9069 (.6717) | .4936 (.6193) | .7282 (.6612) |
| Number of Professors | .0111 (.0120) | | | -.0146 (.0161) | -.0069 (.0141) | | -.014 (.0155) |
| Number of Professors full-time | | .0289 (.0176) | | .0479 (.0287)* * * | | .0109 (.0274) | .0280 (.0346) |
| Number Professors with PhD | | | .0294 (.0169)* * * | | .0359 (.0216) * * * | .0213 (.0266) | .0232 (.0272) |
| Dispersion Parameter | 3.0421 | 2.8026 | 2.7361 | 2.7376 | 2.7069 | 2.7207 | 2.6397 |
| Log-likelihood | -84.294 | -83.292 | -83.0758 | -82.943 | -82.964 | -82.993 | -82.606 |

Notes:
Standard errors in parentheses
(* * *) statistically significant with p <0.10
n = 37

In relation to the production of scientific articles, models 1 to 3 analyze the effect of each one of the three independent variables in a separate way. The three affect positively said production, but only the number of professors with PhD's has some statistical significance (p <0.10). Model 4 takes the number of professors and the

number of full-time professors. In this case, the coefficient of the number of full-time professors is positive and has a statistically significant effect on the production of articles. Nevertheless, when carrying out a likelihood ratio test to know if the fit of this model is superior to that of models 1 and 2, we see that that does not happen (the value of the log-likelihood is superior in model four, but this increase is not statistically significant as to conclude that indeed the new model adapts better to the sample data than models 1 and 2). The same can be affirmed of model 5. In model 6, the coefficient of the number of professors with PhD's continues in similar values but it loses statistical significance, when the number of full-time professors is also included as additional regressor. Nevertheless, this model is not statistically superior to model 3, according to the likelihood ratio test. Model 7 includes the three variables. The coefficient of the number of professors affects the production of articles negatively, the same as in models 4 and 5, but this effect lacks statistical significance. Like in the case of the models with 2 variables, the likelihood ratio test indicates clearly that the fit of model 7 does not constitute a statistically significant improvement on the versions of a single variable.

In synthesis, of the three variables studied only the number of professors with PhD's seem to have a positive and statistically significant effect on the production of academic articles, at least in model 3, which is the one that best fits the data. This result is consistent with hypothesis 3. Contrarily to what could be expected according to hypothesis 2, the number of full-time professors does not have a statistically significant effect. The size of the education staff does not appear as a relevant factor, falsifying hypothesis 1. Summing up, the formation of the professors (hypothesis 3) is more important than their dedication, as decisive productivity factor in terms of academic articles.

Maybe the production of refereed articles within the environment of Latin American schools obeys to idiosyncratic factors of certain institutions that has not been possible to capture in my quantitative analyses. This is very possible, especially due to the existing level of productivity. The annual average for institution is of 1.35 articles.

Keeping in mind that the average of full-time professors is 30.15 professors per business school, the annual productivity per professor is of 0.045 articles, which is certainly a worrying figure.

**Table 3 - Book Production**

| Independent Variable | **Model 1** | **Model 2** | **Model 3** | **Model 4** | **Model 5** | **Model 6** | **Model 7** |
|---|---|---|---|---|---|---|---|
| Constant | **1.6470** (.3328) | **1.1771** (.2830) | **1.7113** (.2557) | **1.3202** (.3017) | **1.5969** (.3209) | **1.1919** (.2854) | **1.3197** (.3019) |
| Number of Professors | **0.01124** (.0053) * * | | | **-.715** (.4864) | **.0037** (.0064) | | **-.0690** (.0506) |
| Number of Professors full-time | | **0.03168** (0.0066) + | | 0.03960 | | .03519 (.0094)+ | .04052 (.0103)+ |
| Number Professors with PhD | | | .02646 (.0100) *. | | .02170 (.0126) * * * | -.0061 (.0113) | -.0021 (.0116) |
| Dispersion Parameter | **.6383** | **.3788** | **.5931** | **.3562** | **.5865** | **.6768** | **.3555** |
| Log-likelihood | -121.35 - | -112.92 | -119.9860 | -111.9200 | -119.808 | -112.7781 | -111.9044 |

Notes:
Standard errors in parentheses
(+) statistically significative with $p < 0.001$
(*) statistically significative with $p < 0.01$
(* *) statistically significative with $p < 0.05$
(* * *) statistically significative with $p < 0.10$
n = 37

When analyzing book production, we observe that in the models 1 to 3, each one of the independent variables affects positively and with statistical significance the variable dependency (particularly the number of full-time professors with $p < 0.001$). Model 4 considers the number of professors and the number of professors full-time, simultaneously. Here, the coefficient of the number of professors becomes negative and loses statistical significance, while the coefficient of the number of full-time professors, maintains its sign and the same high statistical significance (the same as in models 6 and 7). The likelihood ratio test indicates that model 4 has a greater fit than model 1, which only contemplates the variable number of professors. This is the result of adding the number of full-time professors to model 1. Nevertheless, according to this test, model 4 does not constitute a significant statistical improvement, regarding model 2, whose only regresor is the number of full-time professors. Model 5 considers jointly the effect of the number of professors (whose coefficient loses statistical significance)

and the number of professors with PhD's (which diminishes its statistical significance in relation to model 3, which estimates exclusively the effects of this variable). The likelihood ratio test shows that this model is not a significant statistical improvement in relation to the models in which both variables are the only regressors (models 1 and 3). In model 6, the variable number of full-time professors continues having a positive and statistically significant effect, while the variable number of professors with PhD's loses statistical relevance. Like in the case of model 4, model 6 is not superior to model 2 (number of full-time professors as the only independent variable) in a statistically significant way, according to the likelihood ratio test, but has indeed better fit than model 3, in which the only regresor is the number of professors with PhD's. Lastly, model 7 renders similar results. Only the variable number of full-time professors has a positive and statistically significant effect on book production. Again, the likelihood ratio test indicates that the addition of two new regresors does not improve the statistical significance of the model in relation to model 2.

In synthesis, the variable number of full-time professors appears consistently with a positive effect on book production in Latin American business schools. The other variables considered (which also affect books production positively when taken as unique regressors) lose their statistical significance once they are incorporated to a model that takes into account the number of full-time professors. Undoubtedly, in this case the results obtained are compatible with the literature and the empirical evidence of other countries. Thus, only hypothesis 2 is empirically supported by our sample data.

## CONCLUTION

The present study allows to draw some interesting conclusions. One of the results is a bit counterintuitive; the bibliographical production of business schools is not affected in a positive and statistically significant way by the number of professors. It is then quite possible that this latter variable is mostly linked to the aspect that I previously characterized as knowledge exploitation (i.e., delivering courses).

The full-time dedication of professors is positively and statistically significantly associated with book production but, contrarily to what one would expect, its positive effect lacks statistical relevance in relation to academic articles. Regarding this latter aspect, the most important factor is the professors' formation, since the number of professors with PhD's in foreign universities shows a positive effect with certain statistical significance in the regression analysis.

In addition, it is important to observe that, within the context of the region's business schools, the decisive factors behind the production of the two types of knowledge (academic and professional) are different. The professors' formation affects the production of scientific articles, while their dedication is positively associated to book production. Moreover, in relation to the generation of knowledge of a more scientific nature, it is necessary to highlight an important fact: the average annual productivity per professor is 0.045 articles, which would indicate that the region's business schools of the region, at least in average terms, do not grant a very important priority to research, being more clearly oriented to the reproduction (exploitation) than to the authentic creation of knowledge.

**REFERENCES**

Pleace refer to article`s Spanish bibliography.