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An Analysis of Business Administration Students Interest in the Area of Production and Operations

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ABSTRACT: This article analyzes the interest of Business Administration students in the area of Production and Operations. A field study involving data collection of data from 165 students of institutions of higher education in the city of Fortaleza, in the northeastern area of Brazil. Data were evaluated through techniques of regression and cluster analysis. It was found that students have an intermediate level of interest in the area, and that this interest is positively influenced by factors such as intent to pursue a career in the area. Also the perception of educational and professional impact, as well as the importance of the area for the course were studied.

KEYWORDS: Education, Operations Management, Career

1. INTRODUCTION

Business Education is the basic subject in the area of 'Education and Research of Administration', as it is called in the Brazilian academic context. Although interest in this area in Brazil has grown significantly since the second half of the nineties, it can still be perceived as limited, as far as number and comprehensiveness of studies is concerned, especially when compared to other subjects related to Business Administration, such as Marketing and Strategy. On the other hand, it is evident that the recognized complexity of the structure of Business Administration courses, together with systematic efforts by several academic institutions to stimulate studies in the field, are key factors in promoting the growth of knowledge in this area.

This study aims at addressing education from the standpoint of the curricular basis of Business Administration undergraduate courses. It can be observed that the curricular matrix of these courses is constituted by support disciplines (such as Mathematics, Economics, Sociology...), disciplines of managerial knowledge (Finance, Logistics, Human Resources, Production and operations etc.), elective and complementary disciplines, as well as supervised practice and Complementary activities (ANDRADE; AMBONI, 2004; NICOLINI, 2001). Bearing this in mind, there are a number of possible approaches and a clearer demarcation is necessary for research purposes. Therefore, it was decided for this article to emphasize the area of Production and operations. This area constitutes a significant proportion of the time allocated to Business Administration courses and has been the object of interest by some researchers in Brazil (See COSENTINO, 2002; BIDO, 2004).

Among possible approaches to studies in the area, it was decided to evaluate the positioning of the students, since they are the ones most actively interested in the completion of their education. Thus, the following question was set as central research problem: how do undergraduate Business Adminis-

tration students evaluate the area of Production and operations in their courses, their interest in a career in this area, the importance of this area to their education and their mastery of managerial skills related to the area?

In order to set an academic demarcation of the area of Production and operations, it was decided to emphasize the classical disciplines of courses such as Administration of Production and operations, Quality and productivity, Operations research, among others. Thus, the objectives defined for research were: (1) evaluate interest of students in the area of Production and operations; (2) analyze the main factors influencing this interest; and (3) develop a typology of students based on the dimensions of the analysis used in the study.

To answer the research question and to meet the defined goals, the remainder of this paper is divided into four parts. Following this introduction, the second section of the paper presents a literature review, with an emphasis on the process of education in Business Administration, the debate in the area of Production and Operations and the delimitations of topics of the field study. In the third section, decisions on methodological procedures adopted in the field work are outlined. The fourth section presents the results and analysis of the data collected in the field and the last section provides final considerations of the study, with implications, limitations and recommendations for future research.

2. THEORETICAL REVIEW

This section presents some considerations arising from specialized literature on education in Business Administration, followed by discussion of some specific topics in the area of Production and Operations and concludes with delimitations and demarcations for the field work.

2.1. Curriculum of Business Administration courses

Nicolini (2001), in his analysis of the Brazilian model of undergraduate Business Administration courses, indicated that scientific production in the form of books or scientific works on Business Education in Brazil was still rather limited in the late 1990s. From the analysis of the more recent literature in the area, it is possible to observe that many relevant topics are still to be understood, such as curriculum aspects, teaching methods, specialization and others.

Given the objectives of this work, emphasis falls here mainly in the curricular dimension, a topic that has been the object of analysis by some authors (See ANDRADE; AMBONI, 2004; NICOLINI, 2001), especially because of the influence that curricular determination has on the profile of the professional in education. As stipulated by law (BRAZIL, 2004), an undergraduate course in Business Administration is to consist of five dimensions, as follows: (1) basic and instrumental education, with initial disciplines necessary for the adequate understanding of course topics (Mathematics, Economics, Sociology...); (2) professional education, providing basic knowledge of management activity in organizations, in accordance with several classic disciplines; (3) elective and complementary disciplines, which may or may not be oriented to specific activities, providing flexibility for education institutions and their pedagogical projects; (4) a supervised period of training, in which students experience situations of management practice; and (5), a block of Complementary Activities created by the 2004 Law which allow for broader education under student criteria, outside the regular environment of the educational institution. An illustrated vision of these dimensions is shown in Figure 1.

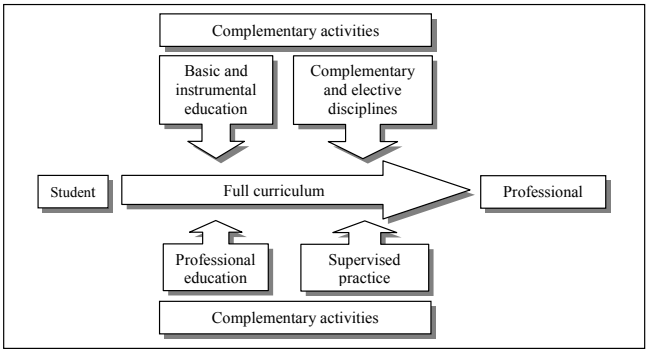

Figure 1: Education Process in Business Administration. Source: Prepared by the authors, based on Nicolini (2001) and Brazil (2004).

Despite the criticism of having a mechanist basis, specialist emphasis and restricted vision, or, in the metaphor of Nicolini (2001), of being similar to a model of an assembly line, this model of education has in its general logic the possibility of encompassing the most diverse aspects of management and organizational activities.

Through the model itself, it is possible to insert what is most relevant and innovative in administrative thought and practice, maintaining a model in which theoretical contents can be interplayed with a link

to practical education. It is possible for the students to construct part of the curriculum by themselves (from the complementary activities).

Disciplines in the area of Production and operations are inserted in the dimension of professional education, along with disciplines in the areas of Marketing, Human Resources, Finance and others. In the following sub-section, additional comments are provided on this area of knowledge, which constitutes the object of study in the present article.

2.2. Debate on Production and Operations

Although management questions concerning the production of goods and services have been the essence of the field of Business Administration since the work of Taylor, the area of Production remained for a long time outside the main interests of the academics and executives due to the assumption that all production problems were of a short term nature. Links with engineering and the excessive emphasis on quantitative instruments contributed to further isolate the function of Production and operations from managerial areas such as Marketing and Finance (ARKADER, 2003).

However, important changes in the competitive scene in the last decades of the 20th century, especially the decline of North American companies compared to their Japanese counterparts in the 1980s, aroused interest in the issue of achieving competitiveness by means of production strategies. According to Arkader (2003), North American production was still characterized by outdated management practices such as excessive concern for short term returns, technological fragility, neglect of human resources, shortcomings in cooperation in all levels and directions, and cost reduction through standardization and economies of scale, in contrast to what the market, increasingly influenced by Marketing, hoped for, that is, more variety and greater differentiation.

This, together with the strong movement towards *just-in-time* and quality models, created a renaissance of the area of Production and operations as a field of study in Business Administration. In Brazil, as a matter of fact, the lean production trend only began in the 1990s along with the competitive shock of market opening and stabilization (ARKADER, 2003).

Currently, the area of Production and operations is well established in academic and professional terms. Besides being part of the professional core of Business Administration courses, the area is also a central component of undergraduate and graduate courses in Production engineering and other branches of engineering (LACERDA et al., 2007).

Conceptually, the Production and operations area of an organization is concerned with the use of resources to produce goods and services and also with strategies of production linked to the external environmental conditions and long term organizational objectives (SLACK; CHAMBERS; JOHNSTON, 2002).

As proposed by Slack, Chambers and Johnston (2002), every organization produces goods or services and, in some cases, a mixture of the two, through a transformation process, that involves a set of resources (*inputs*) used to transform something or to be transformed into goods and services (*outputs*). Any production activity can be seen according to this input-transformation-output model. In the vision of Slack, Chambers and Johnston, the area of Production and operations is constituted by loops of interrelated activities. As shown in Figure 2, the first loop corresponds to the input-transformation-output model, whereas the second one is related to strategic questions of production.

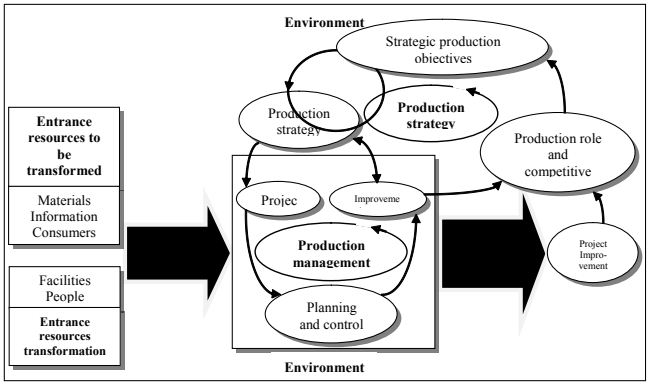

Figure 2: General model of the area of Production and operations. Source: Adapted from Slack, Chambers and Johnston (2002).

According to this perspective, production managers assume responsibility for managing the resources involved in the production function. At the strategic level, it is up to the production team to contribute to meeting long term organizational objectives, by translating these objectives in terms of implications for the performance objectives of production: quality, speed, trustworthiness, flexibility and cost.

Production managers are also responsible for reconciling frequent pressures of market demands, commonly out of alignment with the capacities of production resources, defining physical form, orientation and composition of products, services and processes, together with other functional areas of the business, deciding on the best use of production resources, and ensuring the execution of decisions taken (BRITO; DUARTE; DI SERIO, 2007).

The objective of this study was to evaluate the interest of the students in this area, as well as other related aspects, including the command of the necessary skills for the practice of the above noted responsibilities. The next sub-section presents the approach adopted in the empirical study.

2.3. Definitions of research constructs

Following the review of some empirical studies with similar goals, especially those based on the work of Camey and Williams (2004), Mcintyre, Webb and Hite (2005), Farrell (2006) and Robinson Jr. (2006), together with exhaustive discussions among the authors and consultations with other researchers interested in the subject, it was agreed that the evaluation of the area of Production and operations would be based on five dimensions, described next.

First, we analyze the 'students' personal interest' in Production and operations area. The approach was based on studies by Camey and Williams (2004), who analyzed students' personal interest in Marketing. These authors also examined aspects such as the importance attributed to the subjects by students, personal willingness to develop studies in the area and student interest in a Marketing career.

Based on this latter aspect (student interest in a Marketing career), 'personal interest in a Production and operations career' was defined as a second dimension of analysis for this article, as career interest in the area is distinct from personal student interest in the subject, because it relies upon activities undertaken after graduation.

The third dimension of analysis in this study was 'perception of educational and professional impact' of knowledge of the area. Here, aspects related to what Mcintyre, Webb and Hite (2005) called impacts on students related to the services learning (for Marketing students) are evaluated. In these terms, it was decided to adjust aspects related to disciplines of services to disciplines of the area of Production and operations. To develop a measurement scale for this topic, aspects that Camey and Williams (2004) had evaluated, such as the educational impact of the Marketing discipline for business students, were also considered.

A fourth issue included in the analysis was 'mastery of management skills of the area'. The inclusion of this dimension stemmed from the perception that there are variations in the command of Production and operations management techniques and that, possibly, such variations would have an impact on the way students assess disciplines. To find a basis for the analysis of this dimension, consideration was given to the procedure adopted by Farrell (2006), which involved a scale for evaluating self-effectiveness in the use of the Marketing knowledge and tools for students of this discipline. The proposition by Slack, Chambers and Johnston (2002), pointing out the main abilities of professionals of the area of Production and operations provided a more specific base for the analysis.

The fifth and final dimension involved an assessment of the 'perception of the necessity' including the area of Business Administration course curricula. The evaluation of this dimension was based on the work of Mcintyre, Webb and Hite (2005), that included a similar evaluation of the field of services in Marketing , and also on Robinson Jr.'s (2006) analysis of students attitude towards the use of technology.

Research of literature of managers education, both at national and international levels did not presented evidence supporting the construction and issuing of relationship hypotheses between the five above mentioned dimensions. If one thinks about hypotheses in the conventional sense as used in studies of a quantitative/statistical nature, there is no way to develop such analysis; however, if we evaluate the sense of each one of the five dimensions and consider that the central objective of this research is analyzing the personal interest of students in Production and operations areas, it is relevant to investigate the way the level of students personal interest is influenced by the other four dimensions.

Using the expression "proposition" rather than hypothesis and understanding that it has more exploratory character for the sake of analysis, it was possible to formulate the following propositions, stemmed from exploratory debates among the authors and other researchers interested in the subject:

P1 – Students' personal interest in a Production and operations career positively influences the level of students' personal interest in the area;

P2 – Students' perception of the educational and professional impact of Production and Operations knowledge influences positively the level of students' personal interest in the area;

P3 – The mastery of management skills of the area of Production and Operations influences positively the level of students' personal interest in the area;

P4 - The level of students' personal interest in the area of Production and Operations area is positively influenced by the perception of the area necessity in the course curriculum.

Taking into consideration such propositions, the field study was undertaken, assuming that a consistent analysis could only be carried out through collecting information on the perceptions of the students themselves. Details of field work procedures and decisions are outlined in the following section.

3. METHODOLOGY

The work was developed in three stages: exploratory procedures, instrument definition and data collection, and empirical work. The exploratory procedures were built in two phases: the first one comprised literature review (see sections 2.1 and 2.2); the second phase aimed at identifying empirical studies with objectives similar to the objectives of this study, especially those which could be used to improve the constructs and to identify possible measurement scales (see. item 2.3).

From these initial procedures, a questionnaire was selected as the instrument of data collection. It was decided that the instrument would be divided into three blocks: the first section contained identification variables related to student education and experience; the second section encompassed the study constructs; finally, the third section was dedicated to questions aimed at obtaining demographic and socioeconomic data.

To define the constructs used in the work, supporting construct definitions were analyzed and adopted, as follows: (1) for the 'personal interest' construct, four items adapted from Camey and Williams (2004) were used; (2) for 'personal interest in the career', three items adapted from Camey and Williams (2004) were used; (3) for 'perception of educational and professional impact of the area', six items adapted from Mcintyre, Webb and Hite (2005) were used; (4) for 'mastery of operational requirements of the are'", six items defined from Slack, Chambers and Johnston (2002) were used; and (5) for 'perception of necessity of the area', four items generated from Mcintyre, Webb and Hite (2005) were used.

Constructs items were presented as affirmations, with assessment of degree of the agreement by means of a 5 point scale, with extremes of 1 for 'total disagreement' and 5 for 'total agreement'. After preliminary consolidation of the instrument, it was submitted to pre-testing with a sample of 15 respondents. After adjustments, the questionnaire was then applied. At this stage, configurations were delineated as follows:

Research Universe: was constituted by undergraduate students from Business Administration courses at public and private institutions of Fortaleza. Data from INEP (an acronym for the National Institute of Education Studies and Research) indicated for the year 2004 there were a total of 20 courses, with 11.352 students (BRAZIL, 2007). The current size of this universe in 2008 could not be established, but it is believed to be close to this total;

Sample: the total sample consisted of 165 students, contacted at 4 institutions, selected by accessibility and convenience;

Collection method: data collection was carried out by the authors. The basic procedure consisted of a support request to professors of disciplines of the second half of the course, considered to be the period in which students would already have attended courses in the Production and operations area. Sample questionnaires were applied in February, 2008.

In the analysis of the results of the collected data, the preliminary evaluation was initially used to check missing values, as well as the existence of atypical values (*outliers*), especially in items of the constructs. The procedures did not indicate the need for procedures such as exclusion of entries or variables. After that, the descriptive presentation of the results of the category variables was undertaken.

Construct items were evaluated for reliability by means of the Cronbach's *Alpha*, considered adequate to measure the consistency of sets of variables used to measure a single construct (MALHOTRA, 1999). After these verifications, the mean and the standard

deviation of each variable were determined independently, followed by the construct general mean consisting of the average of entries of the variables forming each construct (Bagozzi and Edwards, 1998).

In examining the results, it was decided to undertake a more detailed exploration of relationships by means of regression analysis. The purpose of this phase was to evaluate the consistency of the propositions (See sub-section 2.3), as well as to verify the relative importance of each of the dimensions related to students' interest in Production and operations area.

The data of the constructs were also submitted to the technique of cluster analysis, as a means of grouping respondents according to their positioning in the set of constructs analyzed in the research. All statistical procedures were based on recommendations by authors specialized in the techniques used (HAIR et al., 2005; MALHOTRA, 1999) and were conducted using the SPSS software, version 15.

4. RESULTS

This section is divided into four parts: first, a description of the study sample is presented; after that the descriptive measures of the defined constructs are analyzed; the third part presents the regression analysis carried out to test propositions; and finally, the fourth part presents the results and the analysis of the grouping procedure used.

4.1. Description of the sample

The sample was made up of 165 students from undergraduate Business Administration courses, 65.5% of them from private institutions and 34.5% from public universities. Of the total respondents, 35.7% were in their third year, 47.3% in their fourth year and 17% in their fifth year of university.

The sample showed a well balanced gender distribution, with 56.4% of the respondents declaring themselves to be male and 43.6% female. As to age, a very eclectic sample was found, with little more than one third (34.5%) claiming to be younger than 22, and the rest being distributed as follows: 17.6% between 22 and 24 years old, 14.5% between 24 and 26, 8.5% between 26 and 28, and 24.8% older than 28.

With regard to family income, available data showed that: 32.7% of respondents had income up to US$ 800,00 per month; 28.5% possessed family income between US$ 800.00 and US$ 1,600.00 and 38.8% reported monthly family income over US$ 1,600.00. These results indicated also an equilibrated distribution of the sample in this variable.

When asked about current occupation, practically half of respondents (48.5%) said they worked full time and about one third (29.7%) indicated part time work. Also with regard to occupation, half of the respondents (50%) indicated an intention to obtain a public or private job upon finishing their studies; 34.6% said they would work in their own company or open a business and 9.3% intended to work in family businesses, and the remaining ones (6.2%) wanted to dedicate themselves only to their studies.

Out of the 165 students surveyed, most planned to continue graduate studies, with a little more than half (50.3%) willing to attend a specialization course and approximately one fifth (19.4%) interested in following an academic career starting with a graduate course (master degree). In addition to students planning to pursue graduate studies, 17% indicated an intention to switch to another undergraduate program, whereas 13.3% said they intended to stop studying permanently.

4.2. Description of the constructs

The variables were submitted to the statistical technique of Exploratory Factorial Analysis, which allowed a comparison with the previously defined expectations and the results of the field work. None of the constructs required adjustment procedures, since the factorial structure generated was consistent with previously defined expectations.

The variables used in the research were grouped by construct, and then means and standard deviations were calculated (the Appendix presents the variables and the standard deviation by construct). The results are summarized in this section of the paper, (since a 5 point scale was used, the adopted analysis criteria were as follows: means up to 3 are low, values from 3 to 4 are intermediate, and those from 4 to 5 are high; as for standard deviations, values up to 0.8 are low, those from 0.8 to 1.0 are intermediate, and those above 1.0 are high):

Means of variables of 'personal interest' in the area can be considered to be intermediate, with values oscillation between 3.21 and 3.86, and standard deviations indicate a high dispersion of opinions (between 1.02 and 1.27). This indicates that students maintain an intermediate degree of interest, but there is a great divergence of positions;

All means of variables related to 'interest in a career' in the area were low (between 2.76 and 2.89) whereas deviations presented high values (between 1.23 and 1.31). This indicates that Business Administration students possess little interest in searching professional opportunities and pursuing a career in the area of Production and operations;

Variables of 'perception of educational and professional impact' presented considerable proximity in means and standard deviations (between 3.35 and 3.88 for the means, and between 1.00 and 1.24 for deviations), indicating a perception of intermediate importance for the knowledge acquired in the discipline, and limited convergence of opinion about the subject.

Measures of 'mastery of management skills' present considerable variation in means (ranging from 2.55 to 3.33). Means of variables of this construct are considered to be between intermediate and low, and no variable had a mean considered high. Standard deviations can be considered high (ranging from 1.02 to 1.13), indicating a high dispersion in students evaluations;

Finally, variables of perception of the 'necessity area' in the course curriculum presented intermediate values for both means and standard deviations (means oscillating between 3.05 the 4.01 and standard deviations between 1.03 and 1.21). The conclusion is that students consider the area to be a necessary part of the course, however there is a significant divergence of perception among them;

The variables were analyzed for reliability in representing the constructs using the Cronbach's *Alpha* coefficient. The *Alpha* was calculated on a construct by construct basis and all values were acceptable (all above 0.6). Based on the results of the factorial structure and reliability analyses, a decision was made on the composition of the variables to generate general measures for each construct.

Table 1: Measures of the constructs.

Construct	*Alpha*	Mean	Deviation
Personal interest in the area	0.752	3.55	0.87
Interest in a career in the area	0.909	2.81	1.18
Perception of educational and professional impact	0.780	3.70	0.81
Mastery of management skills	0.882	3.02	0.87
Perception of necessity of area in the course	0.728	3.51	0.73

Source: Research data.

Taking as composition rule the mean of scores of entries in the spread sheet corresponding to each construct, five new variables were generated. The results for the values of the *Alpha* coefficient, the means and the standard deviations of each construct are displayed in Table 1.

As shown in Table 1, constructs means values are between low and intermediate, the greatest mean being for perception of educational and professional impact (3.70) and the smallest for interest in a career in the area (2.81). The standard deviations can be considered intermediate, except for the measure of the necessity perception of the area in the course curriculum, that was at a low level (0.73).

The calculated means provide greater clarity on the positioning of Business Administration students researched with regard to the constructs used in the study. To the students, the area of Production and operations is perceived as important to the course curriculum and to professional performance. However, following a career in the area, and the command of management skills are considered of lesser importance, with means situated at the intermediate level.

4.3. Analysis of propositions

The propositions defined for the study were evaluated through the statistical technique of Regression Analysis, since this makes possible the evaluation of the simultaneous influence of the independent variables on a predefined dependent variable. Construct 'personal interest in the area' was selected as the dependent variable, whereas the constructs 'interest in a career in the area', 'perception of educational and professional impact', 'command of management skills', and ' necessity perception of the area in the course' were inserted as independent variables.

Table 2: Regression analysis results.

Construct	Coefficient β	Statistic t	p value
Personal interest in the career	0.235	3.928	0.000
Perception of educational and professional impact	0.367	4.003	0.000
Command of management skills	0.077	1.430	0.155
Perception of necessity of the area in the course	0.266	3.241	0.001

Source: Research data

Values found using the regression model are shown in Table 2. The model can be considered consistent (R^2=0.599) and only the construct related to mastery of management skills did not present significant value for the standardized coefficient ($p<0.05$). The implications of the results for the propositions are as follows:

Proposition P1, which stated that personal interest of the students in a career in Production and operations positively influences the level of personal interest of the student in the area, was confirmed (ß=0.235, $p<0.001$). This suggests that the interest of the student stems from the possibility and his or her willingness to following a career in the area of Production and operations;

Proposition P2, which stated that students perception of the educational and professional impact of the knowledge of Production and operations area positively influences the level of students' personal interest in the area, also was confirmed (ß=0.367, $p<0.001$). In this case, understanding the relevance of the Production and operations field to professional performance, is a signal of maturity of the students that increases their interest in the area;

Proposition P3, which stated that the command of management requirements of the area of Production positively influences the level of personal interest of the student in the area, was rejected (ß=0.077, $p=0.155$). In this case, it is highlighted that students' feeling of security about command of management skills and mastery of attributes for professional performance in the area of Production and operations does not matter to the formation of student interest in the area;

Proposition P4, which stated that the level of personal interest of the student in the area is positively influenced by the perception of the necessity of the area in the courses curricula, was confirmed (ß=0.266, $p<0.005$). The evidence, in this case, was that, the much the students understand the area of Production and Operations in a global and systemic way, comprehending its necessity for the course as a whole, the much they value the area and get more interested in it.

Considering these results collectively (see Table 3), the most significant point concerns proposition P3, which was rejected. Considering that students give low priority to properly mastering management skills in the area of Production and operations, an effort to improve learning and to raise security about command of management skills would not provoke a greater interest among students, since such interest stems from the other factors analyzed. As for the other propositions, they were strongly confirmed, demonstrating that student interest in a career in the area, perception of the necessity of the area in the course curriculum and the educational and professional impact of the knowledge of this area really exert a positive influence on the student interest in this subject matter.

Table 3: Synthesis of results for conducted tests.

Proposition	Factors influencing interest in the area	Result
P1	Personal interest in a career	Confirmed
P2	Perception of educational and professional impact	Confirmed
P3	Command of management skills	Rejected
P4	Perception of necessity of the area in the course	Confirmed

Source: Research Data.

4.4 Analysis of groupings

As a way of further exploring research data, a decision was made to apply cluster analysis to construct measurements. Thus, the *k-means* method was used, and the sample was disaggregated into three groups. The generated groups all had a rather significant number of entries. Means for each group, by construct, are displayed in Table 4. The results led to the following breakdown:

Cluster 1 had 43 entrances (26.1% of the total) and the means in each construct were considerably low. This cluster involved students averse to the area of Production and operations;

Cluster 2 had 60 entrances (36.4% of the total) and the means of the constructs ranged from intermediate to high. This cluster involved students enthusiastic about the area of Production and operations;

Cluster 3 had 62 entrances (37.5% of the total) and the means of the constructs were intermediate, however the mean for interest in the career was low. This cluster involved students interested in the area of Production and operations;

Since Business Administration is a multidiscipline area, with a series of possible areas and fields of per-

formance, it can be assumed that the area of Production and operations is valued by a rather significant number of students, as approximately three out of four students either are interested or are enthusiastic about the area. Hence, only one out of four students can be considered averse to the area of Production and operations, a percentage that can be considered small.

Table 4: Generated groups and descriptive measures.

Construct	Groups	Number	Percentage	Mean	Deviation
Personal interest in the area	1	43	26.1	2.50	0.55
	2	60	36.4	4.18	0.62
	3	62	37.5	3.67	0.52
Interest in a career in the area	1	43	26.1	1.79	0.76
	2	60	36.4	4.06	0.64
	3	62	37.5	2.31	0.64
Perception of educational and professional impact	1	43	26.1	2.74	0.49
	2	60	36.4	4.33	0.55
	3	62	37.5	3.77	0.52
Mastery of management skills	1	43	26.1	2.32	0.86
	2	60	36.4	3.25	0.68
	3	62	37.5	3.28	0.77
Perception of necessity or the area in the course	1	43	26.1	2.84	0.58
	2	60	36.4	3.93	0.66
	3	62	37.5	3.58	0.53

Source: Research data

On the other hand, the analysis of means indicate that student security in the command of management requirements of the area did not reach high levels in any of the groups. For the group of the averse students, the mean was low, and for the others it was only intermediate, even for students considered to be enthusiastic, who, because of their greater interest, would dedicate more time to the study of Production and operations disciplines.

The result of the means for the construct interest in the career is also interesting. This construct presented a high mean for enthusiastic students, which was expected, and very low mean for averse students. As for interested students, the mean remained in a low level, also being the only construct with mean lower than 3 in this group. The indication is that only enthusiastic students show a consistent interest in pursuing a career in the area, while the interested ones, despite pointing out high interest in the other constructs, have little interest in moving to this area in their professional career.

5. FINAL CONSIDERATIONS

For this study, it was assumed that it is necessary to investigate personal interest in the various professional alternatives and functional areas of management, that can bring relevant information both in academic and professional (non academic) terms. Considering this assumption, it is believed that this work has served the purpose of presenting a relevant contribution to the understanding of the value that Business Administration students attribute specifically to the area and to the Production and operations disciplines. So, it is expected that the results of this study constitute knowledge relevant to managers of Business Administration courses and institutions of higher education. Furthermore, these results add to the conclusions of other studies and it is reasonable to assume they have the potential to bring about contributions of new research and studies evaluating core teaching and course disciplines.

From the results of the field work (See section 4), it is assumed that the research question was adequately answered, as it was possible to consistently evaluate students' interest in Production and operations, as well as to analyze the potential factors influencing this interest. In this way, the two goals defined initially were reached (sub-sections 4.2 and 4.3). Additionally, it was possible to develop a logical and consistent typology for students (sub-section 4.4), reaching the third goal of the study.

In theoretical terms, this study inserts itself in the context of curricular evaluation. Thus, considering characteristic and limitation of the sample, we believe that we present some relevant empirical evidences regarding the relationships analyzed and the data descriptions presented. From this perspective, the research was relevant by pointing out empirical

evidences about students' positions on a functional area of the Business Administration course, making it possible to verify that students have a well formed and consistent positioning relative to this area.

The results of the study also indicate that the area of Production and Operations displeases to a little more than one quarter of the students and pleases to a little less than three quarters of them, of which half would intend to follow a career in the area and the other half has only theoretical interest, probably giving higher priority to other areas of Business Administration. However, even students who are more enthusiastic about the area do not possess consistent mastery of management abilities, demonstrating that the process of teaching disciplines needs to be reviewed and that students need to be more secure about the practical use of the knowledge acquired in the classroom.

As pointed by Arkader (2003), Production and Operations was initially neglected and later knew a renaissance as a field of study in Business Administration. Additionally, the managerial focus that can be perceived by some texts (CORREA; CORREA, 2004; SLACK; CHAMBERS; JOHNSTON, 2002) indicates the value that a managerial emphasis can bring to the Production and operations area, together with the technological development provided by engineering areas. This can be facilitated by the involvement of Business administration faculty and students in the area. In this way, the results presented here give an indication of some means by which this approximation can occur, specifically indicating some factors that can promote the students interest in the area.

The results give indications to course managers and faculty that a systematic effort to reinforce the value of Production and operations disciplines would bring positive effects on the interest of Business Administration students to get involved in this area. We suggest faculty to reinforce the interplay between the classes contents and the other subjects of the course, to indicate the potential impacts of the contents studied on the students education and profession, and the career alternatives in this area, and also the necessity of the involvement of futures managers (current business administration students) to the development of the area.

On the other hand, we stress that the results were limited, since the sample was restricted to institutions in the city of Fortaleza and the sampling was set on a convenience basis. A replication of this study in other Brazilian states and regions would be relevant, preferably with more rigorous sampling methods.

Moreover, the advisability of performing cluster analysis in future studies is acknowledged in order to test the consistency of research propositions in sample sub-groups. To do so, it is necessary to use a bigger sample, which can be significant even if it is divided into three groups. Cluster analysis can also be used to compare the area reviewed here with groupings of other functional areas, to demonstrate the relative value that each area has in the Business Administration course curriculum.

Aiming at deepening the subject and searching a more global vision of the area, other works will be able to investigate the positioning of professors and entrepreneurs related to the process of teaching management abilities in the area of Production and Operations and find out what types of propositions can be developed to raise student interest, in the quest for a convergence between the context of education and practical application of academic knowledge.

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APPENDIX: CONSTRUCTS AND RESEARCH VARIABLES MEANS AND STANDARD DEVIATIONS (SD)

Personal interest in the area

Variables	Mean	SD
Disciplines in the area are of great importance to me	3,76	1,07
Disciplines in the area are very interesting	3,86	1,02
I do not bother to spend time to dedicate myself to the activities in this area	3,38	1,22
I would enroll in the disciplines in this area even if they were not compulsory	3,21	1,27

Interest in a career in the area

Variables	Mean	SD
Career in this area is a good option for me	2,89	1,23
A career in this area is desirable for me.	2,76	1,30
A career in this area arouses significantly my interest	2,79	1,31

Perception of educational and professional impact

Variables	Mean	SD
What I learn in the disciplines in this area will be important to my professional education	3,88	1,11
Learning brought about by the disciplines in this area can be considered of great relevance to my professional education	3,76	1,06
Learning management skills help students to solve practical problems	3,81	1,01
Disciplines in the area lead students to match theory and practice	3,73	1,13
Content learned in the disciplines in the area of Production and operations will be useful in my daily life	3,35	1,24

Mastery of managerial skills

Variables	Mean	SD
Developing a strategy in Production and Operations for an industrial, agriculture and services organization	2,55	1,10
Translating strategic actions in Production and Operations into the tactical and operational level	2,88	1,13
Developing projects of products, services and Production processes	2,87	1,11
Planning and implementing actions in management and production control	3,25	1,12
Planning and implementing performance improvements for the production area	3,25	1,08
Articulating Production and Operations activities with other functional activities (Marketing, finances, human resources, logistics)	3,33	1,02

Perception of necessity

Variables	Mean	SD
Learning generated in the area develops critical thinking among students	3,62	1,11
I understand that everybody should complete disciplines in this area	4,01	1,09
Discipline content in the area should also be explored in all course disciplines	3,05	1,19
Area content complements well the other disciplines of the course	3,60	1,03
Disciplines in the area are quite challenging	3,51	1,05
Companies expect my institution to encourage students to get education in the area	3,30	1,21

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