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An Exploratory Study on ENADE Evaluation Report Utilization and its Impact on Undergraduate Accounting Program Performance in Brazil

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Dissertation presented to the Department of Accountancy and Actuarial Science at the College of Economics, Business and Accounting at University of Sao Paulo in partial fulfillment of the requirements for the Doctoral degree in Science (Accounting).

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This dissertation is dedicated to my mother, Zilda, whose pride and confidence in me have always pushed me to do my best; to my father, Amândio (*in memoriam*), whose example and character are the foundations of my life; to my brother, Artur, for making my life happier; and to my husband, Luis Paulo, whose love, companionship, critical thinking and care complete me in so many ways and who makes my world better.

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RESUMO

Freitas, S. C. (2012). *Um Estudo Exploratório sobre a Utilização do Relatório de Avaliação do ENADE e seu Impacto no Desempenho dos Cursos de Graduação em Ciências Contábeis no Brasil*. (Tese de Doutorado), Universidade de São Paulo, São Paulo, Brasil.

O programa Brasileiro de avaliação da educação superior, largamente conhecido pelo Exame Nacional de Desempenho de Estudantes (ENADE), representa um esforço governamental para reunir informações sobre a qualidade dos cursos de graduação. Como um produto da avaliação, um relatório é disponibilizado para cada curso avaliado; e saber em que extensão esses relatórios são utilizados pelos coordenadores de cursos de graduação em ciências contábeis, assim como qual é o impacto do uso desse relatório sobre a performance dos cursos, foram os principais objetivos desse estudo. Fundamentado teoricamente na literatura sobre uso de avaliação, um questionário, que inclui uma escala para mensurar tipos de utilização, foi desenvolvido e aplicado. Com base em uma taxa de resposta de 62% (322 questionários completos), quatro diferentes aspectos foram analisados: (1) estudo dos fatores associados ao uso do relatório de avaliação do ENADE, através de regressão logística; (2) análise descritiva acerca da incidência de uso dos relatórios de avaliação, e acerca dos tipos de uso mais frequentes entre os coordenadores de cursos de ciências contábeis; (3) estudo do impacto da utilização, bem como do uso inadequado dos relatórios de avaliação, sobre o desempenho dos cursos de graduação em ciências contábeis na avaliação subsequente, por meio de regressão múltipla; e (4) análise descritiva das razões apontadas pelos coordenadores para o não uso dos relatórios de avaliação. Os principais resultados, a partir das evidências reunidas pelo presente estudo, foram: quanto maior o número de anos do coordenador no cargo, a sua titulação, o seu envolvimento no processo de avaliação e quanto mais positiva a sua percepção sobre a efetividade da comunicação entre o INEP e os cursos, maior a probabilidade de uso do relatório do ENADE; o uso conceitual foi o mais frequente entre os coordenadores pesquisados; a falta de conhecimento sobre a disponibilidade *online* dos relatórios de avaliação foi a principal causa de não uso verificada entre os pesquisados; e por fim, foi identificada uma correlação positiva entre o uso do relatório do ENADE e o desempenho dos cursos de graduação em ciências contábeis na avaliação subsequente.

Palavras-chave: utilização da avaliação, ensino superior, ciências contábeis.

ABSTRACT

Freitas, S. C. (2012). *An Exploratory Study on ENADE Evaluation Report Utilization and its Impact on Undergraduate Accounting Program Performance in Brazil*. (Doctoral dissertation), Universidade de São Paulo, São Paulo, Brazil.

The Brazilian program of higher education evaluation, broadly known by the National Exam of Students' Performance (ENADE), represents a governmental effort to gather information on undergraduate educational quality. As a product of that evaluation, reports are made available to each program evaluated; the main intent of the present research is to discover the extent to which these reports are used by undergraduate accounting program administrators and the impact of evaluation utilization on the programs' performance. Based on the theoretical support of the literature on evaluation utilization, a web-based survey was developed and applied to collect the data. With a response rate of 62% (322 completed surveys), analyses were conducted through four steps: (1) a logistic regression to verify which factors were associated with the use of the ENADE evaluation report, (2) a descriptive verification of the incidence of use of the evaluation report among the undergraduate accounting program administrators and the most frequent types of use that they report, (3) multiple regressions to analyze the impact of the evaluation report's use or misuse on the programs' performance in the subsequent evaluation, and (4) a descriptive analysis of the reasons for the nonuse of the evaluation report. The key findings of this research were as follows: the longer the program administrator's tenure, the higher his or her academic degree, the greater his or her involvement in the evaluation process, and the more positive his or her perception of the effectiveness of the communication between the evaluator and the programs, the greater the likelihood that the ENADE evaluation report would be used; the most frequent type of use among the administrators studied was conceptual; the main reason for nonuse was a lack of information about the online availability of the evaluation report; and finally, there was a positive correlation between the use of the ENADE evaluation report and the performance of undergraduate accounting programs in the subsequent evaluation.

Keywords: evaluation utilization, higher education, accounting.

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LIST OF ABBREVIATIONS AND ACRONYMS

AACSB	Association to Advance Collegiate Schools of Business
ACE	Evaluation of Teaching Conditions (Avaliação das Condições de Ensino)
AVE	Average Variance Extracted
CAPES	Coordination for the Improvement of Higher Level Personnel (Coordenação para o Aperfeiçoamento de Pessoal de Nível Superior)
CCLC	Century Community Learn Centers
CFA	Confirmatory Factor Analysis
CFC	Federal Accounting Council (Conselho Federal de Contabilidade)
CONAES	National Commission of Higher Education Evaluation (Comissão Nacional de Avaliação da Educação Superior)
CPC	Program Preliminary Grade (Conceito Preliminar de Curso)
ENADE	National Exam of Students' Performance (Exame Nacional de Desempenho de Estudantes)
ENC	National Exam of Programs (Exame Nacional de Cursos)
ENEM	National High School Exam (Exame Nacional do Ensino Médio)
ENQA	European Association for Quality Assurance in Higher Education
HLM	Hierarchical Linear Model
IDD	Difference Indicator between the Observed and the Expected Performance (Índice de Diferença de Desempenho)
IEA	International Association for the Evaluation of Educational Achievement
IGC	General Index of Programs (Índice geral de cursos)
INEP	National Institute of Educational Studies and Research - *Anísio Teixeira* (Instituto Nacional de Estudos e Pesquisas Educacionais - *Anísio Teixeira*)
MLR	Multinomial Logistic Regression

OECD	Organization for Economic Co-operation and Development
OLS	Ordinary Least Squares
PAIUB	Brazilian Universities Institutional Evaluation Program (Programa de Avaliação Institucional das Universidades Brasileiras)
PARU	Evaluation Program of University Reform (Programa de Avaliação da Reforma Universitária)
PISA	Program for International Student Assessment
PLS-PM	Partial Least Squares - Path Modeling
QAA	Quality Assurance Agency for Higher Education
SAEB	National System of Basic Education Evaluation (Sistema Nacional de Avaliação da Educação Básica)
SINAES	National System of Higher Education Evaluation (Sistema Nacional de Avaliação da Educação Superior)
TIG	Topical Interest Group
TIMSS	Trends in International Mathematics and Science Study
VIF	Variance Inflation Factor

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CHAPTER I

INTRODUCTION

Program evaluation has become very popular despite concerns regarding resource scarcity, in particular, scarcity in publicly funded programs. The evaluation goals reinforce the potential value of the evaluation instrument to help decision makers in their daily work. Henry (2000) stated that the main goal of an evaluation is "social betterment," and Weiss (1988) asserted that through the evaluation (a) evidence regarding the success of programs is provided, (b) the main factors associated with good and bad outcomes are identified, and (c) some possible explanations about how programs work and why they experienced the documented changes are presented. Hence, evaluation can potentially contribute to the program's quality improvement.

More than the program characteristics or the evaluator's background, federal policies have influenced the definition of how evaluations are structured, how process practices are developed, and which evaluation purpose (policy, accountability, utilization, contextual understanding, or democratization, among others) is applied (Chelimsky, 2007). The influence of federal policies is particularly notable in educational evaluations, which have frequently been the focus of policy or accountability evaluations by local, international, public and private organizations.

The quality of educational programs has been an object of debate and research around the world. Initiatives such as the Program for International Student Assessment (PISA) and the Trends in International Mathematics and Science Study (TIMSS) show that international organizations such as the Organization for Economic Co-operation and Development (OECD) and the International Association for the Evaluation of Educational Achievement (IEA) are trying to verify whether schools are adequately preparing their students by comparing their performances, aiming to highlight the strengths and weaknesses among the educational systems of different countries.

Higher education has also been the object of quality evaluations around the world (Bertolin & Leite, 2008; Ursin, Huusko, Aittola, Kiviniemi, & Muhonen, 2008; Van Kemenade, Pupius, & Hardjono, 2008). Governmental and non-governmental organizations have developed ways to certify institutional quality through evaluation or accreditation processes. Examples of these organizations include the European Association for Quality Assurance in Higher Education (ENQA), the Quality Assurance Agency for Higher Education (QAA), the Association to Advance Collegiate Schools of Business (AACSB) and the National Institute of Educational Studies and Research - *Anísio Teixeira* (INEP).

As in other fields of knowledge, accounting education has been pushed to improve teaching and learning quality due to the new economic dynamics encountered by companies. Moreover, accounting programs have been trying to prevent professional misbehavior and failures that are related to a lack of knowledge, which is commonly verified in cases of accounting fraud, by including courses such as ethics in their curricula and requiring approval in accountant examinations before the students begin their professional careers. Additionally, the harmonization of international financial reporting standards has recently required major curriculum changes and has challenged accounting education in many countries. In this context, concerns about quality are constantly present in the daily routine of accounting program administrators. However, there is no consensus about how quality in higher education can be measured.

Many higher education institutions are applying for an ISO 9000[1] certificate as a way to assure their quality (Lundquist, 1997; Ursin et al., 2008; Van Kemenade et al., 2008), but the most popular way to obtain evidence of quality in higher education programs is through external evaluation (Van Kemenade et al., 2008).

External program evaluations are implemented with the goal of producing information that helps to better comprehend how activities, processes and outcomes are contributing to the attainment of the primary objectives of the organization. Therefore, if properly used, evaluations can potentially serve as an information system that can help programs achieve their goals and correct possible deviations in their operations.

[1] ISO 9000 is a group of standards from the International Organization for Standardization, a non-governmental institution created in 1947, that aim to promote a quality continuum for products and services.

In general, evaluation use or utilization refers to the application of evaluation findings by people (Patton, 2008). Some program evaluation researchers have reinforced the necessity of exploring and comprehending evaluation use (Chelimsky, 1998; Conner, 1998; Datta, 2000; Henry & Rog, 1998; Johnson, 1998); others have stated the importance and benefits of evaluation utilization (Alkin, 2010; Patton, 2008; Preskill & Torres, 2000; Shadish, Cook, & Leviton, 1991). Discussions concerning the definitions of use, types of use, factors associated with use, and even occurrences of nonuse or misuse have been presented in the most important journals on program evaluation (Alkin & Coyle, 1988; Cousins & Leithwood, 1986; Leviton & Hughes, 1981; Stevens & Dial, 1994; Shulha & Cousins, 1997). However, there has been little research that includes practical tools for measuring use in its multiple forms and intensity levels.

1.1 Problem statement

To provide a better understanding of educational institutions, program evaluations have been implemented by governmental and private organizations with different foci and methodologies; however, a report is always developed to describe the results and the means through which these results were found. The evaluation use literature rests on the assumption that institutions can improve their internal processes, make better decisions, better understand themselves, and increase the quality of their programs through the utilization of evaluation activities and reports.

In Brazil, the practice of educational evaluation has been consolidated through governmental initiatives that aim to measure the quality of the Brazilian educational system with a focus on accountability. The current Brazilian program of higher education evaluation was implemented in 2004 by the Ministry of Education through the National System of Higher Education Evaluation (SINAES) and has been used to evaluate each undergraduate program offered in both public and private institutions every three years. This evaluation is managed by the INEP and is generically titled the National Exam of Students' Performance (ENADE); ENADE is one component of SINAES. After the ENADE is implemented, each higher education program in Brazil receives a grade from 1 (lower) to 5 (higher) that represents its educational quality. The Brazilian government then summarizes and posts the results of each

program on the website of the INEP, but the utilization of these reports and the impact of the evaluation information among colleges and universities in Brazil have not yet been thoroughly studied (Burlamaqui, 2008).

Some characteristics of accounting programs in Brazil make accounting education peculiar, especially as concerns the students. For instance, the students typically come from families with lower socioeconomic status; most of them are part-time students, and there is high demand for evening programs. In addition, the accounting restructuring that resulted from the adoption of the international financial reporting standards has required curriculum and knowledge updates, impacting accounting education in Brazil. In this context, program evaluation could be a powerful tool for the process of comprehending and managing educational institutions, providing information that helps them to better understand themselves and their outcomes.

Additionally, the recent results from the accountants' professional exam in Brazil caused some concern regarding Brazilian accounting education (Miranda, 2011). The high failure rate among the newly graduated students may be an indication of a knowledge shortfall, which would induce accounting programs to seek quality improvement.

According to the utilization-focused evaluation literature, accounting programs could benefit from the evaluation report utilization because "the ultimate purpose of evaluation is to improve programs and increase the quality of decisions made" (Patton, 2008, p. 356). Hence, the report provided through the ENADE evaluation may serve as a managerial instrument used in the accounting program administrators' decision making process.

The definition of evaluation use has been widely discussed in utilization-focused evaluation theory. Among the many concepts of evaluation use, that of Cousins and Leithwood (1986) perfectly fits the purpose of the present study. This concept states that "the mere psychological processing of evaluation results constitutes use, without necessarily informing decisions, dictating actions, or changing thinking" (Cousins & Leithwood, 1986, p. 332).

Based on this definition and assuming that through the utilization of evaluation reports, educational institutions can better comprehend themselves, improve their processes and make decisions that will increase the quality of their programs, this study aims to explore the

following question: **to what extent are Brazilian higher education evaluation reports used by the undergraduate accounting programs?**

In a context where academic programs are seeking to improve quality, it is important to know how the Brazilian higher education evaluation system is contributing to the undergraduate accounting programs in Brazil. Knowing whether the accounting institutions use their evaluation reports as an information source will help to examine the setting of some educational decisions and to identify the possible strengths and weaknesses of the Brazilian higher education evaluation process.

1.2 Purpose of the study

This study intended to verify the types, intensity and impact of the ENADE evaluation report utilization among the program administrators in accounting schools in Brazil and to relate that utilization to the programs' grades in the subsequent evaluation, with an overarching goal of analyzing the relationship between evaluation use and program outcome.

In addition to verifying the intensity of use and its correlation with program performance, this study examined other factors described in the evaluation use literature and their relationship to the utilization of the ENADE reports. These factors included those that influence utilization, such as relevance, credibility, user involvement, communication effectiveness, the potential for information processing, clients' need for information, the perceived value of the evaluation as a management tool, the quality of the evaluation implementation, contextual characteristics of the decision or policy setting; and personal characteristics of the evaluation users (Cousins & Leithwood, 1986; Shulha & Cousins, 1997). Additionally, the present study sought to identify the main reasons given by the program administrators to justify their nonuse of the ENADE evaluation report and to verify possible occurrences of misuse of the report.

Therefore, the main objective of this study was to verify whether the ENADE evaluation report was utilized by the accounting program administrators and how its possible use impacted the programs' performance in the next ENADE. Additionally, this study intended to

(a) identify the main factors influencing utilization, (b) identify the most frequent types of use reported, (c) identify the main causes of evaluation nonuse, and (d) verify incidences of misuse.

To accomplish these objectives, a data collection instrument was developed and applied to identify the use occurrences, the most frequent types of use, the reasons for nonuse and the possible misuses of the Brazilian higher education evaluation reports among the accounting program administrators. The cited instrument was sent to all programs that were evaluated through the ENADE in both the 2006 and 2009 editions. Lastly, multiple regressions were used to correlate the utilization of the evaluation reports with the programs' grades. Details on the methods are described in the third chapter.

In the particular evaluation setting studied, most of the stakeholders[2] were not involved in the process. This lack of involvement differentiates this research from other studies investigating the use of evaluations. Previous studies concluded that the participation of the intended users in the evaluation processes was related to, facilitated, or enhanced the usefulness of the evaluation results (Barrios, 1986; Brown-Mcgowan, 1992; Cai, 1996; Cornachione Jr., Trombetta, & Casa Nova, 2010; Greene, 1988a; Johnson, 1993; Mccormick, 1997; Preskill & Caracelli, 1997; Rockwell, Dickey, & Jasa, 1990; Roseland, 2011; Turnbull, 1999). However, the Brazilian higher education evaluation was not designed to be participatory. Therefore, the present research explored a different context, studying evaluation utilization among stakeholders who were not consulted or whose concerns and suggestions were not considered in the evaluation design.

1.3 Significance of the study

This study aimed to contribute to the evaluation utilization literature by proposing a scale with which to measure evaluation use of different types (instrumental, conceptual, and persuasive) in addition to misuse and by applying this scale to measure the report utilization among undergraduate accounting program administrators from the institutions evaluated through the

[2] "Stakeholders are those who have a legitimate interest in or are served in some meaningful way by the program and are thus implicated in the program's evaluation" (Yarbrough, Shulha, Hopson, & Caruthers, 2010 p. 23).

ENADE in 2006 and 2009. Furthermore, this study aimed to better comprehend how these evaluation reports are used by the undergraduate accounting programs, which will enable the accounting schools to increase their internal knowledge. The final goal of this study was to promote information about accounting program management and outcomes in Brazil, which is especially important at this time of major changes in financial accounting standards worldwide.

Beyond studying the utilization of educational evaluation reports, this research examined the main justifications for the nonuse of these reports. Through the opinions of the program administrators who did not use the ENADE evaluation report, this study gathered information about the strengths and weaknesses of the Brazilian higher education evaluation process. Studies on nonuse are less common than studies focused on other issues in the evaluation use literature, particularly studies of nonuse using empirical research with real evaluations, reports and stakeholders.

The present study also attempts to verify the occurrence of misuse, as classified by the evaluation use literature, among the uses described by the accounting program administrators. This contribution is important because few studies have addressed misuse directly (Cousins & Shulha, 2006; Fleischer & Christie, 2009). In particular, research using empirical data to discuss the misuse of evaluation information among higher education institutions is scarce.

Another novel aspect of this research is that it includes an analysis of the factors associated with the utilization of the ENADE report, which can help to better understand the attitude of the group studied toward evaluation use. In addition, it was possible to identify some of the aspects related to the administrators' perceptions of the Brazilian program of higher education evaluation.

The overall expectation is that the results of this research will promote a broader view about ENADE evaluation utilization among undergraduate accounting programs in Brazil and that it will help to clearly define particular information needs and contribute to the informative potential of evaluation reports. Moreover, instruments for estimating *use* are not common in the evaluation utilization literature, and, according to a literature review, no previous studies have correlated use with a measure of programs' quality.

Finally, it is expected that the feedback provided by this study will allow the Ministry of Education in Brazil to better understand the impact and the usefulness of the reports developed through the national exam of students' performance and to make decisions aimed at increasing the users' potential interest in the evaluation outcomes. It is important to highlight that concerns regarding the utilization of the higher education evaluation results or products are present in the Brazilian educational evaluation literature (Souza & Oliveira, 2003; Verhine, Dantas, & Soares, 2006; Vianna, 2009). Thus, efforts to enhance the knowledge about evaluation use in Brazil are welcome.

1.4 Limitations of the study

The main limitations of this study are (a) the utilization of retrospective actions as a way to recognize use and the occurrences of types of use, (b) the utilization of a large-scale test as part of the measurement of the quality of the programs, (c) the utilization of self-reporting to gather information about evaluation use, and (d) the self-selection of participants.

The data collected through the scale application were based on past events derived from reading the ENADE evaluation report. Hence, memory was the basis of the answers and experiences reported. In this case, the limitation associated with the use of memory in the process of gathering information is the fact that memories may not be reliable.

Inasmuch as students may not take seriously the large-scale test used by the Brazilian Ministry of Education to evaluate the quality of programs (Leitão, Moriconi, Abrão, & Silva, 2010), the test outcomes may not represent the students' knowledge. Consequently, the programs' grade may be affected because the large-scale test outcome is a relevant variable in the definition of the programs' performance, which was correlated with the utilization of the ENADE evaluation report in this study. Therefore, any possible imprecision in these data would influence the results and analyses of this research.

Considering that the program administrators self-reported the information about the use of the evaluation reports, it is possible that some misunderstanding has occurred or that inaccurate answers have been provided, intentionally or not, in the scale application. In this case, the

information gathered would not represent the programs' status and, consequently, could lead this research to inaccurate conclusions.

As expected, some accounting program administrators in the population researched did not respond to the data collection instrument. Hence, only those who agreed to answer the instrument were included in the group studied. The lack of answers from the non-respondents impacted the analysis of the present study because the opinions of those who did not participate were not counted in this study.

In addition, this study considered the primary stakeholders to be the program administrators of the undergraduate accounting programs. The factors influencing utilization, types of use, motivations for nonuse, views about the evaluation, and possible misuses by other potential users, such as professors, students, college or university deans, and parents were not studied.

Lastly, the results presented in this research cannot be generalized because they did not come from a probabilistic sample. Therefore, the conclusions derived from this research are applicable only to the group of program administrators and accounting programs studied.

CHAPTER II

LITERATURE REVIEW

In this chapter, the theoretical support for program evaluation, educational evaluation and utilization-focused evaluation will be presented in addition to the history of educational evaluation in Brazil and the Brazilian program of higher education evaluation.

2.1 Understanding evaluation

Different types of programs and projects coexist that request funding from governmental and non-governmental agencies or private organizations, but resources are always scarce. It is necessary to know whether the programs are performing well and what their outcomes (intended or not) are. In this situation, the best way to understand what is happening with these programs and projects is to apply an evaluation. However, although the outcomes from program evaluations might not be used as the only parameter for funding allocation, the programs with unsatisfactory performance may have difficulty continuing to operate or they may become worse due to the lack of financial support.

Generically, Stufflebeam (2001) described evaluation as "a study designed and conducted to assist some audience to assess an object's merit and worth" (p. 11). Alkin (1985), however, defined evaluation as the "activity of systematically collecting, analyzing, and reporting information that can then be used to change attitudes or to improve the operation of a project or program" (pp. 11-12). Both definitions have in common the characteristic of translating reality into information, providing a type of informed judgment about programs or projects. It is also interesting to highlight, in Alkins' definition, the argument about *information use* as a natural consequence of an evaluation process.

One of the best-known ways to characterize evaluations is as either formative or summative, terms developed by Scriven (1967) and largely used since then (Rebien, 1997). A formative evaluation is intended to provide information for program improvement, whereas a

summative evaluation intends to help with decisions such as whether to continue or abandon a program (Alkin, 2010). However, these types of evaluations are not mutually exclusive. It is relatively common to find that both formative and summative characteristics coexist in the same program evaluation (Stake, 2004).

Another perspective on formative and summative evaluations is related to their functions. The formative function corresponds to the use of an evaluation for the improvement and development of a program, product, or other activity that is in progress. However, the summative function corresponds to the use of an evaluation for accountability, certification or selection (Nevo, 2006).

Three other important aspects of evaluation include the following: (a) an evaluation is not "value-free" (Patton, 2008; Rebien, 1997), (b) each evaluation is related to specific approaches that guide the evaluation process (Stufflebeam, 2001), and (c) an evaluation is not always a matter of value judgment (Scriven, 2001).

First, value, moral, and ethical considerations are always present in the evaluators' decisions and cannot be dissociated from their work. Additionally, some evaluation researchers have noted the importance of incorporating values into the evaluation process to better understand the effectiveness of the program being evaluated in its context (Greene, 2005; Schwandt, 1997; Stake, 2004).

Second, the approaches organized by Stufflebeam (2001), which were divided into four main groups (pseudoevaluations, question- and/or methods-oriented approaches, improvement/accountability approaches, and social agenda/advocacy), were developed based on the beliefs and experiences of their authors regarding how evaluations should be conducted. Alkin (2010) presented a different organization for the evaluation approaches, dividing them into three general groups (use-oriented, values-oriented, and methods-oriented). Alkin also explained that concerns about use, values and methods are present in all evaluations but that the choice of the evaluation's primary orientation is what defines the approach that will be used (Alkin, 2010).

Third, the word *evaluation* has commonly been considered to be a synonym for a merit judgment of programs or activities. However, according to Scriven (2001), an evaluation may

simply contrapose measurements and established standards without attributing merit judgment. Thus, it is recommended that caution be used with generalizations when using the term *evaluation*.

In evaluations, standards can be used to define the quality parameters that help to determine the level of program success or to evaluate the evaluation process (metaevaluation). In the former case, any prior outcomes from the same or similar programs can serve as a parameter with which to judge the current status, or new goals can be established. In the latter case, a group of standards is usually discussed and consensually chosen by the evaluators and stakeholders, serving as a practice guide during the evaluation process. As an example, evaluators and practitioners recognize "The Program Evaluation Standards" proposed by the Joint Committee[3] as among the most relevant criteria for assessing quality in educational evaluations (Wingate, 2009).

Although the potential contributions to social improvement through evaluation are recognized (Lipsey, 2001; Mark, Henry, & Julnes, 2000; Smith, 2001), some researchers believe that there is a lack of studies on evaluation itself, particularly studies that will expand the present understanding regarding the types of evaluation and their benefits and that include empirical analysis aimed at improving practice and contributing to social betterment (Henry & Mark, 2003b; Shadish et al., 1991).

2.2 Educational evaluations

Educational institutions have been the target of evaluations worldwide and have received the special attention of evaluation researchers, as can be attested by the large number of studies focused on this domain. Characteristics such as strong governmental regulation, the variety of actors involved (teachers, students, directors, social assistants, and program coordinators, among others), cultural and social diversity, and the possibility of longitudinal analysis make educational evaluation very attractive and in demand.

[3] Joint Committee on Standards for Educational Evaluation.

Educational evaluation was defined by Nevo (1995) as the "act of collecting systematic information regarding the nature and quality of educational objects" (p. 11). Research on educational evaluation usually investigates issues regarding students, teachers, instructional materials, educational projects, and program and school evaluations; among these objects of evaluation, students have been the most studied by evaluators (Nevo, 2006). The same author also stated that "educational evaluation can serve many needs at various levels of the educational system resulting in five major functions. They are related to decision-making, improvement, accountability, professionalism, and certification" (Nevo, 2006, p. 443).

Educational evaluation can be considered to be a complex task in a complex environment (Ball, 1981). Therefore, the decisions on what outcomes to assess and what evaluation design to apply are very important to the development and success of the evaluation process. Ryan and Cousins (2009) stated that "the goal of all educational evaluation is to enable programs and policies to improve student learning" (p. ix). This noble goal enhances the appeal of educational evaluation and contributes to increasing the researchers' interest and involvement with this challenge.

Among the large number of studies on educational evaluations, those developed by Betoret and Tomás (2003), Byrne and Flood (2003), Leviton and Boruch (1983) and Braskamp, Brown and Newman (1978) are particularly interesting in the context of the present research because they provide rich information about the previous results on evaluation in higher education, evaluation in accounting programs, federal educational evaluation, and the source and usefulness of evaluation reports.

Betoret and Tomás (2003) proposed an evaluation model using indicators for the activities developed in the teaching and learning process in higher education. Based on questionnaires applied to teachers (n = 2) and students (n = 156) during two semesters in a course at a Spanish university, the results indicated that the indicators model was considered to be a useful tool when utilized in the formative evaluation of professors.

Byrne and Flood (2003) tested the use of the Course Experience Questionnaire (CEQ) to evaluate teaching quality through an analysis of curriculum, teaching experience and student assessment outcomes. Through the CEQ questionnaire application among bachelor's and master's students (n = 204) during two academic years in an accounting program in Ireland,

the study confirmed the CEQ's reliability and construct validity and also confirmed the questionnaire's effectiveness in measuring teaching quality in that context.

Leviton and Boruch (1983) conducted research about the contributions of evaluations to educational programs and policy. Using case studies and analyzing the content of 21 evaluation reports, these authors found that federal evaluations in education contributed to changes in laws, regulations, and management; in particular, these changes were affected by information related to the program implementation, followed by program outcomes, cost, and federal administration.

Lastly, Braskamp, Brown and Newman (1978) verified the effects of the source and the message of educational evaluation reports. More precisely, they verified whether school administrators' (n = 52) and teachers' (n = 59) reactions to evaluation information were affected by the characteristics of the evaluator, the content of the report and the audience perception of the usefulness of the evaluation report, using simulated reports and conducting a survey after the report reading. The results from the administrators and the teachers were significantly different regarding their perception of the usefulness of the evaluation report. Administrators rated the usefulness of the evaluation report higher than did teachers. However, the two groups studied did not differ in their perception of the impact of the evaluators' characteristics on the evaluation information.

These studies exemplified the educational evaluation context and established previous experiences with the topics that are related to the present study. It is important to highlight that the research by Byrne and Flood (2003) was one of the few studies investigating evaluation in accounting programs in the literature reviewed. Considering the focus of this study on verifying evaluation utilization within undergraduate accounting programs in Brazil, the present study appears to contribute to a minimally explored field.

2.3 Educational evaluation in Brazil

Educational evaluation in Brazil had an unstable beginning. Although introduced in the first decades of the 20th century, only in the 1960s did educational evaluation become more

systematized and begin to be part of Brazil's developmental politics. However, at the end of the 1970s and the beginning of 1980s, educational evaluation was discredited and questioned as a field of study, recovering its significance in the late 1980s early 1990s through initiatives directed toward elementary school evaluation (Gatti, 2002).

Among the problems identified by the Brazilian educational evaluation literature, the two primary difficulties related to the educational evaluation process were the lack of people with program evaluation expertise to manage and structure the system and the discontinuity of public politics over the years, which caused changes to the work teams and to the study objects (Gatti, 2009).

Educational evaluation in Brazil has been consolidated only since the 1990s, and it has aroused the interest of researchers in different fields of knowledge, such as education, economics, and psychology. As examples of the systematization of educational evaluation, the following programs can be cited: the National System of Basic Education Evaluation (SAEB); the National High School Exam (ENEM); and the National Exam of Programs (ENC), which was replaced by the ENADE. ENADE is one component of the SINAES, instituted in 2004 with the purpose of evaluating higher education institutions, higher education programs, and student performance (Dantas, 2009; Silva, 2011).

These programs are funded by the Brazilian government, which also maintains employees who manage each program jointly with consultants, mainly professors, who make up specific committees. The work teams define the evaluation concept and the standards used to measure the quality of institutions, which are usually based on the outcomes of standardized tests applied to students, and these teams are responsible for undertaking the evaluation.

Educational evaluation in Brazil has an accountability focus, and it aims to measure the quality of institutions (Santos, 2012). The accountability approach is popular among politicians, is question-oriented with outcomes, is based on pass/fail standards, provides for punishment for unacceptable outcomes, and includes an external and impartial perspective orientation, among characteristics (Stufflebeam, 2001). These characteristics are present in the Brazilian educational evaluation programs. In addition, Rezende (2010) affirmed that accountability systems "typically require students to take a standardized test" (p. 842), which also occurs in the Brazilian evaluations.

According to Hanushek (2002), standardized tests have been the predominant instrument for assessing the quality of education. This type of performance test predominantly depends on the student's cognitive ability. Educational literature has discussed the validity of this type of performance measurement, although systematic studies that reveal the conceptual framework and specific criteria that are considered in the students' performance assessment instruments are scarce (Bonamino, Coscarelli, & Franco, 2002).

Researchers have asserted that educational evaluations are increasing in importance at all levels of education in Brazil and have argued that this practice is important because it allows for a better understanding of the conditions in which schools exist and increases the possibility of finding solutions to the problems that affect the quality of education (Bonamino et al., 2002; Jesus, 2004; Pereira, 2006).

However, other researchers point out some negative aspects of educational evaluations in Brazil, especially the use of standardized tests by educational institutions as a model that drives curriculum reductions based on the test contents and the potential for the evaluation process to become a type of control instrument that is directed at preparing the workforce for the labor market (Gentili, 1996; Sousa, 2003). Another criticism related to the national program of educational evaluation is that it is not restricted to pedagogical boundaries but, rather, reflects a governmental and political orientation, and, in some cases, instead of acting as a diagnostic instrument, it serves as a governmental control instrument (Souza, 2009).

After an initial period of strong resistance, the educational evaluations in Brazil underwent changes and a new evaluative culture based on an accountability focus is in the process of consolidation (Gatti, 2009). Impacts from this new evaluative culture can already be seen, and the next stage should consider how the evaluation results can stimulate changes and be used to improve the educational process (Gatti, 2009; Vianna, 2009).

2.3.1 The Brazilian program of higher education evaluation

According to Mendonça (2000) and Schwartzman (2010), higher education developed late in Brazilian society. The first programs were initiated in the 1800s, but the first universities were established between the 1920s and 1930s through the aggregation of the single programs and colleges that were already in operation in Brazil (Mendonça, 2000; Schwartzman, 2010).

Concerns about the quality of higher education in Brazil originated from the expansion of these institutions and the increasing number of students (Marchelli, 2007). As a response to these concerns, the first initiative related to higher education evaluation in Brazil was developed. The Evaluation Program of University Reform (PARU) was instituted in 1983 with the objective of analyzing university management and knowledge production and dissemination among universities, but it had a very short lifetime and became extinct only one year after its implementation due to political discontinuity and internal dispute within the Brazilian Ministry of Education (Gatti, 2002; Marchelli, 2007).

A second attempt to institute a Brazilian program of higher education evaluation, called the Brazilian Universities Institutional Evaluation Program (PAIUB), was implemented in 1993 and came to an end in 1995. This program introduced the institutional self-evaluation as the initial stage of the evaluation process and obtained the volunteer participation of approximately 94 universities before it was discontinued by the Ministry of Education. One of the problems related to the PAIUB was that it evaluated only universities; in Brazil, more undergraduate students were in institutions with a different academic organization, such as colleges, which were not evaluated even though there were suspicions about the precarious institutional conditions of many of these institutions (Gatti, 2002; Marchelli, 2007).

In the year after the PAIUB was discontinued, a new higher education evaluation initiative was implemented: the National Exam of Programs (ENC), popularly known as *Provão*. This evaluation program differed substantially from the higher education evaluation standards used previously. This program was followed by two other initiatives: the Evaluation of Teaching Conditions (ACE) and the Higher Education Census. However, the ENC received more attention from the Brazilian media and society because it was based on a mandatory large-scale test that was applied to all senior students in Brazil with the goal of measuring the

quality of the institutions. The ENC began by evaluating three programs in 1996 and gradually increased the number of programs evaluated until it reached 26 in its last year in 2003 (Paiva, 2008; Verhine et al., 2006). Table 1 presents a chronological scale of the programs evaluated by the ENC.

Table 1 - Programs evaluated by the ENC

	YEARS							
	1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Programs evaluated	Business	Business	Business	Business	Business	Business	Business	Business
	Civil engineering	Civil engineering	Civil engineering	Civil engineering	Civil engineering	Civil engineering	Civil engineering	Civil engineering
	Law	Law	Law	Law	Law	Law	Law	Law
		Chemical engineering	Chemical engineering	Chemical engineering	Chemical engineering	Chemical engineering	Chemical engineering	Chemical engineering
		Dentistry	Dentistry	Dentistry	Dentistry	Dentistry	Dentistry	Dentistry
		Veterinary medicine	Veterinary medicine	Veterinary medicine	Veterinary medicine	Veterinary medicine	Veterinary medicine	Veterinary medicine
			Electrical engineering	Electrical engineering	Electrical engineering	Electrical engineering	Electrical engineering	Electrical engineering
			Journalism	Journalism	Journalism	Journalism	Journalism	Journalism
			Languages	Languages	Languages	Languages	Languages	Languages
			Mathematics	Mathematics	Mathematics	Mathematics	Mathematics	Mathematics
				Economics	Economics	Economics	Economics	Economics
				Mechanical engineering	Mechanical engineering	Mechanical engineering	Mechanical engineering	Mechanical engineering
				Medicine	Medicine	Medicine	Medicine	Medicine
					Agronomy	Agronomy	Agronomy	Agronomy
					Biology	Biology	Biology	Biology
					Chemistry	Chemistry	Chemistry	Chemistry
					Physics	Physics	Physics	Physics
					Psychology	Psychology	Psychology	Psychology
					Pharmacy	Pharmacy	Pharmacy	Pharmacy
						Education	Education	Education
							Accounting	Accounting
							Architecture	Architecture
							History	History
							Nursing	Nursing
								Geography
								Phonoaudiology

The ENC was centered in outcomes, productivity, efficiency, control and student performance (Tenório & Andrade, 2009). After the evaluation process, grades ranging from *A* to *E* were assigned to each program based on the students' average performance, and the Ministry of Education disclosed these grades. Additionally, the grades were widely publicized by the Brazilian media as a parameter of the programs' quality. After three years receiving low grades, *D* or *E*, programs could be punished through the temporary prohibition of new student admissions (Gouveia, Silva, Silveria, Jacomini, & Braz, 2005; Rezende, 2010).

Some of the primary criticisms related to the ENC were that (a) it worked as a single evaluation instrument used to measure the programs' grades; (b) the evaluation design was not participatory, and the evaluations were imposed on the educational institutions, which were only information consumers; (c) it ignored the value-added concept by centering the evaluation on a specific knowledge test to measure the students' learning in their fields; (d) the quality indicator was unstable due to the test regulation and its frequent changes, resulting in incomparable outcomes; (e) it was economically unfeasible in the long term; and (f) there was an emphasis on higher education regulatory aspects that confounded the concepts of regulation with those of evaluation (Verhine et al., 2006).

After the 2002 presidential elections, Brazil had a new president and a new commission to discuss the Brazilian program of higher education evaluation. At that time, the objective was to improve the ENC. Hence, the SINAES was proposed and debated at a national level, being changed and later instituted in 2004 through Law number 10,861/04. These changes resulted in a higher education evaluation model that is unlike that of any other country in the world (Verhine & Dantas, 2009).

The SINAES is coordinated and supervised by the National Commission of Higher Education Evaluation (CONAES), and it is operated by the INEP, an autarchy that is linked to the Brazilian Ministry of Education. The current Brazilian program of higher education evaluation is one of the broadest actions undertaken to collect, systematize, and analyze data on higher education in Brazil, aiming at supporting decisions and improving the quality of teaching and learning in colleges and universities (Inep, 2004).

The SINAES maintained, with some changes in its design, the evaluation of students' performance, now called the National Exam of Students' Performance (ENADE), and

introduced two new dimensions to the evaluation process: the programs' evaluation and the institutions' evaluation. These two dimensions aim to improve the quality and guide the expansion of higher education institutions (Gouveia et al., 2005).

The ENADE grade is comprised of four instruments: (a) a standardized test that aims to measure the performance of undergraduate students, considering the curriculum contents, skills and competencies; (b) the students' perception of the test questionnaire; (c) the student questionnaire; and (d) the program administrator questionnaire. The standardized test is divided into two sections: the general knowledge test, which is the same for all programs evaluated in the year, and the test of specific knowledge, which is based on the contents provided in the guidelines for each program curriculum by the Ministry of Education. Until its 2010 edition, the ENADE was applied to freshmen and senior undergraduate students annually, but the program evaluation was rotated so that each field of knowledge was evaluated every three years (Zoghbi, Oliva, & Moriconi, 2010).

From the ENADE grades, it is possible to measure the Difference Indicator between the Observed and the Expected Performance (IDD), a new concept created by the SINAES. This indicator measures the colleges' contribution to the undergraduate students' professional development. The IDD represents the difference between the seniors' average performance in a program and the estimated performance for seniors in that program. The variables used in the calculation of the seniors' estimated performance include the programs' freshmen performance in the ENADE; the educational degree of the seniors' parents; and the programs' selectivity, that is, the ratio of freshmen to seniors in the program (Verhine & Dantas, 2009).

The second dimension introduced by the SINAES was the program evaluation, which corresponds to a program grade as measured through the Program Preliminary Grade (CPC). The CPC components are related to the quality of the undergraduate programs and are as follows: the ENADE grade, the IDD grade, the professor's degree and hours worked, the programs' infrastructure, and the programs' didactic-pedagogical organization. The information about the professors' degrees and hours worked are taken from the Brazilian higher education census. The programs' infrastructure and didactic-pedagogical organization components are measured based on the student's perceptions, which are collected through the students' questionnaire. Thus, the CPC is calculated as follows (Inep, 2009a):

$$CPC^{4} = (0.20 \times NPD) + (0.05 \times NPM) + (0.05 \times NPR) + (0.05 \times NF) + (0.05 \times NO) + (0.30 \times NIDD) + (0.15 \times NI) + (0.15 \times NC) \quad \text{where:}$$

NPD = proportion of professors with a doctorate or higher degree in the program;

NPM = proportion of professors with a master's or higher degree in the program;

NPR[5] = proportion of professors with a part-time or full-time work contract in the program;

NF = proportion of students who positively evaluated the programs' infrastructure;

NO = proportion of students who positively evaluated the programs' didactic-pedagogical organization;

NIDD[6] = difference between the seniors' average performance in the program and the estimated performance for seniors in that program;

NI = freshmen's grades from the ENADE exam;

NC = seniors' grades from the ENADE exam.

The third dimension implemented by the SINAES was the institutions' evaluation, which corresponds to an institutional grade measured through the General Index of Programs (IGC). The IGC[7] is a weighted average of the undergraduate and graduate evaluations of an institution. The undergraduate grade corresponds to the CPCs' weighted average of the institution, and the graduate grade corresponds to the weighted average of the grades attributed to the master's and doctoral programs if they are offered by the institution; otherwise, only the CPCs' weighted average is considered (Inep, 2009b). The graduate programs' grades are conferred through the Brazilian system of graduate program evaluation managed by the Coordination for the Improvement of Higher Level Personnel (CAPES), a public foundation linked to the Brazilian Ministry of Education.

Although the ENADE represents only one dimension of the Brazilian system of higher education evaluation, most of the Brazilian higher education institutions, media and

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[4] The programs' CPC was used as the outcome variable in multiple regressions measuring the impact of evaluation use on undergraduate accounting programs. This equation was applied from 2008 to 2010 evaluations.

[5] Aside from a part-time or full-time work contract, professors can have a work contract based on hours in Brazil.

[6] Details on the IDD and CPC calculation can be found at http://download.inep.gov.br/download/enade/2009/Nota_Tecnica_CPC.pdf

[7] Details on the IGC calculation can be found at http://download.inep.gov.br/download/areaigc/Downloads/nota_tecnica_IGC_2009.pdf

undergraduate students emphasize it. In some cases, there is a belief that the Brazilian program of higher education evaluation corresponds to the ENADE, a concept that is reinforced in the media (Bittencourt, Viali, Casartelli, & Rodrigues, 2008; Ristoff & Giolo, 2006). Thus, in the present research, the expression *ENADE evaluation* is used to represent the Brazilian evaluation process that is responsible for assessing the undergraduate programs' performance as determined through the CPC and based on the ENADE standardized test, ENADE questionnaires, and data from the higher education census.

Programs that receive a grade in the ENADE evaluation also receive a report that comprises detailed information about the grade achieved by the program, the performance of students on the large-scale test, the students' perceptions of the large-scale test, and information about the students' socioeconomic status. Comparative data from the national average student's performance and perceptions are also presented in the report. Thus, program stakeholders can utilize that information in their daily work to persuade people, to support their decisions, and/or to better know their students' characteristics and academic strengths and weaknesses.

A threat to the reliability of the ENADE outcomes is the students' lack of commitment to collaborating with the evaluation process (Leitão et al., 2010). A study developed by Leitão et al. (2010) verified the magnitude and type of a phenomenon known as a boycott, that is, the students' refusal to participate in the large-scale test. The authors found that when analyzed generically, the phenomenon did not appear to be significant because boycotts were engaged in by less than 3.5% of the students. However, when the data from each field of knowledge were analyzed individually, a large variability was verified. It is interesting to highlight that among all of the fields of knowledge evaluated by the ENADE, the accounting field had the second lowest (less than 1%) probability of a student boycott (Leitão et al., 2010). This finding increases the reliability of the ENADE accounting programs' outcomes that were used in the development of the present study.

Additional criticisms related to the ENADE are that it is a mandatory exam, that the same evaluative instrument is used in the entire country without regard for Brazilian regional differences, and that the evaluation process is heavily weighted toward the students' performance on the standardized test (Burlamaqui, 2008; Gouveia et al., 2005; Ristoff & Giolo, 2006). However, inasmuch as the ENADE data have become a potential source of information, it is worthwhile to attempt to better understand the variables underlying the

teaching and learning processes and the impact of the evaluation process on higher education programs and institutions in Brazil. Therefore, studies that analyze the ENADE experience are important (Verhine & Dantas, 2009).

2.3.2 Previous studies on higher education evaluation in Brazil

From the review of the literature on Brazilian higher education evaluation, empirical studies that addressed different aspects of the Brazilian program of higher education evaluation were found (Barbosa, 2011; Miranda, 2011; Nogueira, 2008; Real, 2007; Santana, 2009; Silva, 2007).

However, special attention was given to research on the factors associated with the performance of students on the ENC and ENADE inasmuch as the independent variables tested in the regressions in the present study were defined based on previous studies (Diaz, 2007; Gracioso, 2006; Moreira, 2010; Santos, Cunha, & Cornachione Jr., 2009; Santos, 2012; Silva, 2011; Soares, Ribeiro, & Castro, 2001; Souza, 2008). These previous studies are presented in Table 2.

Table 2 - Brazilian empirical studies on factors associated with students' performance on the ENC and ENADE

	Type of study	Evaluation	Evaluation year	Level of analysis	Programs	Dependent variable	Independent variables	Significant variables	Statistical approach
Soares, J. F.; Ribeiro, L.M.; Castro, C. M., 2001	Paper	ENC	1996-1999	State (Minas Gerais)	Law, Business, and Civil Engineering	Student grades	University entrance grades, Gender, Socioeconomic indicator, Peer effect	University entrance grades, Gender, Socioeconomic indicator, Peer effect	HLM
Gracioso, A., 2006	Doctoral dissertation	ENC	2003	National	Business	Student grades	Race, Previous grades, English level, Computer use level, Student's perception of infrastructure, Student's perception of pedagogical project, Student's perception of teachers' evaluation, Student's perception of competences acquired, Family income, Parents educational level, Candidate per place indicator, Average student evaluation of infrastructure, Percentage of doctors, Average student evaluation of professors, Percentage of white and Asian students, Percentage of students with high family income, Percentage of students with a high English level, Percentage of students that use a computer regularly, Percentage of students that studied only at private high schools, Average student evaluation of pedagogical project, Average student evaluation of competences acquired	Race, Previous grades, English level, Computer use level, Family income, Candidate per place indicator, Percentage of doctors, Average student evaluation of professors, Percentage of white and Asian students, Percentage of students that use a computer regularly, Percentage of students with a high English level, Average student evaluation of competences acquired	HLM

(table continues)

	Type of study	Evaluation	Evaluation year	Level of analysis	Programs	Dependent variable	Independent variables	Significant variables	Statistical approach
Diaz, M.D.M., 2007	Paper	ENC	2000	National	Business, Law, and Civil Engineering	Student grades	Family income, Gender, Age centralized, Fathers with higher education, Percentage of fathers with higher education, Mothers with higher education, Private high school, Computer use at home, Participation in extension activities, Participation in research activities, Students' perception of the balance between content and credit hours, Teaching strategies, Research use as a teaching strategy, Percentage of students who conducted research in the majority of their classes, Perception of the professor's commitment, Perception of the course demands, Brazilian region, Percentage of professors with doctorate degree, Percentage of professors with master's degree, Percentage of professors with master's or doctorate degree, Percentage of professors working 40 hours weekly, Percentage of professors with fewer than 8 hours weekly in class, Total number of professors, Total number of professors centralized, Main funding source	Family income, Gender, Age centralized, Fathers with higher education, Percentage of fathers with higher education, Private high school, Computer use at home, Participation in extension activities, Participation in research activities, Students' perception of the balance between content and credit hours, Teaching strategies, Research use as a teaching strategy, Percentage of students who conducted research in the majority of their classes, Perception of the professor's commitment, Perception of the course demands, Brazilian region, Percentage of professors with master's or doctorate degree, Percentage of professors working 40 hours weekly, Percentage of professors with fewer than 8 hours weekly in class, Main funding source	HLM

(table continues)

	Type of study	Evaluation	Evaluation year	Level of analysis	Programs	Dependent variable	Independent variables	Significant variables	Statistical approach
Souza, E. S., 2008	Master's thesis	ENADE	2006	National	Accounting	IDC	Freshman grades, Family income, Job, Father's educational level, Mother's educational level, Public high school, Student's personal commitment	Freshman grades, Family income, Father's educational level, Mother's educational level, Student's personal commitment	OLS
Santos, N.A., Cunha, J.V.A.; Cornacchione Jr., E.B., 2009	Conference paper	ENADE	2006	State (Minas Gerais)	Accounting	IDD	Professors' academic degree, Program age, Daily operational period, Credit hours, Year-based or half-year-based courses, Minimal number of years to finish the program, Average number of students by class, Federal institution, Freshmen's average grades on the ENADE, Seniors' average grades on the ENADE	Professors' academic degree, Seniors' average grades on the ENADE	MLR
Moreira, A.M.A., 2010	Doctoral dissertation	ENADE	2005	National	Biology, Civil Engineering, History, and Pedagogy	Student grades (seniors)	Academic organization, Brazilian regions, Age, Gender, Fathers with higher education, Family income, Academic extra activities, Indicator of institutional quality, Professors' availability for extra class advising, Professors' academic degree, Perception of the course demands	Academic organization, Brazilian regions, Age, Gender, Fathers with higher education, Family income, Academic extra activities, Indicator of institutional quality, Professors' availability for extra class advising, Professors' academic degree, Perception of the course demands	OLS
Silva, M.C.R., 2011	Doctoral dissertation	ENADE	2006	National	Business	Specific knowledge student grades (seniors)	Parents' educational level; Family income; Job; Freshman specific knowledge grades; Freshman general knowledge grades	Family income, Job, Freshman specific knowledge grades, Freshman general knowledge grades	HLM

(table continues)

	Type of study	Evaluation	Evaluation year	Level of analysis	Programs	Dependent variable	Independent variables	Significant variables	Statistical approach
Santos, N.A., 2012	Doctoral dissertation	ENC, and ENADE	ENC 2002-2003, and ENADE 2006	National	Accounting	Student grades	Age, Gender, Ethnic group, At least one hour of extra class study, Marital status, Children, Brothers or sisters, Family income, Fathers with higher education, Mothers with higher education, Public high school, Participation in extension activities, Participation in research activities, Research use as a teaching strategy, Book use as a learning support, Lecture as the most frequent teaching strategy, Course-provided knowledge on accounting information systems, Course-provided knowledge on tax planning, Percentage of professors with master's and doctorate degree, Percentage of professors with 40 hours weekly worked, Students' perception that majority of professors have domain of knowledge, Proportion of fathers with higher education by program, Proportion of mothers with higher education by program, Average students' age by program, Academic organization, Main funding source	Age, Gender, Ethnic group, At least one hour of extra class study, Marital status, Brothers or sisters, Family income, Fathers with higher education, Public high school, Participation in extension activities, Participation in research activities, Research use as a teaching strategy, Book use as a learning support, Lecture as the most frequent teaching strategy, Percentage of professors with master's and doctorate degree, Percentage of professors with 40 hours weekly worked, Students' perception that majority of professors have domain of knowledge, Proportion of fathers with higher education by program, Proportion of mothers with higher education by program, Academic organization, Main funding source	HLM

Note. The significant variables correspond to variables with $p < .10$, $p < .05$, or $p < .001$, considering at least one year or one program analyzed. IDC= programs' performance indicator; IDD= difference indicator between seniors' observed and seniors' expected performance; HLM= hierarchical linear model; MLR= multinomial logistic regression; OLS= ordinary least squares regression; ENC= national exam of programs; ENADE= national exam of students' performance.

Another study on Brazilian higher education evaluation deserves to be highlighted because it had an objective similar to that of the present research, but it applied different methods and focused on a different field of knowledge. In her master's thesis, Reis (2009) studied the utilization of the 2005 ENADE results by two Physics programs in Brasília, using interviews with one member of the INEP and with program administrators, professors, and managers of the two institutions researched. The research findings indicated that the ENADE results influenced the didactic-pedagogical organization, the professors' maintenance, and the institutional infrastructure in the private institution, whereas the latter influence was not verified in the public institution according to the interviewees. In addition, the interviewees also recognized the importance of the Brazilian program of higher education evaluation to the betterment of higher education quality but pointed the lack of potential user participation as one weakness in the evaluation program (Reis, 2009).

The necessity of providing more attention to the utilization of evaluation results in Brazil has also been addressed by other researchers who advocate for using the evaluation outcomes to promote program improvement and, in particular, to help in the decision making of stakeholders, such as higher education managers, government, students, and parents (Souza & Oliveira, 2003; Verhine et al., 2006; Vianna, 2009).

Therefore, all efforts to increase the usefulness of educational evaluation outcomes should be employed because, as stated by Verhine, Dantas and Soares (2006), "this endeavor [ENC and ENADE] is only justified if its results are effectively used..." (p. 307) [translation mine]. Hence, it is essential to know the framework for evaluation utilization to better understand the role of evaluation use in influencing and contributing to program improvement.

2.4 Utilization-focused evaluation

Concerns regarding evaluation utilization began in the 1960s (Alkin & Taut, 2003; Fitzpatrick, Sanders, & Worthen, 2010; Owen & Lambert, 1995; Russ-Eft & Preskill, 2009), in response to the concern that, after all of the investment devoted to an evaluation, including money, time, human resources, and materials, the evaluation process, results and/or report

should be used. It is important to highlight that the words *use* and *utilization* are considered to be synonyms in the present study, as they are in some of the seminal literature on the topic (Alkin & Taut, 2003; Cousins & Leithwood, 1986; Patton, 2008).

In the initial discussions about use, the main concept of evaluation utilization was strict and related to the direct impact of the evaluation on the decision making process (Preskill & Torres, 2000; Weiss, 1998). Thus, this restriction on the meaning of utilization led to the conclusion that evaluations were underutilized because in many cases, it was difficult to identify direct decisions that were related to evaluation results (Alkin, Daillak, & White, 1979; Dickey, 1980). More inclusive definitions of use were then suggested.

There are diverse definitions of use available in the evaluation utilization literature. Table 3 presents some of these definitions. In addition, the utilization-focused evaluation theory (Patton, 2008) has been the main support for studies on use during or after the evaluation process. According to this theory, "utilization-focused evaluation is evaluation done for and with specific intended primary users for specific, intended uses" (Patton, 2008, p. 37).

Table 3 - Evaluation use/utilization definitions

Authors	Evaluation use/utilization definitions
Alkin, 2010, p. 206	"Evaluation use refers to how the evaluation process and information obtained from an evaluation affects the program that is being evaluated."
Alkin and Taut, 2003, p. 1	"… refers to the way in which an evaluation and information from the evaluation impacts the program that is being evaluated."
Christie, 2007, p. 8	"the effect the evaluation has on the evaluand - the 'thing' being evaluated - and those connected to the evaluand."
Cousins and Leithwood, 1986, p. 332	"… the mere psychological processing of evaluation results constitutes use, without necessarily informing decisions, dictating actions, or changing thinking."
Hall, 1982, p. 186	"Utilization is defined in terms of decisions based on evaluations and observable consequences of these decisions."
King and Pechman, 1984, p. 244	"… intentional and serious consideration of evaluation information by an individual with the potential to act on it."
Leviton and Boruch, 1983, p. 564	"… serious consideration of findings, which may or may not relate to decisions."

Among the concepts of evaluation use/utilization presented in Table 3, the concept developed by Cousins and Leithwood (1986) perfectly matches the objectives of the present research

because, as defined, an ordinary activity such as reading the evaluation report can be considered to be evaluation use. This definition is different from those concepts that require final actions such as making a decision, possible effects, impacts and consequences, or serious considerations arising from the evaluation outcomes or process to consider that any utilization has occurred.

The discussions about evaluation use also include the distinction between *process use* and *use of findings*. Greene's (1988b) paper contributed to the process use debate, providing a conceptual framework that found the analysis of the impacts of the process use itself (Preskill & Caracelli, 1997). As defined in a 1997 survey by Preskill and Caracelli, process use "refers to the cognitive and behavioral changes resulting from users' engagement in the evaluation process," whereas the use of findings "refers to the results of the evaluation and decisions made about changing programs on the basis of the evaluation findings…" (Preskill & Caracelli, 1997, p. 217).

Hence, evaluation utilization can occur during evaluation development (process use) or after the evaluation conclusion (use of findings). Table 4 presents the six primary uses of findings and the six types of process use identified by Patton (2008).

Table 4 - Primary use of findings and types of process use

Primary use of findings	**Types of process use**
1. judging overall merit or worth	1. infusing evaluative thinking into the organizational culture
2. improving programs	2. enhancing shared understandings among those involved in a program
3. accountability	3. supporting and reinforcing the program interventions
4. monitoring	4. instrumentation effects and reactivity
5. development	5. supporting participant engagement
6. generating knowledge	6. developing programs and organizations

Note. Adapted from "Utilization-focused evaluation," by M. Q. Patton, 2008, p. 571.

According to the evaluation utilization literature, the use of evaluation findings can improve programs (Dawson & D'amico, 1985; Patton, 2008; Wholey, 1981). Through evaluation participation (process use), people can learn more about the program, developing a broader understanding of the programs' operation and a positive attitude toward the evaluation,

thereby changing their beliefs (Greene, 1988b; Henry & Mark, 2003a). Comparing these two topics, most of the research on evaluation utilization refers to the use of findings (Johnson et al., 2009). In the present research, the study object was also related to the use of findings.

Utilization has been the most researched area of evaluation (Christie, 2007). Due to the large number of evaluators applying efforts on evaluation utilization, it is possible to find a vast number of propositions and classifications suggested by senior evaluators, some of them broadly tested and discussed. Examples of these propositions and classifications are foundations for use (Patton, 2008) and policy actors use (Weiss, 1988).

Patton (2008) stated that credibility affects utilization and that the information provided through an evaluation report "should be as accurate and believable as possible" (p. 396). Furthermore, the author presented the standards required as a foundation for use as follows: (a) report clarity, (b) full and frank disclosure of the data's strengths and weaknesses, (c) balanced reporting, (d) defensible information sources, (e) valid and reliable measurement, (f) justified conclusions, and (g) impartial reporting. On this same topic, Henry and Rog (1998) affirmed that "for an evaluation to be utilized, the evaluation must be designed, implemented, analyzed, and reported in ways that are sensitive to the different processes that operate in the world of social policy-making and programming" (p. 89).

Also with regard to propositions and classifications for the evaluation utilization literature, Weiss (1988) discussed four ways that policy actors use evaluations, that is, the usefulness of evaluations:

(a) warning – evaluation can provide an indication of problems;
(b) guidance – evaluation informs direction for improvement;
(c) reconceptualization – evaluation can provide new approaches or ways to think about an issue; and
(d) mobilization of support – evaluation helps to gather support to reinforce a point of view or to persuade others through its information.

Therefore, due to the great volume of discussion on evaluation utilization, some important conclusions resulted from the development of this evaluation area. Greene (1988a) stated that "the quality of an evaluation is now judged, in part, by how useful it is, and the effectiveness

of an evaluator rests, in part, on his or her skills in promoting utilization" (p. 341). In addition, a useful evaluation is described by Ginsburg and Rhett (2003) as "one that adds to the body of timely, relevant evidence to increase the likelihood that policy decisions improve program performance" (p. 490).

Other topics related to evaluation utilization, such as the factors associated with use, the types of use, the nonuse of evaluation findings, and the misuse of evaluation findings are discussed in the sections below.

2.4.1 Factors associated with evaluation use

Many studies have discussed the factors associated with evaluation utilization. This section addresses some of these studies, but it is first necessary to conceptualize what a *factor* means in the evaluation context. According to Alkin (1985), "a *factor* is any characteristic or element present in a given evaluation situation that can affect the evaluation's potential for use" (p. 24). The same author also stated that the factors associated with evaluation utilization can be divided into three categories: human factors, context factors, and evaluation factors (Alkin, 1985).

The human factors are related to the users' and the evaluators' personal characteristics that might have an effect on the evaluation utilization, such as the user's attitudes toward the evaluation, the evaluator or the project. The context factors are related to the setting where the evaluation is conducted, including elements such as organizational characteristics and social and political climate. Lastly, the evaluation factors are related to the evaluation aspects, such as its procedures, the information collected and how the findings are reported (Alkin, 1985).

Another term presented in the literature on evaluation use is the *personal factor* (Patton, 2008). The personal factor is related to the influence that one or more individuals can exert to induce evaluation utilization due to their participation in the evaluation process (Patton, 2008). A case study developed by Rockwell et al. (1990) analyzed evaluation use when the personal factor is considered in the evaluation planning stage. The study identified six factors that appear to support evaluation use in that context: (a) the intended user's desire for

information, (b) the timeliness of the study, (c) the intended user's ownership of the information, (d) the team interaction, (e) the methodological appropriateness and quality, and (f) the uses for the results (Rockwell et al., 1990, p. 392).

The factors associated with evaluation use were also studied by Boyer and Langbein (1991), who correlated evaluation use with the possible factors associated with evaluation utilization in the American legislative setting. The multiple regression results indicated that *the proper timing of the report, the clarity of the report,* and *the methodological credibility* had a significant effect on the amount of evaluation use by the 100 members of Congress and/or the staffers researched (Boyer & Langbein, 1991).

Beyond studying the factors associated with evaluation utilization, Cousins and Leithwood (1986) also developed a meta-analytic method to measure the relative weight of the factors influencing use after analyzing 65 empirical evaluation studies. First, these authors clustered the factors associated with use into two categories: (a) the characteristics of evaluation implementation, which are comprised of the factors *evaluation quality, credibility, relevance, communication quality, findings,* and *timeliness of evaluations for users*; and (b) the characteristics of the decision or policy setting, which are comprised of the factors *information needs of users, decision characteristics, political climate, competing information, personal characteristics of users,* and *user commitment and receptiveness to evaluation information.* After the clustering, based on the method developed, the authors found that evaluation quality was the most influential characteristic in evaluation use, followed by the decision characteristics, the findings, the commitment and/or the receptiveness to evaluation, and the relevance (Cousins & Leithwood, 1986).

In the present research, the study of factors associated with evaluation utilization aimed to identify the main characteristics that may influence the use of the ENADE evaluation report. The factors tested were defined from the research by Shulha and Cousins (1997) that reviewed the evaluation use literature published from 1986 to 1996 and identified the most frequent factors. These frequently used factors were clustered as follows: (a) relevance, (b) credibility, (c) user involvement, (d) communication effectiveness, (e) potential for information processing, (f) clients' need for information, (g) anticipated degree of program change, (h) perceived value of evaluation as a management tool, (i) quality of evaluation

implementation, and (j) contextual characteristics of the decision or policy setting (Shulha & Cousins, 1997, p. 196).

2.4.2 Types of use

In an attempt to better distinguish the evaluation uses presented in the literature, Leviton and Hughes (1981) summarized the categories for the most frequent uses described at that time and classified them into the current and broadly known *types of use*, which include *conceptual use*, *instrumental use*, and *persuasive use*. This nomenclature is generally accepted when describing the uses of evaluation findings (Alkin & Taut, 2003; Preskill & Caracelli, 1997).

The conceptual type of use, also known as enlightenment (Braskamp, 1982; Owen & Lambert, 1995; Weiss, 1980), refers to improving the understanding regarding aspects of the program, such as its participants, its context, or its outcomes, through the evaluation. The conceptual use is also related to developing new views of the program and identifying problems (Alkin, 2010; Braskamp, 1982; Henry & Mark, 2003a). In addition, the enlightenment type of use is considered to be a key element in the evaluation literature, preceding the other types of use (Johnson, 1998; Owen & Lambert, 1995).

The instrumental use, “perhaps the earliest type of use examined in the literature” (Johnson, 1998, p. 93), is related to the purposes of decision making or problem solving using the information provided through the evaluation. This type of use refers to direct actions aimed at modifying the program in some way, symbolizing an objective use of evaluative information (Henry & Mark, 2003a; Shadish et al., 1991; Shulha & Cousins, 1997).

Lastly, the persuasive use is related to convincing others to agree with or support some specific choice or political position or to persuading stakeholders about the programs’ values using evaluation findings, often in a selective way (Fleischer & Christie, 2009; Leviton & Hughes, 1981; Patton, 2008). As explained by Leviton and Hughes (1981), “the difference between persuasive use and the other two categories listed above is that persuasive use involves interpersonal influence, getting others to go along with the implications of evaluation” (p. 529).

Although some researchers classify persuasive and symbolic uses in the same category (Allen, 2010; Fleischer & Christie, 2009), the persuasive nomenclature is preferred in the present study. Thus, the other use of findings categories, also defined as types of use by the evaluation utilization literature, such as legitimative use and symbolic use (Alkin & Taut, 2003; Patton, 2008), were not studied in the present research, which is why they are not discussed here.

In a three-year study focused on stakeholders' participation in the evaluation process and its impact on evaluation utilization, Greene (1988b) documented some specific uses of evaluation findings by type of use, proposing a subdivision of instrumental use as follows:

> (a) significant new program developments, policy implementation, and/or planning activities (major instrumental use) and (b) smaller procedural changes in program operations and activities (minor instrumental use), both of which appeared to be grounded in (c) a broader and deeper program understanding, representing important confirmation of existing intuitions (conceptual use), (d) citation of results in reports and proposals to external audiences (persuasive use), and (e) enhanced prestige and visibility for the program within the larger community (symbolic use). (p. 100)

Other research efforts that studied the use of evaluation findings and the incidence of each type of use described in the literature found that the conceptual use was the most frequent or the most significant type of use verified among the groups researched (Mccormick, 1997; Shea, 1991). At the same time, the instrumental use was considered "often restricted to relatively low-level decisions" (Weiss, 1982, p. 135).

2.4.3 Nonuse and misuse of evaluation findings

The last two important aspects from the evaluation utilization literature analyzed in the present research are the concepts of nonuse and misuse. "While nonuse is a measure of degree or magnitude, misuse is a measure of *manner* of use" (Alkin, Patton, & Weiss, 1990, p. 290). The discussion about nonuse originated from a widespread concern among evaluators on the lack of use of evaluation findings by stakeholders (Dickey & Hampton, 1981; King &

Thompson, 1983). The discussion about misuse, however, has remained informal, with few published studies dedicated solely to misuse (Stevens & Dial, 1994).

In general, nonuse represents a potential waste of money and effort (Thompson, 1994), but there are different nonuse classifications and nomenclature in the evaluation use literature, including *justified nonuse* (Alkin & Coyle, 1988). To better understand the justified nonuse concept, it is necessary to consider two opposite scenarios: a properly performed evaluation and a poorly performed evaluation. In a properly performed evaluation scenario, the motivation for nonuse needs to be linked to a nonuse classification such that only unintentional nonuse would be considered evaluation *nonuse*; a purposeful nonuse would be considered *misuse*; and an intentional/blatant nonuse would be considered *abuse*. However, in a poorly performed evaluation scenario, nonuse would be considered *justified* inasmuch as the findings reported misrepresent the programs' condition (Alkin & Coyle, 1988).

Patton (2008) stated that "from a utilization-focused evaluation perspective, nonuse represents some kind of failure in the evaluation process" (p. 106). However, the author agreed that in some cases, such as an evaluation report with weak evidence, a late report, or a poor evaluator performance, among others, the nonuse of an evaluation is appropriate. Patton (2008) also described two categories of nonuse:

a) political nonuse – occurs when evaluation findings are ignored by stakeholders because they conflict with their interests; and
b) aggressive nonuse – occurs when the evaluation or evaluator are attacked because the results contradict some stakeholders' position.

Also with regard to the nonuse of evaluation findings, King and Pechman (1984) divided nonuse into *intentional* and *unintentional* and discussed combining the nonuse concept with the types of use concepts. The authors classified intentional nonuse into instrumental and persuasive nonuse. The former refers to nonuse by lack of action due to personal or organizational restrictions. The latter refers to the lack of evaluation findings application due to beliefs that it is the best action considering the administrators' own interest or the program's interest. Lastly, unintentional nonuse refers to the lack of evaluation use for an unintended reason or as a result of external factors that impact the opportunities for use, such as changes in administrative or leadership positions (King & Pechman, 1984).

According to Stevens and Dial (1994), "misuse of evaluation means that an evaluation has been used for the wrong purpose or that the results of an evaluation have been misapplied or used improperly" (p. 3), whereas Alkin and Coyle (1988) defined misuse as "the intentional (and even malicious) manipulation of some aspect of an evaluation (evaluative results, for example) in order to gain something, position or support, for instance" (p. 334).

Although studying misuse empirically is quite difficult (Shulha & Cousins, 1997), some authors have provided valuable insights into misuse. Palumbo (1994) stated that misuse is not a single phenomenon but assumes different forms, such as the distortion or rejection of evaluation findings. Vroom, Colombo, and Nahan (1994) affirmed that "deliberate or inadvertent misuse of evaluation often arises from self-interest" (p. 49). In addition, as examples of the misuse of evaluation findings, Stevens and Dial (1994) included "using the results to further a political career, or to end one; using results to reward or punish staff; or not distributing findings to other stakeholders" (p. 7).

Moreover, based on the cases of misuse cited in the evaluation use literature, Alkin and Coyle (1988) identified the major categories of misuse as follows: (a) misuse in commissioning an evaluation (before the evaluation process in the contract phase), (b) misuse of the evaluation process (during the evaluation), and (c) misuse of the evaluative findings (after the evaluation is completed, in the use of its results).

In research developed with American Evaluation Association members (evaluation use TIG[8]) to investigate their perceptions and experiences with evaluation use in general, Preskill and Caracelli (1997) also included aspects on evaluation nonuse and misuse in their applied survey. From the answers of 282 respondents (an answer rate of 54%), these authors found that the nonuse of evaluation findings was considered to be a *major problem* by 46% of the respondents. The evaluators researched also related that they had their findings misused *frequently* (9%), *sometimes* (43%), and *rarely* (34%).

Fleischer and Christie (2009) developed similar research with the American Evaluation Association members to verify their current perceptions and experiences with evaluation use,

[8] TIG is the acronym of the Topical Interest Group.

receiving 1,140 completed surveys. Regarding evaluation nonuse and misuse, and considering only the answers from *evaluation use* TIG members, the study found that 10 years later, 74% of the respondents considered nonuse to be a *major problem*. The same respondents also reported *intentional misuse* (29%) and *unintentional misuse* (33%) to be a *major problem*. In the Preskill and Caracelli (1997) research, these rates were 26% and 24%, respectively. Thus, a greater concern regarding evaluation nonuse and misuse was verified among the evaluators researched in 2006, in particular regarding the nonuse of evaluation findings.

2.4.4 Previous research on evaluation utilization

In addition to the studies cited in previous sections, other important studies on evaluation utilization related to the present research deserve to be mentioned because they served as a source of information and orientation. These studies are summarized in the following paragraphs.

Bober and Bartlett (2004) examined the use of evaluation results in four corporate universities, aiming to verify which organizational members use the results, for what purposes, and which factors are related to the use of the evaluation findings. Through a case study using on-site interviews and an in-depth document review, these authors found that the main users were the evaluation staff, the instructional design and development staff, the instructors and trainers, the dean or director of the corporate university, and the upper-level and senior management. Nine main uses of evaluation results were identified among the four institutions: to modify aspects of the course or curriculum, to train or replace instructors, to justify training programs, to influence course continuation decisions, to identify when advanced courses are needed, to determine employee job placement, to market programs, to identify barriers within the organization that affect the transfer of training, and to continue or discontinue contracts with external vendors. Lastly, the factors associated with evaluation use were communication quality, timeliness, commitment or receptiveness to evaluation, evaluation quality, credibility, relevance, and findings.

Mccormick (1997) studied the correlations between the type of use and the users' commitment to the program, involvement with the program, attitude toward the evaluation,

and organizational position as well as the correlation with the type of organization. The research subjects were 89 potential evaluation users, and a survey was conducted to collect the data. The test outcomes indicated that only the involvement with the program was positively and significantly correlated with the conceptual and process use; the managers' and legislators' organizational positions presented significant differences in their process use; and there was no significant difference in the use of evaluation findings between the respondents from public/governmental institutions and those from private nonprofit institutions.

Tackett (2004) researched the use of evaluation findings within grant programs. A survey was applied to collect data from 43 federally funded Century Community Learn Centers (CCLCs). The results revealed that the most common use of evaluation findings was summative, and the least common use was to revise program goals and objectives. Regarding the types of use, the instrumental use exhibited a moderate positive correlation with report clarity. A secondary analysis indicated that stakeholder satisfaction with the evaluation exhibited a moderate positive correlation with the prior knowledge of the community and prior CCLCs experience.

Barrios (1986) developed an investigation to measure evaluation utilization in a large state agency using a case study. She found that the major factor influencing utilization was the relevance of the evaluation results to decision making. Other important factors reported to influence utilization include the support for user involvement in the study formulation, the credibility of the information, the evaluator's credibility in terms of program knowledge, and the evaluation quality.

Vanek (2004) researched the influence of the evaluation process and the use of evaluation findings on school board decision making. A survey was conducted in Washington State, with 168 completed surveys received from school board members. The results indicated that the main factors influencing evaluation use were the superintendent's input and presentation of the evaluation information, the decision making model, the characteristics of the individual presenting the information, and the type of information presented. The results also indicated that both the evaluation process and the use of evaluation findings influenced the school board's decision making.

Finally, Cornachione Jr. et al. (2010) examined the role of intense and direct involvement of the internal stakeholders in the evaluation process on the evaluation utilization using a non-

degree online program case study that was comprised of surveys answers (n = 42), interviews (n = 40), and archival data (n = 34). The findings verified a clear and strong influence of the internal stakeholders' participation on the evaluation process and the evaluation use, indicating that intense and direct evaluation participation had a significant role on the evaluation utilization in the context analyzed.

As seen from the studies reviewed here, the concepts of types of use, the factors associated with use, and the process use are more frequently analyzed in the empirical research than other aspects of evaluation utilization. Those studies offer context for the present research, which also explores aspects such as nonuse and misuse combined with the accountability focus of the Brazilian program of higher education evaluation.

CHAPTER III

THE METHOD

In this chapter, the description of the data collection instrument and the data analysis models, the definition of the study hypotheses, variables, population and sample, and the pilot test results are presented.

3.1 Introduction

The underlying idea of program evaluation is that the information provided from evaluations will be used (Hatry, Wholey, & Newcomer, 2010). Within this context, the present research intended to explore the extent to which the ENADE evaluation report is used by the undergraduate accounting program administrators. Five complementary analyses based on the evaluation utilization literature were designed to achieve this objective: (a) the factors associated with evaluation use, (b) the types of evaluation use, (c) the nonuse of the evaluation report, (d) the misuse of the evaluation report, and (e) the impact of evaluation use on the accounting programs' performance.

Each analysis was developed using information from the data collection instrument and/or the database provided by the INEP for the 2006 and 2009 ENADEs. Table 5 shows the different statistical approaches applied to each evaluation use analysis.

Table 5 - Evaluation use analyses versus statistical approaches

Evaluation use analyses	***Statistical approaches***
Factors associated with the ENADE report use	Logistic regression
Types of evaluation use plus misuse scale	Confirmatory factor analysis
Nonuse of the ENADE report	Descriptive analysis
Impact of the ENADE report use on accounting programs' performance	Ordinary least squares regressions

The next sections present the data collection instrument, explain how each analysis was designed, describe the population and sample compositions, and discuss the results from the data collection instrument piloting test.

3.2 The study data collection instrument

Only one data collection instrument was developed and applied in this research. This instrument was structured in five parts: (a) the factors associated with evaluation use, (b) the evidence of use, (c) the types of evaluation use plus misuse, (d) the reasons for nonuse, and (e) demographic information (see Appendix A for a copy of the survey instrument). Figure 1 shows how these five parts are related and how the data collection instrument was organized.

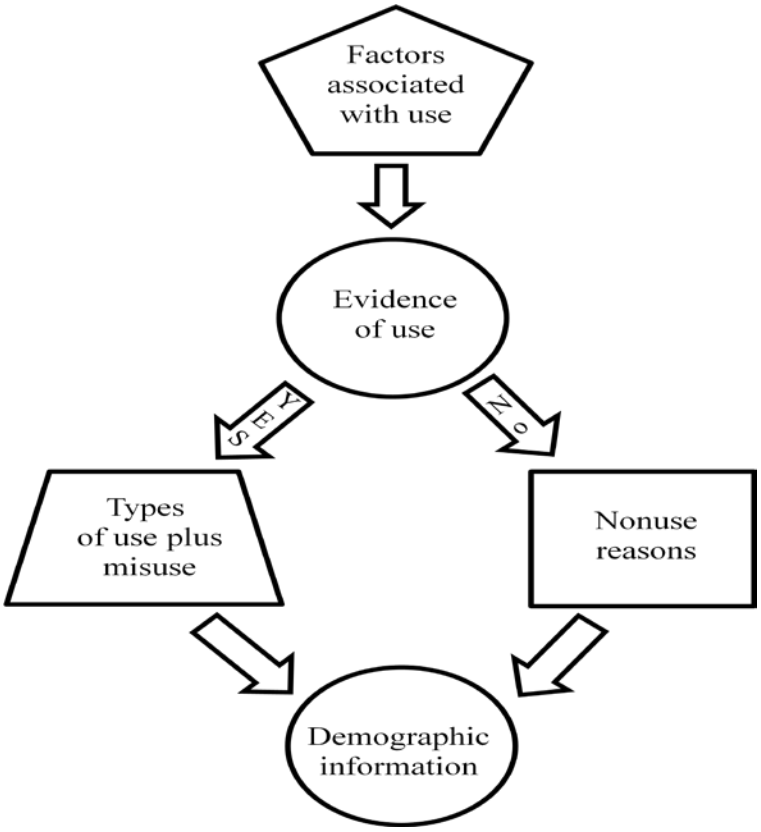

Figure 1. Data collection instrument design.

As shown in Figure 1, the research subjects began by answering a questionnaire on the factors associated with use and then were directed to the next section, which was designed to verify whether they were familiar with the ENADE evaluation report. In the case of a positive

answer, respondents were redirected to the types of use plus misuse scale; otherwise, they were redirected to the nonuse reasons questionnaire. Both groups of respondents completed their participation by answering the demographic information questionnaire, which was positioned as the last section of the data collection instrument.

The questionnaires were created as a single document on Survey Monkey, a web-based survey software, where the responses were also stored. The first page of the electronic survey asked the respondents the name of the institution at which they were a program administrator. A response was not obligatory, but this information was necessary to correlate the evaluation use with the programs' outcomes, as described in the study hypotheses in section 3.3. Each questionnaire is broadly discussed below.

3.2.1 Factors associated with evaluation use

The first part of the instrument was developed to verify the main factors associated with ENADE report use incidence with an exploratory intent. The inclusion of these factors in this evaluation use study was based on King's (1988) affirmation that "some people are more likely to use evaluation information than others" (p. 288). The same author also emphasized that the personal factor (a person's particular interest in putting information to use) is fundamental in the process of evaluation utilization (King, 1988).

The statements designed for the factors associated with use questionnaire were based on Shulha and Cousins (1997). According to their results, previous studies most frequently investigated factors associated with use that were related to *relevance, credibility, user involvement, communication effectiveness, potential for information processing, clients' need for information, anticipated degree of program change, perceived value of evaluation as a management tool, quality of evaluation implementation,* and *contextual characteristics of the decision or policy setting*. These items were divided into five questions that involved nine of the ten groups presented in the paper by Shulha and Cousins. One of the factors, the *anticipated degree of program change*, was not included in the questionnaire used in the present study because it was not compatible with the Brazilian educational evaluation context.

The prior reading of the ENADE evaluation report was not required to answer those questions because only the respondents' perceptions of the evaluation process were being studied here. However, prior knowledge of or experience with the ENADE was expected from program administrators as a responsibility of their positions. Table 6 presents the matching between the factors associated with use and the questionnaire statements and questions.

Table 6 - Matching between the factors associated with use and the questionnaire statements/questions

Factors	**Questionnaire statements/questions**
Relevance	Relevance to your job as a program administrator
Credibility	Credibility conferred by the Ministry of Education to the evaluation
User involvement	My level of involvement in the 2006 National Exam of Students Performance (ENADE) was…
Communication effectiveness	Communication effectiveness (INEP – Accounting Program) during the evaluation process
Potential for information processing	Elapsed time between the evaluation and the report availability
Clients' need for information	As a program administrator, I believe that the evaluation report provided through the ENADE can potentially support my decision making process
Perceived value of evaluation as a management tool	The National Exam of Students Performance (ENADE) is an important management tool for my program
Quality of evaluation implementation	In my opinion, the quality of the National Exam of Students Performance (ENADE) implementation is…
Contextual characteristics of the decision or policy setting	Importance given to the local characteristics of the programs

The answers obtained and some information on the characteristics of the administrators and their institutions were correlated with the real use, which was verified through the second part of the data collection instrument, with the intent of analyzing which of these factors were associated with the use or nonuse incidence in the ENADE context. The inclusion of information on the characteristics of the program administrators in the analysis was based on Cousins and Leithwood's (1986) findings about the relationship between evaluation use and user attributes in previous research on evaluation utilization.

Because the dependent variable in the regression to test which factors were associated with the ENADE report use is binary, the most appropriate model to treat the data is a logistic

regression (Field, 2009). Furthermore, measuring use as a likelihood instead of a specific value appears to be more interesting in the context of this study and represents another worthwhile attribute of the logistic regression as described by Field (2009), "In logistic regression, instead of predicting the value of a variable Y from a predictor variable X_1 or several predictor variables (Xs), we predict the probability of Y occurring given known values of X_1 (or Xs)" (p. 266). The logistic regression is represented by a general model as follows:

$$P(y) = \frac{1}{1 + e^{-(b_0 + b_1X_{1i} + b_2X_{2i} + \dots + b_kX_{ki})}} \quad \text{where:}$$

P(y) = the probability of y occurring;
e = the base of natural logarithms;
b_0 = constant;
b_1, b_2, b_k = predictors' coefficients;
X_1, X_2, X_k = predictors of the model.

Lastly, as previously noted, the dependent variable in the logistic regression was defined as the use or nonuse incidence that was verified in the second part of the data collection instrument, and the predictors were defined as the nine factors associated with use plus six personal and organizational characteristics of the accounting program administrators and the programs. All of the variables and their measurements are presented in section 3.4.

3.2.2 Evidence of use

The second part of the data collection instrument was intended to identify whether the accounting program administrators made any use of the 2006 ENADE evaluation report. Here, use was defined as the action of simply reading the cited evaluation report. This definition was used in accordance with the concept of use proposed by Cousins and Leithwood (1986).

To verify the *evidence of use*, an objective yes or no question was asked. Depending upon the answer, the respondents were redirected to one of the two sets of specific questions. The first

set was created to explore the most frequent types of use, or even misuse, of the ENADE evaluation report (people who answered *yes*), and the second was created to examine the main reasons for nonuse (people who answered *no*) among the accounting program administrators.

It is important to highlight that the answers from this section of the data collection instrument were used as the dependent variable in the logistic regression of the factors associated with use and as an explanatory variable for the hypothesis test that verified the impact of the use of the evaluation report on the performance of accounting programs.

3.2.3 Types of use plus misuse scale

The third part of the data collection instrument was a scale that aimed to identify the most frequent types of use practiced by the accounting program administrators. The statements that represent the types of use were defined in accordance with Leviton and Hughes's (1981) study, which summarized three types of use posteriorly consolidated by the evaluation utilization literature: (a) conceptual, (b) instrumental, and (c) persuasive.

In addition to these three types of use, the present study was interested in verifying possible misuse of the ENADE evaluation report. The misuse statements in the scale were developed primarily based on the definition of misuse proposed by Alkin and Coyle (1988) and on the description of misuse offered by Stevens and Dial (1994). The study of misuse in this research is corroborated by Cook, Levinson-Rose and Pollard (1981), who emphasized that studies on the utilization of evaluation findings would not be complete without the inclusion of aspects of misuse.

Twenty-one statements and one descriptive question were developed to identify how accounting program administrators use the ENADE evaluation report. These statements were presented in a random way to avoid bias in the answers. Table 7 presents the statements divided by type of use plus misuse.

Table 7 - Types of use plus misuse scale statements

Type of use/misuse	Code	Scale statements
Conceptual	*concep_1*	better understand the socioeconomic characteristics of the students in my institution
	concep_2	better understand the students' perceptions of the program's infrastructure
	concep_3	better understand the students' perceptions of the program and/or of the ENADE large-scale test
	concep_4	analyze my students' performance in comparison with the national average student performance
	concep_5	better understand the curriculum and/or course content strengths and weaknesses
	concep_6	better understand my program grade
Instrumental	*inst_1*	hire professors
	inst_2	change the program's curriculum and/or course contents
	inst_3	decide to buy new books for the library and/or new computers for the computer laboratory
	inst_4	implement programs for the academic orientation of students
	inst_5	increase/decrease the number of credits or hours of any course component
Persuasive	*pers_1*	negotiate the application of more financial resources in my program
	pers_2	look for institutional support to change pedagogical policies and/or program management policies
	pers_3	diffuse advertising campaigns and/or institutional campaigns that disclose program outcomes
	pers_4	use public meetings to disclose program outcomes
	pers_5	propose partnerships with other educational institutions or companies
Misuse	*mis_1*	fire professors
	mis_2	claim institutional recognition for the quality of the program
	mis_3	reward and/or punish program professors and/or students
	mis_4	propose a new private project under my administration
	mis_5	highlight the strengths of the program administration

The accounting program administrators were invited to express their level of agreement with these statements, answering whether they had experienced each situation presented. It is important to emphasize that these questions were answered only by the respondents who chose *yes* in the second part of the data collection instrument, that is, by people who said that they had read the 2006 ENADE evaluation report.

The internal consistency reliability and the construct validity were utilized to evaluate the scale quality (Devellis, 2011). According to the same author, "whereas reliability concerns how much a variable influences a set of items, validity concerns whether the variable is the underlying cause of item covariation" (Devellis, 2011, p. 59).

The internal consistency reliability was verified through the coefficient alpha (Cronbach, 1951; Netemeyer, Bearden, & Sharma, 2003). Referring to internal consistency, Churchill Jr. (1979) stated that "coefficient alpha *absolutely* should be the first measure one calculates to assess the quality of the instrument" (p. 68). In addition, to establish the construct validity, the measurement of convergent validity and discriminant validity was required (Campbell & Fiske, 1959; Churchill Jr., 1979).

The confirmatory factor analysis (CFA) enables the test of convergent and discriminant validity (Steenkamp & Van Trijp, 1991). For the CFA, the number of factors, the factor structure and the relationships between factors are defined by the researcher based on the theories that support the study. Therefore, the objective of the CFA is to determine whether the hypothesized model is corroborated by the data collected (Netemeyer et al., 2003; Sharma, 1996).

Partial least squares path modeling (PLS-PM) was chosen as the estimator of the CFA because its indicators are weighted to optimize the prediction of relationships among latent variables, and it estimates the direct and indirect effects between factors (Kline, 2011). Through the CFA, it was possible to assess Cronbach's alpha, the factor loadings, the cross-factor correlations, and the average variances extracted (AVE), which are the components of the convergent and discriminant validities, and the reliability tests. In addition, the factor scores, or latent variable scores, generated by the CFA were used as explanatory variables in the ordinary least squares (OLS) regression that was applied to test whether the utilization of the ENADE evaluation report impacted the performance of the undergraduate accounting programs (details are presented in section 3.3).

Lastly, the descriptive question asked the respondents to describe other utilizations that they had made of the 2006 ENADE evaluation report. Some interesting answers are discussed as *additional analyses* in the next chapter (section 4.7.3).

3.2.4 Nonuse reasons

The fourth part of the data collection instrument was dedicated to the respondents who did not have a chance to read the ENADE evaluation report (those who answered *no* in the incidence

of use question). Taking into account that the evaluation process is recognized to be effective, the nonuse of evaluation findings should be considered to be a waste of effort and a waste of financial resources (Thompson, 1994). Therefore, being aware that some level of nonuse was expected, it became important to try to investigate the causes of this nonuse.

The questionnaire comprised two queries that intended to verify the main reasons identified by the accounting program administrators to explain why they did not read the report from the evaluation. The presupposition was that two major causes were responsible for their actions: (a) accessibility problems, and (b) they did not subscribe to either the evaluation process or the evaluation findings.

The first question asked directly the main reasons why the administrators did not read the report. The second asked their level of agreement with 10 statements about the characteristics of the ENADE evaluation process and educational evaluation in general. Table 8 presents these statements.

Table 8 - Nonuse statements

Nonuse statements
Higher education evaluation findings are a relevant source of information for the decision making of program administrators
External educational evaluation outcomes are trustworthy when they take into account institutional contextual characteristics
The governmental evaluation of higher education in Brazil is unnecessary
The Brazilian government should maintain the higher education evaluation program
Student refusals to answer the ENADE large-scale test are a serious threat to the evaluation outcomes
Educational institutions should be invited to participate in the planning and design of the evaluation process
The evaluation of higher education in Brazil should be primarily based on student answers and performance
The questions of the ENADE large-scale test are congruous with the content taught in my program
Students should be punished if they will not answer the ENADE large-scale test
The evaluation outcomes would be more useful if the higher education institutional representatives could suggest improvements to the evaluation process

Answers from both questions were descriptively analyzed, and possible explanations for evaluation nonuse were gathered to provide information that could be used to reduce the ENADE nonuse occurrence among program administrators.

3.2.5 Demographic information

The fifth and last part of the data collection instrument was designed to obtain demographic information from the respondents. This section was comprised of three questions about the accounting program administrators' personal characteristics and one opinion question. The first three questions asked the respondents their gender, their highest degree obtained, and how long they had been in the program administration position. The fourth question asked their opinion regarding the full availability of the ENADE evaluation report. The objective of this last question was to determine what the accounting program administrators thought about the fact that anyone can access their institutional evaluation reports.

Other descriptive information was obtained from the database provided by the INEP about the ENADE, such as the Brazilian region where each institution is located (north; northeast; west-center; south; and southeast), the institutional academic organization (university; university center; college; and federal institute of education, science and technology), and the institutional main funding source (public; and private).

The first three questions on the demographic information questionnaire and the institutional data provided by the INEP were used as explanatory variables in the logistic regression (in the study of the factors associated with the use of the evaluation report) and in the ordinary least squares regression (in the study of the impact of evaluation utilization on the performance of accounting programs).

3.3 The study hypotheses

After verifying the factors that were associated with the use of the ENADE evaluation report, the incidence of use, the types of use, and why some accounting program administrators did

not use the report, the final analysis investigated the consequences of evaluation utilization. Hatry, Wholey and Newcomer (2010) stated that "…a major purpose of most program evaluations should be to provide information that helps to improve programs and services, not solely to save money" (p. 672). Hence, to obtain a complete view about the ENADE report use, it was important to verify the impact of report utilization on the accounting programs' performance. Although the present study is primarily exploratory, three hypotheses were formulated regarding the impact of report use.

According to the evaluation utilization literature, the use of evaluation findings can improve programs (Dawson & D'amico, 1985; Patton, 2008; Wholey, 1981). Based on this assumption, it is reasonable to expect that the undergraduate accounting programs where the administrators used the 2006 ENADE evaluation report would present a better result in the 2009 evaluation than the programs that did not use the report. Therefore, a positive correlation between the use of the 2006 ENADE evaluation report and the programs' outcomes in the 2009 ENADE evaluation was expected.

Aiming to verify whether the utilization of the evaluation report impacted the accounting programs' performance, three hypotheses were developed:

H_1: There is a positive correlation between the use of the ENADE evaluation report and the performance of the undergraduate accounting programs.

H_2: There is a positive correlation between the intensity of use of the ENADE evaluation report and the performance of the undergraduate accounting programs.

H_3: There is a positive correlation between at least one type of use of the ENADE evaluation report and the performance of the undergraduate accounting programs.

Inasmuch as the individual and group effects of more than two independent variables on a dependent variable needed to be analyzed, multiple OLS regressions were applied based on the regression general model (Pedhazur, 1997):

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + ... + \beta_k X_k + \varepsilon \quad \text{where:}$$

Y = the dependent or outcome variable;

β_0 = the intercept of the model;

$\beta_1, \beta_2, \beta_k$ = the predictors' coefficients;

X_1, X_2, X_k = the predictors of the model;

ε = the error, or residual.

The dependent variable was the same in the tests of each of the three hypotheses, namely, the grade achieved by the accounting programs in the 2009 ENADE evaluation[9]. However, a different measure of evaluation utilization from the data collection instrument was applied to each regression defined to test the three hypotheses. In addition, other covariates were added to the models according to previous studies on the factors associated with the performance of undergraduate programs in Brazil. The intention was to test whether the evaluation utilization predictor variable would make a significant contribution to the model after it was added.

Considering that the models correspond to the classical linear regression, the OLS estimator choice can be justified by its remarkable popularity as the best linear unbiased estimator (Kennedy, 2008).

3.4 The study variables and measurements

This research intended to apply different analyses to achieve its objective to better understand the extent to which the ENADE evaluation reports are utilized by the undergraduate accounting program administrators. Among the analyses proposed, a logistic regression and the OLS regressions were designed to study the factors associated with evaluation use and the impact of using the evaluation report on the accounting programs' performance, respectively.

The logistic regression variables were primarily based on the studies of Shulha and Cousins (1997) and Cousins and Leithwood (1986), and the OLS regression variables were primarily based on the studies of Diaz (2007), Moreira (2010), and Santos (2012). In addition, the program administrator highest degree variable was also tested in the OLS regressions with an

[9] The grade achieved by the undergraduate programs in the ENADE evaluation used in this research was the continuum value of the programs' preliminary grade (CPC).

exploratory intent because of the relevance of the professors' degree variable in previous studies (Diaz, 2007; Gracioso, 2006; Moreira, 2010; and Santos, 2012). Two data sources were utilized to gather all of the variables tested in this research: (a) the data collection instrument, and (b) the 2009 ENADE evaluation database provided by the INEP.

From the data collection instrument, the variables related to the accounting program administrators' perceptions of the ENADE evaluation, their personal characteristics, and their evaluation use were obtained. Table 9 presents the data collection instrument variables plus their descriptions, measurements, and an indication about the regression in which each variable was applied.

Table 9 - Description of the data collection instrument variables

Variable	Description	Measure	Regression
relev	Perception of the relevance of the ENADE evaluation	Grade ranging from 1 (lowest) to 5 (highest)	Logistic
credib	Perception of the Ministry of Educations' credibility as an evaluator	Grade ranging from 1 (lowest) to 5 (highest)	Logistic
communic	Perception of the effectiveness of the communication process between INEP and the program	Grade ranging from 1 (lowest) to 5 (highest)	Logistic
rep_ava	Perception of the suitability of the elapsed time between the ENADE evaluation and the report availability	Grade ranging from 1 (lowest) to 5 (highest)	Logistic
loc_charac	Perception of the importance given to the program's local characteristics	Grade ranging from 1 (lowest) to 5 (highest)	Logistic
involv	Accounting program administrator level of involvement in the 2006 ENADE evaluation	Scale ranging from 1 (none) to 5 (very high)	Logistic
manag_tool	Perception of the ENADE as an important management tool	Scale ranging from 1 (strongly disagree) to 5 (strongly agree)	Logistic
imp_qua	Perception of the quality of the ENADE evaluation implementation	Scale ranging from 1 (very bad) to 5 (very good)	Logistic
sup_dec	Perception of the potential of the ENADE report to support a decision making process	Scale ranging from 1 (strongly disagree) to 5 (strongly agree)	Logistic
use*	Incidence of evaluation use through the reading of the 2006 ENADE evaluation report	Binary in which 1 means use and 0 means nonuse	Logistic and OLS
concep	Conceptual type of use	Factor score	OLS

(table continues)

inst	Instrumental type of use	Factor score	OLS
pers	Persuasive type of use	Factor score	OLS
mis	Misuse of the evaluation report	Factor score	OLS
use_int	Intensity of the ENADE evaluation report use	Sum of the conceptual, instrumental and persuasive factor scores	OLS
pos_time	Tenure of the administrator in the position	Scale ranging from 1 (less than one year) to 4 (six or more years)	Logistic
gender	Accounting program administrator gender	Binary in which 1 means male and 0 means female	Logistic
hig_deg	Highest degree obtained by the accounting program administrator	Scale ranging from 1 (bachelor) to 4 (doctorate)	Logistic and OLS

Note. OLS = ordinary least squares.
*Outcome variable in the logistic regression.

The INEP provided the second data source utilized in this research. The INEP database contained the data related to the 2009 ENADE evaluation. Table 10 presents the variables tested in this study plus their descriptions and measurements and an indication about the regression in which each variable was applied.

Table 10 - Description of the 2009 ENADE database variables

Variable	Description	Measure	Regression
cpc_cont*	Grades obtained by the undergraduate accounting programs in the evaluation[10]	Continuum ranging from 0 to 5	OLS
adm_dep	Undergraduate accounting programs' main funding source	Binary in which 1 means private and 0 means public	Logistic and OLS
college	Undergraduate accounting programs' academic organization – college	Binary in which 1 means college and 0 means otherwise	Logistic and OLS
fiest	Undergraduate accounting programs' academic organization – federal institute of education, science and technology	Binary in which 1 means federal institute of education, science and technology and 0 means otherwise	Logistic and OLS
univ_cent	Undergraduate accounting programs' academic organization – university center	Binary in which 1 means university center and 0 means otherwise	Logistic and OLS

(table continues)

[10] For more information on the calculus of the programs' grades, as measured through the CPC, see section *2.3.1 The Brazilian program of higher education evaluation* in Chapter II.

univ	Undergraduate accounting programs' academic organization – university	Binary in which 1 means university and 0 means otherwise	Logistic and OLS
north	Brazilian region where the undergraduate accounting program is located – north	Binary in which 1 means north and 0 means otherwise	Logistic and OLS
west-center	Brazilian region where the undergraduate accounting program is located – west-center	Binary in which 1 means west-center and 0 means otherwise	Logistic and OLS
northeast	Brazilian region where the undergraduate accounting program is located – northeast	Binary in which 1 means northeast and 0 means otherwise	Logistic and OLS
southeast	Brazilian region where the undergraduate accounting program is located – southeast	Binary in which 1 means southeast and 0 means otherwise	Logistic and OLS
south	Brazilian region where the undergraduate accounting program is located – south	Binary in which 1 means south and 0 means otherwise	Logistic and OLS

Note. OLS = ordinary least squares.
*Outcome variable in the OLS regressions.

It is important to highlight that the INEP did not release the full version[11] of the 2009 ENADE database until June of 2012. Thus, other possible variables related to the factors associated with use or the predictors of the programs' performance were not included in the models.

3.5 The study population and sample

The study population consisted of the Brazilian undergraduate accounting programs that participated and obtained a grade in the National Exam of Students' Performance in both the 2006 and 2009 editions. From the first edition (2006), the grades were not relevant, but only the programs with grades had a complete evaluation report available. From the second edition (2009), the grades were used as the dependent variable in the regression models. It is important to highlight that a different methodology was used to measure the grades in each edition, which is why no comparison was made of the two grades.

A total of 772 undergraduate accounting programs were evaluated in the 2006 ENADE, but only 570 obtained a grade[12] and consequently had an evaluation report available. From the

[11] The 2009 ENADE microdata.

570 accounting programs evaluated in 2006, only 518 were evaluated with grades in 2009 and currently continue their operations. Therefore, this study population was equal to 518 undergraduate accounting programs, as shown in Figure 2.

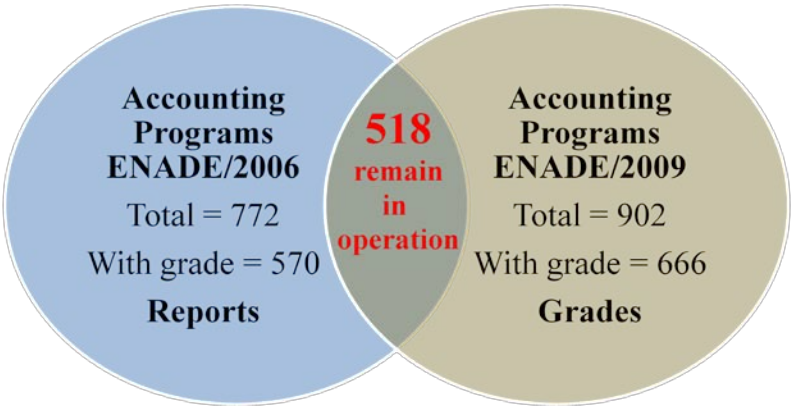

Figure 2. Study population.

The study subjects were the current undergraduate accounting program administrators from the 518 institutions researched. The program administrators are responsible for the academic management of educational programs and can be considered to be one of the parties who are the most interested in the evaluation results.

A power analysis conducted through the freeware G*Power 3.1 established the minimal sample size for this study. The estimation of the sample size based on the power analysis requires a priori definitions of the statistical power and the effect size desirables. Ellis (2010) stated that "statistical power describes the probability that a test will correctly identify a genuine effect" (p. 52). The same author explained that "an effect size refers to the magnitude of the result as it occurs, or would be found, in the population" (Ellis, 2010, p. 4). In addition to the statistical power and effect size, other necessary variables to estimate the sample size include the alpha significance level and the study population.

The study population was known. The further parameters were defined according to Cohen (1988), who suggested for the a priori values for the definition of the sample size, when previous research measures are not available, a statistical power of 0.8, a medium effect size, and an alpha significance level of 0.5. Using these standards, the minimal sample size found for this study was 131 respondents, which is approximately 25% of the population studied.

[12] At least two senior students must take the test for a program to receive a grade.

3.6 The study pilot test

Before the application of the data collection instrument, a pretest was performed with 33 former accounting program administrators to generate feedback on the statements' comprehensibility, answer timing and feasibility. To generate the feedback from the pretest volunteers, a text box was added after each question on the data collection instrument, and a question asked for opinions, suggestions and any comments about the clarity of the wording.

The pilot ran from October 10th, 2011, to November 16th, 2011. The volunteers were contacted by email, and the majority were doctorate students who had been in a program administration position in the past. These respondents answered the web-based survey and tested the data collection process. The average time to complete the survey was nine minutes.

Aside from the textual feedback on the web survey form, additional comments from the experience were gathered through informal conversations with colleagues who participated in the pilot. Although the information, questions and statements of the survey were considered to be perfectly understandable for the majority of respondents, some adjustments to the statements were made based on the suggestions received to improve their clarity.

CHAPTER IV

RESULTS

The extent to which the ENADE evaluation report is used by accounting program administrators is explored in this chapter through the presentation of the data collection results, the factors associated with evaluation use, the most frequent types of use, the impacts of evaluation use on the programs' performance and some additional analyses.

4.1 Data collection

The data collection occurred from December 2011 to April 2012. This interval covered two months of academic recess, January and February, and the ending and the beginning of the academic semesters, which explains why almost five months were needed to conclude this phase of the research.

Prior to sending the invitation letter to the programs studied (see Appendix C for a copy of the invitation letter to the accounting program administrators), a web search was conducted to find the names, emails and institutional telephone numbers of the accounting program administrators using the name of each institution from the INEP database. If any of this information was not available on the institutional website, the program was contacted by phone.

The entire study population of 518 undergraduate accounting program administrators was invited to participate in this research, and some strategies were adopted to increase the response rate. First, a personal invitation to each program administrator was made by email. This message provided the survey and the web link and informed the respondents that they would be entered in a raffle for a best-selling financial accounting book if they completed the survey. The message was sent twice. Any administrators who did not answer the questionnaire were contacted by phone at their educational institutions, and a new invitation was sent to them by email.

A total of 359 surveys were received. From these surveys, 326 were completed, a 63% response rate. The 33 incomplete responses were excluded from all analyses because they did not present an answer to the second part of the data collection instrument, that is, the incidence of use, which was fundamental information for the statistical tests. Thus, only the completed surveys were utilized. Table 11 details the response rate for the completed surveys by Brazilian region.

Table 11 - Response rate for completed surveys by Brazilian region

	Research population	**Completed surveys**	**% of surveys completed**
North	30	20	67
% of total	5.8%	6.1%	
West-Center	68	40	59
% of total	13.1%	12.2%	
Northeast	91	56	62
% of total	17.6%	17.2%	
Southeast	204	127	62
% of total	39.4%	39.0%	
South	125	83	66
% of total	24.1%	25.5%	
Total	**518**	**326**	**63**
% of total	100.0%	100.0%	

After examining the data and the regression outcomes, it was possible to identify the outliers among the institutions' respondents. Four surveys were identified to be outliers and were excluded from all analyses. These surveys presented a standardized residual greater than three standard deviations from the mean standardized residual score and caused a heteroscedasticity problem. After the exclusion of the four outliers, two from west-central and two from southeastern institutions, no heteroscedasticity was verified in the multiple regressions. Therefore, the final sample was comprised of 322 institutions, 20 from the north, 38 from the west-central region, 56 from the northeast, 125 from the southeast and 83 from the south of Brazil.

4.2 Demographics

Before proceeding to the main analyses, it was important to know the demographic and descriptive aspects of the group studied, which were captured by three personal characteristics of the accounting program administrators and three institutional characteristics of the accounting programs. Because this research primarily aimed to study the use of the ENADE report, all of the characteristics were related to the incidence of use verified by the second part of the data collection instrument. Thus, it was possible to analyze the prevalence of evaluation report use or nonuse based on the particular characteristics. Table 12 presents the gender statistics for the undergraduate accounting program administrators who completed the data collection instrument.

Table 12 - Gender versus use or nonuse

			GENDER		
			Female	**Male**	**Total**
USE	**No**	Count	40	86	**126**
		% within gender	42.1%	37.9%	39.1%
	Yes	Count	55	141	**196**
		% within gender	57.9%	62.1%	60.9%
	Total	Count	**95**	**227**	**322**
		% within gender	100.0%	100.0%	100.0%

As can be inferred from Table 12, 70.5% of the respondents were men; thus, male was the most frequent gender among the accounting program administrators researched. Regarding the use of the 2006 ENADE evaluation report, approximately 61% of the respondents affirmed that they used it by stating that they read the report. The proportion of use among men was 62%, and 58% among women, according to the data gathered. Table 13 describes the highest degree among the program administrators.

Table 13 - Highest degree versus use or nonuse

			HIGHEST DEGREE				
			Bachelor	**Specialization**	**Master's**	**Doctorate**	**Total**
USE	**No**	Count	3	43	69	11	**126**
		% within highest degree	100.0%	52.4%	33.0%	39.3%	39.1%
	Yes	Count	0	39	140	17	**196**
		% within highest degree	0%	47.6%	67.0%	60.7%	60.9%
	Total	Count	**3**	**82**	**209**	**28**	**322**
		% within highest degree	100.0%	100.0%	100.0%	100.0%	100.0%

Table 13 shows that a master's degree was the highest degree obtained by the majority of the accounting program administrators researched. This finding can potentially be explained by the small number of accounting doctors in the country, despite the ongoing expansion of accounting graduation programs in Brazil (Miranda, 2011). Another interesting finding is a possible association between the highest degree obtained and the use of the 2006 ENADE evaluation report. As shown in Table 13, the frequency of nonuse within the accounting programs' administrators is higher than that of use among those with bachelor's degrees and specialists. The majority of the administrators with master's (67%) and doctorate (61%) degrees are in the users group. Table 14 shows how long the respondents were in their administrative position.

Table 14 - Position tenure for accounting program administrators versus use or nonuse

			POSITION TENURE				
			Less than one year	**Between one and three years**	**More than three and less than six years**	**Six or more years**	**Total**
USE	**No**	Count	33	56	27	10	**126**
		% within position tenure	71.7%	59.6%	29.0%	11.2%	39.1%
	Yes	Count	13	38	66	79	**196**
		% within position tenure	28.3%	40.4%	71.0%	88.8%	60.9%
	Total	Count	**46**	**94**	**93**	**89**	**322**
		% within position tenure	100.0%	100.0%	100.0%	100.0%	100.0%

In most of the cases (57%), the respondents were in their administrative position for over three years, which means that they were involved in at least one ENADE evaluation process,

inasmuch as the answers were collected between December 2011 and April 2012 and the previous evaluation occurred in 2009. Previous studies have reported that the involvement of the users in the evaluation process tends to strengthen the use of evaluation information (Dawson & D'amico, 1985; Greene, 1988b; Roseland, 2011). It is important to highlight that approximately 28% of the people researched were the program administrators when the 2006 ENADE evaluation was completed. Table 14 also indicated a possible association between the number of years in the program administration position and the use of evaluation findings because the nonuse rate progressively decreased as the number of years increased: for less than one year (72%), between one and three years (60%), more than three and fewer than six years (29%), and six or more years (11%).

The tables below present some of the characteristics of the educational institutions and their relationship with the use or nonuse of the 2006 ENADE evaluation report by the accounting program administrators. Table 15 presents the institutional main funding source by frequency of use.

Table 15 - Main funding source versus use or nonuse

			MAIN FUNDING SOURCE		
			Public	**Private**	**Total**
USE	**No**	Count	36	90	**126**
		% within main funding source	61.0%	34.2%	39.1%
	Yes	Count	23	173	**196**
		% within main funding source	39.0%	65.8%	60.9%
	Total	Count	**59**	**263**	**322**
		% within main funding source	100.0%	100.0%	100.0%

Table 15 demonstrates that the majority of the undergraduate accounting programs studied (81.7%) were private institutions, and the incidence of use among their program administrators was more frequent than that of their colleagues from the public institutions. In fact, nonuse was more common (61%) than use among the program administrators of public institutions. A possible explanation for this outcome is the policy of regular succession of professors to the program administration position; this policy has been established in public higher education institutions that, in many cases, also limit the maximum number of consecutive years that a professor can stay in that position, usually to four years. In an effort

to verify this supposition, Table 16 was developed to match the main funding source with the position tenure and the use incidence of the respondents from public institutions.

Table 16 - Main funding source and position tenure versus use or nonuse in public institutions

				POSITION TENURE				
				Less than one year	**Between one and three years**	**More than three and less than six years**	**Six or more years**	**Total**
PUBLIC	**USE**	**No**	Count	7	20	9	0	**36**
			% within position tenure	77.8%	66.7%	56.3%	0%	61.0%
		Yes	Count	2	10	7	4	**23**
			% within position tenure	22.2%	33.3%	43.8%	100.0%	39.0%
		Total	Count	**9**	**30**	**16**	**4**	**59**
			% within position tenure	100.0%	100.0%	100.0%	100.0%	100.0%

As Table 16 shows, nonuse grows progressively less common as the number of years on the job increases, but the majority (66.1%) of the program administrators had held the position for fewer than three years. The opposite situation was verified among the private institutions, as presented in Table 17.

Table 17 - Main funding source and position tenure versus use or nonuse in private institutions

				POSITION TENURE				
				Less than one year	**Between one and three years**	**More than three and less than six years**	**Six or more years**	**Total**
PRIVATE	**USE**	**No**	Count	26	36	18	10	**90**
			% within position tenure	70.3%	56.3%	23.4%	11.8%	34.2%
		Yes	Count	11	28	59	75	**173**
			% within position tenure	29.7%	43.8%	76.6%	88.2%	65.8%
		Total	Count	**37**	**64**	**77**	**85**	**263**
			% within position tenure	100.0%	100.0%	100.0%	100.0%	100.0%

Among the undergraduate accounting programs at the private institutions studied, most of the program administrators (61.6%) had held the position for over three years, and the same

progressive reduction of the nonuse incidence was verified. Hence, a previous analysis of the data from both public and private institutions suggests that retaining the same administrator longer in the position could increase the chance that the evaluation report would be used in the group researched. Table 18 presents the academic organization of the institutions and its relationship with the incidence of use or nonuse.

Table 18 - Academic organization versus use or nonuse

			ACADEMIC ORGANIZATION				
			Federal institute of education, science and technology	**College**	**University center**	**University**	**Total**
USE	**No**	Count	0	61	19	46	**126**
		% within academic organization	0%	40.7%	36.5%	38.7%	39.1%
	Yes	Count	1	89	33	73	**196**
		% within academic organization	100.0%	59.3%	63.5%	61.3%	60.9%
	Total	Count	**1**	**150**	**52**	**119**	**322**
		% within academic organization	100.0%	100.0%	100.0%	100.0%	100.0%

College was the most common academic organization among the accounting programs studied (46.6%), followed by universities (37%). Regarding the use of the 2006 ENADE evaluation report, all types of academic organizations presented a higher incidence of use than nonuse. Excluding the federal institute of education, science and technology because it was comprised of only one institution, the university centers presented a proportionally highest incidence of use (63.5%) among the programs studied. Table 19 shows the institutions' respondents divided into Brazilian regions and related to the use incidence.

Table 19 - Brazilian region versus use or nonuse

			BRAZILIAN REGIONS					
			North	**West-center**	**Northeast**	**Southeast**	**South**	**Total**
USE	**No**	Count	9	21	26	39	31	**126**
		% within Brazilian region	45.0%	55.3%	46.4%	31.2%	37.3%	39.1%
	Yes	Count	11	17	30	86	52	**196**
		% within Brazilian region	55.0%	44.7%	53.6%	68.8%	62.7%	60.9%
	Total	Count	**20**	**38**	**56**	**125**	**83**	**322**
		% within Brazilian region	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Following the frequency of institutions in the study population (see Table 11), the southeast of Brazil was the region with the highest number of respondents (38.8%) in the sample. The same region also presented the highest proportional incidence of use of the 2006 ENADE evaluation report (68.8%) by its institutions, followed by the south (62.7%), north (55%) and northeast (53.6%). The west-central region was the only region where the incidence of nonuse (55.3%) was higher than that of use. According to the previous tables, a possible explanation for this outcome in the west-central region is the position tenure and the highest degree of their program administrators. Tables 20 and 21 connect these variables to verify whether this possible explanation is corroborated by the data.

Table 20 - Position tenure versus use or nonuse of west-center institutions

				POSITION TENURE				
				Less than one year	**Between one and three years**	**More than three and less than six years**	**Six or more years**	**Total**
WEST-CENTER	**USE**	**No**	Count	5	11	4	1	**21**
			% within position tenure	83.3%	73.3%	57.1%	10.0%	55.3%
		Yes	Count	1	4	3	9	**17**
			% within position tenure	16.7%	26.7%	42.9%	90.0%	44.7%
		Total	Count	**6**	**15**	**7**	**10**	**38**
			% within position tenure	100.0%	100.0%	100.0%	100.0%	100.0%

Table 21 - Highest degree versus use or nonuse of west-center institutions

			HIGHEST DEGREE			
			Specialization	**Master's**	**Doctorate**	**Total**
WEST-CENTER **USE**	**No**	Count	11	10	0	**21**
		% within highest degree	55.0%	58.8%	0%	55.3%
	Yes	Count	9	7	1	**17**
		% within highest degree	45.0%	41.2%	100.0%	44.7%
	Total	Count	**20**	**17**	**1**	**38**
		% within highest degree	100.0%	100.0%	100.0%	100.0%

Tables 20 and 21 show that the majority of accounting program administrators from the institutions researched in the west-central region had fewer than three years in their position (55.3%) and had a specialization degree (52.6%). Thus, the data suggest that the higher nonuse incidence verified in that region can be partially explained by these characteristics of their program administrators. However, the real significance of these variables to the incidence of use of the 2006 ENADE evaluation report is tested through the logistic regression below.

4.3 Factors associated with evaluation use

As part of the analysis on evaluation use by undergraduate accounting program administrators, this research verified the factors associated with the ENADE report use through a logistic regression. As presented in Table 9, the outcome variable was the use or nonuse as captured by the second section of the data collection instrument. The explanatory variables were some perceptions and attributes of the program administrators and some characteristics of the undergraduate accounting programs, as follows: (a) program administrators' perceptions of the ENADE (*relevance, credibility, communication, report availability, local characteristics, involvement, management tool, implementation quality,* and *support decision*), (b) attributes of the program administrators (*tenure in the administrative position, gender,* and *highest degree*), and (c) characteristics of the programs (*main funding source, academic organization,* and *Brazilian region*).

The logistic regression analysis was carried out in PASW Statistics 17.0. Due to the exploratory character of this analysis and because no similar prior Brazilian research indicating potential predictive variables could be found, a forward stepwise (Likelihood Ratio) model selection was chosen. Thus, Table 22 presents the statistically significant variables to predict the use of the 2006 ENADE evaluation report among the programs researched.

Table 22 - Factors associated with the ENADE evaluation report use

	B	**SE**	**Wald**	***p*-valor**	**Exp(B)**
pos_time	0.895	0.161	30.959	0.000	2.45
hig_deg	0.780	0.247	9.981	0.002	2.18
adm_dep(1)	0.793	0.357	4.918	0.027	2.21
communic	0.439	0.135	10.554	0.001	1.55
involve	0.412	0.105	15.400	0.000	1.51
constant	-7.118	1.086	42.978	0.000	0.001

Chi-square = 117.95 (df = 5); p < .000

-2 Log likelihood = 313.09

Nagelkerke R^2 = 0.416

Note. N = 322. communic = communication; involv = involvement; pos_time = tenure of the administrator in the position; hig_deg = highest degree; adm_dep = main funding source.
(1) = private institutions.

The test of the full model presented a statistically significant contribution when compared with the constant-only model (chi-square = 117.95, $p < .000$ with df = 5), indicating that the predictors as a set reliably distinguished between the users and nonusers of the 2006 ENADE evaluation report.

As shown in Table 22, the statistically significant variable that made the greatest contribution to predicting the 2006 ENADE evaluation use was *tenure of the administrator in the position* (Wald = 30.96), followed by, in descending order, *involvement in the 2006 ENADE* (Wald = 15.40), *communication* (Wald = 10.55), *highest degree* (Wald = 9.98), and *main funding source* (Wald = 4.92). It is important to highlight that the statistics for this last variable refer to *private* institutions because they were assigned *code 1* in the database (see Table 10).

The positive coefficients (B) of the statistically significant variables indicate that the longer the program administrators are in their positions, the higher the academic degree of the administrators, the greater their level of involvement in the evaluation process, and the more positive their perception of the effectiveness of communication between the INEP and the programs, the greater the likelihood of their using the ENADE evaluation report.

Other interesting information presented in Table 22 is the Exp (B), or variable odds ratios. Increasing the tenure of the administrator in the position from a shorter to a longer period (considering the intervals presented as options for answers in the data collection instrument) as well as the academic degree by one level more than doubles the likelihood of using the evaluation report. The classification as a private institution also more than doubles the likelihood of the report being used in the group researched.

The logistic regression outcomes suggest that the undergraduate accounting programs in Brazil should avoid the rotation of program administrators, which is common in public institutions, or should at least extend the maximum time in the position to beyond four years if they intend to increase the use of the ENADE evaluation report. In addition, these programs should favor the professors with the highest degrees for the program administrator position. At the same time, the INEP should promote changes in the evaluation process, requiring more involvement from program administrators and improving the communication with programs if an increase in the evaluation report use is desirable.

The tolerance and the variance inflation factor (VIF) statistics indicate that there is no multicollinearity problem in the model. According to the type of variables in this research database, other logit assumptions are not applicable (Field, 2009). The complete logistic regression results and the multicollinearity test outcomes are provided in Appendix D.

4.4 Types of use plus misuse scale

Only the respondents who affirmed that they had read the 2006 ENADE evaluation report responded to the scale about the types of use plus misuse (n = 196). That scale was intended to capture the level of use by type, with a goal of creating variables to test the relationship

between evaluation use and the programs' performance. However, the reliability and validity of the instrument needed to be examined before proceeding to the analysis (Devellis, 2011).

The internal consistency reliability and the construct validity were assessed through a confirmatory factor analysis (CFA) conducted in SmartPLS 2.0 using partial least squares path modeling (PLS-PM) as an estimator. First, the scale in its full version was tested; the latent variable bivariate correlations, the average variances extracted (AVE), the composite reliabilities, and the Cronbach's alphas are presented in Table 23.

Table 23 - Latent variable bivariate correlations, AVE, composite reliability and Cronbach's alpha – full model

	CONCEP	**INST**	**MIS**	**PERS**	**AVE**	**Composite Reliability**	**Cronbachs' Alpha**
CONCEPTUAL	1				0.574	0.890	0.852
INSTRUMENTAL	0.725	1			0.626	0.893	0.849
MISUSE	0.599	0.827	1		0.561	0.864	0.806
PERSUASIVE	0.745	0.837	0.833	1	0.561	0.864	0.802

Note. N = 196. concep = conceptual; inst = instrumental; pers = persuasive; mis = misuse; AVE = average variances extracted.

As shown in Table 23, the latent variables – conceptual, instrumental, persuasive, and misuse – presented AVEs greater than 0.5 and Cronbach's alphas greater than 0.7, results that match the required standards to convergent validity and the internal consistency reliability, respectively (Fornell & Larcker, 1981; Hair Jr., Anderson, Tatham, & Black, 2005; Hinkin, 1995). However, the instrumental, persuasive and misuse latent variables presented individual bivariate correlations that were greater than 0.8, which means that the indicators had loadings that were highly related to more than one latent variable. Although Kline (2011) affirmed that excessively high individual bivariate correlations among latent variables would be greater than 0.9, an analysis of the cross-loadings was conducted.

The cross-loading analysis found that one indicator from each latent variable presented a loading of over 0.7 on its theoretically assigned factor and, simultaneously, on another factor. Thus, these four indicators were excluded from the scale database, and a new CFA was performed. Tables 24 and 25 show the excluded indicators and the new CFA outcomes, respectively. Both the confirmatory factor analyses cross-loadings and the indicators' descriptive statistics are provided in Appendix E.

Table 24 - Scale-excluded indicators

Latent variable	Code	Scale statement
CONCEPTUAL	concep_5	better understand the curriculum and/or course content strengths and weaknesses
INSTRUMENTAL	inst_1	hire professors
MISUSE	mis_2	claim institutional recognition for the quality of the program
PERSUASIVE	pers_2	look for institutional support to change pedagogical policies and/or program management policies

These four indicators were excluded to reduce the correlations between factors and improve the discriminant power of the latent variables. However, a reduction of the Cronbach alphas was also expected because they are directly related to the number of indicators in the scale (Hair Jr. et al., 2005).

Table 25 - Latent variables correlations, AVE, composite reliability and Cronbach's alpha – reduced model

	CONCEP	INST	MIS	PERS	AVE	Composite Reliability	Cronbachs' Alpha
CONCEPTUAL	**0.885**				0.606	0.885	0.836
INSTRUMENTAL	0.680	**0.896**			0.682	0.896	0.845
MISUSE	0.505	0.735	**0.856**		0.599	0.856	0.778
PERSUASIVE	0.681	0.786	0.771	**0.831**	0.552	0.831	0.727

Note. N = 196. Diagonal entries are composite reliabilities. concep = conceptual; inst = instrumental; pers = persuasive; mis = misuse; AVE = average variances extracted.

The scale reliability and construct validity were verified using the new CFA outcomes, which are presented in Table 25. As was expected, there was a reduction in the Cronbach alphas, but it was not enough to diminish the reliability of the scale. Cronbach's alpha, which, according to Hair Jr. et al. (2005), is the most common measure used to evaluate the internal consistency reliability, indicated reliabilities greater than 0.7, suggesting that the responses were consistent across the latent variables within the scale.

The construct validity was assessed through the convergent and discriminant validities. The average variances extracted (AVE) were greater than 0.5, indicating convergent validity according to Fornell and Larcker (1981); that is, the indicators of each factor were able to measure its construct. The assessment of the discriminant validity was conducted through a comparative analysis between the latent variable bivariate correlations and the composite

reliabilities (O'cass & Ngo, 2007). Latent variables with composite reliabilities greater than their bivariate correlations indicate discriminant validity. As shown in Table 25, the correlations ranged from 0.505 to 0.786, and the reliabilities ranged from 0.831 to 0.896, suggesting that the indicators were able to differentiate the constructs measured by each latent variable.

Therefore, the types of use plus misuse scale fulfills its objective of measuring an "attribute or quality which is not operationally defined" (Cronbach & Meehl, 1955, p. 282) because it achieves reliability and construct validity. Thus, the latent variable scores from the second confirmatory factor analysis were utilized in the OLS regressions as estimates of their constructs, that is, the *conceptual*, *instrumental*, and *persuasive* types of use in addition to *misuse*.

It is important to highlight that one persuasive indicator, *pers_4*, did not achieve the 0.7 factor loading standard, which may be a cause for caution (Kline, 2011). However, a third CFA was performed that excluded that indicator, and no significant difference was verified in the outcomes, which is why it was retained in the analysis. Table 26 presents the descriptive statistics of the constructs.

Table 26 - Descriptive statistics from the scale constructs

	Minimum	**Maximum**	**Mean**	**Std. Deviation**
Conceptual	5	25	19.31	4.10
Instrumental	4	20	14.23	4.12
Persuasive	4	20	13.28	3.74
Misuse	4	20	10.92	4.04

Note. N = 196.

Table 26 shows that the conceptual type of use indicators received the highest level of use, as measured through the statement agreements among the respondents, and also presented the lowest proportional deviation. This preliminary outcome is in accordance with previous studies that indicated conceptual use, or utilization for enlightenment, as the most common type of use for evaluation findings (Mccormick, 1997; Shea, 1991; Thompson, 1994). The persuasive type of use was the least frequent among the accounting program administrators

researched. A misuse incidence was also verified among the program administrators. Lastly, the significance of the types of use on the programs' performance was tested through the OLS regressions.

4.5 Hypothesis tests

This research put forward three hypotheses concerning the impacts of evaluation use on the performance of undergraduate accounting programs. Ordinary least squares regressions were applied to test these hypotheses using the freeware gretl 1.9.9. The outcome variable in all of these regressions was the grades achieved by the programs in the 2009 ENADE evaluation. Table 27 shows the descriptive statistics of the outcome variable.

Table 27 - Descriptive statistics of the outcome variable

	Minimum	**Maximum**	**Mean**	**Std. Deviation**
cpc_cont	0.772	4.124	2.270	0.586

Note. N = 322. cpc_cont = programs' grades.

The explanatory variables were mostly defined from previous research on factors associated with undergraduate program performance in Brazil (all predictors are presented in Tables 9 and 10). The approach was to add variables related to evaluation use to test whether they contribute to program performance. These evaluation use variables were created from the data collection instrument used in this research.

All of the hypotheses were tested in two stages, first using simple regression and second using multiple regression to verify the outcomes' robustness. The first hypothesis was *there is a positive correlation between the use of the ENADE evaluation report and the performance of the undergraduate accounting programs*. This first hypothesis tested the variable *use*. Table 28 presents the results from the simple regression.

Table 28 - Relationship between the use of the ENADE evaluation report and the undergraduate accounting programs' performance

	B	***S.E.***	***t***	***p-valor***
const	2.1765	0.0518	41.9950	<0.00001***
use	0.1542	0.0664	2.3216	0.0209**
F = 5.3899				
R^2 = 0.0166				

Note. N = 322. S.E. = standard error.
*** p < .001, **p < .05.

The first regression aimed to verify whether the binary variable *use* alone was sufficient to predict the programs' performance. The positive and statistically significant coefficient of the variable tested indicates that the act of reading the 2006 ENADE evaluation report is positively correlated with the 2009 evaluation program's outcome in the group researched. The low R^2 is understandable because it was not assumed that the programs' grades would only be explained by the evaluation report use. Additionally, the previous research developed in Brazil has identified other important variables that are related to the ENADE outcomes. Some of those variables were added to the model in the next regression to test whether the variable *use* would remain statistically significant. Table 29 presents the results from the second regression.

Table 29 - Relationships between the use of the ENADE evaluation report and the undergraduate accounting programs' performance with additional control variables

	B	***S.E.***	***t***	***p-valor***	
const	2.3199	0.1786	12.9904	<0.00001	***
use	0.1299	0.0594	2.1895	0.0293	**
hig_deg	0.1475	0.0505	2.9207	0.0038	***
north	-0.3443	0.1210	-2.8455	0.0047	***
northeast	-0.2283	0.0824	-2.7720	0.0059	***
west-center	-0.2441	0.0962	-2.5388	0.0116	**
south	-0.0039	0.0722	-0.0538	0.9571	
univ_cent	-0.2098	0.0870	-2.4105	0.0165	**
college	-0.4115	0.0681	-6.0446	<0.00001	***
fiest	-0.5278	0.5015	-1.0524	0.2935	
adm_dep	-0.2762	0.0820	-3.3690	0.0009	***
F = 14.0068					

(table continues)

$R^2 = 0.3105$

Note. N = 322. S.E. = standard error; hig_deg = highest degree; univ_cent = university center; fiest = federal institute of education, science and technology; adm_dep = main funding source.
*** p < .001, **p < .05.

The second regression showed that even in the presence of other control variables, the variable *use* remains statistically significant and positively correlated with the programs' performance. Thus, this result corroborates the first, suggesting that the reading of the 2006 ENADE evaluation report was related to the 2009 evaluation outcomes in the undergraduate accounting programs researched.

Another association tested in the second regression was the highest degree received by the accounting programs' administrators and the 2009 evaluation outcomes. These results also indicate a statistically significant and positive correlation between the academic degree of the administrators and the 2009 ENADE grades; in other words, the higher the academic title of the programs' administrator, the stronger were the 2009 ENADE outcomes in the undergraduate accounting programs studied.

The other variables included in the last regression have already been tested by previous research on evaluations in Brazilian higher education. The negative coefficients indicate that accounting programs from the northern, west-central and northeastern regions presented lower grades than the institutions from the southeast of Brazil in the group researched. Diaz (2007) found similar results, especially regarding the low performance of the institutions from the northern region, although she studied the ENC evaluation system by examining different programs and using students' grades as an outcome variable.

Among the institutions researched, the university centers and colleges presented negative coefficients and, consequently, a lower performance in the 2009 ENADE when compared with universities. This result corroborates the findings of Moreira (2010), although she worked with different programs and used students' grades as an outcome variable. Lastly, the negative coefficient of the private institutions researched reveals that they had a lower performance in the 2009 ENADE than the public institutions. A similar outcome was found by Diaz (2007) and Santos (2012), the latter study being an analysis of undergraduate accounting programs in the ENADE 2006 and ENC 2003 using students' grades as an outcome variable.

Therefore, considering that the program grades used as an outcome variable in this research included the students' grades, it is reasonable to compare the current results with the results of the previous research. The findings of this research appear to be in accordance with those from other studies on Brazilian higher education evaluation even when an evaluation use variable is added. It is important to highlight that the regression assumptions were tested for both regressions, and a non-normal distribution of error terms was identified in the simple regression. The results of the assumption tests are provided in Appendix F.

The second hypothesis was that *there is a positive correlation between the intensity of use of the ENADE evaluation report and the performance of the undergraduate accounting programs*. In this case, the variable *use_int* was tested through a simple and a multiple regression. Table 30 shows the simple regression outcomes.

Table 30 - Relationship between the intensity of the ENADE evaluation report use and the undergraduate accounting programs' performance

	B	***S.E.***	***t***	***p-valor***	
const	2.1814	0.0499	43.7417	<0.00001	***
use_int	0.0136	0.0058	2.3494	0.0194	**
F = 5.5199					
R^2 = 0.0170					

Note. N = 322. S.E. = standard error; use_int = intensity of use.
*** p < .001, **p < .05.

The *use_int* variable measures the intensity of use, that is, the degree of utilization based on the types of use diversity and volume as indicated by the accounting programs' administrators through their agreement level on the scale statements. The coefficient for this variable indicates that the intensity of the 2006 ENADE evaluation report use is positively correlated with the 2009 evaluation programs' outcomes in the group researched. Thus, the greater the three types of use were verified jointly, the higher programs' grade. Again, in this case, the low R^2 is understandable because it was not assumed that the programs' grades would be explained only by the intensity of the evaluation report use. As in the first hypothesis test, additional variables were added to the model to test whether the variable *use_int* would remain statistically significant. Table 31 presents the results from the multiple regression.

Table 31 - The relationship between the intensity of the ENADE evaluation report use and the undergraduate accounting programs' performance with additional control variables

	B	***S.E.***	***t***	***p-valor***	
const	2.3210	0.1781	13.0343	<0.00001	***
use_int	0.0132	0.0051	2.5651	0.0108	**
hig_deg	0.1478	0.0502	2.944	0.0035	***
north	-0.3422	0.1207	-2.8359	0.0049	***
northeast	-0.2301	0.0821	-2.8035	0.0054	***
west-center	-0.2450	0.0958	-2.5578	0.0110	**
south	-0.0068	0.0720	-0.0941	0.9251	
univ_cent	-0.2127	0.0867	-2.4535	0.0147	**
college	-0.4114	0.0679	-6.0632	<0.00001	***
fiest	-0.5418	0.5001	-1.0833	0.2795	
adm_dep	-0.2855	0.0820	-3.4829	0.0006	***
F = 14.2619					
R^2 = 0.3144					

Note. N = 322. S.E. = standard error; use_int = intensity of use; hig_deg = highest degree; univ_cent = university center; fiest = federal institute of education, science and technology; adm_dep = main funding source.
*** p < .001, **p < .05.

As shown in Table 31, the *use_int* variable coefficient remains statistically significant and positively correlated with the programs' performance in the 2009 ENADE evaluation even when the control variables were included in the model, presenting a slightly greater contribution (t = 2.5651) to that model than the *use* variable (t = 2.1895). Therefore, the intensity of use explained part of the program's performance variance in the group researched. When compared to the prior multiple regression, the other variables retain the same signal direction and almost the same weight in relation to the outcome variable. Hence, the substitution of the variable *use* for the variable *use_int* in the model did not cause significant changes in the control variables' results and, consequently, in their regression analyses.

It is important to note that the simple regression presented heteroscedasticity and non-normal distribution of error terms problems but that in the multiple regression, after the inclusion of the control variables, these problems were solved. As in the first multiple regression analysis, there was no multicollinearity among variables verified (see Appendix F for the results of the regression assumption tests).

The last analysis related to the impacts of the evaluation use on the programs' performance examined whether the types of use variables were correlated with the programs' grades. The third hypothesis tested was that *there is a positive correlation between at least one type of use of the ENADE evaluation report and the performance of the undergraduate accounting programs*. Tables 32, 33, and 34 present the simple regression outcomes for the *conceptual*, *instrumental* and *persuasive* types of use variables, respectively.

Table 32 - The relationship between the conceptual use of the ENADE evaluation report and the undergraduate accounting programs' performance

	B	***S.E.***	***t***	***p-valor***	
const	2.1527	0.0499	43.172	<0.00001	***
concep	0.0501	0.0162	3.093	0.0022	***
F = 9.5665					
R^2 = 0.0290					

Note. N = 322. S.E. = standard error; concep = conceptual.
*** p < .001.

The conceptual type of use presented a positive and statistically significant (p = 0.0022) coefficient that was correlated with the programs' performance. Thus, the fact that the programs' administrators had read the 2006 ENADE evaluation report to gather information about the student's perceptions and outcomes appears to be positively associated with the results obtained by the undergraduate accounting programs in the 2009 evaluation, considering the group researched.

Table 33 - The relationship between the instrumental use of the ENADE evaluation report and the undergraduate accounting programs' performance

	B	***S.E.***	***t***	***p-valor***	
const	2.2033	0.0492	44.825	<0.00001	***
inst	0.0310	0.017	1.8223	0.0693	*
F = 3.3209					
R^2 = 0.0103					

Note. N = 322. S.E. = standard error; inst = instrumental.
*** p < .001, **p < .05, and * p < .10.

When compared with the conceptual type of use, the second type of use, instrumental, presented a positive and statistically less significant (p = 0.0693) coefficient correlated with

the undergraduate accounting programs' performance in the ENADE 2009. This result indicates that the use of the 2006 ENADE evaluation report to make specific decisions produced a lower association with the 2009 evaluation outcomes than the use of the report to learn and better understand the evaluation outcomes.

Table 34 - The relationship between the persuasive use of the ENADE evaluation report and the undergraduate accounting programs' performance

	B	***S.E.***	***t***	***p-valor***	
const	2.197	0.0493	44.6059	<0.00001	***
pers	0.0363	0.0183	1.9831	0.0482	**
F = 3.9325					
R^2 = 0.0121					

Note. N = 322. S.E. = standard error; pers = persuasive.
*** p < .001, **p < .05.

As shown in Table 34, the persuasive coefficient was statistically significant (p = 0.0482), indicating that, among the programs researched, using the 2006 ENADE results politically, such as to convince others or to reinforce a point of view in a negotiation or discussion, was positively correlated with the accounting programs' 2009 evaluation outcomes.

However, all simple regressions related to the types of use presented a non-normal distribution of error terms, and the instrumental and persuasive regressions also presented a heteroscedasticity problem. Hence, multiple regressions were performed to test the robustness of the coefficients found in the simple regressions and to correct the problems related to the regression assumptions. Due to the multicollinearity that exists among the three types of use variables, they were not tested together. Table 35 shows the *conceptual use* variable multiple regression outcomes.

Table 35 - The relationship between the conceptual use of the ENADE evaluation report and the undergraduate accounting programs' performance with additional control variables

	B	***S.E.***	***t***	***p-valor***	
const	2.3200	0.1775	13.0713	<0.00001	***
concep	0.0426	0.0145	2.9404	0.0035	***
hig_deg	0.1424	0.0502	2.8380	0.0048	***
north	-0.3410	0.1203	-2.8351	0.0049	***

(table continues)

northeast	-0.2256	0.0819	-2.7561	0.0062	***
west-center	-0.2386	0.0956	-2.4971	0.0130	**
south	-0.0038	0.0717	-0.0527	0.9580	
univ_cent	-0.2084	0.0865	-2.4100	0.0165	**
college	-0.4050	0.0678	-5.9772	<0.00001	***
fiest	-0.5529	0.4985	-1.1091	0.2682	
adm_dep	-0.2899	0.0815	-3.5584	0.0004	***
F = 14.5570					
R^2 = 0.3188					

Note. N = 322. S.E. = standard error; concep = conceptual; hig_deg = highest degree; univ_cent = university center; fiest = federal institute of education, science and technology; adm_dep = main funding source.
*** p < .001, **p < .05.

According to the regression results, the conceptual use variable retains its statistical significance and its positive correlation with the programs' 2009 ENADE evaluation outcomes even when the control variables are added to the model. Compared to the previous multiple regressions, the conceptual use proved to be the most relevant variable (p = 0.0035) among the evaluation use measures in the prediction of the accounting programs' performance in the 2009 ENADE evaluation in the group researched. The control variables also retain the same association with the dependent variable verified in the previous multiple regressions. Table 36 presents the regression outcomes to the instrumental use variable.

Table 36 - The relationship between the instrumental use of the ENADE evaluation report and the undergraduate accounting programs' performance with additional control variables

	B	***S.E.***	***t***	***p-valor***	
const	2.3244	0.1785	13.0200	<0.00001	***
inst	0.0332	0.0150	2.2097	0.0279	**
hig_deg	0.1507	0.0503	2.9956	0.0030	***
north	-0.3438	0.1210	-2.8418	0.0048	***
northeast	-0.2346	0.0822	-2.8532	0.0046	***
west-center	-0.2503	0.0960	-2.6088	0.0095	***
south	-0.0072	0.0722	-0.1005	0.9200	
univ_cent	-0.2155	0.0869	-2.4798	0.0137	**
college	-0.4154	0.0680	-6.1098	<0.00001	***
fiest	-0.5251	0.5013	-1.0474	0.2957	

(table continues)

adm_dep	-0.2772	0.0820	-3.3789	0.0008	***
F = 14.0195					
R^2 = 0.3107					

Note. N = 322. S.E. = standard error; inst = instrumental; hig_deg = highest degree; univ_cent = university center; fiest = federal institute of education, science and technology; adm_dep = main funding source.
*** p < .001, **p < .05.

The instrumental use variable presented a greater statistical significance (p = 0.0279) for predicting the accounting programs' performance in the 2009 ENADE in the presence of the control variables than the significance resulting from the simple regression. Additionally, the same positive correlation was verified, suggesting that the greater the instrumental use of the 2006 ENADE evaluation report, the greater the 2009 ENADE programs' performance, considering this study sample. Again, the control variables presented similar results to the previous regressions. Table 37 shows the persuasive use variable regression results.

Table 37 - The relationship between the persuasive use of the ENADE evaluation report and the undergraduate accounting programs' performance with additional control variables

	B	***S.E.***	***t***	***p-valor***	
const	2.3189	0.1783	13.0046	<0.00001	***
pers	0.0391	0.0162	2.4059	0.0167	**
hig_deg	0.1516	0.0501	3.0237	0.0027	***
north	-0.3424	0.1208	-2.8343	0.0049	***
northeast	-0.2301	0.0822	-2.7998	0.0054	***
west-center	-0.2466	0.0959	-2.5718	0.0106	**
south	-0.0091	0.0721	-0.1264	0.8995	
univ_cent	-0.2144	0.0868	-2.4700	0.0141	**
college	-0.4140	0.0679	-6.0965	<0.00001	***
fiest	-0.5392	0.5008	-1.0765	0.2825	
adm_dep	-0.2842	0.0823	-3.4554	0.0006	***
F = 14.1488					
R^2 = 0.3127					

Note. N = 322. S.E. = standard error; pers = persuasive; hig_deg = highest degree; univ_cent = university center; fiest = federal institute of education, science and technology; adm_dep = main funding source.
*** p < .001, **p < .05.

Table 37 indicates that no important variation occurred with the persuasive use variable or the control variables in this new multiple regression. The third type of use remains statistically significant ($p = 0.0167$) and positively correlated with the 2009 ENADE programs' performance. Hence, the regression outcomes suggest that the persuasive use of the 2006 ENADE evaluation report, verified among the institutions researched, is also related to their grades in the subsequent evaluation.

Analyzing the regression outcomes jointly revealed that the use of the 2006 ENADE evaluation report by the undergraduate accounting program administrators researched was related to improved program performance in the 2009 ENADE evaluation independently of how this use was measured (binary, sum of factor scores, or individual factor scores), suggesting that the use of the ENADE evaluation report should be incentivized to increase the chances of achieving an evaluation performance improvement through the enhancement of the programs' quality (Patton, 2008).

Based on the regression results, it is also possible to affirm that the *conceptual* type of use was the most strongly correlated with the accounting programs' performance in the 2009 ENADE evaluation in the group researched. This result is in accordance with previous studies that indicated that the conceptual type of use was the most frequent and significant among the evaluation users (Mccormick, 1997; Shea, 1991).

The control variables presented a stable behavior throughout the multiple regressions. The exploratory test of the highest degree of the program administrator variable (*hig_deg*) remained statistically significant and positively correlated with the 2009 ENADE programs' performance, suggesting that undergraduate accounting program administrators with a doctorate or a master's degree are related to programs that achieved better performances. Thus, if better grades in the ENADE evaluation are desirable, then program administrators with the highest degrees should be preferred.

Concurrently, the other control variables already tested by previous research on Brazilian higher education evaluation demonstrated the usual results as follows: the institutions from the northern, west-central and northeastern regions presented a lower performance than the southeastern region; university centers and colleges showed a lower performance than the universities; and private institutions received lower grades than public institutions (Diaz,

2007; Moreira, 2010; Santos, 2012). Possible explanations for these results include the association between the educational development and the regional socioeconomic development, inasmuch as the north, northeast and west-center present the lowest socioeconomic indicators in Brazil; the more complex organizational and academic structure may lead the universities to better program performance when compared to colleges and university centers; and the public institutions may attract more of the educationally most prepared students when compared with the private institutions.

Therefore, after examining the regression outcomes, none of the three hypotheses could be rejected because in each analysis, the variable related to the 2006 ENADE evaluation report use was statistically significant and positively correlated with the 2009 ENADE evaluation performance for the undergraduate accounting programs researched. The first hypothesis tested the binary variable *use,* the second tested the *intensity of use*, and the third tested the types of use; all three types of use were statistically significant and positively correlated with the undergraduate accounting programs' performance in the 2009 ENADE evaluation.

Lastly, the non-normal distribution of error terms and the heteroscedasticity problems that were verified in the simple regressions were solved through the multiple regressions. The multiple regressions also presented no multicollinearity problems (see Appendix F for the results of the regression assumption tests).

4.6 Statistical power and effect size

To evaluate the magnitude of the results presented in the multiple regressions that tested this study hypotheses and the probability that the tests correctly identified a true effect, effect size and statistical power analyses were conducted using the freeware G*Power 3.1. The effect size was calculated based on Pearson's correlation coefficient, *r*, of the predictors and the outcome variable. The parameters that should be applied to calculate the statistical power, according to Cohen, Cohen, West, and Aiken (2003), were effect size, degrees of freedom (determined primarily by sample size, n = 322), and alpha significance level ($\alpha = 0.05$). Table 38 presents the effect size and the statistical power for each multiple regression that was applied to test the study hypotheses.

Table 38 - The effect size and the statistical power of the hypotheses test multiple regressions

OLS regression	**Effect size (f^2)**	**Statistical power**
Test of the binary variable evaluation *use*	0.4503	0.9999
Test of the variable evaluation *use intensity*	0.4586	0.9999
Test of the variable *conceptual* type of use	0.4680	0.9999
Test of the variable *instrumental* type of use	0.4507	0.9999
Test of the variable *persuasive* type of use	0.4550	0.9999

Note. OLS = ordinary least squares.

In this study, the magnitude of the observed effects ranged from 0.4503 to 0.4680. Considering the multiple regression tests, effect sizes greater than 0.35 are considered to be *large* (Cohen, 1988). Equally important, a statistical power greater than 0.80 indicates a "sufficient power to detect any effects that might have existed" (Field, 2009, p. 58). Thus, the statistical powers achieved by the regressions equaling 0.9999 suggest that the probability of correctly identifying a real effect was almost 100%. All of the input and output parameters for the effect size and the statistical power calculus can be seen in Appendix G.

4.7 Additional analyses

4.7.1 Misuse analysis

To determine whether the misuse of the 2006 ENADE evaluation report was also correlated with the undergraduate accounting programs' performance in the 2009 ENADE evaluation, a simple and a multiple regression were performed using the models developed to test the types of use. The simple regression aimed to test the significance of the misuse variable singly, and the multiple regression aimed to verify whether the misuse variable changed its significance in the presence of the control variables. Table 39 shows the simple regression outcomes.

Table 39 - The relationship between misuse of the ENADE evaluation report and the undergraduate accounting programs' performance

	B	***S.E.***	***t***	***p-valor***	
const	2.2225	0.0478	46.4544	<0.00001	***
mis	0.0288	0.0211	1.367	0.1726	
F = 1.8686					
R^2 = 0.0058					

Note. N = 322. S.E. = standard error; mis = misuse.
*** p < .001.

The correlation between misuse and the 2009 ENADE evaluation outcomes was not statistically significant (p = 0.1726) according to the regression results. Thus, the inadequate use of the 2006 ENADE evaluation report appears to have no association with the next evaluation performance. However, the regression outcomes presented non-normal distribution of error terms. Control variables were added to the model, and a new test was performed. Table 40 presents the misuse variable multiple regression results.

Table 40 - The relationship between misuse of the ENADE evaluation report and the undergraduate accounting programs' performance with additional control variables

	B	***S.E.***	***t***	***p-valor***	
const	2.3217	0.1790	12.9727	<0.00001	***
mis	0.0345	0.0186	1.8527	0.0649	*
hig_deg	0.1562	0.0502	3.1098	0.0021	***
north	-0.3434	0.1213	-2.8320	0.0049	***
northeast	-0.2364	0.0824	-2.8683	0.0044	***
west-center	-0.2525	0.0962	-2.6261	0.0091	***
south	-0.0123	0.0724	-0.1695	0.8655	
univ_cent	-0.2166	0.0871	-2.4859	0.0135	**
college	-0.4164	0.0681	-6.1115	<0.00001	***
fiest	-0.5121	0.5024	-1.0192	0.3089	
adm_dep	-0.2720	0.0824	-3.3000	0.0011	***
F = 13.8123					
R^2 = 0.3075					

Note. N = 322. S.E. = standard error; mis = misuse; hig_deg = highest degree; univ_cent = university center; fiest = federal institute of education, science and technology; adm_dep = main funding source.
*** p < .001, **p < .05, and * p < .10.

The multiple regression outcomes presented in Table 40 indicate that the misuse variable changed from being not statistically significant, in the simple regression, to being statistically significant (p = 0.0649) when analyzed together with the control variables. The misuse variable presents a positive correlation with the undergraduate accounting programs' performance in the 2009 ENADE evaluation, although with a lower contribution to the model compared to the other statistically significant variables. The control variables retained the statistical significance of their coefficients and in the same direction as presented in the *types of use* multiple regressions and analyzed in the hypothesis tests section.

Although the literature defines misuse as an inadequate form of use, according to the regression outcomes, the 2006 ENADE evaluation report misuse was positively correlated with the 2009 ENADE evaluation performance for the undergraduate accounting programs researched. Thus, independently of how misuse is classified by theory, ENADE evaluation report use appears to be beneficial to the accounting programs researched, even when this use is motivated by the program administrators' self-promotion or vanity. It is important to highlight that the misuse scale does not include statements that are related to fraud, manipulation or the omission of evaluation findings, as proposed in the misuse literature. Although the questionnaire guaranteed anonymity, only the less severe examples of misuse were presented to avoid the embarrassment of the respondents.

Finally, the non-normal distribution of error terms verified in the simple regression was solved through the multiple regression. The multiple regression also presented no multicollinearity problems (see Appendix F for the results of the regression assumption tests).

4.7.2 Nonuse analysis

The data collection found that almost 40% (n = 126) of the undergraduate accounting program administrators did not read the 2006 ENADE evaluation report. Aiming to better understand why they did not read the report, two questions related to nonuse reasons and perceptions of the evaluation process and results were formulated and answered by the nonusers. Table 41 shows the answers on the reasons for nonuse.

Table 41 - ENADE evaluation report nonuse reasons

	Response Percent	**Response Count***
My institution did not receive it	7%	9
I did not know about the existence of the report	22%	28
I did not have time during my work hours	6%	8
I am new in the program administrator position, and I did not receive the report from the previous program administrator	71%	90
I do not know where the report for my program is to be found	18%	23
I do not believe in the outcomes provided by the ENADE evaluation	2%	2
The text is too complex	3%	4
The text is not interesting	1%	1
Other	12%	15

Note. N = 126.
*More than one answer option could be chosen for this question.

The answers from the program administrators reveal that at least 71% did not know that the 2006 ENADE evaluation report was available on the INEP website, and 22% affirmed that they did not even know that the report existed. Hence, it appears that there was a lack of information about the disclosure of the ENADE evaluation findings among the accounting programs' administrators researched. Considering that the ENADE evaluation was properly conducted, the nonuse verified among the majority of the program administrators (nonusers) appears to be *unintentional* (Alkin & Coyle, 1988; King & Pechman, 1984).

Using the *other* answer option, the respondents indicated some additional nonuse reasons; for example, they were not the programs' administrator when the evaluation was performed (33%), or the dean of the institution did not refer the report to the programs' administration (33%). In this latter case, the answers could be included among the group that did not know about the availability of the EANDE report on the internet, increasing that statistic. Another interesting answer affirmed that the elapsed time between the evaluation and the report availability made the information useless.

The next question asked the undergraduate accounting program administrators their level of agreement with statements that aimed to verify their perceptions of three main topics: (a) the importance of higher education evaluation in Brazil, (b) some aspects of the ENADE

evaluation process, and (c) the weight attributed to the students' participation in the evaluation. The first four graphs summarize the answers gathered on the statements about the importance of higher education evaluation in Brazil. Figure 3 presents the answers' frequencies to the statement *higher education evaluation findings are a relevant source of information for the decision making of program administrators*.

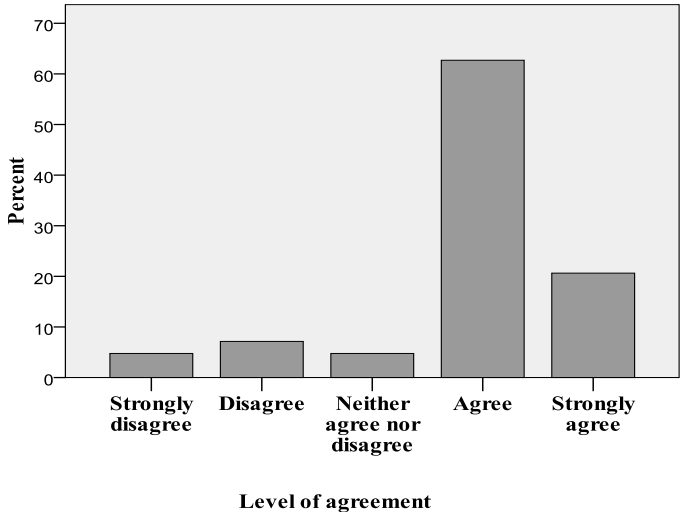

Figure 3. Perceptions of the relevance of evaluation findings for the decision making.

As shown in Figure 3, the majority (83%) of the undergraduate accounting program administrators researched who did not read the ENADE evaluation report do believe that the findings of higher education evaluations are a relevant source of information for decision making. Figure 4 shows the answers to the second statement, which was *external educational evaluation outcomes are trustworthy when they take into account the institutional contextual characteristics*.

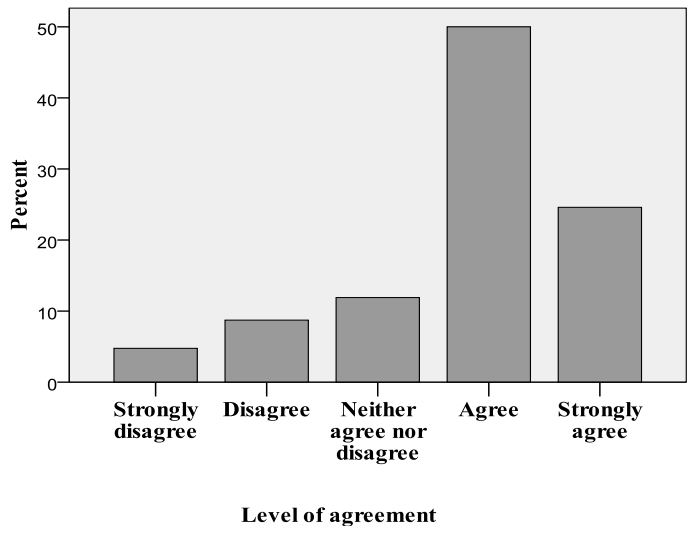

Figure 4. Perceptions of the importance of contextual characteristics to the trustworthiness of the evaluation outcomes.

Figure 4 shows that 75% of the program administrators researched believe that institutional contextual characteristics, when considered in an external educational evaluation, improve the reliability of the evaluation outcomes. Figure 5 presents the responses to the statement *the governmental evaluation of higher education in Brazil is unnecessary*.

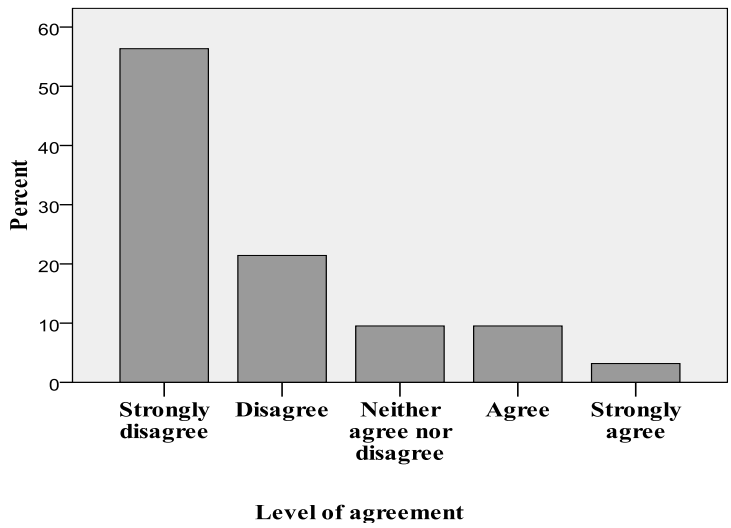

Figure 5. Perceptions of the lack of necessity for governmental evaluation of higher education in Brazil.

The answers from the research participants to the third statement about the importance of higher education evaluation in Brazil indicated that most people who affirmed that they did not read the 2006 ENADE evaluation report recognized that the governmental evaluation of

higher education in Brazil is necessary (78%). The final statement on the topic was *the Brazilian government should maintain its higher education evaluation program*.

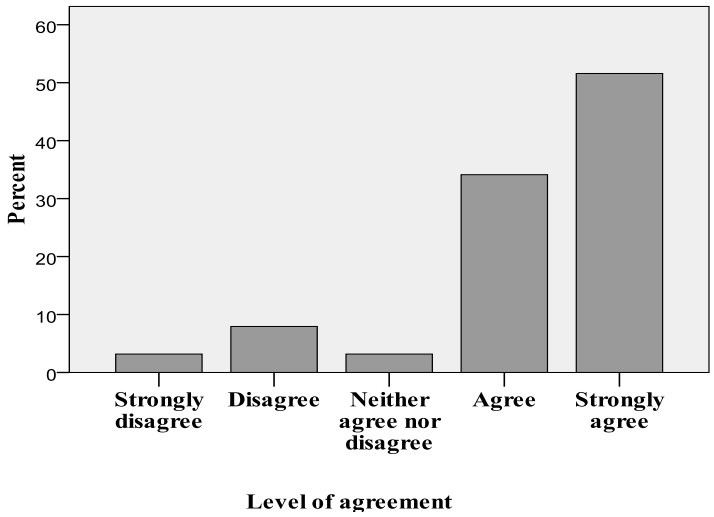

Figure 6. Agreement on the maintenance of the Brazilian higher education evaluation program.

Figure 6 shows that the respondents (86%) believed that the Brazilian government should maintain its program of higher education evaluation. Thus, according to the answers to the four statements above, it appears that the undergraduate accounting program administrators did not disapprove of the Brazilian program of higher education evaluation, despite the fact that they did not read the evaluation report. Hence, criticisms of the Brazilian evaluation program cannot be considered a possible reason for the evaluation report nonuse occurrences that were verified.

The next three graphs present the respondents' perceptions of some aspects of the ENADE evaluation process. The first statement on this topic was *educational institutions should be invited to participate in the planning and design of the evaluation process*. Figure 7 shows the answers obtained.

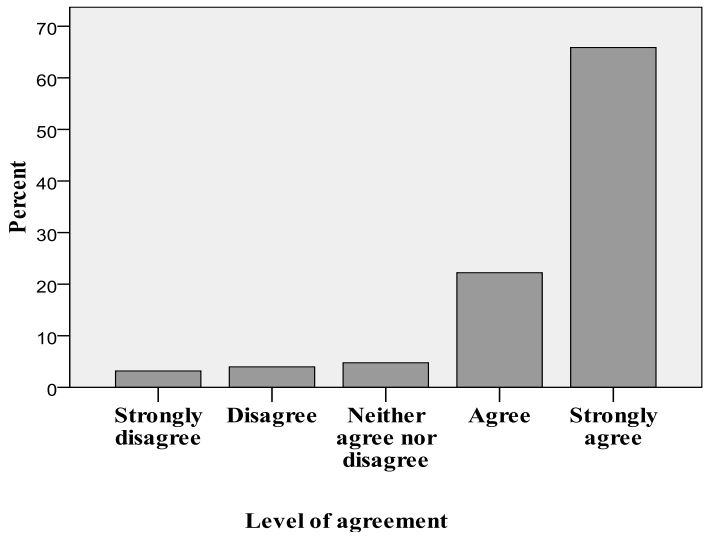

Figure 7. Perceptions of the necessity of evaluand participation in the planning and design of the ENADE evaluation process.

The majority of the undergraduate accounting program administrators researched who did not read the ENADE evaluation report (88%) said that the institutions should be invited to participate in the planning and design of the evaluation. Thus, they assumed that the institutions could collaborate more in the conception of the evaluation program. Figure 8 presents the answers to the statement *the questions of the ENADE large-scale test are congruous with the content taught in my program*.

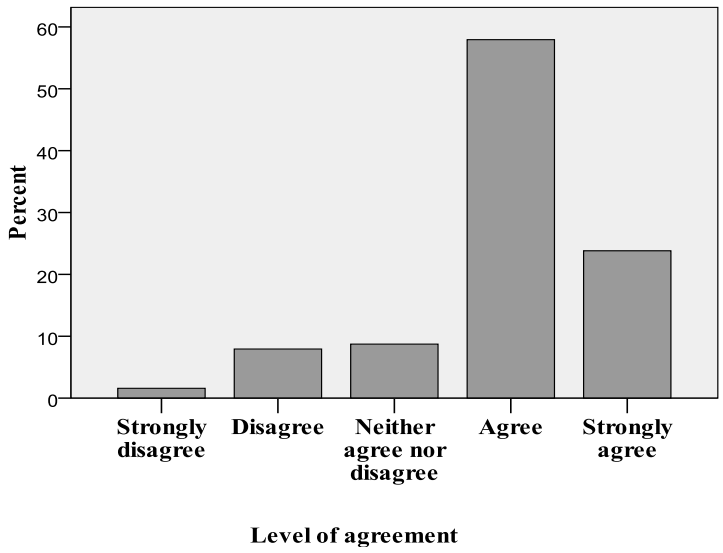

Figure 8. Perceptions of the congruousness of the ENADE large-scale test questions.

According to the data, 82% of the research respondents believe that there is no divergence between the content taught at the institutions and the content presented in the ENADE large-

scale test. Hence, the accounting knowledge components of the test appear to be in accordance with the programs' course contents. Figure 9 shows the perceptions regarding the statement *the evaluation outcomes would be more useful if the higher education institutional representatives could suggest improvements to the evaluation process*.

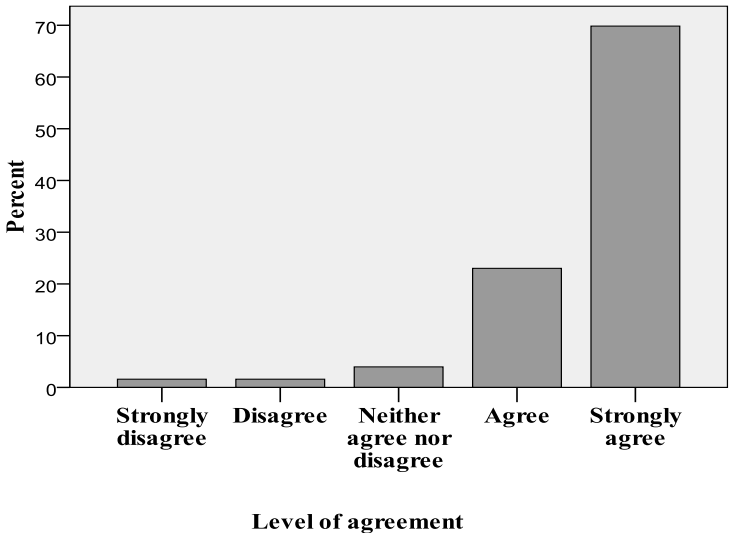

Figure 9. Agreement on the link between evaluation outcomes' usefulness and evaluand participation in the evaluation.

The graph in Figure 9 reveals that the accounting program administrators who did not read the evaluation report (93%) believe that the usefulness of the ENADE evaluation findings could be increased with suggestions from the institutions evaluated. Therefore, the answers presented in the last three graphs regarding some aspects related to the ENADE process give the impression that there are no criticisms on the content of the students' large-scale test but that the research respondents would like a higher level of participation by educational institutions in the evaluation process to be considered.

The final group of statements regarded the weight attributed to the students' large-scale test on the programs' outcomes. Figure 10 presents the respondents' perceptions of the affirmation *student refusals to answer the ENADE large-scale test are a serious threat to the evaluation outcomes*.

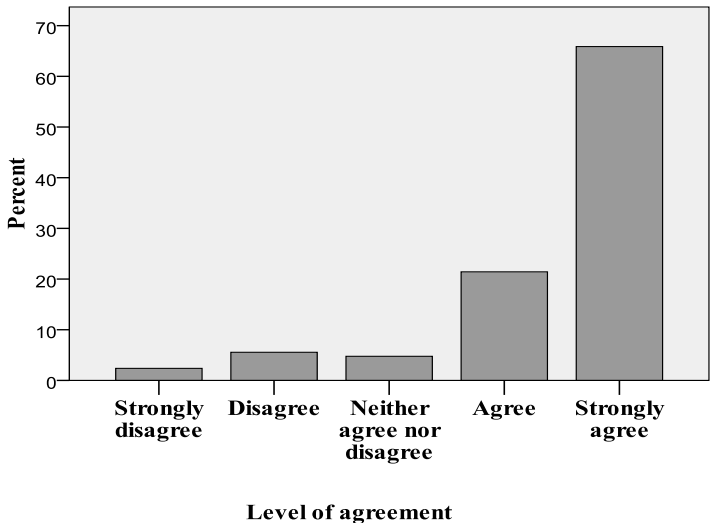

Figure 10. Perception regarding student refusals to answer the test as a threat to the evaluation outcomes.

Most of the program administrators researched (87%) believe that the students' refusal to participate in the ENADE large-scale test is a serious threat to the evaluation outcomes. Thus, information that indicates a lack of commitment from students may induce the program administrators to consider the evaluation results to be unreliable and, consequently, may provide a possible reason for evaluation report nonuse. Figure 11 shows the answers to the statement *the evaluation of higher education in Brazil should be primarily based on student answers and performance*.

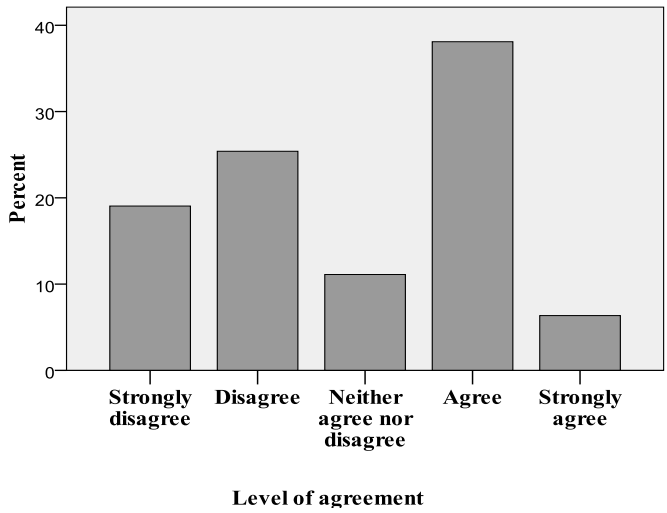

Figure 11. Agreement on the use of student answers and performance as the main parameter in the evaluation.

Figure 11 presents the highest level of respondent divergence among the evaluation nonuse statements. Exactly 44% of the accounting program administrators researched are in accordance, whereas another 44% are not in accordance with the affirmation presented. Due to this great divergence of responses, it is not possible to draw a general conclusion about the respondents' positions. The last chart will be presented in Figure 12, which reports the respondents' answers to the statement *students should be punished if they do not answer the ENADE large-scale test*.

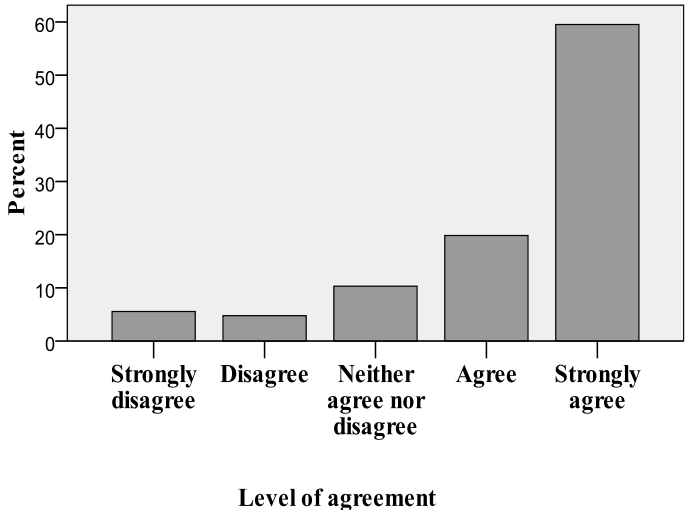

Figure 12. Perceptions regarding the necessity of punishing students who do not answer the large-scale test.

The majority of respondents (79%) believe that students should be penalized when they do not answer the ENADE large-scale test because that decision impacts the programs' outcomes in the evaluation. Therefore, the data suggest that the weight of the students' test performance in the evaluation results is a concern to the undergraduate accounting program administrators researched. That concern was also the object of comments in the descriptive box in the end of the second question, where the respondents expressed their additional opinions about the Brazilian program of higher education evaluation.

A total of 38 comments were posted, and among them, the main topics were the lack of commitment from students and the necessity of including their test grades in their academic records or diploma (42%), criticisms of the evaluation process or of the lack of participation from educational institutions in the evaluation design (39%), the different student profile for

the public and private institutions (5%), and compliments about the importance of the ENADE evaluation for higher education institutions (5%).

Three other original comments deserve to be highlighted. First, there was a narration about the differences between the attention given to the ENADE outcomes in private and public institutions, where a respondent affirmed that when she was in the program administration of a private institution, the ENADE results were discussed in more detail and there was a greater expectation and preoccupation with being highly evaluated than she is experiencing now in the same position at a public institution. Second, there was a suggestion that an assessment, similar to a large-scale test, should be included for the professors as part of the ENADE evaluation process. Lastly, there was a suggestion that the ENADE large-scale test should be used as a substitute for the *sufficiency exam*[13], which would solve the problems related to the lack of commitment to that test from students.

On the whole, it is not possible to determine the reasons that motivate the nonuse occurrence among the accounting program administrators researched, but according to the descriptive data analysis, most of them revealed that they did not know where to access the ENADE evaluation report. It is also important to highlight that 71% of the nonusers had been in the program administration position for fewer than three years, and that position tenure is positively correlated with the evaluation report use (see Table 22). Lastly, it appears that the confidence of 87% of the nonusers in the ENADE outcomes is affected by the students' lack of commitment (see Figure 10); however, this result does not mean that they did not use that report because of this perception.

4.7.3 Other uses

The types of use plus misuse scale, which was answered by 196 undergraduate accounting program administrators who read the 2006 ENADE evaluation report, asked the respondents to describe other uses that they have made of the ENADE evaluation report or outcomes. A total of 24 comments on evaluation utilization were received. Among these comments, five

[13] The sufficiency exam is required by the Brazilian Federal Accounting Council (CFC) before applying to the accounting professional practice.

main topics were identified: (a) faculty group discussions, (b) development of tests and didactic planning, (c) discussions with students, (d) comparative analysis, and (e) goal setting or strategy definition.

The first topic was mentioned by 16% of the respondents. These respondents described their experiences in using the ENADE evaluation report and outcomes in meetings and group discussions with professors or with all faculty members with the goal of disclosing the results and analyzing the strengths and weaknesses of the program.

The second topic was related to the elaboration of materials that should be utilized by professors in their daily work. These descriptions represented 25% of the comments and emphasized the use of the ENADE large-scale test as a model to be followed, especially in the accounting knowledge assessment tests, with a goal of training the students for that large-scale test.

The third topic is characterized by answers that allude to meetings with students to discuss the ENADE large-scale test or results. The respondents (20%) used words such as *motivate* and *prepare* to justify the necessity of these meetings and to discuss the importance of student engagement in the ENADE evaluation.

The next topic corresponds to the comments related to all types of comparisons that the respondents (16%) made regarding the ENADE evaluation outcomes. Public, private, regional, and benchmark institutions were mentioned in the answers as the objects of analyses performed to better understand the evaluation results and identify institutional strengths and weaknesses.

The last topic refers to the comments on goal setting, planning or strategy definition from the accounting program administrators (20%). The use of the ENADE evaluation report to define strategies to improve the students' performance, to ground the programs' reformulation, to support new projects, and to set clear goals were described.

However, one surprising comment about the use of the ENADE evaluation report was also received. A program administrator affirmed that the information provided by the ENADE evaluation would be used to punish students. The comment talked about inscribing notes on

the students' diploma in case of a low performance. Nevertheless, he did not detail how it would be done.

Thus, aside from the uses verified through the scale, other evaluation report utilizations were cited, showing that the ENADE evaluation report has been useful in different ways to the undergraduate accounting program administrators researched, despite the small number of textual descriptions and the potential misuse related. Interestingly, all 24 comments came from accounting program administrators at private institutions.

4.7.4 Perceptions of the ENADE

Before concluding this chapter on results, a few graphs present the accounting program administrators' perceptions of the Brazilian higher education evaluation program. These perceptions were collected from the first and last part of the data collection instrument, and all 322 respondents answered the questions.

At this time, the main objective is to clarify what the program administrators researched think about the ENADE. The first question asked the respondents to give a grade from 1 (lowest) to 5 (highest) according to their perceptions of the *credibility conferred by the Ministry of Education to the evaluation*. Figure 13 presents the answers.

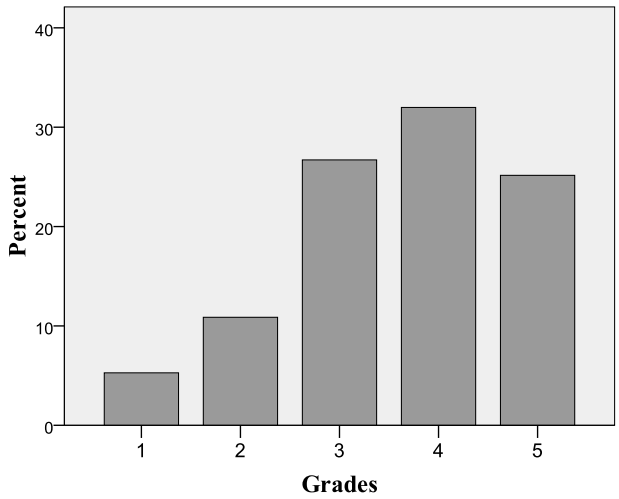

Figure 13. Perceptions of the credibility conferred by the Ministry of Education to the evaluation.

Figure 13 shows that most of the respondents (57%) chose grades of four and five, which means that they consider the Brazilian Ministry of Education to be a credible agency to conduct the higher education evaluation program. However, 16% of the respondents chose grades of one and two, indicating the lack of credibility of that agency, and 27% demonstrated an intermediate reliability when they chose grade three. The next question asked the program administrators' opinion about *the quality of the National Exam of Students' Performance (ENADE) implementation*. Figure 14 presents the answers.

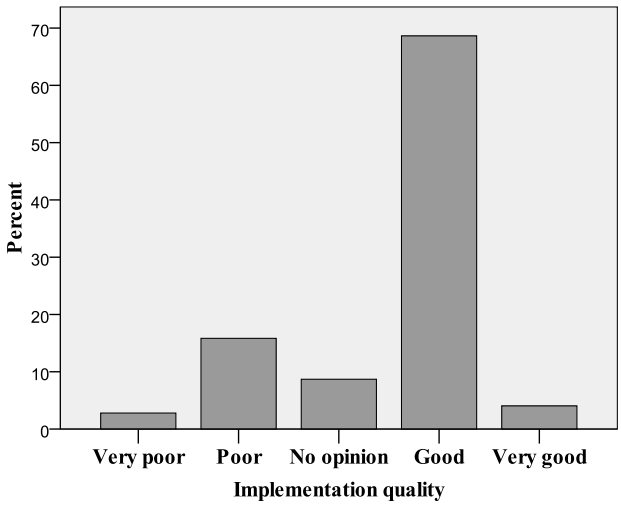

Figure 14. Opinions about the quality of the ENADE implementation.

As shown in Figure 14, the quality of the ENADE implementation was considered to be good or very good by 73% of the undergraduate accounting program administrators researched, whereas 19% considered it poor or very poor. The subsequent question asked the respondents their level of agreement on the affirmation *as a program administrator, I believe that the evaluation report provided through the ENADE can potentially support my decision making process*. Figure 15 presents the answers.

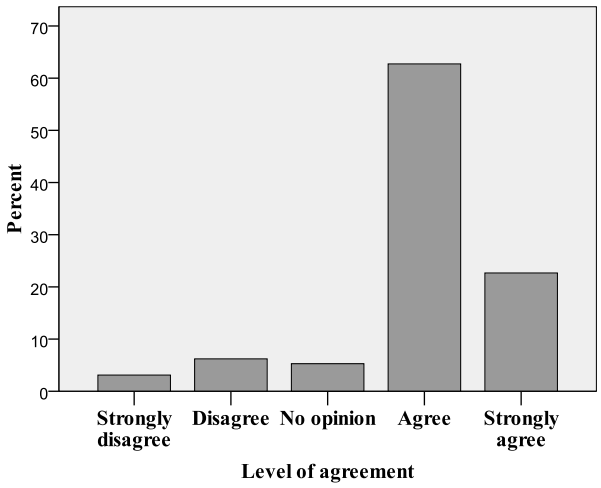

Figure 15. Agreement on the statement that the ENADE report potentially supports decision making processes.

The respondents mostly agree or strongly agree that the ENADE evaluation report can potentially support their decision making process; thus, 85% of the program administrators researched appear to believe that the ENADE evaluation report can be useful to the programs' management. Lastly, the respondents were asked whether, in their opinion, *the ENADE evaluation report distribution should be restricted to each institution evaluated*. Figure 16 shows the opinions.

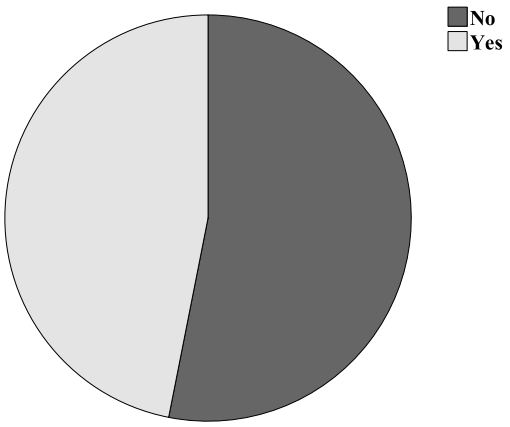

Figure 16. Agreement on the restricted disclosure of the ENADE evaluation reports.

The unrestricted disclosure of the ENADE evaluation report was defended by 53% of the respondents. Therefore, public access to the evaluation report divided the opinions of the accounting program administrators researched inasmuch as 47% believed that the reports

should be restricted to the institution evaluated, but it did not appear to represent a cause of complaint among the survey respondents; at least, no comment regarding this issue was made.

Analyzing the answers jointly, it is possible to infer that the undergraduate accounting program administrators researched have positive perceptions of the Brazilian program of higher education evaluation and its report. First, the majority of respondents indicated that the Brazilian Ministry of Education is a credible institution to conduct the evaluation program. Second, they mostly agreed that the implementation of the evaluation program is good. Third, they mostly agreed that the ENADE evaluation report could potentially support their decisions. Hence, these answers demonstrate that a favorable environment for evaluation report utilization appears to be present among the program administrators who participated in this survey.

CHAPTER V

CONCLUSION

In this final chapter, the main finds of this study and their implications for the management of higher education institutions are emphasized along with the recommendations for future research on Brazilian higher education evaluation utilization.

5.1 Study purpose and procedures

The Brazilian program of higher education evaluation, broadly known by the National Exam of Students' Performance (ENADE), represents a governmental effort to gather information on undergraduate educational quality with the goal of following the development of activities by the institutions and recommending changes if necessary. As a product of that evaluation, reports are made available to each program evaluated. The main intentions of the present study were to determine to what extent those reports are used by undergraduate accounting program administrators as well as the impacts of evaluation utilization.

Different aspects of the evaluation use were studied in this research, as follows: (a) the factors associated with use, (b) the most frequent types of use, (c) the reasons for evaluation report nonuse, (d) the incidence of misuse, and (e) the impact of evaluation utilization on the programs' performance. Thus, through this broad view of the ENADE evaluation report utilization, it was possible to respond to the proposed research question: *to what extent are the Brazilian higher education evaluation reports used by undergraduate accounting programs?*

A data collection instrument was developed for this study. The instrument was comprised of five parts (*factors associated with use questionnaire, incidence of use question, types of use plus misuse scale, reasons for nonuse questionnaire,* and *demographic information questionnaire*). The instrument was applied through a web-based survey, and, from a study population of 518 institutions, 326 completed answers were received, of which 322 were utilized in the research tests and analyses.

The extent to which the ENADE evaluation report was utilized by undergraduate accounting program administrators was studied in four steps: (1) a logistic regression to verify which factors were associated with the ENADE evaluation report use, (2) a descriptive verification of the evaluation report use incidence among the undergraduate accounting program administrators and the most frequent types of use reported by them, (3) multiple regressions to analyze the impacts of evaluation report use and misuse on the programs' performance in the subsequent evaluation, and (4) a descriptive analysis of the reasons for evaluation report nonuse.

5.2 Key findings and implications

The key conclusion based on the evidence yielded by this research is that ENADE evaluation report use is positively correlated with the undergraduate accounting programs' performance in the subsequent evaluation. Therefore, actions to increase the potential use of that report among program administrators should be incentivized.

The factors associated with the 2006 ENADE evaluation report use by the undergraduate accounting program administrators researched, identified from the logistic regression results, were the tenure of the administrator in the position (*Wald* = 30.96, p = .000), the administrator's involvement in the 2006 ENADE evaluation (*Wald* = 15.40, p = .000), the administrator's perception of the effectiveness of the communication process between the INEP and the accounting programs (*Wald* = 10.55, p = .001), the highest degree obtained by the program administrator (*Wald* = 9.98, p = .002), and the institutional main funding source (*Wald* = 4.92, p = .027).

All of these variables presented positive coefficients, indicating that the longer the program administrator is in the position, the higher the academic degree of the administrators, the greater their involvement in the evaluation process, and the more positive their perception of the effectiveness of the communication between the INEP and the programs, the greater the likelihood of ENADE evaluation report utilization. Additionally, the private institutions presented a greater likelihood of evaluation report use than the public institutions.

Considering that the undergraduate accounting programs intend to increase the ENADE evaluation report use among their program administrators, the main implications of the factors associated with use analysis are that the regular succession of program administrators should be avoided or that the maximum time in the position should be extended to over four years and that professors with higher degrees should be favored for the position. Considering that the INEP also intends to encourage the use of the ENADE evaluation report among the educational programs, the INEP should also promote a greater involvement of program administrators in the evaluation process in addition to increasing their communications with programs during the evaluation process, according to this study's findings.

Taking into account the self-reporting of the undergraduate accounting program administrators researched, the incidence of the ENADE evaluation report use was greater (61%) than the nonuse (39%). Additionally, the most frequent type of use verified was *conceptual*, followed by *instrumental* and *persuasive*. These results indicate that the respondents who utilized the ENADE report primarily used it to better understand their programs and better comprehend their programs' grades, gathering information about their students' socioeconomic status, their performance on the large-scale test, and their perceptions of the programs' infrastructure and quality.

After these uses, the administrators most frequently used the ENADE report to support their decision making processes, for example, utilizing the information from the report as a basis for decisions such as hiring professors, buying learning supplies, implementing student activities, and changing the program's curriculum. Persuasive uses were also identified through actions that involved convincing other people to agree with pedagogical changes, recruiting students to the program, marketing the quality of the program, or convincing other institutions to cooperate with the program. Lastly, it is important to highlight that the reliability of the types of use plus misuse scale was tested successfully through the confirmatory factor analysis, which measured the Cronbach alpha for each construct: conceptual ($\alpha = .836$), instrumental ($\alpha = .845$), persuasive ($\alpha = .727$), and misuse ($\alpha = .778$).

The three hypotheses tested could not be rejected inasmuch as independently of how the ENADE evaluation report use was measured (by the reading of the report, by the types of use described, or by the intensity of use represented by the sum of the types of use), the use was

positively correlated with the performance achieved by the undergraduate accounting programs in the subsequent evaluation.

Considering that the grades achieved by the programs in the evaluation process reflect their quality, the regression results suggest that the information presented in the ENADE evaluation report can help the undergraduate programs to better understand themselves and to improve their decision making process. Hence, the potential benefits from the evaluation report utilization indicate that efforts should be made to convince the nonusers to read the report.

The primary reason for the nonuse of the ENADE evaluation report indicated by the accounting program administrators researched was their lack of knowledge about where to find the report. Therefore, the insufficient disclosure of the evaluation results appears to be responsible for the nonuse among at least 71% of the respondents who had not read the report. Changes in the communication process between the INEP and the undergraduate programs can help to decrease the nonuse incidence and to promote the greater involvement of the program administrators, which would also reinforce a favorable attitude toward the evaluation report utilization according to the factors associated with the use analysis.

The other variables tested in this study showed statistical significance in explaining the performance of the undergraduate accounting programs in the 2009 ENADE evaluation. The academic degree of the program administrator was positively correlated with the programs' outcomes, suggesting that institutions where the program administrators have a master's or a doctorate degree tend to perform better than those where the administrators have a specialization or a bachelor's degree. This variable was also positively correlated with the use of the ENADE evaluation report for the factors associated with use analysis. Therefore, these research results indicate that the professors with higher degrees should be favored for the program administration positions because, in addition to being more likely to use the evaluation report, their degree will also be related to better program performance.

Additionally, the traditional outcomes derived from institutional characteristics and their correlation with program performance were confirmed in this study. Institutions from the southeast performed better in the evaluation than institutions from the north, west-central and northeast regions of Brazil; private institutions performed worse than the public institutions;

and universities performed better than colleges and university centers. The association between educational development and regional socioeconomic development, the absorption of the educationally most prepared students by public institutions, and the greater organizational and academic structure of the universities are possible explanations for these regression outcomes.

Other findings deserve to be highlighted. First, the program administrators related that the ENADE large-scale test has influenced the teaching of accounting at undergraduate programs, especially in private institutions, where that test has served as parameter of didactic instruments and as an assessment model. This type of utilization can be less beneficial if the main objective is only to train students to that test to the detriment of discussing important accounting issues. Thus, a diversification of the test design for each evaluation edition could prevent the institutions from adopting this practice and should be considered by the INEP.

Second, the program administrators researched appeared to be enthusiastic about the Brazilian program of higher education evaluation, although they related that they would like to participate more actively in the evaluation process. Therefore, an increase in the users' involvement and participation throughout the ENADE evaluation could stimulate the evaluation report use and, consequently, reinforce the chances of increasing the quality of programs.

Lastly, the program administrators showed a strong concern about the lack of commitment to the ENADE large-scale test among the undergraduate accounting students. The administrators believe that there should be consequences for the students who refuse to take the test seriously, such as the registration of their test grades in their academic records or diploma. Inasmuch as the students' participation is fundamental to the ENADE evaluation process, they should be prepared and motivated to fulfill the test requirement to the best of their ability. Thus, government actions to stimulate and reinforce the importance of the students' participation to the success of the evaluation are desirable because they would increase the reliability of the evaluation outcomes.

The misuse of the ENADE evaluation report was also studied, and even the uses that are considered by the literature to be inappropriate were shown to be positively correlated with the programs' performance in the presence of control variables. However, no misuse related

to fraud or corruption was tested in this research, which analyzed only the misuses related to the program administrators' self-benefit. Therefore, all of the types of ENADE evaluation report utilization tested appear to be beneficial to the educational institutions researched, suggesting that the reading of that report could help institutions to improve their quality.

Inasmuch as a positive association between the ENADE evaluation report use and one dimension of the educational institutions' performance (CPC) has been verified and considering that, according to evaluation utilization literature, the use can have a broadly organizational effect, this study produced evidence about the relevance of evaluation utilization to program management. The question is therefore raised as to whether that use is also associated with other aspects of the educational institutions that were not examined in this research.

Finally, because the ENADE reports are already produced by the INEP after the evaluation process, promoting the use of the evaluation findings is only a matter of stimulus and knowledge about the potential usefulness of this managerial instrument. Through its results, this study reinforces the idea that undergraduate accounting institutions can improve their internal understanding by using the ENADE evaluation report, which would also contribute to improving the programs.

5.3 Recommendations for future research

Five recommendations for future research can be derived from this study experience and results: (a) an analysis of factors associated with types of use, (b) a measurement of the impact of evaluation use at the student level, (c) an investigation of evaluation use by different stakeholders, (d) research on evaluation use at programs from other fields of knowledge, and (e) a retest of this study using data from the 2012 ENADE evaluation.

In this study, the outcome variable chosen to produce the factors associated with use analysis was the binary answer about the utilization (reading) of the ENADE evaluation report. In future studies, the types of use could be chosen as an outcome variable to identify the users' and institutional characteristics that are related to each type of use (conceptual, instrumental

and persuasive). Based on this new analysis, it would be possible to know and to encourage specific evaluation uses by type.

Another research alternative would be to change the outcome variable and the statistical approach used in the analysis about the impact of evaluation utilization. Instead of using the programs' performance (grades), the students' grades could be used as the outcome variable, and a hierarchical linear model (HLM) could be performed. Hence, aside from verifying the impact of evaluation utilization only on the program level, it would be possible to also verify it on the student level, increasing the understanding of the relationship between evaluation utilization and the program and student performances.

This study considered the undergraduate accounting program administrators to be the main stakeholders and only research subject. Thus, all analyses (factors influencing utilization, types of use, motivations for nonuse, impacts of evaluation utilization, and possible misuses) were based on that stakeholder viewpoint and answers. Other potential users, such as professors, students, college or university deans, and parents could be used as subjects in future research on ENADE evaluation report utilization.

Other fields of knowledge could also be the object of studies on ENADE evaluation report utilization. Comparative studies among programs in different fields or single-field program analysis could be performed to examine the impact of evaluation utilization on program performance. The factors associated with use, the most frequent types of use and the reasons for nonuse could also be verified.

A final recommendation is to retest this study with data collected from the 2012 ENADE evaluation. It would be interesting to verify whether the results are similar or if divergences are found. It is reasonable to believe that many of the research subjects could be the same as in this research; however, considering that the evaluation report utilized in the analyses would be from the 2009 ENADE evaluation, different accounting programs would certainly compose the new study population.

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Appendix A – Survey instrument

Evaluation report utilization_ENADE

Research information

This questionnaire is part of a doctoral dissertation entitled "An Exploratory Study on ENADE Evaluation Report Utilization and its Impact on Undergraduate Accounting Program Performance in Brazil," which is in progress at the accounting graduate program at FEA/USP under the supervision of Professor Dr. Edgard Cornacchione. This research aims to better understand how the Brazilian higher education evaluation program impacts educational institutions; in addition, it seeks to know how the undergraduate accounting program administrators' perceive the usefulness of the evaluation report. Thank you in advance for your cooperation! Sheizi Freitas - shecal@usp.br

1. Please, identify the name of the institution in which you are (or most recently were) an accounting program administrator:

Other (Please specify)

Evaluation report utilization_ENADE

Part I - Perceptions of the ENADE

Questions 1 to 5 are based on your perceptions and opinions of the ENADE as part of the National Program of Higher Education Evaluation. Question 1 asks you to grade particular aspects of the ENADE higher education evaluation. Questions 2 to 5 present some affirmations and ask about your level of involvement, accordance, or your opinions regarding these affirmations. Please answer as accurately as possible.

***1. From 1 (lowest) to 5 (highest), pick the grade that best describes your perception of the particular aspects of the National Exam of Students Performance (ENADE) as part of the Brazilian Program of Higher Education Evaluation**

	1	2	3	4	5
Relevance to your job as a program administrator	○	○	○	○	○
Credibility conferred by the Ministry of Education to the evaluation	○	○	○	○	○
Communication effectiveness (INEP – Accounting Program) during the evaluation process	○	○	○	○	○
Elapsed time between the evaluation and the report availability	○	○	○	○	○
Importance given to the local characteristics of the programs	○	○	○	○	○

***2. My level of involvement in the 2006 National Exam of Students Performance (ENADE) was**

	None	Low	Medium	High	Very high
Level of involvement	○	○	○	○	○

***3. The National Exam of Students Performance (ENADE) is an important management tool for my program**

○ Strongly disagree ○ Disagree ○ No opinion ○ Agree ○ Strongly agree

***4. In my opinion, the quality of the National Exam of Students Performance (ENADE) implementation is**

○ Very poor ○ Poor ○ No opinion ○ Good ○ Very good

***5. As a program administrator, I believe that the evaluation report provided through the ENADE can potentially support my decision making process**

○ Strongly disagree ○ Disagree ○ No opinion ○ Agree ○ Strongly agree

Evaluation report utilization_ENADE

Part II - Incidence of use

1. Did you have the opportunity to read your accounting program 2006 ENADE evaluation report?

- ○ Yes
- ○ No

Evaluation report utilization_ENADE

Types of use

The questions in this next section ask you to indicate your level of agreement with the possible uses of the information provided by the 2006 ENADE evaluation report in your daily activities as a program administrator. Please answer as accurately as possible.

***1. I (or my institution) could use the information provided by the 2006 ENADE evaluation report to...**

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Better understand the socioeconomic characteristics of the students in my institution	○	○	○	○	○
Negotiate the application of more financial resources in my program	○	○	○	○	○
Fire professors	○	○	○	○	○
Hire professors	○	○	○	○	○
Better understand the students' perceptions of the program's infrastructure	○	○	○	○	○
Change the program's curriculum and/or course contents	○	○	○	○	○
Claim institutional recognition for the quality of the program	○	○	○	○	○
Look for institutional support to change pedagogical policies and/or program management policies	○	○	○	○	○
Better understand the students' perceptions of the program and/or of the ENADE large-scale test	○	○	○	○	○
Reward and/or punish program professors and/or students	○	○	○	○	○
Decide to buy new books for the library and/or new computers for the computer laboratory	○	○	○	○	○
Diffuse advertising campaigns and/or institutional campaigns that disclose program outcomes	○	○	○	○	○
Analyze my students' performance in comparison with the national average student performance	○	○	○	○	○
Propose a new private project under my administration	○	○	○	○	○
Implement programs for the academic orientation of students	○	○	○	○	○
Use public meetings to disclose program outcomes	○	○	○	○	○
Highlight the strengths of the program administration	○	○	○	○	○
Better understand the curriculum and/or course content strengths and weaknesses	○	○	○	○	○
Increase/decrease the number of credits or hours of any course component	○	○	○	○	○
Propose partnerships with other educational institutions or companies	○	○	○	○	○
Metter understand my program grade	○	○	○	○	○

Please describe any other uses you have made of, or comments about, the ENADE evaluation report:

Evaluation report utilization_ENADE

Nonuse reasons

*** 1. The reason(s) I did not have the opportunity to read my institutional 2006 ENADE evaluation report was/were (please, check all that apply)**

- ☐ My institution did not receive it
- ☐ I did not know about the existence of the report
- ☐ I did not have time during my work hours
- ☐ I am new in the program administrator position, and I did not receive the report from the previous program administrator
- ☐ I do not know where the report for my program is to be found
- ☐ I do not believe in the outcomes provided by the ENADE evaluation
- ☐ The text is too complex
- ☐ The text is not interesting
- ☐ Other (specify)

Evaluation report utilization_ENADE

*** 2. What is your level of agreement with each of the statements below about the process and outcomes of the National Exam of Students Performance (ENADE)? Please answer as accurately as possible.**

In my opinion...

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Higher education evaluation findings are a relevant source of information for the decision making of program administrators	○	○	○	○	○
External educational evaluation outcomes are trustworthy when they take into account institutional contextual characteristics	○	○	○	○	○
The governmental evaluation of higher education in Brazil is unnecessary	○	○	○	○	○
The Brazilian government should maintain the higher education evaluation program	○	○	○	○	○
Student refusals to answer the ENADE large-scale test are a serious threat to the evaluation outcomes	○	○	○	○	○
Educational institutions should be invited to participate in the planning and design of the evaluation process	○	○	○	○	○
The evaluation of higher education in Brazil should be primarily based on student answers and performance	○	○	○	○	○
The questions of the ENADE large-scale test are congruous with the content taught in my program	○	○	○	○	○
Students should be punished if they will not answer the ENADE large-scale test	○	○	○	○	○
The evaluation outcomes would be more useful if the higher education institutional representatives could suggest improvements to the evaluation process	○	○	○	○	○

Please provide any additional comments you have about the ENADE evaluation process and/or outcomes:

Evaluation report utilization_ENADE

Demographic information

1. How long have you been the program administrator at this institution?

- ○ Less than one year
- ○ Between one and three years
- ○ More than three and less than six years
- ○ Six or more years

2. What is your gender?

- ○ Female
- ○ Male

3. What is your highest degree obtained?

- ○ Bachelor
- ○ Specialist
- ○ Master's
- ○ Doctorate

4. In your opinion, should the ENADE evaluation report distribution be restricted to each institution evaluated?

- ○ Yes
- ○ No

THANK YOU for your time and for your participation in this survey!
By submitting the questionnaire, you will automatically be participating in a raffle for the book "Manual de Contabilidade Societária," which will occur at the end of the data collection! Good luck!
Questions about this research or about the raffle should be sent to shecal@usp.br

Appendix B – Survey instrument (Portuguese)

Usos do Relatório de Avaliação Educacional_ENADE

Informações sobre a Pesquisa

O presente questionário é parte integrante da tese de doutorado intitulada "Um Estudo Exploratório sobre a Utilização do Relatório de Avaliação do ENADE e seu Impacto no Desempenho dos Cursos de Graduação em Ciências Contábeis no Brasil", em desenvolvimento no Programa de Pós-graduação em Controladoria e Contabilidade FEA/USP, sob orientação do Prof. Dr. Edgard Cornacchione. Através desta pesquisa espera-se melhor entender como os sistemas de avaliação educacional impactam as instituições de ensino superior, assim como conhecer a percepção dos Coordenadores de Cursos de Ciências Contábeis sobre a utilidade do relatório de avaliação. Antecipadamente, agradeço pela sua colaboração! Sheizi Freitas - shecal@usp.br

1. Por favor, indique o nome da Instituição na qual você atua (ou mais recentemente atuou) como Coordenador do Curso de Ciências Contábeis:

Outra (Por favor, especifique)

Usos do Relatório de Avaliação Educacional_ENADE

Parte I - Percepções sobre o ENADE

As questões de um a cinco procuram verificar a sua percepção e opinião sobre o ENADE, enquanto parte integrante do Sistema Nacional de Avaliação da Educação Superior. A primeira questão solicita uma nota para alguns aspectos do sistema de avaliação. Nas demais questões, algumas proposições serão apresentadas e você deverá indicar o seu nível de envolvimento, concordância, ou a sua opinião sobre tais proposições. Por favor, seja o mais preciso possível.

***1. Em uma escala de 1 (mais baixa) a 5 (mais alta), atribua uma nota para cada um dos aspectos relativos ao Exame Nacional de Desempenho de Estudantes (ENADE), enquanto parte integrante do Sistema Nacional de Avaliação da Educação Superior**

	1	2	3	4	5
Relevância para o seu trabalho enquanto Coordenador de Curso	○	○	○	○	○
Credibilidade conferida pelo Ministério da Educação ao processo de avaliação	○	○	○	○	○
Efetividade da comunicação (INEP–Coordenação de curso) durante o processo de avaliação	○	○	○	○	○
Divulgação do resultado (tempo decorrido entre a avaliação e a disponibilização do relatório do curso)	○	○	○	○	○
Importância dada as características locais das instituições	○	○	○	○	○

***2. Seu nível de envolvimento com o Exame Nacional de Desempenho de Estudantes (ENADE) 2006 foi**

	Nenhum	Baixo	Mediano	Alto	Muito alto
Nível de envolvimento	○	○	○	○	○

***3. O Exame Nacional de Desempenho de Estudantes (ENADE) é uma importante ferramenta de gestão para o meu curso**

○ Discordo totalmente ○ Discordo parcialmente ○ Não concordo, nem discordo ○ Concordo parcialmente ○ Concordo totalmente

***4. Em sua opinião, a qualidade da implementação do Exame Nacional de Desempenho de Estudantes (ENADE) é**

○ Muito ruim ○ Ruim ○ Desconheço ○ Boa ○ Muito boa

***5. Enquanto Coordenador de Curso, acredito que o Relatório de Curso proveniente do ENADE pode, potencialmente, dar suporte ao meu processo de tomada de decisão**

○ Discordo totalmente ○ Discordo parcialmente ○ Não concordo, nem discordo ○ Concordo parcialmente ○ Concordo totalmente

Usos do Relatório de Avaliação Educacional_ENADE

Parte II - Uso do Relatório do Curso gerado através do ENADE

***1. Você já teve a oportunidade de ler o Relatório de Curso provido pelo ENADE 2006 para o curso de Ciências Contábeis da sua Instituição?**

- ○ Sim
- ○ Não

Usos do Relatório de Avaliação Educacional_ENADE

Percepções sobre a utilidade do Relatório de Curso do ENADE

Na próxima seção, você deve indicar o seu grau de concordância com os possíveis usos das informações providas através do Relatório de Curso do ENADE 2006 em suas atividades diárias enquanto Coordenador de Curso. Por favor, seja o mais preciso possível.

***1. Através das informações do Relatório de Curso do ENADE 2006, eu pude (ou a minha Instituição pôde)**

	Discordo totalmente	Discordo parcialmente	Não concordo, nem discordo	Concordo parcialmente	Concordo totalmente
Conhecer as características socioeconômicas dos estudantes da minha Instituição	○	○	○	○	○
Negociar maior destinação de recursos financeiros para o meu curso	○	○	○	○	○
Decidir pela demissão de professores	○	○	○	○	○
Decidir pela contração de novos professores	○	○	○	○	○
Conhecer a percepção dos estudantes sobre a infraestrutura do meu curso	○	○	○	○	○
Promover alterações no currículo do curso e/ou no conteúdo programático de disciplinas	○	○	○	○	○
Reivindicar reconhecimento institucional para a qualidade do meu curso	○	○	○	○	○
Buscar apoio institucional para alterações de políticas pedagógicas e/ou políticas de gestão do curso	○	○	○	○	○
Conhecer a percepção dos estudantes sobre o curso e/ou sobre a prova do ENADE	○	○	○	○	○
Premiar e/ou repreender docentes e/ou discentes	○	○	○	○	○
Decidir pela necessidade de aquisição de novos livros para a biblioteca e/ou novos equipamentos de informática para o(s) laboratório(s)	○	○	○	○	○
Dar suporte a campanha publicitária e/ou de divulgação institucional evidenciando o resultado obtido pelo meu curso	○	○	○	○	○
Analisar a performance dos estudantes do meu curso em comparação com o desempenho médio nacional dos estudantes	○	○	○	○	○
Propor a criação de um novo curso de pós-graduação ou de extensão sob a minha coordenação	○	○	○	○	○
Implementar programa(s) de orientação acadêmica para os estudantes	○	○	○	○	○
Apresentar/discutir os resultados do meu curso em reuniões acadêmicas	○	○	○	○	○
Destacar aspectos positivos da minha atuação enquanto coordenador do curso	○	○	○	○	○
Analisar a adequação do currículo do curso e/ou dos programas das disciplinas	○	○	○	○	○
Aumentar ou diminuir o número de créditos ou carga horária de disciplinas do curso	○	○	○	○	○
Propor parcerias com outras instituições educacionais ou com empresas	○	○	○	○	○

Usos do Relatório de Avaliação Educacional_ENADE

Melhor entender a nota atribuída ao meu curso

Por favor, descreva qualquer outro uso que você tenha feito, ou comentários sobre o Relatório do Curso do ENADE:

Usos do Relatório de Avaliação Educacional_ENADE

Uso do Relatório de Curso gerado através do ENADE

***1. A(s) razão(ões) pela(s) qual(is) eu não tive a oportunidade de ler o Relatório de Curso do ENADE 2006 da minha instituição foi(ram): (Por favor, marque todas as alternativas que se aplicarem)**

- ☐ Minha instituição não recebeu o referido relatório
- ☐ Eu não sabia da existência do referido relatório
- ☐ Eu não tive tempo durante as minhas horas de trabalho
- ☐ Eu sou novo no cargo de Coordenador e não recebi o referido relatório do Coordenador anterior
- ☐ Eu não sei onde se encontra o relatório do meu curso
- ☐ Eu não acredito nos resultados providos através do ENADE
- ☐ O texto é muito complexo
- ☐ O texto não é interessante
- ☐ Outro (especifique)

Usos do Relatório de Avaliação Educacional_ENADE

***2. Qual o seu nível de concordância com cada uma das afirmações abaixo sobre o processo e resultados do Exame Nacional de Desempenho de Estudantes (ENADE)? Por favor, seja o mais preciso possível.**

Em minha opinião...

	Discordo totalmente	Discordo parcialmente	Não concordo, nem discordo	Concordo parcialmente	Concordo totalmente
Os resultados da avaliação do ensino superior são uma relevante fonte de informação para o processo de tomada de decisão dos coordenadores de curso de graduação	○	○	○	○	○
Resultados de avaliações educacionais externas são confiáveis quando contemplam características contextuais das instituições	○	○	○	○	○
Avaliações governamentais da educação superior no Brasil são desnecessárias	○	○	○	○	○
O Governo Brasileiro deve manter o programa de avaliação da educação superior	○	○	○	○	○
A recusa dos estudantes em responder a prova do ENADE representa uma grande ameaça aos resultados da avaliação	○	○	○	○	○
As instituições de ensino deveriam ser convidadas a participar do planejamento e design do processo de avaliação	○	○	○	○	○
A avaliação da educação superior no Brasil deve ser majoritariamente baseada nas respostas e no desempenho dos estudantes	○	○	○	○	○
O conteúdo da prova do ENADE é condizente com os programas das disciplinas ensinados em meu curso	○	○	○	○	○
Deveria haver uma sanção para os estudantes que entregassem a prova do ENADE "em branco" (sem respostas)	○	○	○	○	○
Os resultados da avaliação seriam mais úteis se representantes das instituições de ensino pudessem sugerir melhorias para o processo de avaliação	○	○	○	○	○

Por favor, descreva qualquer comentário adicional que você tenha sobre o processo de avaliação ou resultados do ENADE:

Usos do Relatório de Avaliação Educacional_ENADE

Informações sobre você

***1. Há quanto tempo você é (ou por quanto tempo você foi) Coordenador do Curso de Ciências Contábeis na Instituição indicada?**

- ○ Menos de 1 ano
- ○ Entre 1 e 3 anos
- ○ Mais que 3 e menos que 6 anos
- ○ 6 anos ou mais

***2. Qual é o seu gênero?**

- ○ Feminino
- ○ Masculino

***3. Qual é a sua maior titulação?**

- ○ Bacharelado
- ○ Especialização
- ○ Mestrado
- ○ Doutorado

***4. Em sua opinião, o Relatório de Curso do ENADE deveria ser restrito à Instituição avaliada?**

- ○ Sim
- ○ Não

MUITO OBRIGADA por ter destinado parte do seu tempo para participar dessa pesquisa!
Ao submeter o questionário, você automaticamente estará participando do sorteio do exemplar do Manual de Contabilidade Societária, que ocorrerá ao final do processo de coleta de dados! Boa Sorte!!!
Questões sobre essa pesquisa ou sobre o sorteio do livro devem ser encaminhadas para shecal@usp.br

Appendix C – Invitation letter to the accounting program administrators

Dear Professor,

Your institution was selected to participate in research on The National Exam of Students' Performance (ENADE) as part of the National System of Higher Education Evaluation (SINAES). This research is part of a doctoral dissertation developed in the Accounting Graduation Program at FEA/USP, and it intends to study how the use of evaluation findings impacts the undergraduate accounting programs in Brazil. The advisor for this research is Professor Edgard Cornacchione. Your participation is fundamental to the success of this study; therefore, I would appreciate your collaboration by answering the survey available at

https://www.surveymonkey.com/s/Sheizi_Freitas

The estimated answer time is approximately 10 minutes, and you are free to abandon the survey at any time. The data collected will be used aggregately, and neither you nor your institution will be identified in the research results.

Lastly, a best-selling financial accounting book will be raffled among the respondents as a way to thank you for your participation. The book can be donated to your institution's library if you already have it.

Thank you very much for your understanding and your assistance!

Sheizi Freitas

Prezado(a) Professor(a),

A sua instituição foi selecionada para participar de uma pesquisa sobre o *Exame Nacional de Desempenho de Estudantes (ENADE)*, enquanto parte integrante do *Sistema Nacional de Avaliação da Educação Superior (SINAES)***.** Tal pesquisa é orientada pelo Prof. Dr. Edgard Cornacchione e está vinculada a uma tese de doutorado, desenvolvida no Programa de Pós-graduação em Controladoria e Contabilidade da FEA/USP, que intenciona estudar como o uso do relatório do ENADE impacta os cursos de Contabilidade brasileiros. *A sua participação é de fundamental importância para a continuidade dessa pesquisa, por isso gostaria de contar com a sua especial colaboração no que se refere ao preenchimento do questionário disponível em*

https://www.surveymonkey.com/s/Sheizi_Freitas

Gostaria ainda de informá-lo que o tempo estimado para o preenchimento do questionário é de, aproximadamente, 10 minutos, e que você é livre para deixar de participar da pesquisa a qualquer momento. *Os dados coletados serão utilizados de forma agregada, de modo que o senhor e a sua instituição não serão identificados nos resultados da pesquisa*.

Por fim, como uma forma singela de agradecer pela sua participação, será sorteado, entre os respondentes, um exemplar do livro *Manual de Contabilidade Societária: Aplicável a todas as Sociedades de Acordo com as Normas Internacionais e do CPC de autoria de Sérgio de Iudícibus, Eliseu Martins, Ernesto Rubens Gelbcke e Ariovaldo dos Santos, 2010*, que poderá ser doado para a biblioteca da instituição caso o senhor já possua a referida obra.

Muito obrigada pela sua compreensão e colaboração!

Atenciosamente,

Sheizi Freitas

Appendix D – Logistic regression results

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B) Lower	Upper
Step 1[a]	pos_time	1.066	.141	57.362	1	.000	2.903	2.203	3.825
	Constant	-2.325	.376	38.156	1	.000	.098		
Step 2[b]	pos_time	.845	.151	31.469	1	.000	2.329	1.733	3.129
	involv	.441	.100	19.369	1	.000	1.555	1.277	1.893
	Constant	-2.866	.414	48.012	1	.000	.057		
Step 3[c]	pos_time	.918	.158	33.791	1	.000	2.504	1.837	3.412
	communic	.415	.130	10.286	1	.001	1.515	1.175	1.953
	involv	.429	.102	17.756	1	.000	1.535	1.258	1.874
	Constant	-4.320	.653	43.815	1	.000	.013		
Step 4[d]	pos_time	.919	.159	33.324	1	.000	2.506	1.834	3.423
	hig_deg	.690	.238	8.373	1	.004	1.993	1.249	3.180
	communic	.446	.133	11.295	1	.001	1.563	1.204	2.027
	involv	.431	.104	17.304	1	.000	1.540	1.256	1.887
	Constant	-6.367	.998	40.703	1	.000	.002		
Step 5[e]	pos_time	.895	.161	30.959	1	.000	2.446	1.785	3.353
	hig_deg	.780	.247	9.981	1	.002	2.180	1.344	3.536
	adm_dep	.793	.357	4.918	1	.027	2.209	1.096	4.451
	communic	.439	.135	10.554	1	.001	1.551	1.190	2.020
	involv	.412	.105	15.400	1	.000	1.509	1.229	1.853
	Constant	-7.118	1.086	42.978	1	.000	.001		

a. Variable(s) entered on step 1: pos_time (tenure of the administrator in the position).
b. Variable(s) entered on step 2: involv (involvement).
c. Variable(s) entered on step 3: communic (communication).
d. Variable(s) entered on step 4: hig_deg (highest degree).
e. Variable(s) entered on step 5: adm_dep (main funding source).

Multicollinearity test

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	**Collinearity Statistics Tolerance**	**VIF**
1	(Constant)	-.737	.151		-4.885	.000		
	communic	.068	.020	.156	3.342	.001	.985	1.015
	involv	.074	.018	.222	4.170	.000	.763	1.311
	pos_time	.158	.025	.331	6.227	.000	.762	1.313
	hig_deg	.140	.039	.168	3.575	.000	.978	1.022
	adm_dep	.138	.061	.110	2.268	.024	.924	1.082

Constant only model[a,b,c]

Iteration		-2 Log likelihood	Coefficients Constant
Step 0	1	431.051	.435
	2	431.047	.442
	3	431.047	.442

a. Constant is included in the model.

b. Initial -2 Log Likelihood: 431.047

c. Estimation terminated at iteration number 3 because parameter estimates changed by less than .001.

Appendix E – Confirmatory factor analysis

Cross-loadings - full model

	CONCEPTUAL	INSTRUMENTAL	MISUSE	PERSUASIVE
CONCEP_1	**0.7137**	0.4927	0.4483	0.4865
CONCEP_2	**0.8179**	0.577	0.4714	0.575
CONCEP_3	**0.7249**	0.4852	0.3969	0.5219
CONCEP_4	**0.7841**	0.4978	0.4588	0.5946
CONCEP_5	**0.7485**	*0.7072*	0.5217	0.6587
CONCEP_6	**0.7523**	0.4831	0.4014	0.5181
INST_1	0.3529	**0.7006**	*0.7101*	0.5739
INST_2	0.6672	**0.8341**	0.6384	0.6901
INST_3	0.5952	**0.819**	0.6804	0.6836
INST_4	0.5968	**0.7647**	0.5871	0.6811
INST_5	0.6244	**0.8282**	0.6681	0.6733
MIS_1	0.3037	0.569	**0.718**	0.5358
MIS_2	0.5351	0.6423	**0.7511**	*0.7147*
MIS_3	0.3356	0.5471	**0.7298**	0.5136
MIS_4	0.4287	0.6586	**0.7869**	0.6567
MIS_5	0.58	0.6596	**0.7565**	0.6585
PERS_1	0.4519	0.6185	0.6893	**0.7566**
PERS_2	0.6157	*0.7349*	0.6825	**0.8355**
PERS_3	0.5797	0.5711	0.598	**0.7245**
PERS_4	0.6395	0.5393	0.4367	***0.6403***
PERS_5	0.5143	0.6514	0.6918	**0.7737**

Cross-loadings - reduced model

	CONCEPTUAL	INSTRUMENTAL	MISUSE	PERSUASIVE
CONCEP_1	**0.7533**	0.5065	0.4263	0.4803
CONCEP_2	**0.8455**	0.5932	0.4254	0.559
CONCEP_3	**0.7429**	0.4996	0.3428	0.5184
CONCEP_4	**0.785**	0.5279	0.4034	0.5836
CONCEP_6	**0.7596**	0.5127	0.3633	0.5013
INST_2	0.602	**0.8488**	0.5865	0.6497
INST_3	0.5416	**0.8204**	0.6372	0.6574
INST_4	0.5441	**0.7854**	0.5674	0.6313
INST_5	0.5583	**0.8481**	0.6358	0.6596
MIS_1	0.283	0.4592	**0.7592**	0.5568
MIS_3	0.3249	0.5068	**0.7561**	0.5255
MIS_4	0.394	0.6219	**0.8165**	0.6494
MIS_5	0.5197	0.6497	**0.7612**	0.6324
PERS_1	0.4386	0.5665	0.6757	**0.7831**
PERS_3	0.5504	0.5751	0.5253	**0.7427**
PERS_4	0.561	0.5559	0.4058	***0.6546***
PERS_5	0.4839	0.637	0.6629	**0.7846**

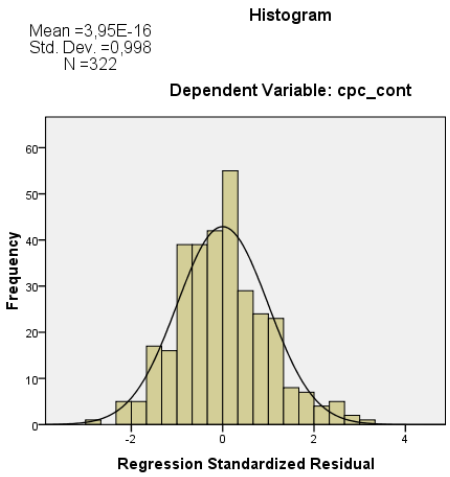
Descriptive statistics

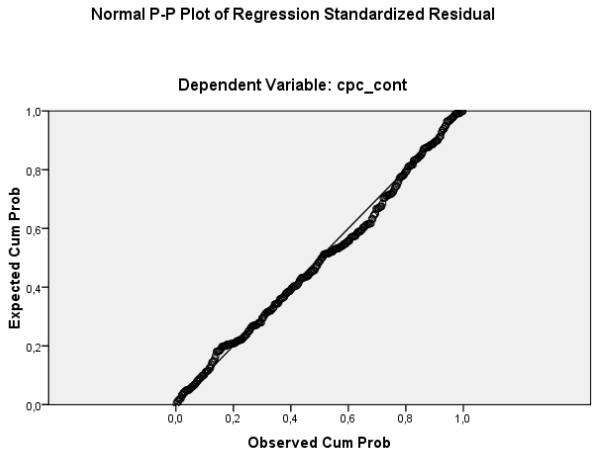
	N	Minimum	Maximum	Mean	Std. Deviation
CONCEP_1	196	1	5	3.71	1.115
CONCEP_2	196	1	5	3.82	1.004
CONCEP_3	196	1	5	3.79	1.019
CONCEP_4	196	1	5	4.16	1.067
CONCEP_6	196	1	5	3.83	1.067
INST_2	196	1	5	3.66	1.146
INST_3	196	1	5	3.69	1.276
INST_4	196	1	5	3.59	1.243
INST_5	196	1	5	3.29	1.321
MIS_1	196	1	5	2.38	1.321
MIS_3	196	1	5	2.41	1.260
MIS_4	196	1	5	2.66	1.332
MIS_5	196	1	5	3.47	1.295
PERS_1	196	1	5	2.77	1.255
PERS_3	196	1	5	3.47	1.337
PERS_4	196	1	5	4.24	1.052
PERS_5	196	1	5	2.80	1.365
Valid N (listwise)	196				

Appendix F – Regression assumption tests

Simple regression

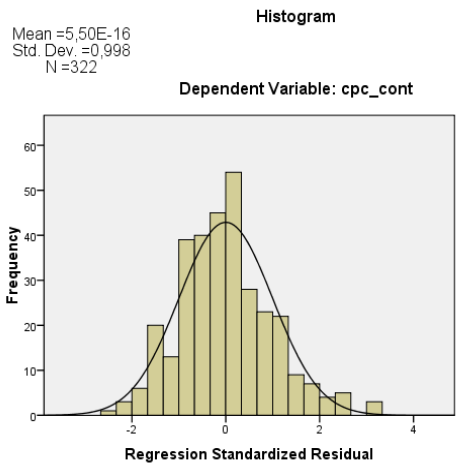
Variable tested: *use*
Heteroscedasticity (White test) *p-valor* = 0.38091
Normal distribution of error terms (Doornik-Hansen test) *p-valor* = 0.04230

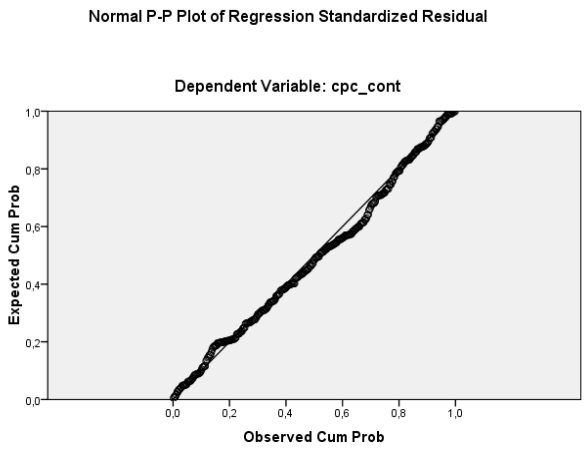




Simple regression

Variable tested: *use_int*
Heteroscedasticity (White test) *p-valor* = 0.00805
Normal distribution of error terms (Doornik-Hansen test) *p-valor* = 0.01943

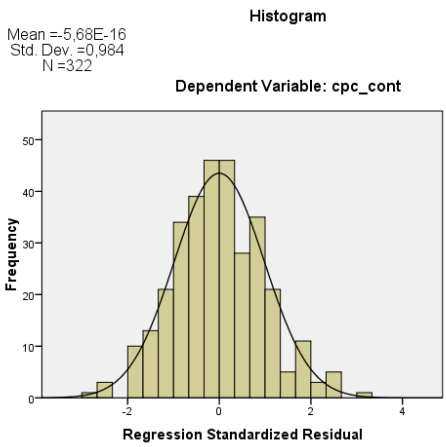


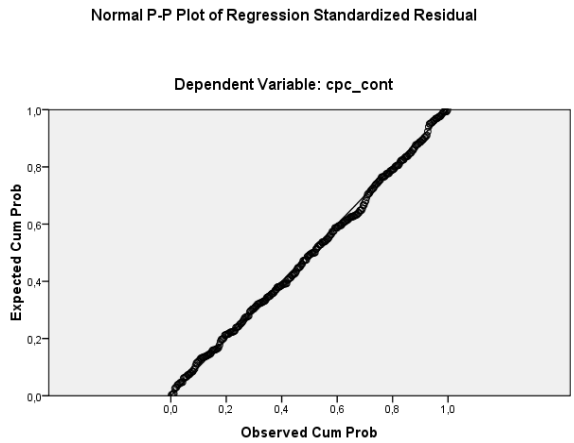


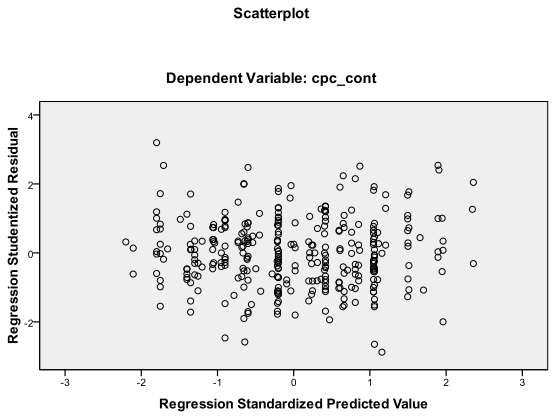
Multiple regression

Variable tested: *use*
Heteroscedasticity (White test) *p-valor* = 0.23109
Normal distribution of error terms (Doornik-Hansen test) *p-valor* = 0.34172
Multicollinearity (variance inflation factor - VIF):

use	1.106
hig_deg	1.158
north	1.125
northeast	1.286
west-center	1.269
south	1.315
univ_cent	1.353
college	1.521
fiest	1.027
adm_dep	1.327



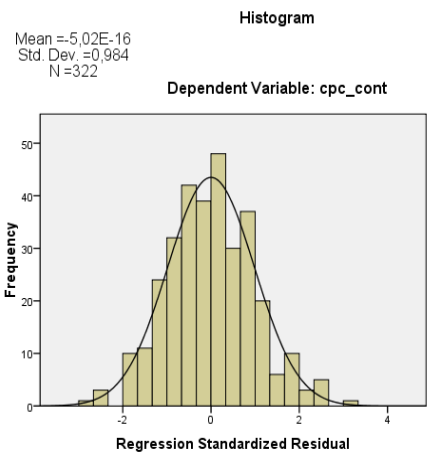


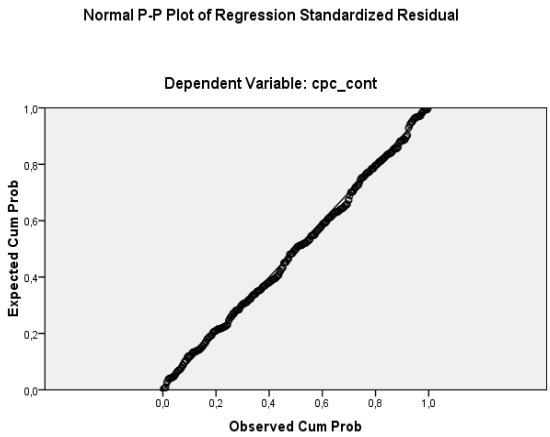


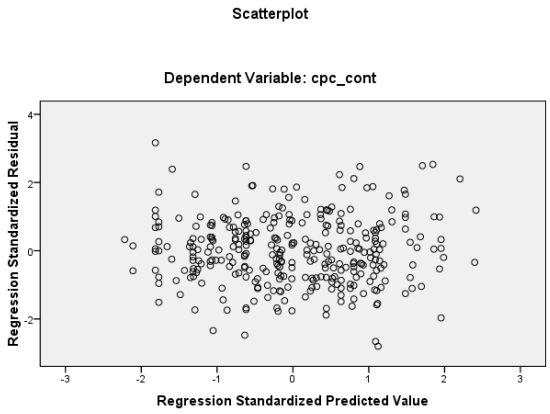
Multiple regression

Variable tested: *use_int*
Heteroscedasticity (White test) *p-valor* = 0.20202
Normal distribution of error terms (Doornik-Hansen test) *p-valor* = 0.29927
Multicollinearity (variance inflation factor - VIF):

use_int	1.101
hig_deg	1.15
north	1.125
northeast	1.283
west-center	1.266
south	1.314
univ_cent	1.35
college	1.52
fiest	1.027
adm_dep	1.333

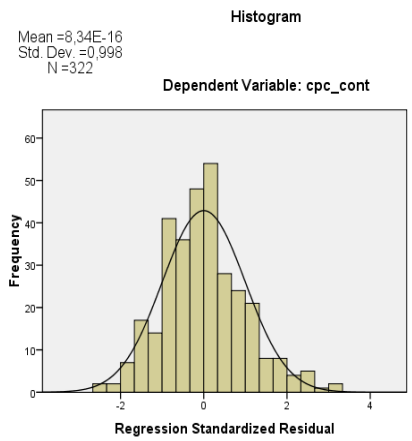


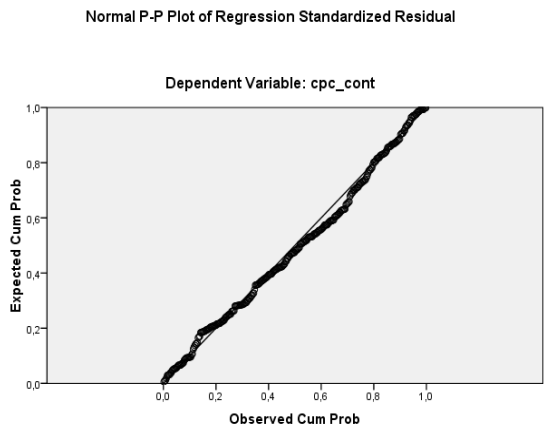




Simple regression

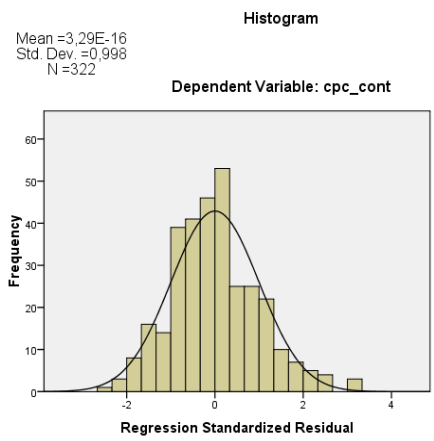
Variable tested: *concep*
Heteroscedasticity (White test) *p-valor* = 0.11658
Normal distribution of error terms (Doornik-Hansen test) *p-valor* = 0.021829

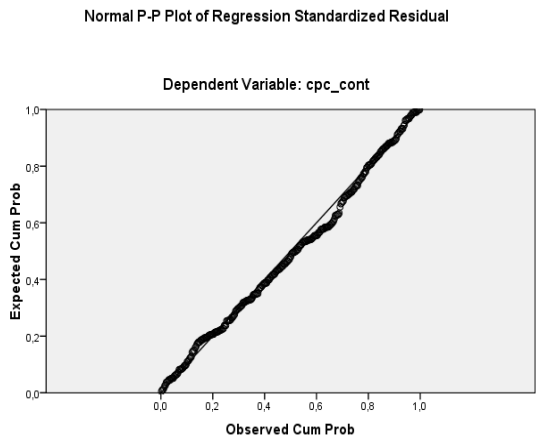




Simple regression

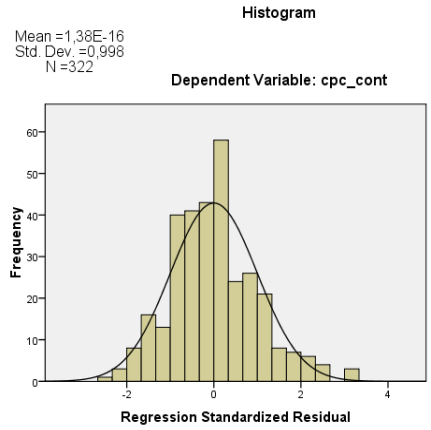
Variable tested: *inst*
Heteroscedasticity (White test) *p-valor* = 0.04759
Normal distribution of error terms (Doornik-Hansen test) *p-valor* = 0.02061

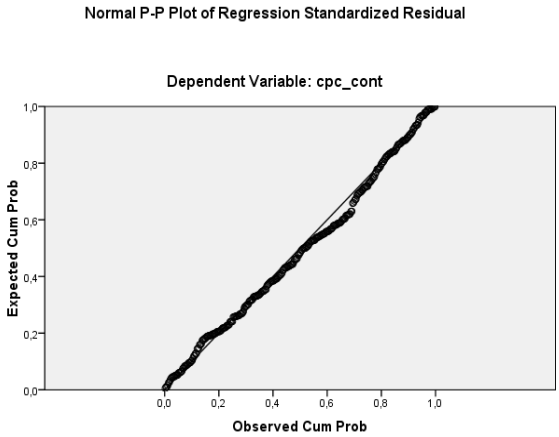




Simple regression

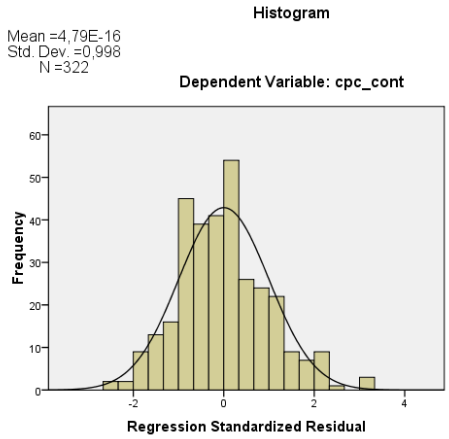
Variable tested: *pers*
Heteroscedasticity (White test) *p-valor* = 0.01938
Normal distribution of error terms (Doornik-Hansen test) *p-valor* = 0.01768

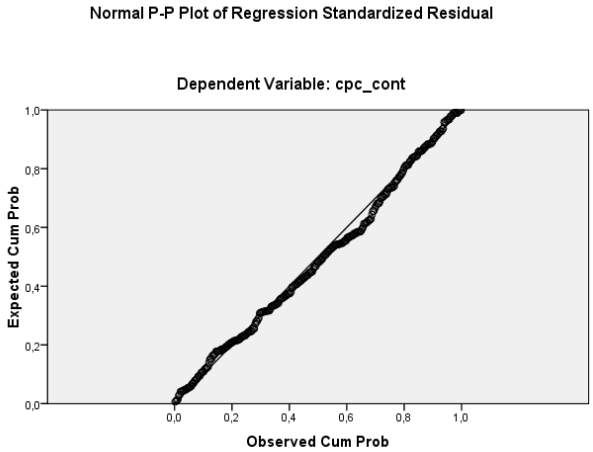




Simple regression

Variable tested: *mis*
Heteroscedasticity (White test) *p-valor* = 0.10197
Normal distribution of error terms (Doornik-Hansen test) *p-valor* = 0.01965

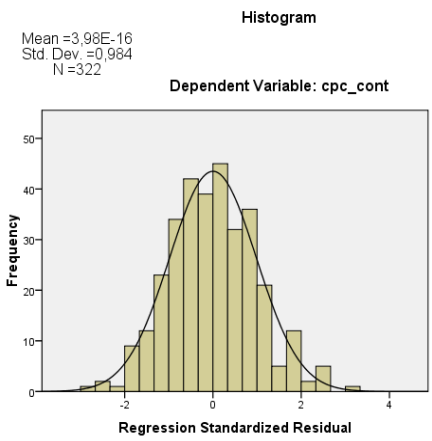


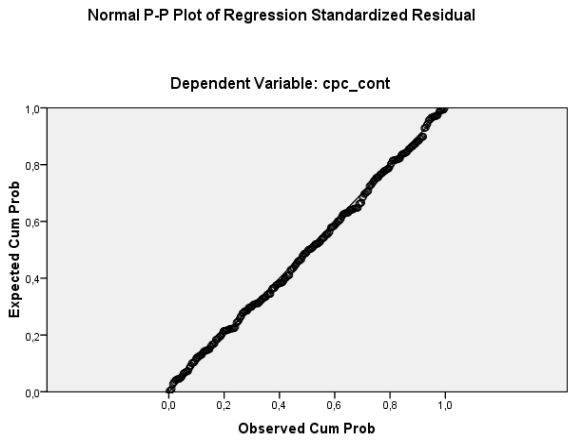


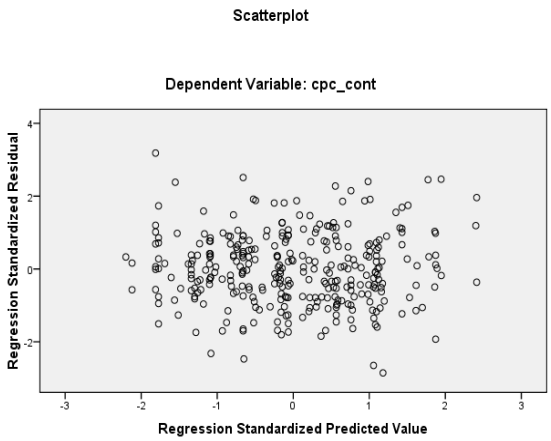
Multiple regression

Variable tested: *concep*
Heteroscedasticity (White test) *p-valor* = 0.25689
Normal distribution of error terms (Doornik-Hansen test) *p-valor* = 0.34184
Multicollinearity (variance inflation factor - VIF):

concep	1.107
hig_deg	1.157
north	1.125
northeast	1.285
west-center	1.269
south	1.314
univ_cent	1.352
college	1.525
fiest	1.027
adm_dep	1.326



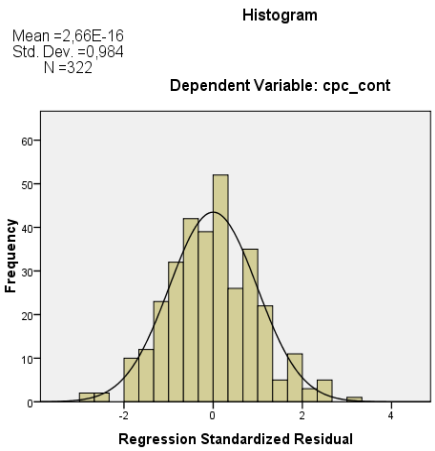


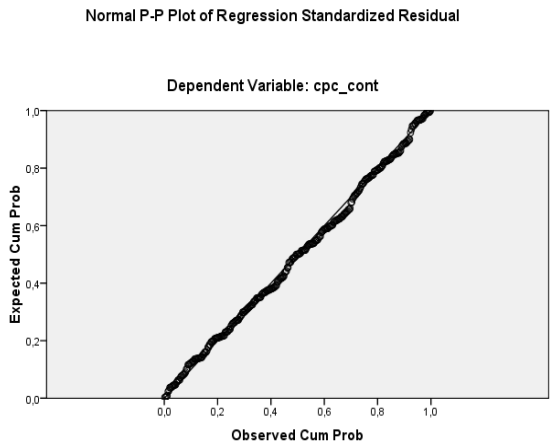


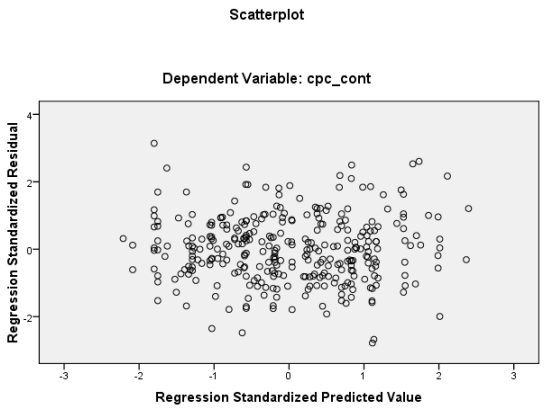
Multiple regression

Variable tested: *inst*
Heteroscedasticity (White test) *p-valor* = 0.22914
Normal distribution of error terms (Doornik-Hansen test) *p-valor* = 0.27956
Multicollinearity (variance inflation factor - VIF):

inst	1.089
hig_deg	1.149
north	1.125
northeast	1.282
west-center	1.264
south	1.314
univ_cent	1.35
college	1.517
fiest	1.027
adm_dep	1.329



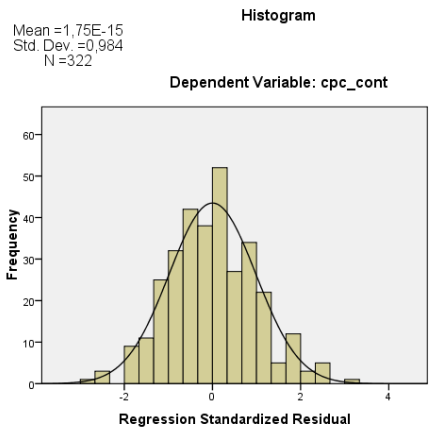


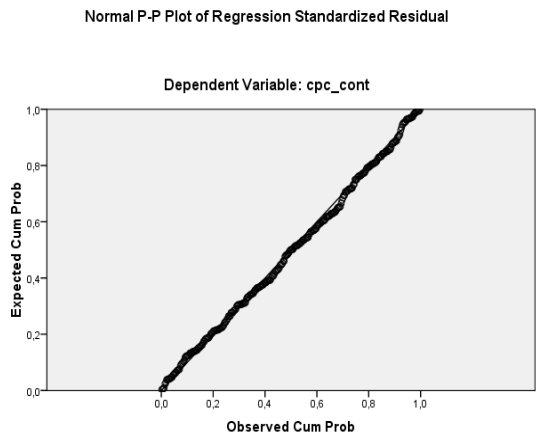


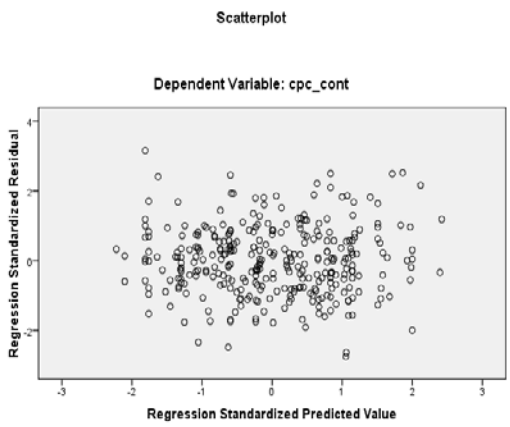
Multiple regression

Variable tested: *pers*
Heteroscedasticity (White test) *p-valor* = 0.14094
Normal distribution of error terms (Doornik-Hansen test) *p-valor* = 0.27424
Multicollinearity (variance inflation factor - VIF):

pers	1.101
hig_deg	1.144
north	1.125
northeast	1.284
west-center	1.266
south	1.314
univ_cent	1.35
college	1.518
fiest	1.027
adm_dep	1.34



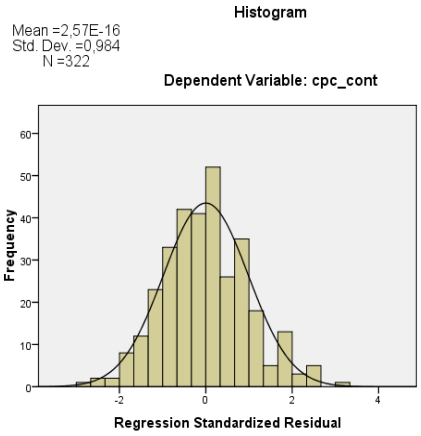


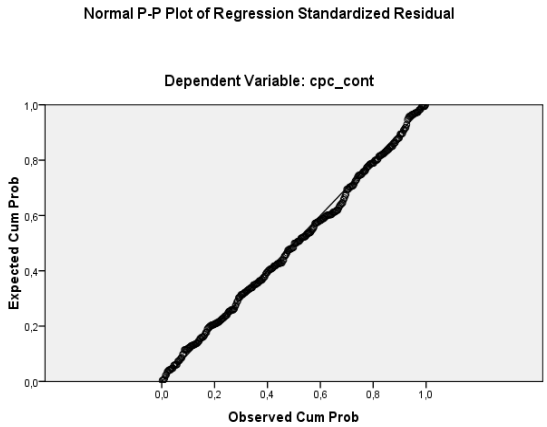


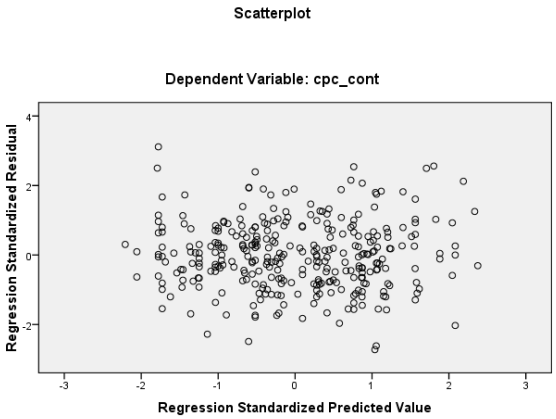
Multiple regression

Variable tested: *mis*
Heteroscedasticity (White test) *p-valor* = 0.23177
Normal distribution of error terms (Doornik-Hansen test) *p-valor* = 0.25971
Multicollinearity (variance inflation factor - VIF):

mis	1.09
hig_deg	1.14
north	1.125
northeast	1.281
west-center	1.264
south	1.315
univ_cent	1.35
college	1.517
fiest	1.026
adm_dep	1.336







Multiple regression – types of use

	B	***S.E.***	***t***	***p-valor***	
const	2.3168	0.1773	13.0706	<0.00001	***
hig_deg	0.1356	0.0504	2.6889	0.0076	***
north	-0.3403	0.1200	-2.8357	0.0049	***
northeast	-0.2127	0.0821	-2.5919	0.0100	***
west-center	-0.2238	0.0957	-2.3391	0.0200	**
south	0.0035	0.0718	0.0487	0.9612	
univ_cent	-0.1977	0.0865	-2.2863	0.0229	**
college	-0.3884	0.0682	-5.6938	<0.00001	***
fiest	-0.5489	0.4975	-1.1033	0.2707	
adm_dep	-0.2807	0.0817	-3.4339	0.0007	***
concep	0.1287	0.0521	2.4714	0.0140	**
inst	-0.0797	0.0590	-1.3508	0.1778	
pers	-0.0150	0.0653	-0.2297	0.8184	
F = 12.4708					
R^2 = 0.3263					

Note. N = 322. S.E. = standard error; concep = conceptual; inst = instrumental; pers = persuasive; hig_deg = highest degree; univ_cent = university center; fiest = federal institute of education, science and technology; adm_dep = main funding source.
*** p < .001, **p < .05.

Heteroscedasticity (White test) *p-valor* = 0.23313
Normal distribution of error terms (Doornik-Hansen test) *p-valor* = 0.40805
Multicollinearity (variance inflation factor - VIF):

hig_deg	1.174
north	1.125
northeast	1.297
west-center	1.278
south	1.324
univ_cent	1.358
college	1.553
fiest	1.028
adm_dep	1.341
concep	14.405
inst	17.062
pers	18.07

Appendix G – Effect size and statistical power

Variable tested – *use*
F tests - Linear multiple regression: Fixed model, R^2 deviation from zero

Analysis:	Post hoc: Compute achieved power		
Input:	Effect size f^2	=	0.4503263
	α err prob	=	0.05
	Total sample size	=	322
	Number of predictors	=	10
Output:	Noncentrality parameter λ	=	145.0051
	Critical F	=	1.8612068
	Numerator df	=	10
	Denominator df	=	311
	Power (1-β err prob)	=	1.0000000

Variable tested – *use intensity*
F tests - Linear multiple regression: Fixed model, R^2 deviation from zero

Analysis:	Post hoc: Compute achieved power		
Input:	Effect size f^2	=	0.4585764
	α err prob	=	0.05
	Total sample size	=	322
	Number of predictors	=	10
Output:	Noncentrality parameter λ	=	147.6616
	Critical F	=	1.8612068
	Numerator df	=	10
	Denominator df	=	311
	Power (1-β err prob)	=	1.0000000

Variable tested – *conceptual*
F tests - Linear multiple regression: Fixed model, R^2 deviation from zero

Analysis:	Post hoc: Compute achieved power		
Input:	Effect size f^2	=	0.4679977
	α err prob	=	0.05
	Total sample size	=	322
	Number of predictors	=	10
Output:	Noncentrality parameter λ	=	150.6953
	Critical F	=	1.8612068
	Numerator df	=	10
	Denominator df	=	311
	Power (1-β err prob)	=	1.0000000

Variable tested – *instrumental*

F tests - Linear multiple regression: Fixed model, R^2 deviation from zero

Analysis:	Post hoc: Compute achieved power		
Input:	Effect size f^2	=	0.4507471
	α err prob	=	0.05
	Total sample size	=	322
	Number of predictors	=	10
Output:	Noncentrality parameter λ	=	145.1406
	Critical F	=	1.8612068
	Numerator df	=	10
	Denominator df	=	311
	Power (1-β err prob)	=	1.0000000

Variable tested – *persuasive*

F tests - Linear multiple regression: Fixed model, R^2 deviation from zero

Analysis:	Post hoc: Compute achieved power		
Input:	Effect size f^2	=	0.4549687
	α err prob	=	0.05
	Total sample size	=	322
	Number of predictors	=	10
Output:	Noncentrality parameter λ	=	146.4999
	Critical F	=	1.8612068
	Numerator df	=	10
	Denominator df	=	311
	Power (1-β err prob)	=	1.0000000