

EFFECTIVENESS OF MANAGEMENT OF HIGHER PUBLIC EDUCATION FROM THE BALDRIGE EXCELLENCE PROGRAM

EFETIVIDADE DA GESTÃO DO ENSINO SUPERIOR PÚBLICO A PARTIR DO PROGRAMA DE EXCELÊNCIA BALDRIGE

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ABSTRACT

Purpose – The objective of this article is to analyze the effectiveness of higher education management, according to the Baldrige Excellence Model in a Public Institution of Higher Education in Minas Gerais, based on the perception of public workers.

Design/methodology/approach – A quantitative survey was carried out with the application of questionnaires to university employees. The collected data were submitted to multivariate statistical analysis using the Partial Least Squares - Structural Equation Modeling (PLS-MEE) and Covariance (MEE-CB).

Findings – The methods adopted confirmed that Leadership, Strategic Planning, Focus on the Client, Measurement of Knowledge, Analysis and Management, Focus on the Workforce and Focus on the Operation explain more than 75% of the effectiveness of the management of an IPES. This research corroborates with the Baldrige Education Criteria for Performance Excellence (2019), even if applied in Brazil, a different context from the original model.

Research limitations/implications – The customer's perception was not collected in this research. For a greater depth of analysis of the construct and model, it appears that it is relevant to include the participation of the client in future research and expand the units of analysis.

Originality/value – Know the elements that affect the management effectiveness of public institutions of higher education. With the model, the effectiveness of management is significantly explained, but the simultaneous correlation between all constructs is not proven and there is little leadership contribution. These results demonstrate the need for advances in the specifics of the model for the management of this type of institution.

Keywords: Effectiveness. Strategy. Management. Model of Excellence. Baldrige.

RESUMO

Objetivo - O objetivo deste artigo é analisar a efetividade da gestão do ensino superior, segundo o Modelo de Excelência Baldrige, em uma Instituição Pública de Ensino Superior de Minas Gerais, com base na percepção dos servidores públicos.

Desenho / metodologia / abordagem – Utilizou-se uma pesquisa quantitativa com a aplicação de questionários aos funcionários da universidade. Os dados coletados foram submetidos à análise estatística multivariada por meio do método de Partial Least Squares - Structural Equation Modeling (PLS-MEE) e Covariância (MEE-CB).

Resultados - Os métodos adotados confirmaram que a Liderança, Planejamento Estratégico, Foco no Cliente, Mensuração do Conhecimento, Análise e Gestão, Foco na Força de Trabalho e Foco na Operação explicam mais de 75% da efetividade da gestão de uma IPES. Essa pesquisa corrobora com o Baldrige Education Criteria for Performance Excellence (2019), mesmo que aplicado no Brasil, um contexto diferente do modelo original.

Limitações / implicações da pesquisa - A percepção do cliente não foi coletada nesta pesquisa. Para uma maior profundidade de análise dos construtos e do modelo, verifica-se que é relevante incluir nas pesquisas futuras a participação do cliente e ampliar as unidades de análise.

Originalidade / valor – Conhecer os elementos que impactam a efetividade da gestão das instituições públicas de ensino superior. Com o modelo explica-se de forma significativa a efetividade da gestão, mas, não é comprovada a correlação simultânea entre todos construtos e observa-se pouca contribuição da liderança. Estes resultados demonstram a necessidade de avanços nas especificidades do modelo para a gestão deste tipo de instituição.

Palavras-chave: Eficácia. Estratégia. Gestão. Modelo de Excelência. Baldrige.

1 INTRODUCTION

Although Public Institutions of Higher Education (IPES) operate in the same area that private universities do, IPES have very different characteristics, starting with free education and having the Federal Union as their main cost center. Nevertheless, effectiveness and education of good quality are factors in common that are assessed in any scope, either public or private.

According to Trigueiro (2000), defining quality management standards in universities is a challenge due to their diversity and plurality, due to the time spent in teaching students and due to all the resources involved.

For some authors, the management of higher education institutions in Brazil is based on improvisation, lack of definition, and lack of planning. Public universities follow a bureaucratized model, implemented by federal law and based on the changes in universities in the '60s, which was directed towards federal institutions (Marra & Melo, 2003). Facing this complex of universities, establishing efficient management and assessment mechanisms becomes essential to cope with such plurality.

In terms of these efficiency, effectiveness, and excellence in management, several awarded models are found which aim to encourage companies in the pursuit of quality. One of those is the Malcolm Baldrige model, the reference model of choice in this work.

Malcolm Baldrige, as a program of quality in management and through partnerships between the public and private sectors, seeks to establish a manual of good practices in educational institutions' management, one capable of producing results which aim not only to the improvement in educational quality, but also to promote innovation, competitiveness and scientific advancement, thus increasing the quality of national companies and the country's competitiveness (Baldrige Performance Excellence Program, 2019).

The award has also been adopted, within the public area scope, as a system for the assessment of public management with the understanding that, in order to improve organizations'



efficiency and effectiveness, in general, having a systemic view and approach becomes necessary (Ferreira, 2012).

According to Ferreira (2012), the same effort, with a focus on organizational results as undertaken by private institutions, began to be persecuted by the public sector, particularly in Brazil. Thus, analyses of effectiveness and the constructs composing it may become parameters and benchmarking sources for improving public institutions' management and assessment processes.

Then, bearing in mind the challenges of Public Institutions of Higher Education (IPES) in Brazil, as well as the relevance of effective management tools for reaching a better organizational result and benefits for the society, this research sought to identify: What is the background of effectiveness in the management of a Public Institution of Higher Education, based on the elements highlighted in the Baldrige Excellence Model?

This way, this article aimed to assess the background of effectiveness in higher education management, based on the Baldrige Excellence Model in a Public Institution of Higher Education in Minas Gerais, according to public servants' perception.

This study is justified in that, as we observe the management of public institutions of higher education, it may imply better results, effective service to regional development, and the consequent improvement in the national indicators of education, innovation, and development. Thus, causing the IPES to fulfill their social role, through improving education quality, as set forth by article 214 of the Federal Constitution of Brazil, subsection III (Brazil, 1988).

This research represents continuity in the studies on the effectiveness and applicability of the Baldrige Model in Higher Education Institutions in Brazil, as said by Menezes, Martins and Oliveira (2018). In his research, performed in a private Higher Education Institution, Menezes, Martins and Oliveira (2018) highlights that the constructs of Strategic Planning and Focus on the Operation represent a relevance and positive correlation with management effectiveness. Nevertheless, he also highlights that the constructs Leadership, Focus on the Customer, Knowledge Measurement, Analysis and Management, and Focus on the Workforce were refuted as hypotheses with a positive impact on the effectiveness of management of a Higher Education Institution. Before the findings in this research, we sought to research and know the behavior of those two hypotheses, based on the Baldrige Model, in the environment of a Public Institution of Higher Education.

In this context, the present study may serve as a subsidy for strategic reorientation, better use management tools based on the Baldrige excellence model, and support success in managing and improving the public machine. Thus, we intend to expose the main characteristics of management, its likenesses, and differences in a public institution of higher education of Minas Gerais.

For that purpose, this article, besides this introduction, is divided into theoretic reference, the concepts, and excellence criteria of the Baldrige Model, and research methodology. Then, we show the data, and a discussion of the research results in a public institution of higher education.

2 THEORETICAL BACKGROUND

2.1 The Baldrige performance excellence award

The initiative for creating this model was born in the early '80s, and it was named after a Malcolm Baldrige, former secretary of commerce and finance of the United States. The Malcolm Baldrige Award was created in 1987 by the law 100-107 of the American National Congress, which implemented a public-private partnership to encourage in North-American companies the sense for quality and raise awareness on quality as an ever more relevant element in terms of competitiveness



and understanding of the requirements for performance excellence (Baldrige Performance Excellence Program, 2019).

According to Buccelli and Neto (2013), the Baldrige Award assesses and acknowledges organizational models for the excellence in organizations that provide not only excellent products and services to the customer but also for doing so with a transparent and responsible ethical leadership, by training their employees and by providing steady support to local communities.

In 1999, the Baldrige Program advanced, having developed versions for education and healthcare areas. In the educational area, the criteria focused on being applicable in schools and public, private, or corporate education environments at all levels.

As to the definition in the Baldrige Performance Excellence Program (2019), the criteria of the education directed model adapt several relevant concepts within the educational field. First, a focus on both teaching and learning can be highlighted, viewing students as their main clients and never leaving aside other stakeholders, such as parents, employers, other schools as well as the community. This way, the concept of excellence in education includes a well-conceived and executed strategic assessment, besides the main measures and performance indicators, always focused on the learning process.

According to Calhoun (2002), the key features in the criteria for the education model focus on the effectiveness and the outcomes of the institution. It also adds that the criteria should focus on the main areas in organizations, from assessing students' learning results, focusing on the other stakeholders and financial and budgetary results, to market and workforce results and operational and leadership results, including governance and social responsibility.

The structure of the Baldrige Program for Education approaches the organizational profile that defines the context where organizations operate; the 'leadership triad' emphasizes the importance of leaderships' focus on strategy and on clients and the 'results triad' which includes processes, workforce, and the organization's performance.

2.2 The Baldrige model excellence criteria for education

The assessment of the Baldrige Model for Education (2015) begins with a description of the organizational profile, which is configured as an analysis of all the organizational environment in the perspective of identifying the mode of actuation on the market and of identifying the competencies of the organization which can contribute for the adequate planning and execution of strategic actions. The organizational profile provides the organization with a critical view on the internal and external factors which mold the operational environment, such as the view, the values, the mission, the essential competencies, the competitive environment, the strategic challenges and the disadvantages (Baldrige Performance Excellence Program, 2019).

The Malcolm Baldrige Excellence Model is presented with the seven excellence criteria: Leadership, Strategic Planning, Focus on the Client, Focus on the Workforce, Focus on the Operation, Knowledge Measurement, Analysis and Management, and Results (Baldrige Performance Excellence Program, 2019).

Criterion 1 - Leadership

As seen in the educational sector, leadership is one of the main constructs to be dealt with, which has become a challenge for managers who operate in markets ever more dynamic and competitive, pressured to do more with less (Mastella & Reis, 2008).



As to Drucker's (1998) conception, a leader is the one who influences other individuals; nevertheless, he highlights that only the hierarchy position within institutions does not make an executive a leader. In educational institutions, particularly, Adriano and Ramos (2015) highlight that, when one analyses university leadership, it can be noted that the process involves especially the functions of educational leadership, individual or team leadership, under the perspectives of Boards of Directors of Institutes, Course Coordination Offices, collegiate organs, councils, as well as administrative leadership.

The authors also add that many studies on leadership within university environments say that leading, in academia, is a 'kitten herding' process in the sense that it means attempting to mobilize a group of people who are not easily conducted by anyone. The reasons for that difficult mobilization are appointed by Bryman and Lilley (2009) as due to low professors' loyalty towards the University, given that such loyalty is shown in the following order: a professor's own (teaching) subject; one's field of study; one's research work; one's department; the course and the unit where they teach; and the university.

The Baldrige Program addresses the growing need for a training-and-learning environment which may conduct consistent guidance for the future and a commitment to improvement, innovation, and organizational sustainability. It also reinforces the relevance of governance in a socially responsible, informed, and transparent way, one which may protect the stakeholders' interests (Baldrige Performance Excellence Program, 2019).

Criterion 2 – Strategic Planning

The term Planning constitutes a prescriptive process of establishment of objectives, internal and external auditing, strategic assessment, and operationalization, that is, full programming of all the steps in the process. It also holds, as its first principle, that strategy formation is a deliberate process supported by reasoning and control, from which resulting strategies may come in a conscious and controlled process of formal planning, one outlined by technical steps (Mintzberg, 1998).

In this criterion, the Baldrige Model focuses on developing strategy, translating, and implementing strategic objectives through operational action plans. Assessment is based on: translation and implementation of the strategy through operational action plans; utilization of data and information for strategic planning, and for the strategic planning process itself.

As stated by Evans et al. (2012), the Baldrige criteria for strategic planning are consistently focused on two elements which are key to be addressed by the area of strategy development process: the process through which organizations make strategic planning and (2) the collection and analysis of relevant data and information used in the strategic planning process.

Under this criterion, Baldrige (2015) assesses how organizations develop the objectives, the strategic actions, the implementation model, and assess strategic planning progress. The composition of such planning goes through essential competencies, work systems, focus on learning, long-term organizational sustainability, and also through a focus on the competitive environment.

Criterion 3 – Focus on the Client

To Sharabi (2013), for a very long time, universities concentrated on the academic needs more than on the students as their main clients. Nevertheless, students are crucial and are part of the organization, given that those institutions' being successful is entirely connected to the students' perception and sense of satisfaction.



Focusing on students, investing on measures for attraction, on evasion reduction, as well as on efficiency in improving students' performance and awarding them a diploma, thus reducing retention by improving teaching/learning and cost optimization, may become innovative measures to improve higher education performance (Sharabi, 2013).

In this sense, the Baldrige Excellence Model assesses exactly the relation between the focus on the client and the results of management effectiveness. According to Evans et al. (2012), the 'focus on the client' criterion concentrates on identifying and assessing client groups and market segments, on methods to build relationships, on measurement, and on using client satisfaction data. It also focuses on assessing the following aspects: (i) data and information analysis; (ii) client and market group segmentation; (iii) strategies for learning and using client-focused data and information.

As to the 'client' criterion, Baldrige (2015) examines how the organization involves its students and other stakeholders, including how they hear and build relationships with their clients, using those clients' information and expectations to identify and address the opportunities of improvement and innovation.

Criterion 4 – Knowledge Measurement, Analysis and Management

According to Andreeva and Kianto (2012), the relevance of knowledge and its efficient and effective management for organizational development seems to be a widely accepted questioning in most of the current management's literature.

The traditional production factors have become secondary in the society of knowledge, and the most important resource becomes information and knowledge (Drucker, 1998). Stewart (1998) reinforces such perception by stating that, in the new era of information, the basic sources of opulence are communication and knowledge, and not natural resources or physical work.

In this criterion, the Baldrige Program (2015) examines how the institution uses data and information to improve and measure performance. Also, it highlights the relevance of an integrated system for performance measurement and management, by using information which shall base the analysis, revision, and improvement in process management to obtain organizational results.

Criterion 5 – Focus on the Workforce

Focus on the Workforce is another relevant highlight among the criteria in the Baldrige Model. To Evans et al. (2012) this item concentrates on the conception of the high-performance work systems and the work environment, including the assessment of workforce satisfaction, well-being, and motivation, basically evaluating mostly significant themes, such as: (i) cultural and environmental issues; (ii) training and development; (iii) utilizing data and information.

The Baldrige Model (2015) emphasizes that organizations often confuse the concepts of aptitude and capacity by adding more skilled people, to compensate scarcity of competencies. However, it is necessary to foresee and plan personnel needs for the success of an institution, not only in terms of proper quality but also thinking on adequate instruction.

This Baldrige criterion values workforce training to reach better performance, characterized by innovation, knowledge, skill, good communication, information sharing, and alignment with the organizational objectives, with a focus on students and other clients.



Criterion 6 – Focus on the Operation

The ‘Focus on the Operation’ criterion considers, according to Kich and Pereira (2011), that organizational adequacy must account for collateral processes. Collateral processes are information and decision-making processes that, in turn, coordinate activities spread among the organizational departments, promoting general management decentralization mechanisms and the management processes – which include strategic planning, the unfolding of strategic objectives into operational plans, and, mainly, the processes of assessment and control. The authors mention the importance of integration and coordination, besides information sharing, communication, and transference of knowledge to execute the strategy.

Focus on the operation, as a criterion in the model, reflects the main concepts of process management, conception, control, and improvement enabled by adequate measurement and analysis systems. Evans et al. (2012) add that that criterion assesses the dominating challenges of the themes, such as: (i) support processes; (ii) process nuclei management activities; (iii) measurement and cost control.

Criterion 7 - Results

Under the ‘Results’ criterion, the performance of an organization, and the improvements in every key-area are assessed, including performance levels in relation to those of competitors.

For the Baldrige Program (2019), reaching the desired process performance requires a configuration with performance levels or standards to guide decision-making. In case of any deviation, corrective action is necessary to restore the performance to the process, which was planned at first.

If, on the one side, all these Baldrige Model elements point to better quality and positive results, on the other hand, in the higher education scope, effectiveness is directly related to the performance of a crucial and relevant role for intellectual growth, through an advanced human resource production process, development of researches and promotion of advanced technologies (Kraipetch, Kanjanawasee & Prachyapruit, 2013). Cornali (2012) adds that the development and growth of the social and economic well-being of the countries are directly related to and depend on the quality of education.

This criterion, in the Baldrige Model (2015), encompasses a system of performance and results necessary for the sustenance of an educational institution, as well as the students’ results, the workforce results, leadership, and governance and budgetary and financial results. The main results of student learning and operational performance are assessed, which show quality in the educational programs and the services provided, besides the satisfaction of the other clients.

3 METHODOLOGY

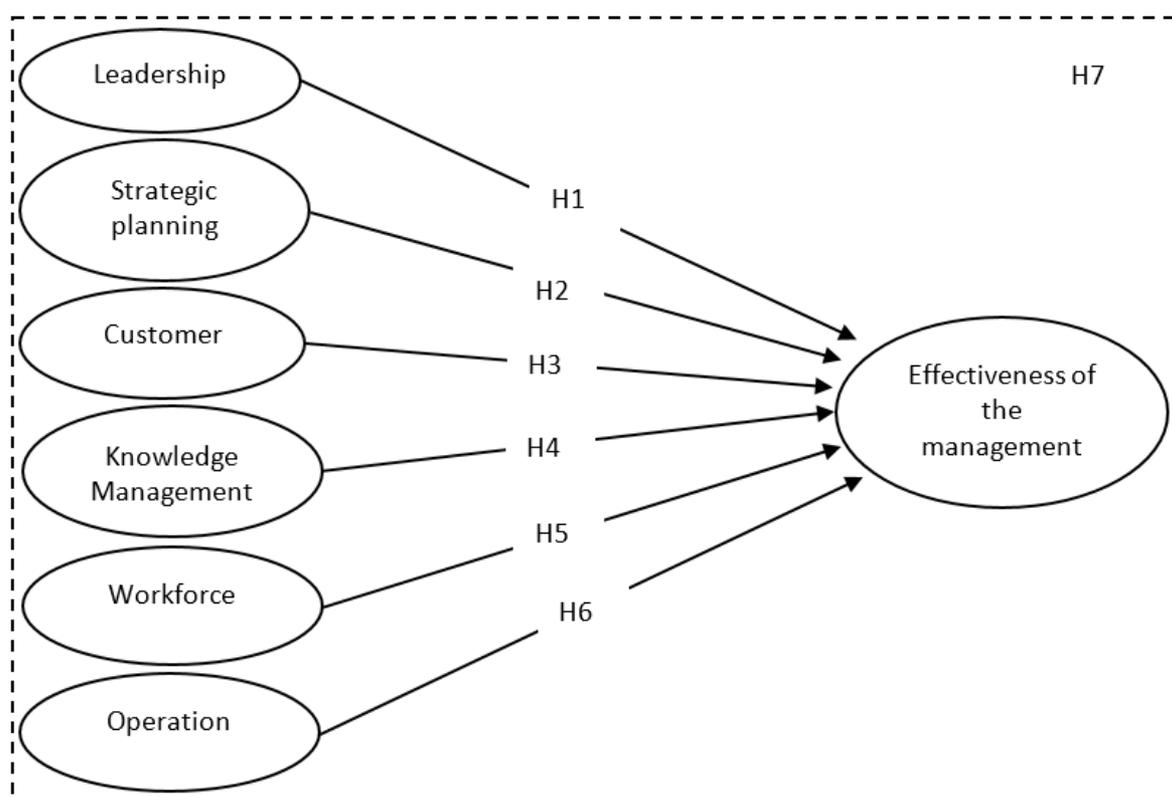
Qualitative-descriptive research was performed. Data were collected by structured questionnaires. Regarding the resources, the research was classified as a case study in a Public Institution of Higher Education of the state of Minas Gerais. A questionnaire based on the Menezes model (2014) was used, which contained affirmative questions grouped according to the Baldrige Excellence Model criteria. In this instrument, a scale from 0 to 10 was used so that the interviewee could indicate their level of agreement with that statement. The Menezes (2014) questionnaire was adapted to the context of the Public Institution of Higher Education (IPES) and, then, underwent a test with 08 public servants – 02 from the central administration, 02 academic unit directors, 02 ad-



ministrative technicians, and 02 professors, from diverse sectors from the university. The research instrument was sent by electronic media (e-mail) and also applied in person, manually, giving a 100% of the effective servants in activity in the institution the chance to participate, no matter if they were effective professors or administrative technicians, amounting to 1,624 public servants.

Under that perspective, the hypothetical model of Menezes (2014) was used, according to Figure 1.

Figure 1 - Hypotheses in the Research.



Source: Adapted from Menezes, 2014.

In the description of the hypothesis, we can highlight:

Hypothesis 1: Leadership positively impacts the effectiveness of the management of the Public Institution of Higher Education.

Hypothesis 2: Strategic planning positively impacts the effectiveness of the Public Institution of Higher Education’s management.

Hypothesis 3: Focus on the Client positively impacts the effectiveness of the management of the Public Institution of Higher Education.

Hypothesis 4: Knowledge Measurement, Analysis, and Management positively impact the effectiveness of the management of the Public Institution of Higher Education.

Hypothesis 5: Focus on the Workforce positively impacts the effectiveness of the Public Institution of Higher Education’s management.

Hypothesis 6: Focus on the Operation positively impacts the effectiveness of the management of the Public Institution of Higher Education.

Hypothesis 7: There is a correlation between the constructs in the Baldrige Model and the effectiveness of the management in a Public Institution of Higher Education.

The institution researched and analyzed, named University Federal of Ouro Preto, is a Brazilian public institution of higher education, in the federal sphere, with three campi in different cities, and currently offers undergraduate courses, post-graduation courses (specialization, master's and doctor's), besides distance learning. As a whole, the university currently has 15,000 undergraduate students spread in over ten academic units, in three campi. Around 2,300 collaborators, among effective public servants, third parties and occasionally hired servants, over 45 undergraduate courses, 38 stricto sensu post-graduation courses, with 742 students attending the master's and 260 students attending the doctor's courses, 19 lato sensu post-graduation courses with 2,453 students (Management Report, 2014).

The institution was born from the fusion of some centennial schools, which covered several areas of knowledge. Since then, it has been developing and incorporating, in its structure, several other education areas and it comes to undergo, in the short term, a speed up growth process due to the Federal Government plans, through the Program of University Restructuring – Reuni of the Ministry of Education (MEC) (Management Report, 2014).

The population in the unit of analysis was made out of effective servants in activity in the IPES under the study, being composed by professors and administrative technicians in education, directors of academic units, and central administration, summing up to 1,624 public servants. All of the three campi were analyzed in every one of the different cities.

Regarding the universe of the research and for its better development, the sample was calculated based on an error margin of 5%, with a reliability interval of 95%, making it necessary to have 311 questionnaire forms answered. After data checking, 56 extreme multivariate cases were identified, which, due to being atypical (outliers), were removed from the sample, resulting in 453 registers for treatment, estimate, and analysis of results, in turn, are 45.66% larger than the calculated sample.

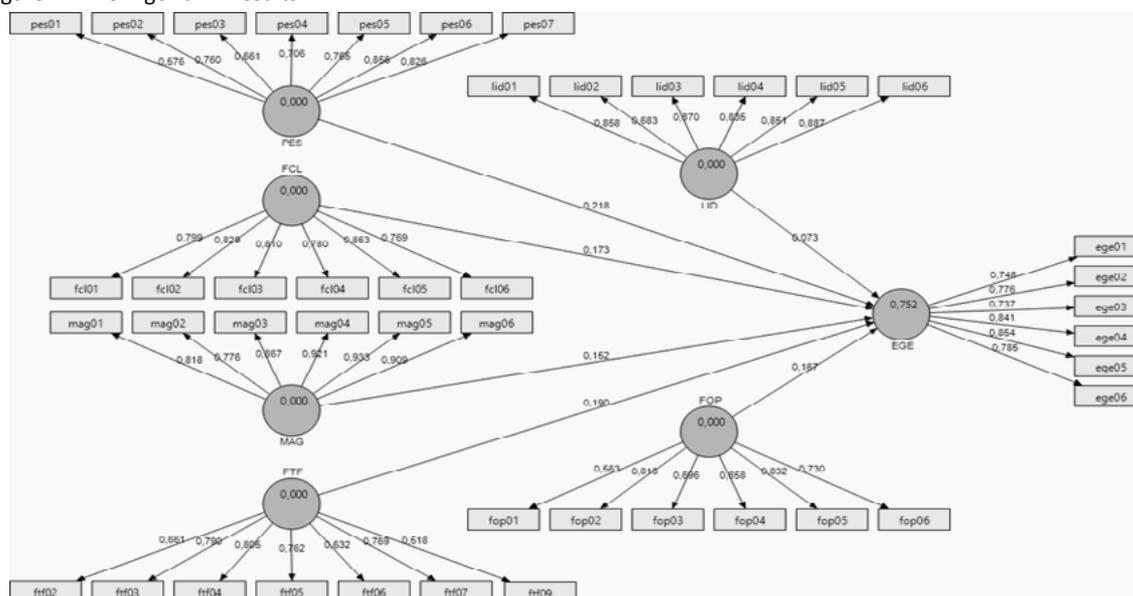
4 RESEARCH RESULTS AND DATA ANALYSIS

To estimate the relations between the constructs with Structural Equation Modeling by Partial Least Squares (PLS-MEE) estimation the SmartPLS version 2.0 software was used (RINGLE, WENDE & WILL, 2005) according to the following parameters: *Weighting Scheme= Path Weighting Scheme; Data Metric= Mean 0, Var 1; Data Iterations = 300; Abort Criterion= 1,0E-5* (that is, 0.00001); *and Initial Weights= 1,0* (Hair et al., 2009, p. 84). Factorial loads obtained after executing the Partial Least Squares (PLS) estimate algorithm are shown in the measurement model in Figure 2.

The MEE-PLS does not assume data follows a normal distribution, which implies that parametric significance tests used in regression analyses cannot test whether the coefficients are negative (Hair et al., 2013). For that purpose, the MEE-PLS relies on a non-parametric bootstrap procedure to test coefficient significance. Then, using the SmartPLS software, the bootstrapping (BT) algorithm was executed, configured with the following parameters: *Sign Changes= No Sign Changes; Cases = 453* (number of registers in the sample) and *Bootstrap Samples= 5,000* (Hair et al., 2013, p. 132). Also, the *blindfolding* (BD) algorithm was executed using the *Omission Distance= 7* as a parameter (Hair et al., 2013, p. 180) to check the model's predictive relevance. To complete the estimation of the results, the SPSS software was used to obtain the *Variance Inflation Factor* (VIF) tolerance value from the SmartPLS software output.



Figure 2 – PLS Algorithm Results



Source: Research Data, 2016

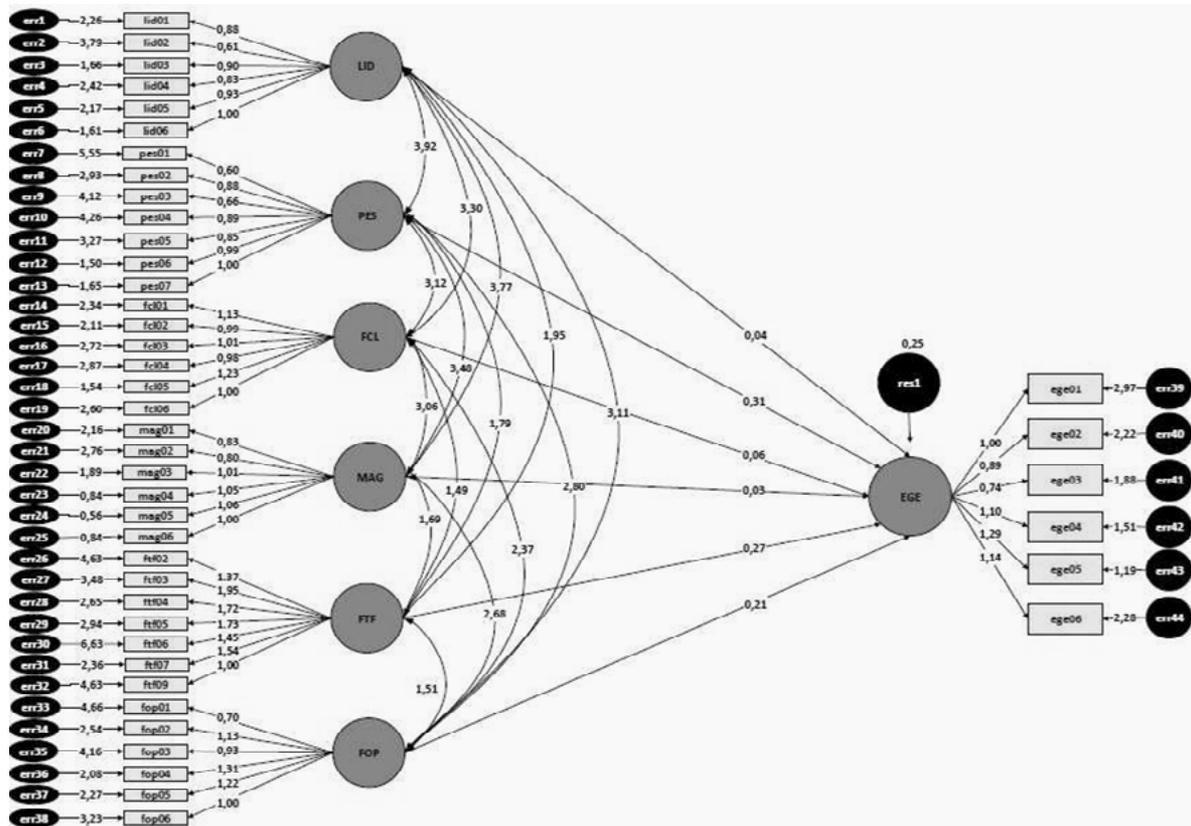
To estimate the relations between the constructs with the Covariance-based Structural Equation Modeling the IBM SPSS AMOS version 24.0 software was used (Arbuckle & Byrne, 2016), having been configured according to the following parameters: *Estimation= MaximumLikelihood; Numerical Convergence Criteria*, Crit1 = 1.0E-5 (that is, 0.00001); Crit2 = 0.001 and *Iteration limit= 50; Bias = Unbiased, Covariance stobe Analyzed= MaximumLikelihood and Output = Standardized Estimates* (Arbuckle, 2016).

The results of the measurement model to check the correlations between the Baldrige Excellence Model constructs are shown in Figure 3.

The reliability level was evaluated by the Cronbach alpha's analysis of values ranging from 0 to 1 (Cronbach, 1951). Its objective is to assess the absence of random error in the measurement units on the scale. The closer from 1, the higher the proof of the reliability of the set of items. Values up to 0.5999 show a non-acceptable reliability level (Costa, 2011), and it is expected that such an indicator presents values higher than 0.70 (Malhotra, 2012). Thus, it was possible to state that indicators have internal consistency since the measures reflecting a composite reliability level are superior to 0.70. That means to say the constructs are reliable.

In the MEE-PLS dimensions, the validity of the construct is checked in two phases, in the case of measurement models with reflexive indicators (Hair, Ringle & Sarstedt, 2011). First, the converging validity test is performed in two steps, employing a reliability analysis of the indicator and by checking the factorial loads obtained by the AVE. Second, one proceeds to the discriminating validity test, also in two steps, using the Fornell-Larcker Criterion to assess the level of the construct, and the evaluation of the cross-sectional loads to assess the indicator level.

Figure 3 - Results of the CB Construct Correlation Algorithm



Source: Research Data, 2016.

In phase one, regarding the converging validity, which is the width in which a measure is positively correlated with the alternative measures of the same construct (Hair et al., 2013). In the first step, as a minimum, the external loads of all indicators must be statistically significant, because a significant external load may still be very weak. The rule of thumb is that external loads must be 0.708 or higher. In most cases, 0.70 is considered sufficient to make 0.708 acceptable (Hair et al., 2013). Loads of 0.50 or 0.60 may be acceptable in case there are extra indicators in the comparison base block (Chin, 1998).

Indicators with values lower than 0.40 were left out of the analysis (Hair et al., 2013), because they implied, on the FTF construct, increased compound confidence from 0.8553 to 0.8760 and an increased AVE from 0.4131 to 0.5071. Indicators with values higher than 0.708 and indicators with factorial loads with values from 0.40 to 0.70, were kept in the model after examined, once it was proven statistical significance of the external loads of all indicators ($p < 0.01$).

As a second step to check converging validity, the average variance extracted was examined. An AVE value of 0.50 or higher indicates a sufficient level of converging validity. Inversely, an AVE value lower than 0.50 indicates that, on average, more of the measurement error remains in the indicator than the variance explained by the construct (Hair et al., 2013).

The Fornell-Larcker Criterion points to an extracted variance lower than the shared variance, in some cases. However, as a second step, another criterion is used complementarily to assess discriminating validity through cross-section loads. This is often a little freer. The expected result of the assessment is that the factorial load of an indicator with its associated latent construct is higher than their loads with all the remaining constructs (Hair, Ringle & Sarstedt, 2011).

Phase two in MEE-PLS consists of assessing the structural model and implies establishing the capacity of prediction and analyzing the relationships among the constructs. Thus, the assessment criteria comprise the significance level of the structural path coefficients and the values of R². Before describing these analyses, it is necessary to analyze collinearity of the structural model (Hair et al., 2013), which predicts that each set of predictors in the structural model for collinearity must show the *Variance Inflation Factor* (VIF) tolerance value for each predictor construct higher than 0.20 and lower than 5.

4.1 Analysis of Results

Based on the factorial loads shown in Figure 3 and on the data presented in Table 1, we found positively related dependencies, so the IPES Management Effectiveness construct reached an R² value = 0.7523. In other words, the other constructs: Leadership, Strategic Planning, Focus on the Client, Knowledge Measurement, Analysis and Management, Focus on the Workforce, and Focus on the Operation are capable of explaining the variation corresponding to an observed value of ≈75% of IPES Management Effectiveness.

Table 1 – MEE-PLS Structural Path Significance Test

Constructs	Structural Path	T	Significance Level	p	Reliability Interval 99%	Reliability Interval 90%
LID →EGE	0.0730	1.7110	*	0.0878	[-0.0370 ; 0.1834]	[0.0026 ; 0.1433]
PES →EGE	0.2182	3.9759	***	0.0001	[0.0761 ; 0.3602]	[0.1277 ; 0.3086]
FCL →EGE	0.1732	3.6071	***	0.0003	[0.0490 ; 0.2973]	[0.0940 ; 0.2523]
MAG →EGE	0.1520	3.0982	***	0.0021	[0.0249 ; 0.2790]	[0.0710 ; 0.2329]
FTF →EGE	0.1899	4.6549	***	0.0000	[0.0843 ; 0.2954]	[0.1226 ; 0.2571]
FOP →EGE	0.1674	3.8739	***	0.0001	[0.0556 ; 0.2791]	[0.0961 ; 0.2386]

NS = non-significant | *** p < 0.01 | ** p < 0.05 | * p < 0.10 Source: Research data, 2016.

Source: Research Data, 2016.

According to data found, it was identified that the relationships were positive and statistically significant with the structural equation modeling techniques. It was also found that hypotheses H¹, H², H³, H⁴, H⁵, and H⁶ were supported by the structural model in the structural path analysis. The summary of those individual relations of constructs with effectiveness can be found in Table 2.

Table 2 – Structural Model Hypotheses' Analyses

Hypotheses	Constructs	MEE-PLS	p	MEE-CB	p	Higher Value	Result
H ¹	LID →EGE	0.0730	*	0.0880	***	CB-SEM	Accept
H ²	PES →EGE	0.2182	***	0.2280	***	CB-SEM	Accept
H ³	FCL →EGE	0.1732	***	0.1240	***	PLS-SEM	Accept
H ⁴	MAG →EGE	0.1520	***	0.0960	***	PLS-SEM	Accept
H ⁵	FTF →EGE	0.1899	***	0.2840	***	CB-SEM	Accept
H ⁶	FOP →EGE	0.1674	***	0.1990	***	CB-SEM	Accept
H ⁷	-	-	-	-	-	-	Reject

NS = non-significant | *** p < 0.01 | ** p < 0.05 | * p < 0.10 Source: Research data, 2016

Source: Research Data, 2016.



However, the analysis of H⁷ rejected the hypothesis of an existing correlation between the constructs in the Baldrige Model and IPES effectiveness. It must be highlighted that no simultaneous correlation was found among the constructs and management effectiveness, then, inferences cannot be made that all the constructs keep a correlation among themselves and, at the same time, with management effectiveness.

This way, it can be noted that Leadership, Strategic Planning, Focus on the Client, Knowledge Measurement, Analysis and Management, Focus on the Workforce and Focus on the Operation individually and positively influence Management Effectiveness in the Public Institution of Higher Education. To Baldrige (2019), such constructs in the educational area adapt to several important concepts, highlighting the focus on teaching-learning to students.

To Calhoun (2012), the key features in these criteria in the specific model for education focus on effectiveness and the result of the institution, what was noted in the present research, given that, through the constructs, the explanation of 75% of effectiveness in the studies management was found.

In MEE-CB's perspective, the hypotheses H², H⁵, and H⁶ showed to be statistically significant, highlighting the importance of Strategic Planning, Focus on the Workforce, and Focus on the Operation.

Focus on the workforce with an influence level of 0.2840 on effectiveness, in a variation from -1 to 1, showed to be the most significant one among the constructs. Literature corroborates that understanding when it emphasizes that one of the pillars of a good process of strategies' implementation is the focus on the workforce, on aligning people with the strategy, on the process of succession and, in summary, on the form of actuation and strengthening the mission of people management (Hrebiniack, 2006).

Baldrige (2019) also highlights the focus on the workforce as an important role positively impacting educational organizations' performance. The author emphasizes that educational institutions must show good engagement with the workforce, characterized by the innovation, by knowledge, by skill, by good communication, by information sharing, and by aligning with organizational objectives, focusing on students, who are a fundamental part in the execution process of the planning and the development of the strategic objectives of the institution.

Strategic Planning is pointed out as the second construct with a bigger load of influence on effectiveness, with a value of 0.2280, in a variation from -1 to 1. This construct emphasizes that tool as a process of development of strategies, of translation and implementation of the organization's objectives, going across an important composition of essential competences, work systems, focus on learning, long-term organizational sustainability and focus on the environment – critical aspects for the development (Baldrige, 2019).

The third best index of influence on effectiveness was Focus on the Operation, with a load of 0.1990. It is understood that this construct represents an important process sequential to planning, focusing on execution. To Neis and Pereira (2014), there is a mismatch between the excessive attention given to the formulation process and a relative precariousness in the process of strategy implementation in organizations' daily lives. However, Hrebiniack (2006) corroborates with the findings in this research, when he states that planning and execution of strategies are fundamental, complementary, and directly connected to organizations' performance.

Besides the process of execution of strategic objectives under the Focus on the Operation criterion, the Baldrige Model (2019) also reinforces the relevance of organizational processes in the sense of identifying and operating on minimizing costs and issues resulting from any deviation from the performance expected. In this sense, the model also strengthens the relevance of operational



efficiency, considering every aspect necessary for the maintenance of the educational programs and services for the students.

Hypotheses H¹, H³, and H⁴, although with lower intensity, were also supported by both MEE-PLS e MEE-CB models. In the latter, the Focus on the Client constructs reached the fourth-best index, with the value of 0.1240, followed by 0.0960 from the Knowledge Measurement, Analysis and Management construct, and Leadership with a not-so-significant index with a value 0.0880, all of which compared with a -1 to 1 variation. Even so, they are relevant constructs that help others understand over 75% influence in the effectiveness of the management of a public institution of higher education.

The importance of the constructs Leadership, Focus on the Client and Knowledge Measurement, Analysis and Management is evidenced by literature based on the perspective from Moraes (2004), which highlights organizational effectiveness as an important construct which involves good management practices, organizational structures, information and knowledge management system and management and leadership styles.

Adding to that, the Baldrige Model (2019) fundamentals effectiveness as a performance and results system necessary for the sustenance of an educational institution and it goes across the results of the learning process for students, the workforce, the leadership, the governance system, and the budgetary and financial results.

However, according to servants' perception, leadership is the construct that offers the least contribution to management effectiveness in the institution in this study. Such finding can be interpreted at the light of what Adriano and Ramos (2015, p. 51) highlight, which says that management of Universities is based on 'collegialism' which, in turn, can be translated by the premises of university autonomy, individual academic freedom, collective professionalism, aversion to concepts such as authority and hierarchy. In other words, they add that the conduction of those institutions is marked by management through collegiate organs, with low levels of individual protagonism. Generally speaking, academics deny the legitimacy of professional managers, preferring management to be under their control; authority is weak in universities, and managers are not provided with traditional means of control over the collaborators; 'heavy-handed' management may be dysfunctional for the creative processes academic activity is involved with.

The perception of the servants in the IPES in this study did not allow inference on simultaneousness and an integrated view on the importance of the constructs as related to positive synchronicity. By looking into the results, a fragmentary view about the concepts and the relevance of those constructs towards management effectiveness can be noted. In other words, servants notice the constructs as relevant and influential to effectiveness but do not present perception of the synchronicity among them.

However, this gap between discourse and practice is noticed, and explained by Andriquetto et al. (2011) that, in universities, the strategic choice is fragmentary due to the autonomy every agent or decision-maker has, what makes strategic initiatives come from several areas, independently on the preferences of what is formally established in the high administration plans. Such fragmentation causes, many times, actions to be illogical, non-linear, and in all directions (including opposite ones), forecast capacity to be damaged, and alignment among discourse and practice becomes a challenge.

5 CONCLUSIONS

This research – which focus was to analyze the effectiveness background in the management of a Public Institution of Higher Education, as to the Baldrige Excellence Model – sought to



identify the perceptions of effective servants, from all units in a public Institution of Higher Education, about which constructs in the Baldrige have a positive impact on management effectiveness.

In the statistical analysis, the individual and positive correlation of every construct with management effectiveness were identified, as proposed on objective 2. In the MEE-PLS and MEE-CB analysis, hypotheses H¹, H², H³, H⁴, H⁵, and H⁶ were supported by having a direct positive correlation with management effectiveness, according to servants' perception. This way, Leadership, Strategic Planning, Focus on the Client, Knowledge Measurement, Management and Analysis, Focus on the Workforce, and Focus on the Operation positively influence and explain over 75% of effectiveness in the management of this Public Institution of Higher Education.

The research also points out the lowest correlation in the model, which signals servants' perception that leadership has a little contribution to effectiveness. According to Adriano and Ramos (2015) highlights that leadership is an aspect disregarded by university managers and by the academia itself, which may be explained by the existing conflict between 'collegialism' and 'managerialism.'

Nevertheless, despite the low correlation of leadership and effectiveness in the servants' perception, Adriano and Ramos (2015) reinforce that leadership would be the solution for such duality because it provides the meeting of the university structures with the current demands, and it may promote advances in terms of university management.

This research contributes to university managers understanding the importance of such constructs to provide their main sponsor, which is society itself, with better results. As highlighted by Adriano and Ramos (2015), universities have been pushed to adopt new forms of management, because of decrease in public financing, besides the growing number of students admitted and, also, increasing cooperation with other institutions are some of the factors which have been causing a change in the way of thinking university management.

To that end, higher education institutions' management requires various skills, whether managerial, intuitive, and political, besides managing the diverse demands of the organization and adapting to the external demand of a society in constant change. However, to Andriquetto et al. (2011), not always will those factors seem to be present in among the competencies of their managers, which may severely compromise the academic and financial performance of those organizations.

So, it is understood that Public Institutions of Higher Education need to appropriate of the constructs Leadership, Strategic Planning, Focus on the Client, Knowledge Measurement, Management and Analysis, Focus on the Workforce and Focus on the Operation to oppose the challenges and dynamicity of the environment where they operate and to fulfill their social role, understanding that those constructs as the conception and the path towards effectiveness.

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2. Development of hypotheses or research questions (empirical studies)	√	√	√	
3. Development of theoretical propositions (theoretical work)	√	√	√	
4. Theoretical foundation / Literature review	√	√	√	
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