Benchmarking Non Public Hospitals in Puerto Rico: A Key Component in the Financial Performance

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ABSTRACT

Benchmarking is considered a key component of the organizational performance measurement system. This study examines a sample of 53 profit and nonprofit hospitals registered in the American Hospital Directory, through four financial dimensions: liquidity, efficiency, profitability and capital structure. The purpose of the study is to validate whether the financial industry benchmark differs or not from a group of 17 selected financial ratios of profit and nonprofit hospitals, to determine if their financial performance is efficient or inefficient in the Puerto Rico health care system. The findings from the research show that 53% or more of the 17 selected financial ratios, compared globally, suggest being efficient in both types of hospitals. This means that these financial ratios were greater than or equal to the industry benchmark.

Keywords: industry benchmark, ratio analysis, financial statements, decision making, financial performance.

RESUMEN

El *benchmarking* se considera un componente clave del sistema de medición del desempeño de una organización. Este estudio examina una muestra de 53 hospitales con y sin fines de lucro adscritos al Directorio Americano de Hospitales, a través de cuatro dimensiones financieras: liquidez, eficiencia, rentabilidad y estructura de capital. El propósito del estudio es validar si el *benchmark* de la industria difiere o no de un grupo de 17 índices financieros seleccionados, para determinar si su desempeño es eficiente o ineficiente en el sistema hospitalario de Puerto Rico. Los resultados muestran que el 53% o más de los índices financieros seleccionados, comparados globalmente, sugieren ser eficientes en ambos tipos de hospitales. Esto significa que estos índices financieros fueron mayores o iguales que el *benchmark* de la industria.

Palabras clave: *benchmarking* de la industria, análisis de *ratios*, estados financieros, toma de decisiones, desempeño financiero.

Healthcare facilities are turning towards benchmarking practices due to compliance with the standards of accreditation by the Joint Commission on Accreditation of Healthcare Organization (JCAHO) and the Center for Medicare & Medicaid Service (CMS) (Sorying Consulting, 2012). JCAHO accreditation and certification is recognized nationwide as a symbol of quality since many healthcare institutions and facilities, which are beneficiaries of Medicare and Medicaid, are accredited by this organization (JCIASH, 2014). The CMS (2015) is an agency of the U.S. Department of Health & Human Services responsible for the administration of several key federal health care programs (Phillips, 2015). JCAHO and CMS command that all the healthcare facilities provide safe and high quality care to their beneficiaries. In their initial process of certification, when an entity seeks to participate in Medicare, the first step is to complete and submit an enrollment application known as CMS-855A. This application's request is to fill out a questionnaire about enrollment, payment rules and financial solvency (CMS, 2015); therefore, it is very important to establish that, if the hospital wants to participate in Medicare programs, it needs to have financial solvency.

Most of the benchmarks used by the JCAHO and CMS in their hospital accreditations only measure the practices against norms and standards, comparing the quality of services (surgical techniques, therapeutic approaches, etc.), not the financial performance or solvency of the institution. In accordance with recent studies, such as Ettorchi, Levit, and Michel (2012), benchmarking in health care is not a subject that has ever been studied in a systematic and standardized way. It is confirmed by literature review that benchmarking, as an industry practice, is rarely implemented; other approaches similar to benchmarking are used.

For more than ten years now the demand for financial performance has become a primary issue for the health care system due to control cost factors, management risk structure, setup, quality care and patient expected satisfaction. These demands have been forcing the amplification of many projects for development and comparison indicators. The term benchmarking emerges within this context of comparison process (Ettorchi, Levit, & Michel, 2012).

Many studies in literature, such as Camp (1989), Zairi (1992), Smith, Ritter, and Tuggle (1993), Vaziri (1992), Watson (1993), Kleiner (1994), Rogers, Daugherty, and Stank (1995), Kozak (2004), and others, agree in their investigations that benchmarking is the most useful strategic tool for hospitals to help leaders achieve and enable a higher level of quality in the decision making process and best practices from the "best in class" companies inside and outside the industry. The points of convergence in their investigations mostly are: the multiple definitions of the concept, the advantages and uses of benchmarking, the beginning of the concept in history, comparison of benchmark quality in services, etc.; they rarely used the tool with a financial perspective or validated it as efficient or inefficient using the industry benchmark.

Our study is based on meeting these needs in the literature, especially in the healthcare system. In an era of resource constraints, the ability to validate efficient hospitals over their inefficient counterparts by the tool of benchmarking provides a great help for hospital managers to discover and reduce potential inefficiencies, and to provide the health administration authorities measures that may be used to promote financial solvency (Almeida & Fique, 2011).

This paper addresses the improvement of healthcare system financial performance through the benchmarking tool. Our primary interest is to focus, confirm, and validate with the industry benchmark, whether or not the financial performances of the profit and nonprofit hospitals in Puerto Rico are at the same financial position level with the "best companies" in the same industry. We want to examine and provide a better understanding of the utilization and validation of the benchmark industry in the organization; moreover, to become acquainted with the real situation in the healthcare system in comparison with the industry, to help the top administration examine and detect early warning signals of danger, take corrective actions, and prevent further erosion of the organization's financial health. To address these concerns, the remainder of the paper is organized as follows: the first section looks at a literature overview; furthermore, this paper provides the proposed hypothesis research method, results, theoretical and managerial

implications, limitations of the study, and future research. The paper ends with a discussion and some concluding remarks.

Literature Overview

The term *benchmarking* was for the first time introduced in the industrial sector in the 1980s by the Xerox Company and its initial use was as a method of comparing the production cost with competitors in the same sector. Later, it became a method for continuous quality improvement in any sector (Ettorchi, Levit, & Michel, 2012).

Subsequently, in the '80s and '90s, researchers such as Camp (1989) and Geber (1990) defined the concept of benchmarking as the process of finding examples of world-class product, service or system and then, adjusting or matching them to overcome the rules. They describe benchmarking as a continuous process of measuring products or services and practices against the toughest competitor of the most recognized companies as industry leaders.

As the concept of benchmarking evolved, other researchers, such as Vaziri (1992), Watson (1993), and Kleiner (1994) support the definition that benchmarking is an excellent tool used to identify a target for improving organizational performance, partners who have achieved these goals and practices that are applicable to incorporate an effort to redesign or restructure the company. They agree that benchmarking is a continuous input of new information to an organization and its three most important principles are: (a) the maintenance of quality, (b) customer satisfaction, and (c) continuous improvement. The concept of benchmarking has changed over the time; has multiplied and diversified its definitions, which are found mainly in the industrial sector as we see in Table 1.

Table 1

Benchmarking Definitions

Authors	Year	Definitions
David Kearns, Executive Director, Xerox Corporation (Cited in Camp, 1989)	1980	Benchmarking is the continuous process of measuring products, services, and practices against the toughest competitors or those companies recognized as industry leaders.
Robert C. Camp	1989	Benchmarking is the search for best practices for a given activity that will ensure superiority.
Geber	1990	A process of finding the world-class examples of a product, service or operational system and then adjusting products and services to meet or beat those standards.
Geral J. Balm	1992	The ongoing of comparing one's own process, product or service against the best known similar activity so that challenging but attainable goals can be set and a realistic course of action implemented to efficiently become and remain best of the best in a reasonable time.
Watson	1993	The continuous input of new information to an organization.
Kleiner	1994	An excellent tool to use in order to identify a performance goal for improvement, identify partners who have accomplished these goals and identify applicable practices to incorporate into a redesign effort.
Cook	1995	A kind of performance improvement process that identifies understands and adopts outstanding practices from within the same organization or from other businesses.
APQC (American Productivity and Quality Center)	1999	The process of continuously comparing and measuring an organization against business leaders anywhere in the world, to gain information that will help the organization take action to improve its performance.
EFQM-European Benchmarking Code of Conduct	2009	The process of identifying and learning from good practices in other organizations.

Source: Balm (1992); Camp (1989); EFQM (2009).

Despite some researchers coinciding and agreeing on many assertions, others have raised controversies on these approaches; for instance, studies from Kozak (2004) suggest that benchmarking is not a continuous process but it is a perishable and time-sensitive one. He considers and pushes forward that what is a standard of excellence today can be tomorrow's expected performance; thus, the improvement in company performance should be an ongoing process, and benchmarking can be considered a part of that process. Likewise, Ettorchi, Levit, and Michel (2012) studies agree that benchmarking often refers to the comparison in a time limited approach, and it is not often perceived as a tool for continuous improvement and change support. Benchmarking comparison of outcome indicators in the health care system dates back to the 17th century and its primary application was to compare mortality in hospitals (Braillon, Chaine & Gignon, 2008). In this period, benchmarking also emerged in the United States and in the United Kingdom with the purpose of comparing hospitals' outcomes and rationalizing their funding (Camp, 1998; Dewan, Daniels, Zieman & Kramer, 2000).

From the mid to late 1990s in the United States, it began as a structure method and was used to improve the quality of services as a requirement of the JCAHO (Phillips, 1995; Bullivant, 1998; Camp, 1998). The JCAHO is an independent nonprofit organization that accredits and certifies nearly 21,000 healthcare organizations and programs in the United States. It is a nationwide organization recognized as a symbol of quality and many institutions and facilities of healthcare, which are beneficiaries of Medicare and Medicaid, are accredited by this organization (JCIASH, 2014).

The JCAHO and the CMS command that all healthcare facilities provide safe and high quality care to their beneficiaries. The CMS defines safe and quality care by setting standards or benchmarks that the healthcare organization must accomplish in several measurable areas and by being comparable with the CMS benchmarks indicating success or failure in their performance (Phillips, 2015). These benchmarks are known as accountability measures (previously core measures) that are part of the collective joint commis-

sion hospital quality measures. These accountability benchmarks measure or quantify: healthcare processes, outcomes, patient perceptions, and organizational structure or systems that are associated with the ability to provide high-quality health care and that relate to one or more quality goals for health care; these goals include: effective, safe, efficient, patient-centered, equitable, and timely care (CMS, 2015). The benchmarks used by the JCAHO on their hospital accreditation are benchmarks that measure the quality of services but not the financial performance or solvency of the institution.

According to Camp (1989), Zairi (1992), Smith, Ritter, and Tuggle (1993), and Rogers, Daugherty, and Stank (1995), the advantages of using the tool of benchmarking help the organization understand where there are strengths and weaknesses; they enable the organizations to realize the level of performance and how they can still improve; however, given these advantages, two further points need to be considered. First, studies about benchmarking in the healthcare sector have experienced several modifications, and second, there are still many gaps in the literature regarding the healthcare system (Bayney, 2005; Collins-Fulea, Mohr, & Tillett, 2005; Ellershaw, Gambles, & McGlinchey, 2008; Meissner, Mescha, Rothaug, Zwacka, Gottermann, Ulrich, & Schleppers, 2008). In the first instance, benchmark was essentially the comparison of performance outcomes to identify differences, and later it included an analysis of process and success factors for producing higher levels of performance. The most recent modifications of the concept were related to the need to meet patients' expectations (Ellis, 2006).

In the second instance, there are still many gaps in the literature regarding the healthcare system and evidence that supports this position can be found in Dorsch and Yasin's (1998) studies. They have found that the academic community is lagging behind in terms of providing and promoting models and frameworks that integrate multiple facets of benchmarking in the organization. Both authors point out that most research in the literature often lacks a systematic approach to the evaluation of results; however, benchmarking affects all aspects of an organization, but studies tend to focus on

one zone: comparing similar functions in different organizations, exchanging knowledge on a particular activity with the aim of improving the field under study, and comparing the processes and the exchange of best practices in clinical care. Benchmarking is not integrated with other organizational processes such as the measure of the financial performance or solvency of the hospital system using the industry benchmark.

Dorsch and Yasin (1998) also claim that the literature lacks studies of costs and benefits of benchmarking and these should be strengthened. Organizations that operate today in the public dynamic environment should not and cannot ignore the importance of benchmarking focused on both processes. Before considering quality of services, it is important to note that financial solvency is linked to quality of services, if the organization wants to be successful. At the same time, according to Ellis (2006), nowadays the concept of benchmarking is often compromised by limiting it to a simple comparison of the results, while in reality it should be taken further, to promote discussion among the top management practice professionals in order to stimulate cultural and organizational change within organizations.

In accordance with Bodinson (2005), the success of a hospital organization is mainly due to how well their leadership can create a culture of excellence, and achieve financial security and improvements in their operational methods. That financial security can be achieved through the use of best assessment practices, the implementation of effective methods and the tools for analysis of their financial information in assessing its financial statements for decision-making.

When it comes to achieving an efficient financial performance, many elements are related: the patient experience, organizational structure, financial performance, and the satisfaction of the staff. The leaders in each of these elements have a responsibility to implement best practices and to focus on strategies that lead the company to success (Bodinson, 2005).

As we have read in this literature overview, there are many gaps that we need to fill in as researchers associated with the benchmark-

ing tool. It is important to know the definitions of the concept, its advantages and disadvantages, and what its role is in the healthcare system; but, we need studies whose primary premise is to focus and validate the benchmarking tool in the financial perspective of the organization with the commission to help the executives and the healthcare system top management identify and correct weak and distress areas in their organization. To date, no systematic investigation has considered examining this financial perspective. Although we know that the standard of excellence today may be the expected performance of tomorrow (Kozak, 2004), the continuous improvement of an organization's performance against the best in the industry can maintain quality, productivity, efficiency, customer satisfaction, competitive advantage, and a clear understanding where they have strengths, weaknesses or opportunities to identify gaps in performance. On what follows, we present a hypothesis concerning the comparison of the financial performance between for profit and nonprofit hospitals and the industry benchmark between the dimensions of liquidity, efficiency, capital structure, and profitability.

Hypothesis

The underlying theoretical foundation behind our approach is that for more than ten years now, the demands for performance have become a primary issue for the healthcare system due to factors of control costs, structure management risk, quality care setup, and satisfaction of patient's expectation. These demands have been forcing the amplification of many projects for indicator development and comparison. Recent studies, like Ettorchi, Levit, and Michel (2012), explain that benchmarking in healthcare is not a subject that has ever been studied in a systematic and standardized way, and confirm that in a review of the literature, benchmarking as practiced in industry is rarely implemented; other approaches similar to benchmarking have been used. Our studied hypothesis is based on fulfilling this need of a study in a systematic and standardized way in the healthcare system. Based on this reasoning we hypothesize the following:

H_o: In Puerto Rico, the financial performance of for profit hospitals does not significantly differ from the industry benchmark among the dimensions of liquidity, efficiency, capital structure, and profitability compared to nonprofit hospitals.

H_a: In Puerto Rico, the financial performance of for profit hospitals significantly differs from the industry benchmark among the dimensions of liquidity, efficiency, capital structure, and profitability compared to nonprofit hospitals.

The null hypothesis will be tested at a significance level of .05 where: P value < .05 the null hypothesis is rejected; that is, the financial performance of for profit hospitals significantly differs from the industry benchmark among the dimensions of liquidity, efficiency, capital structure, and profitability compared to nonprofit hospitals. P value > .05 null hypothesis is retained; that is, the financial performance of for profit hospitals does not significantly differ from the industry benchmark among the dimensions of liquidity, efficiency, capital structure, and profitability compared to nonprofit hospitals.

The principal premise of this quantitative study is to validate whether the financial industry benchmark differs or not from a group of 17 selected financial ratios of for profit and nonprofit hospitals, to determine if their financial performance is efficient or inefficient in the healthcare system of Puerto Rico. Contrary to previous researches, such as Bayney (2005), Collins-Fulea, Mohr, and Tillett (2005), Ellershaw, Gambles, and McGlinchey (2008), and Meissner, Mescha, Rothaug, Zwacka, Gottermann, Ulrich, and Schleppers (2008) our goal in this research is to focus and confirm if the financial performance of the hospitals in Puerto Rico is at the same financial position level with the "best companies" in the healthcare industry through the tool of benchmarking.

In accordance with Jacobs (2001), increasing emphasis is being placed on measures of efficiency in hospitals to compare their relative performance given the need to ensure the best use of scarce resources. Few studies have, however, assessed the consistency of ef-

ficiency rankings across different methodologies. It is often argued that health care institutions are not expected to be efficient, as they do not adhere to neo-classical firm optimization behavior; nonetheless, given the vast amount of resources that go towards funding such institutions, there is a great and growing interest in examining efficiency in hospitals with the driving force for such concern being valued for money.

The idea behind validating the industry benchmarking is to measure a group of selected hospital financial ratios against an external standard as the industry benchmark. It is a way to learn which companies are the best in carrying out certain activities and functions and then imitate or, even better, improve their techniques.

Method

In this study the data was collected from the American Hospital Directory (AHD) as shown in their website (http://www.ahd.com), for a trial period of five years from 2008 to 2012. AHD is a private organization founded in 1996 that provides online database and financial information from more than 6,000 for profit, nonprofit, and government hospitals of the United States and Puerto Rico. This website is the source of each indicator used in this study. In this website we can access the hospital profiles, statistics of services provided, utilization statistics, accreditation status, financial information, and key statistics of: bed size, discharges, patient days, and gross patient revenue. Also, we can access the audited financial statement of all the hospitals as balance sheet and income statement, and a financial indicators section with 17 financial ratios previously calculated from their financial formula. For this study, we use all the financial ratios provided from the financial indicators section, for the years 2008 to 2012.

The financial information in this website is from the Medicare cost reports that are maintained in cooperation with Cost Report Data Resources, an online source for cost report data. We use this secondary data because it contains the most recent version (i.e. as submitted, settled, and reopened) of each cost report filed with

CMS, since federal FY 1996. Cost reports are filed annually by hospitals, according to their individual reporting years. This dataset is updated quarterly by CMS. According to Schuhmann (2008), the Cost Report data is a useful tool that can be used to examine trends in hospitals individually and in groups during different years.

The total population in the study was 53 (N) hospitals, $n_1 = 33$ for profit hospitals and $n_2 = 20$ nonprofit hospitals in a sample applied to the healthcare system in Puerto Rico. The sample is distributed as following: 38% of the sample corresponds to nonprofit hospitals and the remaining 62% to for profit hospitals. From this total, 30% corresponds to hospitals with fewer than 99 beds, 47% to hospitals with between 100-199 beds, and 23% to hospitals with more than 200 beds. We use the 100% of for profit and nonprofit hospitals registered to the AHD website. We did not use the government hospitals because the information in the directory was not updated and it was incomplete.

Panel data was used for the organization of the data. This technique provides us with very valid information following the hospital financial ratios over time and offers a more complete vision about the problem that guides us to best interpreting the dynamics of changes. We organize the data in an Excel Microsoft table with descriptive information about the sample of the 53 hospitals: their names, hospital type (profit or nonprofit), bed size, and each financial ratio obtained from AHD website organize by dimensions (liquidity, efficiency, capital structure, and profitability) and by years (2008-2012). We incorporated the financial ratio data into multiple tables, which undergo testing and evaluation of the statistical program SPSS.

The study involves similar samples from both groups of hospitals. To ensure that homogeneity, for profit and nonprofit hospitals were divided into three different groups or categories, based on their number of bed size (< 99, 100-199 and > 200 beds). These size categories are commonly used by national organizations in the US to classify hospitals for comparison, such as the Nationwide Inpatient Sample (NIS). According with the Agency of Healthcare Research and Quality (AHRQ) (2012), NIS is the largest publicly

available all-payer inpatient health care database in the United States. The sample of hospitals in the NIS is stratified on hospital size and weight to the American Hospital Association (AHA) universe to better represent the universe of hospitals. In AHA report, bed size refers to the number of beds the hospital is licensed to use (AHA, 2009). NIS estimates five hospital sampling strata, which are the following: (a) Geographic Region: Midwest, Northeast, West, and South; (b) Ownership: government, investor-owned (profit), and nonprofit nongovernment, (c) Location: urban and rural; (d) Teaching Status: teaching and non-teaching; and (e) Bed size: small, medium, and large, specific to the hospital's location and teaching status. Table 2 shows NIS bed size categories:

Table 2

Bed Size Categories

Location and Teaching Status	Bed Size		
	Small	Medium	Large
Rural	1-49	50-99	100+
Urban, nonteaching	1-99	100-199	200+
Urban, teaching	1-299	300-499	500+

Source: American Hospital Association (2009).

In Puerto Rico, according to the hospital profile data of the AHD, all the hospitals are listed as urban, nonteaching hospitals; therefore, we use the classification of the groups in accordance with NIS bed size categories: small (less than 99 beds), medium (100-199 beds), and large (more than 200 beds) (AHD, 2012).

In each hospital category (< 99, 100-199, and > 200 beds), by dimension, we compared a group of selected financial ratios of each type of hospital and validated them with the industry benchmark by the statistic tool of one sample t-test and established whether their difference is significantly lower, significantly higher or not significant. Econometrically, the setup is $y_{it} = a + bx_{it} + u_{it}$; where y_{it} is the dependent variable (financial performance), a is the intercept term, b is a $k \times 1$ vector of parameters to be estimated on

the explanatory variables, x_{it}; $t = 1$, T (2008-2012); $i = 1$, N (financial ratios); u_{it} refers to purely random error. Our study validates if the financial industry benchmark differs or not from a group of selected financial ratios of for profit and nonprofit hospitals, to determine whether or not their financial performance is efficient or inefficient in the healthcare system of Puerto Rico. The econometric model is related to the benchmark as:

Finaratio$_{it}$ = b_1 + b_2 bench$_{it}$ + a_{it} + year08$_i$ + ε_{it}
Finaratio = Financial ratios
Bench = Industry benchmarks
year08 = 2008, 09 if 2009, 10 if 2010, 11 if 2011, and 12 if 2012

The dependent variable in this study is a categorical variable, which is the financial performance divided into two mutually exclusive groups and coded with a value of 0 for efficient financial performance and a value of 1 for inefficient financial performance. According to Bhunia, Mukhuti, and Roy (2011), financial performance is defined as the act of conducting financial activity. In a broader sense, financial performance is the degree to which financial objectives have been achieved. It is the process of measuring the results of business policies and operations in monetary terms. It is used to measure the overall financial health of the firm for a certain period of time and can be used to compare similar businesses through the same industry or to compare different industries or sectors. An efficient financial performance refers to a degree to which financial activity meets the needs of the organization. Efficiency is a quantitative economic measure that defines the use of resources of the organization for a given level of customer satisfaction (Kaplan & Norton, 2001). An inefficient financial performance means, on the contrary, that the financial activity does not cover the needs of the organization.

For the evaluation of the five years (2008-2012), we used the financial benchmark prevailing in the industry for 2012 and corresponding to a group of generic benchmarks taken in the health-

care industry from several sources like the *Almanac of Hospital Financial & Operating Indicators 2014* (Optuminsight, 2014); *2012 Annual Global Corporate Default Study and Rating Transitions* (Vazza & Kraemer, 2012); *Becker's Hospital Review* (2012); and the Healthcare Financial Management Association (HFMA) (2012). Generic benchmarking is an effective tool used when an important process needs significant improvement and would benefit from some revolutionary ideas. It primarily focuses on the need for drastic process improvement regardless of the industry or organization you compare it with (Amerinet, 2013).

In this study, we are focused on validating whether the financial industry benchmark differs or not from a group of selected financial ratios of for profit and nonprofit hospitals, to determine if their financial performance is an efficient or inefficient one in the healthcare system of Puerto Rico. In each category of hospitals (< 99, 100-199, and > 200 beds), we compare whether or not the averages of the variables of the two types of hospitals are equivalent or significantly differ from the industry benchmark and establish whether or not the difference is significantly lower, significantly higher, or not so significant at all. To establish these differences, we use the following researcher criteria, as set forth in Table 3.

Table 3

Industry Benchmark Evaluation Criteria

Criteria	Description
Significantly Higher	The financial ratios exceed the industry benchmark by 50%.
Significantly Lower	The financial ratios are lower than industry benchmark by 50%
Not Significant	The financial ratios do not exceed the industry benchmark.

Source: Own elaboration.

These evaluation criteria are used based on Kelessidis (2000) studies, which point out that using the external benchmarking tool (industry benchmark), the organization may have the ability to compare their results with other organizations with global operations, as well as organizations included in its industrial sector. If external benchmarking results have scores above 50%, it means that the results were significantly higher than other companies worldwide and within their industry. In other words, this determines who were leading the comparative category; on the contrary, if the scores are less favorable than the external benchmarking or lower than 50%, this determines who are not the leaders in the comparative category (The Social Workplace, 2012).

The understanding of these comparisons provided the momentum necessary for the organization to make the needed improvements in the most critical areas in need of change. The desire of the organization is to remain competitive within the industry, to maintain turnover, and to ensure that key talent and experience is not lost.

The dependent variable is going to be measured as follows: we compare the 17 financial ratios, with the industry benchmark separated into the three categories (< 99, 100-199, and > 200 beds); then, we point out those that are greater or equal than the industry benchmark, taking in consideration the above criteria. Second, we point out those that were lower than the industry benchmark, also taking into consideration the above criteria. When all is identified, we calculate the percentage (of the total of 17 financial ratios) for the first group and the second group. This is going to be performed to for profit and nonprofit hospitals. The criterion used was: if 50% or more of the total of financial ratios are greater or equal than the industry benchmark this is classified as efficient performance. This means that the financial activity of the hospital meets the financial needs of the organization in comparison to the best in class of the industry. Otherwise, if fewer than 50% of the total financial ratios are greater or equal than the industry benchmark, this is classified as inefficient performance. This means that the financial activity of the hospital does not meet the financial needs of the organization in comparison to the best in class of the industry. The independent

variables are the 17 financial ratios classified by dimension and obtained from the AHD website, which is show in Table 4:

Table 4

Independent Variables

#	Variable Code	Description	Financial Dimension
1	CUR	Current Ratio	Liquidity
2	QKR	Quick Ratio	Liquidity
3	DCH	Days Cash on Hand	Liquidity
4	DCHAS	Days Cash on Hand All Sources	Liquidity
5	DNPAR	Days in Net Patient Account Receivables	Liquidity
6	DNTR	Days in Net Total Receivables	Liquidity
7	APP	Average Payment Period (days)	Efficiency
8	INT	Inventory Turnover	Efficiency
9	TAT	Total Assets Turnover	Efficiency
10	LDNA	Long Term Debt to Net Assets	Capital Structure
11	TDNA	Total Debt to Net Assets	Capital Structure
12	AAP	Average Age of Plant	Capital Structure
13	OPM	Operating Margin	Profitability
14	EXM	Excess Margin	Profitability
15	PEX	Personnel Expense as a Percent of Total Operating Revenue	Profitability
16	ROE	Return on Equity	Profitability
17	ROA	Return on Assets	Profitability

Source: Own elaboration.

We also take into consideration the criteria or the Expected Effect established by the HFMA (2012) when evaluating the financial ratios. Our study uses this evaluation metric because the HFMA is the most important organization in the United States, with more than 40,000 nationwide memberships. This organization builds and supports other healthcare associations and industry groups, to achieve consensus on the solutions needed for the challenges facing the healthcare system today. This association identifies gaps

throughout the healthcare system and is the bridge and link for the creation and exchange of knowledge and best practices in the system.

The HFMA regularly conducts extensive research on the finance healthcare industry through evaluations, survey, consultations, etc., in order to acquire information on the current state of the financial management of health and new trends in the field. We are confident that the Expected Effect Established by the HFMA (2012) used for the analysis is a representative metric and a reliable tool, to decide on what is efficient or inefficient in the healthcare system in this study. According to Pink, Holmes, Slifkin, and Thompson (2009), norms, standards, and assessments of financial ratios of the HFMA are updated regularly and the organization compiles data from 11 financial agencies with high prestige and reliability as: Standard & Poors, Fitch, Thomson Healthcare, Advantage Data Corp., INGENIX, and Premier, Inc. These standards of evaluation established by the HFMA are shown in Table 5:

Table 5

Expected Effect Established by the HFMA (2012)

Independent Variables-Financial Ratios Expected Effect (HFMA, 2012)			
#	Variable Code	Description	Expected Effect Greater Better (+) Lower Better (-)
1	CUR	Current Ratio	1.5 – 3.0
2	QKR	Quick Ratio	(+)
3	DCH	Days Cash on Hand	(+)
4	DCHAS	Days Cash on Hand All Sources	(+)
5	DNPAR	Days in Net Patient Account Receivables	40-50
6	DNTR	Days in Net Total Receivables	40-50
7	APP	Average Payment Period (days)	(-)
8	INT	Inventory Turnover	(+)
9	TAT	Total Assets Turnover	(+)
10	LDNA	Long Term Debt to Net Assets	(-)

11	TDNA	Total Debt to Net Assets	(-)
12	AAP	Average Age of Plant	(-)
13	OPM	Operating Margin	(+)
14	EXM	Excess Margin	(+)
15	PEX	Personnel Expense as a Percent of Total Operating Revenue	(-)
16	ROE	Return on Equity	(+)
17	ROA	Return on Assets	(+)

Source: HFMA (2012).

Before doing further regression analysis, we check the existence of multicollinearity for a perfect or exact linear relationship among all the explanatory variables of the regression model. In this study, the Variance Inflation Factor (VIF) index is used to determine whether a test result is reliable or not. In multiple regressions, according to Hair, Anderson, Tatham, & Black (1995), the variance inflation factor (VIF) is used as an indicator of multicollinearity and computationally; it is defined as the reciprocal of tolerance: $1 / (1 - R^2)$. All researchers want lower levels of VIF and it is known that higher levels of VIF affect the results associated with a multiple regression analysis adversely.

Various recommendations for acceptable levels of VIF have been published in the literature. Perhaps most commonly, a value of 10 has been recommended as the maximum level of VIF (Hair, Anderson, Tatham, & Black, 1995; Kennedy, 1992; Marquardt, 1970; Neter, Wasserman, & Kutner, 1989); however, a recommended maximum VIF value of 5 (Rogerson, 2001) and even 4 (Pan & Jackson, 2008) can be found in the literature. It would appear that researchers can use whichever criterion they wish to help serve their own purposes. In this study, we performed the test of multicollinearity with the standardized predictors, and the results of the VIFs are down to an acceptable range of 10.

Parametric tests were deemed appropriated in this study because they are methods that make assumptions about the parameters (defining properties) of the population distributions from which one's

data are drawn. We performed statistic tests for the data by using the one sample t-test that allowed us to validate the industry benchmark, with the selected financial ratios of for profit and nonprofit hospitals, and to know which one significantly differs in their financial performance from the other. Also, to confirm the results from extreme data, we use the independent t-test to reinforce if the null hypothesis holds, and to compare the two independent groups (nonprofit versus for profit hospitals).

In previous studies as Bayney (2005), Collins-Fulea, Mohr, and Tillett (2005), Ellershaw, Gambles, and McGlinchey (2008), Meissner, Mescha, Rothaug, Zwacka, Gottermann, Ulrich, and Schleppers (2008) they do not validate or compare the industry benchmark with financial ratios. To date, no systematic investigation has considered this perspective; our study is the first to evaluate this combination of ratios, dimension and industry benchmark.

Results

Results by Financial Dimensions

Given the nested nature of our data, we tested our hypothesis by using the one sample t-test, with the key advantage that this test allowed us to compare and validate whether the financial industry benchmark differs or not from the selected financial ratios of for profit and nonprofit hospitals, and to determine whether their financial performance is an efficient or inefficient one in the healthcare system of Puerto Rico.

Since our data are divided into two types of hospitals (for profit and nonprofit hospitals), three categories of hospitals by bed size (< 99, 100-199, and > 200 beds), and by financial dimensions, we tested the null hypothesis considering these three elements.

Table 6 provides the descriptive statistics and results of the financial ratios using the one sample t-test, to validate the industry benchmark in the three categories of for profit and nonprofit hospitals (< 99, 100-199, > 200 beds), in the dimension of liquidity. To test our hypothesis, we ran an analysis in all the control variables belonging to this dimension.

In the results, it is important to point out that the financial ratios of Days in Net Patient Account Receivable (DNPAR), for profit hospitals in the three categories of beds have significant differences with the industry benchmark. As we see in Table 6, the financial ratios of < 99 beds (M = 98.02, p = .008), between 100-199 beds (M = 113.30, p = .000) and > 200 beds (M = 68.42, p = .011) get a significance level (2-tailed) of less than 0.05. They were greater than the industry benchmark that was 45.02. According to the proposed hypothesis, the financial performance for these financial ratios differ significantly from the industry benchmark; thus, we rejected the null hypothesis.

Nonprofit hospitals also have a comparable situation with for profit hospitals. In the three categories of beds, the average for < 99 beds (M = 118.3, p = .017), between 100-199 beds (M = 113.3, p = .000), and > 200 beds (M = 106.82, p = .026) gets a significance level (2-tailed) of less than 0.05. The financial ratios were greater than the industry benchmark (45.02). According to the proposed hypothesis, the financial performance for these financial ratios differs significantly from the industry benchmark; thus, we rejected the null hypothesis.

Other ratio with similar results was Days in Net Total Receivables (DNTR). For profit hospitals in the three categories, the financial ratios for < 99 beds (M = 109.2, p = .008), between 100-199 beds (M = 134.69, p = .014), and > 200 beds (M = 76.17, p = .005) get a significance level (2-tailed) of less than 0.05. They were greater than the industry benchmark, which was 50.80. According to the proposed hypothesis the financial performance for these financial ratios differs significantly from the industry benchmark, so we rejected the null hypothesis. Nonprofit hospitals also have the similar situation than for profit hospitals. The financial ratios for < 99 beds (M = 123.3, p = .021), between 100-199 beds (M = 88.86, p = .010), and > 200 beds (M = 125.16, p = .011) get a significance level (2-tailed) less than 0.05. They were greater than the industry benchmark, which was 50.80. Concurring with the proposed hypothesis the financial performance for these financial ratios differs significantly from the industry benchmark, so we rejected the null hypothesis.

The most significant impact of these results was in the category of hospitals between 100-199 beds, because the result shows that all financial ratios to for profit hospitals differ significantly from the industry benchmark. They were lower than the benchmark for the industry (p < .05), which the study suggests in the liquidity dimension, for profit hospitals between 100-199 beds have no liquidity or they have very poor.

Table 6

Dimension of Liquidity-Comparison Between the Average of Ratios and the Industry Benchmark, for Profit and Nonprofit Hospitals

	Liquidity		< 99 Beds				100-199 Beds				>200 Beds			
	Ratios	Industry Bench-mark	FP n = 10	Sig	NFP n = 6	Sig	FP n = 16	Sig	NFP n = 9	Sig	FP n = 7	Sig	NFP n = 5	Sig
1	CUR	2.15	2.84	0.495	2.61	0.687	1.42	.000*	1.88	.0376	3.94	0.518	1.28	.027*
2	QKR	1.65	2.72	0.293	2.48	0.474	1.32	.047*	1.77	.651	3.91	0.421	1.24	151
3	DCH	30.5	34.48	0.915	30.13	0.983	15.16	.002*	35.76	.471	25.12	0.568	10.74	.010*
4	DCHAS	93.8	228.01	0.487	32.73	.018*	33.35	.004*	41.13	.000*	34.77	.008*	12.14	.000*
5	DNPAR	45.02	98.02	.008*	118.3	.017*	113.30	.000*	80.45	.000*	68.42	.011*	106.82	.026*
6	DNTR	50.8	109.2	.008*	123.3	.021*	134.69	.014*	88.86	.000*	76.17	.005*	125.16	.011*

Note. * = p < .05, FP = for profit hospital, NFP = nonprofit hospitals.
Source: Own elaboration.

Table 7 provides the descriptive statistics and results of the financial ratios using the one sample t-test, to validate the industry benchmark in the three categories of for profit and nonprofit hospitals, in the dimension of efficiency. To test our hypothesis, we ran an analysis in all the control variables belonging to this dimension.

As we see in Table 7, in the dimension of efficiency, the majority of the financial ratios in all the categories gets a significance level (2-tailed) greater than 0.05; therefore, the financial performance in these ratios does not differ significantly from the industry benchmark. The exception was in the financial ratio of Inventory Turn Over (INT) of for profit hospitals. As we see in Table 7, the financial ratios of < 99 beds (M = 86.2, p = .021), between 100-199 beds (M = 48.87, p = .016), and > 200 beds (M = 84.37, p = .049) get a significance level (2-tailed) of less than 0.05. They were greater

than the industry benchmark, which were 28.72. Concurring with the proposed hypothesis, the financial performance for these financial ratios differs significantly from the industry benchmark; consequently, we rejected the null hypothesis.

Table 7

Dimension of Efficiency-Comparison Between the Average of Ratios and the Industry Benchmark, for Profit and Nonprofit Hospitals

	Efficiency		< 99 Beds				100-199 Beds				> 200 Beds			
	Ratios	Industry Bench-mark	FP n=10	Sig	NFP n=6	Sig	FP n=16	Sig	NFP n=9	Sig	FP n=7	Sig	NFP n=5	Sig
1	APP	51.8	75.8	0.151	175.7	0.095	97.44	.032*	119.9	0.332	89.51	0.118	139.72	0.056
2	INT	28.72	86.2	.021*	64.2	0.175	48.87	.016*	75.13	.017*	84.37	.049*	70.72	0.062
3	TAT	1.00	0.96	0.889	1.15	0.535	1.04	0.645	1.28	0.105	1.87	0.156	1.9	.025*

Note. * = p <.05, FP = for profit hospital, NFP = nonprofit hospitals
Source: Own elaboration.

Table 8 provides the descriptive statistics and results of the financial ratios using the one sample t-test, to validate the industry benchmark in the three categories of for profit and nonprofit hospitals, in the dimension of capital structure. To test our hypothesis, we ran an analysis in all the control variables belonging to this dimension.

As we see in the results in Table 8, the majority of the financial ratios in all the categories gets a significance level (2-tailed) greater than 0.05; therefore, the financial performance in these ratios does not differ significantly from the industry benchmark. The exception in the financial ratio of Total Debt to Net Assets (TDNA) in nonprofit hospitals was fewer than 99 beds (M = –4.24, P = .036, benchmark 3.02) and for profit hospitals was fewer than 99 beds (M = .886, p = .016, benchmark 3.02), Long Term to Net Assets (LDNA) for profit hospital more than 200 beds (M = 2.07, p = .052, benchmark .03) and Average Age of Plant (AAP) in for profit hospitals for more than 200 beds (M = 4.38, p = .047, benchmark 10.2). All these ratios get a significance level (2-tailed) of less than 0.05; so, concurring with the proposed hypothesis, we reject the null hypothesis, because the financial performance differs significantly from the industry benchmark.

Table 8

Dimension of Capital Structure-Comparison Between the Average of Ratios and the Industry Benchmark, for Profit and Nonprofit Hospitals

	Capital Structure		< 99 BEDS				100-199 BEDS				>200 BEDS			
	Ratios	Industry Bench-mark	FP n=10	Sig	NFP n=6	Sig	FP n = 16	Sig	NFP n = 9	Sig	FP n = 7	Sig	NFP n = 5	Sig
1	LDNA	0.3	1.06	0.158	-2.46	0.143	0.473	0.798	9.69	0.221	2.07	.052*	-5.98	0.153
2	TDNA	3.02	0.886	.016*	-4.24	.036*	2.91	0.376	12.99	0.06	3.27	0.766	-2.15	0.35
3	AAP	10.2	14.13	0.443	-2.01	0.252	12.35	0.133	13.4	0.299	4.38	.047*	10.62	0.91

Note. * = p < .05, FP = for profit hospital, NFP = nonprofit hospitals
Source: Own elaboration.

Table 9 provides us the descriptive statistics and results of the financial ratios, using the one sample t-test to validate the industry benchmark in the three categories of profit and nonprofit hospitals in the dimension of profitability. To test our hypothesis, we ran an analysis in all the control variables belonging to this dimension.

As we see in the analysis, the results show that in the profitability dimension the majority of the financial ratios in all the categories get a significance level (2-tailed) greater than 0.05; therefore, the financial performance in these ratios does not differ significantly from the industry benchmark. The exception was in the financial ratio of Operating Margin (OPM) in nonprofit hospitals for the three categories of beds where the financial ratio for < 99 beds (M = –10.46, p = .042), between 100-199 beds (M = –2.02, p = .004), and > 200 beds (M = –5.78, p = .022) gets a significance level (2-tailed) of less than 0.05. The values were in negative numbers and the industry benchmark was a positive number of 2.64. These were lower than the industry benchmark and the difference is significant. According to the proposed hypothesis; thus, we rejected the null hypothesis.

Personnel expense as a Percent of Total Operating Revenue (PEX) in nonprofit hospitals gets a significance level (2-tailed) of less than 0.05 in the three categories of hospitals (< 99, M = 39.6, p = .007, 100-199, M = 40.9, p = .000, and > 200 beds, M = 42.18, p = .001); the industry benchmark was 57.5; so, the financial perfor-

mance for these financial ratios differs significantly from the industry benchmark. The PEX also was less than 0.05 in the categories of hospitals between 100 to 199 beds (M = 39.16, p = .000) and more than 200 beds (m = 38.28, p = .000) for profit hospitals; the industry benchmark was 57.5; so, they differ significantly from the industry benchmark which leads us to reject the null hypothesis.

Table 9

Dimension of Profitability-Comparison Between the Average Ratios and the Industry Benchmark, for Profit and Nonprofit Hospitals

	Profitability		< 99 Beds				100-199 Beds				> 200 Beds			
	Ratios	Industry Bench-mark	FP n=10	Sig	NFP n=6	Sig	FP n=16)	Sig	NFP n =9	Sig	FP n=7	Sig	NFP n=5	Sig
1	OPM	2.64	-0.87	0.731	-10.46	.042*	-1.96	0.218	-2.02	.004*	2.7	0.949	-5.78	.022*
2	EXM	3.82	1.4	0.79	-3.83	0.155	2.01	0.572	2.72	0.493	3.88	0.942	-1.32	0.127
3	PEX	57.5	43.76	0.083	39.6	.007*	39.16	.000*	40.9	.000*	38.28	.000*	42.18	.001*
4	ROE	5.7	-1.86	0.834	31.2	0.314	17.42	0.587	-42.38	0.513	21.02	0.124	-38.56	0.397
5	ROA	4.3	3.2	0.87	-5.11	0.244	5.33	0.633	3.74	0.815	9.09	0.356	-0.54	0.094

Note. * = p < .05, FP = for profit hospital, NFP = nonprofit hospitals
Source: Own elaboration.

Results From Independent Two Sample T-Test

An independent two samples t-test was conducted to compare for profit and nonprofit hospitals. The results show that there are no significant differences between for profit and nonprofit hospital with fewer than 99 beds and between 100-199 beds for all the 17 financial ratios tested. In the sample of hospitals with more than 200 beds only the financial ratio of DNTR statistically shows significant differences between for profit and nonprofit hospitals. Since p value (Sig. 2 tailed) = 0.037 < 0.05 we reject the null hypothesis because they were less than the industry benchmark. This result probably suggests that both types of hospitals are facing serious problems in their account receivable.

Results and Analysis by Years 2008-2012

Hospitals with less than 99 beds. The results show that for the years: 2008, 2011, and 2012, more than 60% of financial ratios of for profit hospitals, statistically were greater than or equal to the industry benchmark; however, more than the 60% of the financial ratios of nonprofit hospital were statistically greater than or equal to the industry benchmark for the years 2010, 2012, and for the average as well. The results show that only for the year of 2010, 33% of the financial ratios on for profit hospitals were statistically greater than or equal to the industry benchmark. These results suggest that for the years 2008, 2009, 2011, 2012, and the average, the financial performance of both types of hospitals was efficient because, when we validate with the industry benchmark, they were greater than or equal to the industry, except for the year 2010 that the percentage was lower.

Hospitals with 100-199 beds. The results show that for the years 2008 to 2012 and the average, more than 60% of the financial ratios between the two types of hospitals were statistically greater than or equal to the industry benchmarks. These results suggest that for the years 2008 to 2012 and the average, the financial performance of both types of hospitals was efficient because the validation with the industry benchmark was to be greater than or equal to the best in class of the industry.

Hospitals with more than 200 beds. The results show that for the years 2008 to 2012 and the average, 6% to 35% of the financial ratios of both types of hospitals were greater than or equal to the industry benchmark. These results suggest that the financial performance of both types of hospitals was inefficient when we compare or validate it with the industry benchmark. They were lower than the industry.

Discussion

The results of all the 17 financial ratios validated between the Expected Effect of HFMA (2012) and the industry benchmark for profit and nonprofit hospitals with fewer than 99 beds imply some areas of

concern. First, as we have mentioned before, financial ratios related to the collection of receivables as Days in Net Patient Accounts Receivables and Days in Net Total Receivables suggest being inefficient when we validated them with the industry benchmark. They were lower than the industry benchmark, lower than the "best in class" for the sector of health care. This means that both types of hospitals are facing serious problems in their accounts receivables, because they exceed the expected standards set by the HFMA for 2012 of an ideal collection period of 40-50 days. This result suggests that the solvency of both hospitals is poor and possibly the assets of the companies may be claimed by creditors, plus a high risk in the operation, and they could have difficulty obtaining loans for new projects.

The matter of interest in the results of hospitals between 100-199 beds is that 8 of the 17 financial ratios (47%), of for profit hospitals, and 9 of the 17 financial ratios (41%), of nonprofit hospital, suggest being inefficient when we compare them with the industry benchmark. They were lower than the industry benchmark. The results suggest that in this category the ability to pay or to meet the commitments in the short term obligations is inefficient compared to the industry benchmark. These results imply that for profit hospitals between 100-199 beds have no liquidity or they have a very poor one. This suggests that for profit hospitals do not have enough resources to pay its debts in the next 12 months, they cannot meet their obligations without relying too much of their inventory, they do not have a reasonable amount of days to pay their operating costs in cash if none of the receivables are collected, and they have serious problems to efficiently collect their accounts receivables.

Finally, the results of hospitals with more than 200 beds were similar to those of hospitals between 100-199 beds. In this category, 7 of the 17 financial ratios (41%) of for profit hospitals and 8 of the 17 financial ratios (47%) of nonprofit hospital suggest being inefficient when we validate them with the industry benchmark. They were lower than the industry benchmark. This implies that in this category the managers need to make adjustments in their finances for the better use of their physical assets to generate earnings in the companies. For the category of hospitals between 100-199 beds

and 200 beds, in both types of hospitals, the results in the financial ratio of PEX suggest being inefficient when we validate them with the industry benchmark. They were lower than the industry benchmark. This is the financial ratio that measures the value of expenses related to personnel, salaries, benefits, and payroll, similar training and social charges incurred by the organization. It implies that it is possible that both types of hospitals have problems with high payroll costs in their organizations.

The results with the financial ratio of Operating Margin for the three categories of nonprofit hospitals suggest being inefficient when we validate them with the industry benchmark. These were lower than the industry benchmark. In the three categories of hospitals bed size (< 99, 100-199, and > 200 beds), all financial ratios were negative, possibly implying that hospitals in this category have experienced money loss.

Theoretical Implications

This study validates 17 selected financial ratios, from audited statement of for profit and nonprofit hospitals registered in the AHD with the industry benchmark of the healthcare system. The study improves the understandings, with valuable information to the healthcare system, about the financial performance of for profit and nonprofit hospitals in Puerto Rico. The analysis of the financial ratios of the nonprofit hospitals with the industry benchmark suggests that the nonprofit hospitals have serious collection problems with their accounts receivables, significant pressure on cash flow, difficulties to pay their short-term obligations, and poor inventory turnover, which probably could be symptoms of excess in inventories, slow-moving of goods, or obsolete inventories. Also, they have difficulty paying their creditors, and are having problems with high payroll costs in their organizations. With for profit hospitals there was no exception, but in minor scale.

Managerial Implications

Benchmarking allows the managers of the company to determine the best practices to prioritize improvements in their oppor-

tunities. It also helps to improve performance on the patient's expectations, and to go through the traditional cycle of change. It also helps managers understand the most accurate and efficient means of carrying out an activity, to learn how to actually achieve lower costs and take steps to improve cost competitiveness in a company.

According to Sower (2007), benchmarking is not a tool to copy what other successful organizations are doing; this implies not only a better understanding of what they are doing to be successful, but also what is there to do to achieve their goals and objectives. The top management with this tool can understand that the financial improvement efforts and progress can be monitored over time, to determine whether the measures taken are effective and close all the gaps between the performance of a hospital and the industry benchmark or not. The management can take that information and apply it to their organizations, to determine how to achieve comparable results for internal and external conditions. Benchmarking helps the top managers of the organization to understand where there are strengths and weaknesses. The tool helps them realize how to enable the organization to reach the level of performance and how they can still improve (Camp, 1989; Zairi, 1992; Smith, Ritter, &Tuggle, 1993; Rogers, Daugherty, & Stank, 1995).

Limitations and Future Research

The above results must be viewed in the light of the study's limitations, which offer potentially fruitful avenues for future research on benchmarking. One important limitation this study presents is that benchmarking has simply helped spot areas which need improvement; it does not contribute to solving the issues in hand. Benchmarking can just be the first of many steps to improve a company's performance. Another limitation is that benchmarking is considered to be an ongoing process; it does not mean that once a company has set a benchmark, it would never have to set the benchmark again in the future; therefore, it is important to keep benchmarking updated and according to the market situation.

Other limitation is that there are different financial benchmarks to for profits and nonprofits in the same healthcare industry, and may even be different financial benchmarks for different categories or volume of beds in the industry. We use generic financial benchmarks in this study based on the premise that Nicholson, Pauly, Burns, Baumritter, and Asch (2000) affirm that for profit hospitals are a valid benchmark for the nonprofit hospital, because they are both subject to the same business conditions. Also, Horak (2014) states that both, for profit and nonprofit hospitals, operate profitably. Nonprofits hospitals must still operate profitably; their revenue must exceed expenses or they will go out of business. Both types of hospitals generally face the same economic and regulatory conditions; and, when prudent, both must manage and sometimes reduce expenses, including personnel costs. Generic benchmarking is the best tool used when an important process needs significant improvement and would benefit from some revolutionary ideas. It primarily focuses on the need for drastic process improvement regardless of the industry or organization you compare it with (Amerinet, 2013). Our primary interest is to focus, confirm, and validate it with the industry benchmark, if the financial performance of for profit and nonprofit hospitals in Puerto Rico are at the same financial position level with the best companies in the same industry.

Finally, future research might be to reconfirm the results with a qualitative research, ensuring that benchmarking on the healthcare system meets its goal, mainly to improve the financial performance in the hospital system. Another area to study is the internal benchmarking, comparing one operating unit or function with another within the same industry.

Conclusion

This article describes the method and results of the validation of 17 selected financial ratios affiliated to the ADH with the industry benchmark. We conducted a quantitative study with a sample of 53 hospitals, 20 nonprofit and 33 for profit hospitals, to test the hypothesis whether in Puerto Rico, the financial performance of

for profit hospitals does not differ or significantly differs from the industry benchmark among the dimensions of liquidity, efficiency, capital structure, and profitability compared to nonprofit hospitals. When this study takes these results into a general consideration with all the analysis, not by dimensions, 53% or more of the 17 financial selected ratios globally compared suggest being efficient in both types of hospitals, when we validate them with the industry benchmark; this means that these financial ratios were greater than or equal to the industry benchmark.

Based on these results and according to the proposed hypothesis, we retained the null hypothesis and conclude that, in Puerto Rico, the financial performance of for profit hospitals does not significantly differ from the benchmark for the industry among the dimensions of liquidity, efficiency, capital structure, and profitability compared to nonprofit hospitals.

When we made the comparative analysis considering the financial dimensions and the different categories of hospitals there are significant differences; especially in the category of 100-199 beds, the study implies the fact that both types of hospitals are facing serious problems in their accounts receivables. Accounts receivables are one of the most important assets for the company. Our study suggests that the tool of benchmarking is a key component and a valuable technique, for quickly lifting the financial performance of the organization and to push the boundaries to best practices. A good analysis of the financial situation through benchmarking provides opportunities of learning from the best practices and experiences of others who are at the leading edge.

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