Hospital Cost Accounting: Saving Lives and Saving on Costs

The Honors Program
Senior Capstone Project
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Abstract

Within an industry constantly pursuing accuracy, a cost accounting system that addresses the ongoing concerns of saving money and increasing efficiency is a must. Now more than ever, hospitals require reliable information to combat the conflicting relationship between an increase in spending on new instruments and specialized staff, but a decrease in funding. This project explores potential avenues to find a successful cost accounting method using past research, analysis of hospitals' current environments, and expert opinions from hospital and healthcare personnel. Each hospital is different based on their environment, surrounding population, type of services provided, and personal demands. This study seeks to contribute to previous studies attempting to debunk the navigation process for each hospital looking to find their cost accounting perfect match and where sights should be set on in the future.

Introduction

I decided to do this project because of my curiosity in the field. It all started from constantly hearing about issues and advancements in the medical field and wanting to learn more. Medical shows have flooded television time and news is constantly stirring about what is to come of our medical fields. I was able to take a statistics class dealing with hospital raw data as well as watching plenty of medical television shows and became more familiar with the industry. The political climate of healthcare began to shift during this time with Obamacare's implementation just years before and the current president's active pursuit to alter this act. Regardless of political stance, an industry subject to so much change becomes weakened and demands attention. Additionally, in recent years in Connecticut's government, funding has been drastically cut in response to the state's financial position as they slipped more and more into a

state of financial constraint. While all of this decline is occurring, there is also a consistent increase in desire for better outcomes. Successful medical outcomes over the past years have significantly increased. There remains a constant push to continue this trend into perfection by advancing technology. However, more advanced technology leads to a demand for highly specialized labor to operate such technology. The original plan was to create a hospital budget for a specific hospital in Connecticut that combats both the changing industry and declining governmental funding.

As I began to learn more and more about the medical field, I learned that many moving parts factor into creating a hospital budget. It soon became apart when learning the main areas of a company's business that this industry operated in a completely different fashion than other industries. For one, the main point of the business is different. Most businesses are constructed out of and continue to operate based on a desire to gain profits. However, the medical field is constructed out of necessity and moves forward in the industry based on the desire to give consistently better quality service. The target market of this business is based primarily on vicinity to the hospital. Yet, at the same time, people are still willing to drive further distances to achieve better medical assistance. Each hospital provides specialized services, each like a fingerprint. From the outside, they each may look the same, but when you look deeper within, they all provide different services, are teaching hospitals, specialize in research and development, contain clinics, etc. Each of which requires separate financial analysis prior to constructing a holistic budget for the hospital in question. For these reasons, I felt that understanding how to include all these separate characteristics into one cost accounting method would be more worthwhile.

Purpose

Funding for hospitals have been significantly cut, leaving hospitals less profitable and making it harder to continuously give the highest quality of care to all patients. Developing a cost accounting system for the hospital to use would combat this continuing decline of government funding received. I plan to answer the question of where to draw the line between cost and service for various hospitals, depending on their characteristics. Each hospital is different in terms of location, hospital output, and services offered. For this reason, I will be focusing on the broad perspective of main signifying factors that could help determine a cost accounting match for each entity. The plan I will create will set a strong foundation for other hospitals to apply to their own market characteristics. Analysis on saving costs will be specifically focusing on savings based upon staffing. Data will be analyzed and interviews conducted to answer the question of how to become more efficient and thus save money. I hypothesize that cost saving measures will be found in this area, but will be challenging to implement. The procedures will need to be flexible for emergency cases. Research will need to be done after data collection to accurately put these findings into numbers that work for both the cost accounting method and the flexibility staff need.

The resounding issue that most hospitals face is cost versus quality of service. It is important for a hospital to remain financially viable, as it is still a business, but also important to be able to give the patient good care. Arguments have been long standing about the degree to which additional tests and services remain relevant to the betterment of the patient as well as the

hospital. Unnecessary tests incur extra costs to the hospital, but what if maybe that one in thirty extra tests done would save a life?

The reason so many people have analyzed this question is because there is a high level of importance on either side. The level of quality cannot be compromised because there are human lives on the line. At the same time, many hospitals are not flexible enough to incur additional costs for testing. Hospitals must be wary of remaining viable in order to maintain functionality. Maintaining both varies by hospital, but is always necessary to fully understand. Even nonprofit hospitals have to maintain a budget to ensure it is breaking even. Investors need to see that the hospital is breaking even, covering all costs that are incurred, but also not making too much profit. Research thus far has analyzed many avenues to save on costs and maintain quality, but no clear solution has been found. My research will continue to add to existing research in hopes of narrowing ideas of how best to tackle this problem.

The purpose of my capstone is to contribute to preexisting research on the relevance of cost accounting in hospitals and, more specifically, what methods should be used. An understanding of daily operations in any business is necessary. Cost accounting methods enable a company to more accurately finance these daily operations for productive and predictive purposes. Thus, the question being asked directly is: Is a complex cost accounting system needed in hospitals? If so, what is the best type to implement?

What is Cost Accounting?

Cost accounting is the process of classifying and predicting costs that are incurred by the organization (Carroll & Lord, 2016). Costs can be evaluated on an organizational or a

departmental level. Methods utilized evolve over time in response to the ever moving industry. All of these methods are useful, each pertaining to certain measures of financial performance. Some focus on methodologies such as cost capture or capturing financial and non-financial measures. Cost accounting, overall, enables management to properly budget, improve margins, and establish cost control systems. All of these put the company in an attractive financial position for future periods.

Cost drivers

Cost accounting methods assign a cost driver to each direct cost in hopes of standardizing the cost accounting system. Cost drivers are the unit measurement of any activity that causes a change in cost of the activity (Hartgraves & Morse, 2018). The driver should show a strong relationship to the activity in question. Assigning cost drivers accurately is one of the most important phases each cost measurement method must pass through. As the cost driver activity changes, there is a change in the cost of the activity. Some common cost drivers used in practice are number of patients, direct labor hours, number of beds occupied, and square footage.

Cost drivers come in multiple different variations. There are organizational, structural, and activity cost drivers. Organizational cost drivers are structural and executional factors that determine the long-term cost structure of an organization (Hansen & Mowen, 2008). Structural cost drivers look at the size and scope of operations and technologies. Lastly, activity cost drivers are specific units of work or activities performed to serve customer needs that consume costly resources.

Systems in place currently

Cost accounting is already being used within the medical field, but in many different forms. Yet, sophisticated cost accounting systems are not commonly used because of the inverse pull from a high cost to implement in the hospital industry and minimal benefits of service-level cost information gained. In search of a cost accounting method that balances this relationship, various systems have already been used in the field.

Traditional Costing

Traditional costing allocates overhead using a predetermined cost driver or percentage rate. This approach is used a lot because of the minimal financial investment required and time from management. It remains easy to understand and can be applied right away. However, this costing system does not consider the allocation of costs differently between product (or service) lines. As a whole entity, costs seem more accurate, but on a product or service line basis, this poses the threat of inaccurate and almost unrealistic numbers in some cases.

Activity Based Costing

Activity based costing focuses on the belief that all activities are done so supporting the production and delivery of goods or services and all indirect costs can be traced and allocated to individual products or services. More so than traditional, activity-based costing gives a stronger

understanding of product lines and focuses heavily on firm performance and improvement. This being said, activity based costing can be resource intensive and the selection of cost drivers can often times be subjective (Carroll & Lord, 2016). Finding a cost driver that directly relates to the increase and decrease of cost in a department is often not a simple choice. Rather, a company must choose the best fit given the time and resources available.

Time-Driven Activity Based Costing

Time-driven activity based costing uses time as the cost driver for analyzing and evaluating costs. Time-driven is quite simple with only one cost driver and alleviates subjective influences from human decision out of the equation. Being so simplistic in nature, there are many areas that time-driven does not include and thus management could potentially pass over (Keel, Savage, Rafiq & Mazzocato, 2017).

Performance-focused Activity Based Costing

Performance-focused activity based costing combines the aspects of TDABC with ABC. This method can assess certain resources from many different angles and takes qualitative assessments into account as well. These qualitative measures may include interviews or surveys, for example. Volume and price variances are calculated as well which can quickly signal any changes over periods of time (Carroll & Lord, 2016).

Others

Used only in the health care industry, is the ratio of costs to charges. Each year the Medicare Cost Reports are produced. Within these, is information that many hospitals use to produce departmental level ratio of costs. Rates are then applied using the traditional costing method to allocate costs to departments in hopes of estimating costs for each department. The problem: it is very inaccurate. Medicare makes up just one of many third-party payers active in the industry. Being a government agency, fees paid to the hospital are actually much less from Medicaid than private third-parties (Carroll & Lord, 2016). This an inaccurate way to predict money coming in.

Literature Review

Introduction

Hospitals have a unique market and business strategy. More market power is felt in the hospital industry than many other industries due to the constant need for immediate action. Business strategies revolve around this power and the vast departments and variables to consider. Hospitals do not just treat patients. Hospitals teach, conduct research, and heavily rely on operations management to ensure services are running smoothly at all times. Simple slip-ups can cost someone their life so quality is crucial to maintain. All these variables to consider and the inability to fully estimate all costs the hospital will incur causes researchers to argue over the best plan to implement. This literature review will discuss the studies previously conducted and how they help explain both the market and how to approach an individualized hospital business plan on saving costs.

Background

A hospital is defined as a multi-product firm that contains sectors on education, research, community services, outpatient care, and inpatient care (Lave & Lave, 1970). For this reason, it is quite challenging to determine the best process to lower costs and from what department. Most studies done have all concluded that there is indeed a correlation between changes in quality of service and changes in costs, a key understanding when introduced in any theory now (Jarrett, 1981). This, however, remains one of the only agreed upon findings in studies done. Stone and Walker (1995) argue the need for a cost-effective analysis to be done. A cost-effective analysis looks into both costs and the consequences of health programs and treatments on any actions taken, rather than just looking into only relevant values and monetary impacts in a cost-benefit analysis. They are intended to include extensive angles of evidence such as effectiveness, tolerability, harm, quality of life, health service delivery issues, and costs (Lapsley, 2007). A decision analysis, made known by Raiffia at Harvard Business School, conducts an economic evaluation of alternative health care programs as a style of a cost-effective analysis regularly implemented using a technology called SMLTREE (Stone & Walker, 1995). In comparison, the hedonic cost function has been used. The hedonic cost function is a hospital cost function relating the costs per unit of outcome against individual variables that describe quality of output (Jarrett, 1981). All theories understand that determining costs is always on a hospital-by-hospital basis allowing many different theories to work best for various hospitals.

Determining a distinct way to estimate costs and finding alternative routes to save on hospital costs is an ongoing issue. Factors going into these two determinants consistently shift. A very important measurement to include as well is demand uncertainty. Each department in a hospital has different demand based on whether it is a specialized hospital having people coming

from much farther away to attend, the procedures needed for each, and how common the medical issue is among the public. These demands can also have seasonal fluctuations (Kao & Queyranne, 1985). Before estimating cost, an analysis of supply versus demand would estimate expected patient numbers. The regulatory environment dictating hospital practices has always changed ways of looking into and tackling this issue. For instance, in 1983, Medicare began paying a flat fee based on patient diagnoses which vastly changed the way hospitals would adjust earnings to maintain its estimated expenses. Contractual adjustments, the estimated difference between amounts billed and amounts received under contractual agreements with third party payers, went from being manipulated based mainly on shortfalls in reimbursements to being based on billings versus Medicare reimbursements (Eldenburg & Soderstrom, 1996). Not only did this regulation change, but the government, in response, had to shift the approach to combating the manipulation of hospital data. The system of care has shifted as well to becoming more focused on outcomes than ever before (Michelson, 2014). In 2016, Hartford Hospital recognized this need for positive outcomes and has participated in hundreds of medical research studies designed to test, improve, and advance new drugs, devices, and methods of treatment that save and better people's lives ("Hartford Hospital", 2017). Quality of staff is thus increasing as well, yet, the age of physicians and doctors steadily increases with one in three in 2016 over 65 years old (Boyd, 2016). Thus demand will soon exceed supply for the main element of care for patients making it harder to remain competitive. Understanding that doctors and nurses are the most important factor in health care provided to patients, hospitals have begun to focus on different areas for cost cutting. Highly trained staff members are a quality many hospitals are unwilling to change just to save some money. Increased technology requires increased use of specialized labor so demand for trained staff has actually increased. Researchers have started to

look more into cost saving through drugs in the last two decades. In 2000, hospital CEOs said "drugs offered the single greatest opportunity for cost savings" ("ASHP Guidelines", 2014). Estimated drug use can be projected in financial budgeting for the year. Hospitals can then look back at these projections using statistics to find where the surplus is or where the shortages are for drug use within the hospital. Consistently refining the budget to fit the hospital specific care needs can help to reduce the amount ordered that merely sit in the cabinets. The Pareto Principle, 80/20 rule, helped researchers find this opportunity since 80% of a hospital's budget account for only around 20% of the drugs ("ASHP Guidelines", 2014). "ASHP Guidelines" also explains that discounted prices when purchasing pharmaceuticals is also possible through GPO contracts, facility contracts, and wholesaler own-use contracts (2014).

Review

Just like in any business venture, defining the market is a vastly important part of hospital business. However, what makes hospitals different is the market power they all contain. Many patients have little to no choice on hospital to attend in times of emergencies. Less choice results in less variables going into the market definition for each hospital. Tay explains that defining a hospital market is of the utmost importance to understand how best to operate the business. Her market definition is a mixture of two components: location and quality (Tay, 2003). These two elements are interchangeable. Patients are more likely to attend hospitals closer to their homes, but also willing to drive slightly further for better quality of care. Too far and the patient is almost not willing to go to the hospital unless a specific procedure is required. Patients want higher qualities of service and are willing to drive longer distance even if it means incurring higher costs. However, age changes this theme. Elderly patients are more confined to their

homes and thus more likely to experience emergencies there rather than younger people, who are more likely to experience them while away from home (Tay, 2003).

Needless to say, understanding the elements that a hospital can change to attract more customers and to save money is also important. Profit and non-profit hospitals both have incentives to save on costs, but have different ranges for costs. In 2015, hospital adjusted expenses per inpatient day was conducted by Ayla Ellison and shows that the United States average inpatient costs were quite different for profit versus nonprofit hospitals. Nonprofit hospitals, on average, obtained $2,413 per inpatient day while for-profit hospitals incurred $1,831 each day (Ellison, 2017). Location, as shown to be a huge factor in market definition, still varies in its significance per hospital. Urban hospitals generally tend to produce higher expenses from higher costs to have that location, but also because these hospitals also tend to be the teaching hospitals, containing specialty procedures, and/or research hospitals (Carey, 1997). Additionally, Tay (2003) argues that hospitals with more attractive locations tend to become these high quality, more specialized hospitals over time. Added services such as being a teaching hospital are also reasons for the higher costs in a hospital. However, hospitals have little ability to change this factor if constructed long before, leaving marketing strategies to then focus more on quality to attract patients. Hospitals do tend to compete in localized markets for these reasons (Carey, 1997). Even with a bad location, if a hospital is the only one present in the surrounding area, they are likely to still gain a steady flow of patients. However, these alternative variables – attractiveness of location, hospital type, and service quality – are taken more into consideration when there is competition. Understanding how a market is defined and how to gain higher demand is essential when attempting to lower costs. The hospital must be aware of the predicted responses in the market to any changes.

Market power hospitals have make cost shifting a popular past alternative (Eldenburg & Soderstrom, 1996). Even after the government took action to prevent it, incentives to stay within the hospital's budget, especially for nonprofit hospitals that do not want to show too much profit, remained present. Contractual adjustments provide businesses with the opportunity to do such cost shifting easily. Nonprofits that make high profits cause donors to distance themselves as well as go against important parts of the hospital's mission statement (Eldenburg, Gunny, Hee & Soderstrom, 2011). Nonprofits also want to reduce their losses as well causing nonprofits that cannot reach their benchmark to increase expenditures (Eldenburg, Gunny, Hee & Soderstrom, 2011). What hospitals that cost shift do not realize, as Eldenburg and Soderstrom (1996) describe, is that cost shifting among payers to maximize revenues actually reduces the effectiveness of efforts to reduce costs. They also found that higher levels of contractual adjustments were correlated with rising prices (Eldenburg & Soderstrom, 1996). Cost shifting may seem like a good way to ensure donors are maintained by sticking to the mission statement of a nonprofit, but are found to have repercussions outside the preventative regulations. Studies and observations have indicated that the initial benefit of doing so is overshadowed by the lasting effects on cost saving plans. Thus, rather than vigorously working to stay within an accepted profit margin, hospitals should focus on actually reducing costs.

The hardest part of creating a plan to reduce expenses is estimating all the costs a hospital will incur within the year. Hospitals have to account for costs of service, but also all other parts of the experience of going to the hospital that patients tend to value (Romley & Goldman, 2011). In addition, variations in productivity also have a cost. Size, service, quality, products, and much more need to be taken into consideration for defining the costs a hospital expects to obtain. For instance, larger hospitals tend to have larger expenses each year (Lave & Lave, 1970). A multi-

variate cost function is essential as concluded after research by Kathleen Carey (1997). Each service requires different procedures, tests, drugs, and care thus making it nearly impossible to combine them all into one simple cost function for the whole hospital. A multi-variate cost function is of the utmost importance due to its accuracy and relevance to finding areas for savings in different departments. Hospitals that have used simple cost functions are unable to prepare for the future or make managerial changes as quickly and efficiently.

Statistical analysis is needed for the multitude of departments in hospitals. However, researchers still argue over the best variables to use to measure the efficiency of the hospital. A study conducted by Breyers in 1987 used cases, patient days, and staffed beds to examine costs and prices, while another study used empty beds to look at this problem (Carey, 1997). The most common measure of hospital output to determine efficiency and price is the number of patient days (Lave & Lave, 1970). However, this method must take changes in technology and patients into consideration. For instance, many patients pay for services through government providers. Alterations to the funding the government will provide directly affects the price for each day of service thus the number of patient days has less of an influence on price as other outside factors (Jarrett, 1981). There is a long standing dispute on how to measure the size of a hospital, helping to show the market share it has. Hospital beds is a common variable used. However, for example, Hartford Hospital has 867 beds in their facility. Of these, 104 are used for the Jefferson House long-term care facility while another 114 beds are solely for the Institute of Living mental health facility (“Hartford Hospital”, 2017). Merely looking at the whole number would not give good insight on how busy each private department gets and how much space is available for them. Having almost 900 beds does not mean that large amounts of activity will fill the entire hospital. Rather, if the long-term care facility gets a large influx of patients, it could show up as no

significant change for the hospital if at the same time a decrease in activity is felt by the mental health facility. Hospital activity is also felt differently per hospital. In terms of inventory turnover, smaller hospitals have a lower inventory turnovers compared to larger hospitals and some specialty hospitals ("ASHP Guidelines", 2014). These above trends prove that variables used are on a hospital-by-hospital basis. In order to get the most accurate results, all must be considered at first to find which best fit the hospital in question. Environmental changes can influence the hospital as well leading this analysis to have to occur on an annual basis.

Nurses can also provide important insight on what to consider when constructing a cost function. Patricia Stone and Patricia Walker explain that more studies need to be done using nurses (Stone & Walker, 1995). Just like in decision making, having executives who do not understand the daily internal workings of the company to make decisions or theories can often result in unexpected responses. Researchers and economists have very useful ideas, but understanding the personalized in-house activities will produce a better understanding of how these theories would work in the surgical rooms or in patient recovery rooms before implementing them. Nurses can point out inefficiencies that may not even show up on paper or strong ideas of how to actually increase productivity. In addition, they can explain how past procedural changes to reduce expenses have panned out on the ground floor. Did the alterations to cut costs show a real change or simply move increased expenses to another area? Research by Abigail Tay (2003) supports this push for staff input by including it in a list of variables that help capture hospital quality.

Quality is a huge aspect to remaining competitive in the industry and must be always considered with any decisions made in the hospital. The problem with determining quality though is how difficult it becomes to observe adjustments in it. Quality improvement, working to

attract more customers by way of offering a better product, is on the minds of all hospital executives, but hard to determine the monetary impact of such improvements (Baumol, 2012). Demand shifters are taken into account as they may produce new patient responses. For example, a study conducted by John Romley and Dana Goldman (2011) on pneumonia patients in Los Angeles hospitals showed that more than one third of patients chose a hospital farther out than the nearest three for hospital care. A demand shifter such as an alteration to average income of patients near a hospital could affect the patient's willingness to travel to a distant hospital for a higher quality of service. Again, the elements to consider for quality are different for many researchers with one considering quality of service, severity of illness, and managerial ability being necessary while another says demand shifters are truly essential (Carey, 1997). Examining all at first to find what truly influences that specific hospital the most is a must. Most studies completed were area specific, obviously producing different findings in different states. A thorough analysis of all measurable elements can help pin point where the hospital in question lies among these arguments. Merely looking at demand shifters neglects the internal considerations such as managerial ability.

Improving care given can result from changes in technology, staffing, and partnerships, all offering opportunities to save as well. New technology tends to be a very costly necessity hospitals face. Improvements in technology raises quality of care, but is expensive to implement. Hospitals across the country are faced with the tradeoff of needing to stay competitive and improve systems used in return for higher expenses incurred. There becomes an incentive to sell old assets to replace with new and improved devices saving at least a little on these expensive new assets (Eldenburg, Gunny, Hee & Soderstrom, 2011). In terms of staff, a hospital must understand that highly trained employees are the greatest assets a hospital has to offer to its

patients. Maintaining a good work environment to ensure workers remain happy and productive will save the hospital much more money than searching for equally as trained labor elsewhere in the field. A study done by Scott Boyd explains that a one-year delay in retirement is estimated to increase work costs by 1 to 1.5% annually (Boyd, 2016). Providing such incentives to stay as well as leave when needed can ensure less unexpected costs to the hospital. Partnerships can help reduce costs and create less work for the hospital at the same time. For instance, the Eastern Connecticut Physician Hospital Organization (ECPHO) worked alongside Cigna Health Care to improve the health of members of the insurance group as well as manage costs for both the health care facility as well as the hospitals ("Eastern Connecticut Physician", 2005). This partnership works to increase the number of preventative health visits, help prevent chronic conditions from worsening, and reinforce appropriate use of hospital emergency rooms to name a few benefits, all of which save vast amounts of money on either side. Many other such improvements that have cost savings opportunities are excellent places to look to save money without changing quality of service to patients.

A huge push to advanced cost accounting is shown to benefit all hospitals. Standard cost accounting focuses on direct and indirect labor, material costs, and burden costs most commonly through the burden allocation method. The burden allocation method values services based on difficulty to provide valuations most closely related to actual costs ("Hospital Cost Accounting", 2015). However, the opportunity costs for change are not considered along with the changes to productivity. Baumol (2012) explains, "trying to measure total output is merely impossible when needing to look at each factor individually or else decrease in one but increase in another shows uniformity over time." The same is true of hard to measure factors such as quality and productivity. Not looking at different aspects of each as well can result in uniformity being seen

when that is actually not the case. Dan Michelson (2014) lists the main reasons why advanced cost accounting is very important to have including understanding true margins, identifying opportunities to reduce costs, bringing together financial and clinical outcomes data, understanding how to price right, improving accuracy, and running costing quickly and more frequently to name a few.

Conclusion

Every person wants the highest service when entering a hospital's care, but wants the lowest costs as well. The latest and greatest technology will continue to be introduced, an irreducible quantity of labor, and any additional measures to continue gaining the best possible care. The price paid for quality is a relentless rise in costs to patients and third party providers, Baumol (2012) explains. However, doctors and administrators are doing all they can to ensure that their patients are receiving the best care possible. Edward Roberts, the executive director of ECPHO and CINECT, states, "What matters most to our doctors is having the opportunity to further improve the lives of our patients by providing highest quality, well-coordinated care" ("Eastern Connecticut Physicians", 2005). This can be done with currency and accuracy by using advanced cost accounting methods, understanding the market, and effectively determining both quantitative and qualitative measurements for hospital procedures. Cost accounting methods and market understanding will be gained from patient data made public by Rhode Island and Connecticut hospitals and external research already done to find how other methods can be used to make a customized budget for Hartford Hospital. Hospital procedures will be researched through regulations presented on how medical practices can be conducted and staff interviews for, again, personalizing the information to mold to Hartford's individual needs. Having a plan of

action to implement theories will ensure that upon introduction the cost cutting efforts do not affect the quality of service for patients.

Investigation method

My investigation method included examination of prior research and conducting semi-structured interviews. Prior research spanned the cost accounting field as well as the hospital field. Simply narrowing research to cost accounting specifically in hospitals would mean missing out on potentially successful implementations in other fields. Additionally, hospitals' actions are influenced by other industries – pharmaceutical companies, healthcare companies, investors, etc. – and government agencies. A basic understanding of their relations makes understanding influencing factors simpler.

I chose to conduct interviews because I felt this would give way to more information than other testing methods. Talking to experts in the field would give the best results, but with such a small population attainable given the time restraints, a survey's results would be too limited. A survey also poses the threat of limiting an expert's answers. They know more in their respective fields from hands-on experience. For this reason, interviews were ideal. Semi-structured interviews are when the interviewer as a set of fixed questions to ask the interviewee. Survey-like research was able to be gained, yet interviewees could still go in-depth on their knowledge of the subject. Items I had never even thought of came to light during interviews, constantly providing more avenues to investigate. For simplicity reasons, the questions remained fixed over the course of each interview.

Perspectives from all angles makes for a broader picture of how a company operates. That is why many companies request the input of ground-level employees who see, on a daily basis, what really occurs. When hospitals first began implementing coding systems, it was quickly discovered that unless internal controls were used to actually have these codes utilized, the data was useless. There was no point to spending all the money to have it if nothing came about. Cost accounting risks the possibility of this happening as well. This is why research from all angles is needed: *where* is it needed most, *how* can hospitals benefit, *what* type proves beneficial, and *will* it even work? My research method was going to seek to answer all of these questions by making a *trifecta* of people to ask. The trifecta consisted of ground-level employees (nurses), executives, and external parties with relation to hospitals. All of which would potentially have different viewpoints and bring to light new angles of analysis.

The semi-structured questions to ask each interviewee are as follows:

What are the main roles you play (previously played) in your career?

*What does the cash and cost system in place look like **now**?*

*What are the **influencing factors** to your internal decision making on financial matters? Then medical procedures?*

*How much **influence** do you see health insurance companies having on cost systems?*

*How has the push for more **pricing transparency** altered the methods of setting prices?*

*Do you see a **need** for a cost accounting system if not already implemented?*

*Where do you see the cost structure in hospitals moving in the **future**?*

This set of questions were based on common influencers and topics. They sought out expert opinions and explanations of experience in the field. After learning about the experience they have in the field, I asked about the companies they have interacted with. What is in place now? Was it useful? If not, where were problems felt and solutions made? Hospitals interact with many industries, but I wanted to find out where the most influence came from. Internal controls should react accordingly to when influencing factors are altered. When Obamacare first came out, it sent soundwaves out that were felt by even the smallest of facilities. Options of payment changed and hospitals were forced to respond accordingly. I wanted to know what areas of business would have this type of effect on hospitals. Additionally, media currently has been shining a bright light on the industry. Prices have been increasing in response to technological advancements, policy changes, more specialized service, pharmaceutical sales, and more. However, with this increase, people remain skeptical of where these prices are being produced. Pricing transparency has been of main concern in the media, forcing medical centers to respond. Although just one topic being discussed, learning how a hospital responds to this could help to understand the expectations a hospital poses for additional fees to meet future patient needs. Dan Michelson explains, “there has been major movement in the market to implement advanced cost accounting systems, which provide accurate and actionable information on cost and help organizations understand their true margins as they take on risk-based, capitated contracts.” The most recent HIMMS conference described cost accounting as an absolute requirement to advance in the field currently.

Results

A total of six people were interviewed during this study. These included nurses, C-suite hospital executives (past and present), and health insurers. Of the six interviews conducted, every single interviewee stated that they saw a need for a more sophisticated cost accounting system. The hospitals and relating parties only knew hospitals that had at least some sort of cost accounting set into place currently. Three of which discussed the use of time-driven activity based costing as the primary costing method used. Although a very narrow costing method, the time driven ABC was used within service lines for each as well.

One of the many reasons cost accounting is utilized is to set a price for products and services that covers all costs and contains a reasonable profit. However, in the hospital industry, not only are many of the hospitals non-profit, but fixed pricing is negotiated with third-party payers. Cost accounting information need not be gathered as heavily for pricing purposes. Understanding the specific cost of a service is still useful, but there is always opportunity cost. The extra time and effort to get and maintain a specialized methodology that includes pricing comes with the heavy price of more accurate information on the other hand. Less time *could* be spent on producing prices for services in order to better understand their costs instead.

Reliance on Health Insurance Companies

The relationship a hospital has with health insurance companies is quite complex. Government programs such as Medicaid provide payment. This payment only covers the basic costs, and sometimes not all costs for the services provided. When speaking with a former hospital CEO, he

explained that relying on Medicaid-like payments to cover all costs is silly. It is the private third-party payers that provide the profit. Yet, to get a strong partnership going with a health insurance company, there is high levels of competition. Hospitals compete against one another to prove their attractiveness based on services offered, quality, and price. A health insurance strategist explained that these partnerships are mutually beneficial. Insurance companies ask themselves two questions when looking to create a new partnership with hospitals:

1. Is the hospital the right provider for our customer base?
2. Is there a high level of buy-in for this partnership?

The last thing a health insurance company works to have with a hospital, is aligned goals and incentives. They want to know that in the pursuit of quality care, they are being met alongside hospitals aspiring for the same outcome.

Fee-for-service

Fee-for-service is a payment model used in healthcare where services are paid for on an individual basis. Each service is priced separately which incentivizes the doctors to provide as many as possible. Being paid only on speed creates a mindset of quantity over quality of care. Rather than providing the best care to patients, a doctor is given a reason to expedite the process simply to make money. Examples of places this would be potentially useful is conducting tests and office visits. Nonetheless, hospitals would have a hard time splitting up services this way when a patient can come in with one injury and still somehow move around once complications or issues are found.

Value-based care

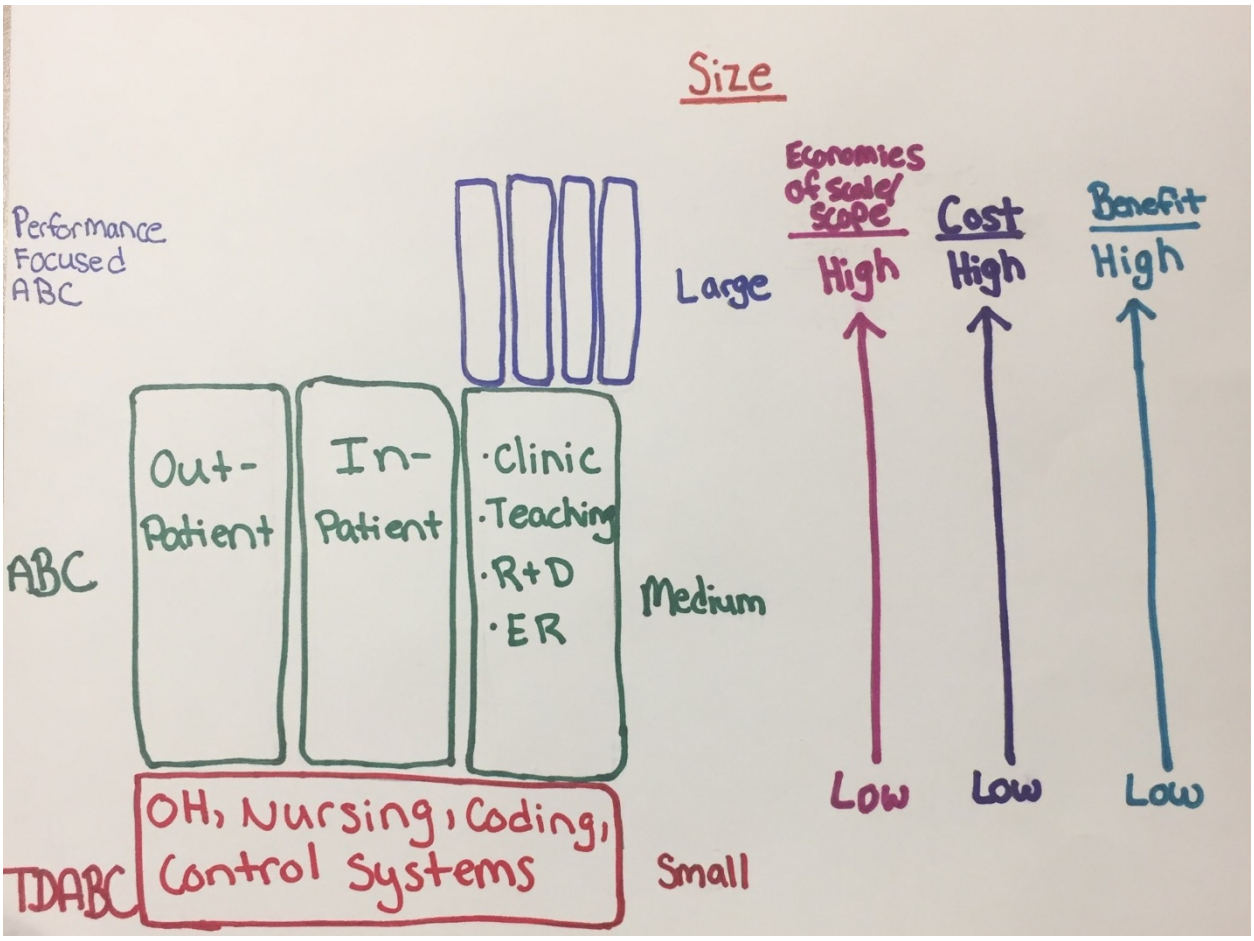
With fee-for-service, a doctor is incentivized to provide more treatment, not better. The push is for quantity over quantity. This is the complete opposite ideal than what normally ranks true in the medical field. The effort should be in building a business atmosphere where doctors *want* to provide the best possible care. Any incentive going against this can create conflict in business practice. The path being forged for the future involves ways to continue growth in the direction of quality. Value-based care models create this incentive for quality over quantity. Payment is not given based on the number of surgeries, but the quality of the surgeries done. The quality is measured in terms of efficiency and effectiveness. These models analyze patient outcomes as well as using specific measures to see a hospital's improvement in quality of care. This incentivizes, not just the doctors, but all hospital personnel to change their tactics. RevCycle Intelligence explains it precisely as "the goal is straightforward but ambitious: Replace the nation's reliance on fragmented, fee-for-service care with comprehensive, coordinated care using payment models that hold organizations accountable for cost control and quality gains" (2018).

Government programs such as the Centers for Medicare & Medicaid Services (CMS) are working to shift the marketplace from a fee-for-service to entirely value-based care. Surprisingly, when discussing this process with the interviewees, all but two explained that the industry is still very much fee-for-service. This is because, in part, to the media and changing government regulations. Value-based payment models take time to implement and changing regulations will always take precedence in order to comply with the government. Additionally, the media has made pricing transparency something that most patients have become concerned about. Patients want to know the exact price of a service (fee-for-service). This puts a hospital in limbo between the two with more tendency than not to go with fee-for-service to meet patient needs and

familiarity. The question remains: how does a hospital give the patient/public all the desired information but incentivize doctors and staff to ensure consistent and improving quality of care?

Model

Hospitals come in all shapes and sizes, providing different services, and within different local communities. None are exactly alike. That being said, each hospital should utilize its own application method for implementing a cost accounting system. It has become apparent that a specialized cost accounting methodology should be used. However, there is an opportunity cost that comes along with it. The information acquisition price for cost accounting data must relate to the economies of scale for the hospital. The cost of more accurate information can be split more reasonably among the cost of 200 patients rather than 20. An element of economies of scope could also apply. Coding systems, although not the same, are ways to gain information for decision making. Apply costs along the range of similar procedures the hospital in question does and there could be potential for economies of scope to take the significant burden price of implementation off of only a few patients.



The model presented is split into tiers. The first tier includes all overhead, coding services, control systems, nurses, and certain medical supplies and drugs used by almost every patient. All of these elements can be applied to almost every patient who walks through the door, making this the easiest layer to implement. Regardless of the reason for the visit, the length of a patient's stay is indicative of the amount of these expenses that could be applied to each patient. Thus, the time driven activity based costing system would be the best option. The second tier splits the company into sectors based on business segments. Here, overhead and all items that would fit in the first tier are still counted for using time-driven costing. All cost information outside that realm is split up by business sector. All the business sectors are mentioned and

contain their own cost drivers. This is where activity based costing is used because of the vast difference in price an ER trip would have versus a brain surgery. The last tier takes all the specific services within the business sectors and splits them up according to performance-focused ABC (uses cost drivers of ABC as well as time). This is where the surgery sector would now be accounting for items within individual types of surgery.

As more tiers of the model are used, the information gets more precise. However, with increased precision comes an increased price. Smaller hospitals with less funding are unable to afford the third tier of information and also do not benefit from the specific information as much as a large hospital would. This is why each tier was split based on size of hospital. Small hospitals use only the first tier with time-driven ABC, medium with ABC, and large hospitals including all tiers up to the performance-focused tier. The benefits are met at each side according to the information acquisition cost the company is able to incur and the respective benefits received from their level.

This model is simply a recommendation that is believed to encompass the main concerns of hospitals based on their qualifications. It was found that size was just as much of a signifier of a hospitals ability to incur costs as anything else. Size also makes for simplistic analysis which saves time and effort that can be put forth elsewhere.

Limitations

The research conducted reached viable solutions. However, it is important to always keep in mind that the small sample size limits the study. A small sample size leads to a potential bias in the information. Taking a small sample size from a population has a much smaller likelihood

of being indicative of the same trends as the entire dataset. Having one outlier within a small data set skews the information much more than if large samples were taken.

Bias was also seen within the perspectives that experts in the field expressed when asked the same questions. For instance, personally experiencing a different angle of the hospital industry can make perceptions change. A person working directly with patients would have a more medical opinion of operations than an executive working with the broad picture. When asked where hospitals can improve, many different answers were received. One interviewee explained, “Hospitals must understand *where* they provide the most value and be best at ***one*** thing.” Alternatively, when asked the same question, another interviewee stated, “The level of specificity we have currently is hurting us more than it is helping us.” These two interviewees came from different relationships with hospitals: one a health insurance company strategist and the other a CIO of a nonprofit. Different backgrounds resulted in different viewpoints. Furthermore, personal experiences could have altered these opinions. The person who stated that the level of specificity in the system is currently hurting us had recently gone through the system as a patient. Here, she was able to see a different perspective than what she had always worked within before. This personal experience changed the way she thought about the system after having to travel between doctors and specialists just for one injury. If able to interview a larger amount of people, these personal experiences and differences in position would not cause such a skew in results. The more people you are able to speak to, the more likely you are to find patterns.

Future research

Future research would involve continued involvement in the field. This capstone paper had the purpose of simply contributing to the body of knowledge, as it is still evolving. The goal is to get to utilize performance-based activity based costing, or new models with predictive qualities to more accurately understand the cost of items in the hospital as well as what internal controls should be in place. Cost accounting is about more than just predicting costs. It is about setting control, making better decisions, informing investors/customers, as well as specifying costs. The pursuit will always be to gain 100% accurate information. Even if that is attained, the industry is always evolving from government, healthcare, and any other external influences. Thus, there will always be future research to do.

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