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Editor

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LETTER FROM THE EDITOR

Welcome to the *Academy of Health Care Management Journal*. We are extremely pleased to be able to present what we intend to become a primary vehicle for communication of health care management issues throughout the world.

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JOB SATISFACTION AS PERCEIVED BY INDEPENDENT PHYSICIANS IN FLORIDA: AN EMPIRICAL INVESTIGATION

**James Farah, Jacksonville University
Leila A Halawi, Quinnipiac University**

ABSTRACT

The purpose of this study was to gain a more complete understanding of the factors that pertain to independent physician job satisfaction. This group of physicians consists of physicians who own their own practice or who are employed in a privately owned medical practice in the State of Florida.

The present study tested a model of job satisfaction for independent physicians practicing in the State of Florida building on the widely accepted Stamps and Cruz (1994) scale. A total of 350 surveys were distributed to independent physicians. Of the 350 questionnaires mailed, a total of 117 responses were returned. Factor analysis and regression analysis were used to analyze the study's model. Six hypotheses were developed. Five hypotheses were supported. This research was limited in that the study sample was derived from a limited geographic area and the survey population was also relatively small.

INTRODUCTION

Medicine is a job as well as a profession, business and economic enterprise (Hoff, 2001). Consequently, a defined flow of reservations, rewards, challenges, chances, discontent, aggravation, doubts, and expectations emerged (Hoff, 2001). The practice and delivery of medicine seem to be typified by regional and local adjustments to markets that might also differ by their levels of physician employment and organization. Physicians occupy a central role in the health-care system by virtue of their capabilities, contributions and influence on the health-care system (Wolfe, 1991).

Physician satisfaction has been a source of special interest for decades maybe due to the high standing of the profession and the expense of training (Mechanic, 2003). The rapid changes in the practice of medicine in the past quarter century have stimulated considerable interest in measuring physicians' perceptions and attitudes about their work (Baker & Cantor, 1993; Warren, Weitz & Kulis, 1998; Landon, Reschovsky & Blumenthal, 2003; Williams & Skinner, 2003). The relationship between physicians and health-care organizations has changed dramatically during the past two decades. Physicians' job situations experience recurrent transformations, some can be perceived as constructive, others as adverse (constant review of contracts, pre-set reimbursement rates, HMOs outlining the care of patients, and selective physicians added to the network). In recent years, physicians have seen their autonomy diminished by recent policies of payers, have been subjected to increased administrative load and time pressure, and have been blamed for the growth in health-care costs; all these developments would reduce work satisfaction (Konrad, Williams, Linzer, & et al. 1999).

Florida is one of the 12 states labeled “in crisis” by the AMA (Borfits, 2003). The costs of medical malpractice insurance, the recent adoption of state constitutional amendments that prohibits licensure or continued licensure of physicians who have committed three or more incidents of medical malpractice, displacement of medical students and licensed physicians by natural disasters may affect the number of medical students applying in the State of Florida and the number of physicians applying for licensure and practicing in Florida. Because of the unfavorable practice environment in Florida, licensed physicians are leaving the state, discontinuing their practices, or reducing the scope of their practices (Peaden, 2005).

Most theorists and researchers agree that job satisfaction is multifaceted (Hopkins, 1983; Blegen, 1993; Stamps & Piedmonte, 1986; Weiss, 2002). Research related to job satisfaction for physicians has primarily been driven by the desire to describe the external motivation or hygiene factors that influence job satisfaction; the studies employed small samples, used measurements of unknown validity and employed only simple correlation techniques (Williams & Skinner, 2003). No research specific to job satisfaction employing larger samples, standard satisfaction measures and sophisticated data analytic techniques among independent physicians has yet been conducted (Williams & Skinner, 2003).

It seems reasonable to assume that physicians and particularly affiliated physicians, may be different than independent physicians in regard to their perceptions of what is essential to enjoyment in their jobs. Therefore, a study that addresses the various elements of job satisfaction for independent physicians working in the State of Florida, would target institutional efforts intended for the promotion of job satisfaction and eventually reduce the probability of job turnover or intention to terminate their respective practice. This study primarily focuses on private physicians that are required to monitor business issues like managing payroll, paying tangible property taxes, marketing, hiring/firing employees, etc. instead of physicians, who have all these matters handled for them by large corporations or governmental agencies.

The purpose of this study is to gain a more complete understanding of the factors that pertain to independent physician job satisfaction. This group of physicians consists of physicians, who own their own practice or who are employed in a privately owned medical practice. The present study is intended to further develop the knowledge base of what factors are most important to independent physicians’ general job satisfaction and retention of their practice as indicators of the viability of a privately owned practice as an occupation both now and in the future.

This current study contributes to the body of knowledge concerning job satisfaction theory by conducting an assessment of the usefulness of the Stamps and Cruz’s (1994) physician satisfaction scale for independent physicians practicing in the State of Florida. This study will expand and deepen our understanding of the concept of independent physician job satisfaction. This study would help us determine the current sources of job satisfaction and what can be done to modify or improve them. We will be able to compare our results with those from studies in other states.

Just what constitutes job satisfaction has been the subject of much debate. Packard (1989) calls it “a controversial and elusive concept” (p.59). The literature review in section II traces the evolution of thinking regarding the nature of the construct, its antecedents, and its theoretical and factual consequences. In section III, the operationalization of the constructs used in the study is presented. Section IV presents the results and section V presents the discussion of the results, the implications for research, and limitations of the study followed by the conclusion.

LITERATURE REVIEW

The U.S. health-care system has changed radically over the past two decades. The medical practice climate in each state is obviously influenced by national legislation, but there is also a fair amount of state level influence, so that there are important differences in the regulatory environment for physicians. Issues such as increasing medical malpractice premiums, reimbursement capitations, increased malpractice litigation, and competition from larger health-care providers affect the financial stability of the privately-owned medical practices, which may in turn contribute to the overall satisfaction physicians have with their respective job. Over the past several years, there have been additional state and federal laws regulating the private practice of medicine and particularly ownership structures and whether or not certain procedures may be performed by the entity owned by the treating physician. As a result of the increased regulation of ownership structures, certain physicians were forced to divest ownership interests of related areas of medicine and to re-work their internal compensation arrangements. Moreover, the overall spotlight on the activities of the physicians and particularly what they may and may not be compensated for has arguably affected the overall satisfaction of physicians.

The working definition of job satisfaction for this study is taken from Spector (1997), who defined job satisfaction as “how people feel about their jobs and different attitudes about their jobs.” It is the extent to which people like (satisfaction) or dislike (dissatisfaction) their jobs. Job satisfaction is an attitudinal variable. (p.2).

Theoretically, autonomy is extensively reviewed in sociological literature. Contemporary physicians have far less autonomy than physicians in past decades (McKinlay, 1988; McKinlay & Arches, 1985; McKinlay & Stoeckle, 1989; Stoeckle, 1988). From their perspective, physicians have lost control over who become their patients, the conditions and substance of their work, the equipment and amenities required for their work, and the total and rate of remuneration for their labor (Warren et al., 1998). These revolutions stem from two sources: (1) ever-increasing efforts by the federal government to oppress health-care costs, and (2) the rise in managed care plans. A common criticism in today’s health-care environment is a perceived reduction in the degree of professional autonomy. Autonomy has been linked to job satisfaction in many studies and showed to be a strong predictor of physician satisfaction (Lichtenstein, 1984; Stamps, Piedmont, Slavitt & Haase, 1978; Schulz & Schulz, 1988). Perceived threats to autonomy are one of the most common factors cited that decrease satisfaction. The Society of General Internal Medicine (SGIM) study group (Konrad et al., 1999) defined autonomy as “independence of action”, together with the power to care for patients according to the greatest clinical judgment. According to Landon et. al. (2003), professional autonomy refers to the individuals’ ability to control the terms and content of their work. Autonomy is the independence one experiences in decision making of day-to-day job-related responsibilities. The freedom to choose and initiate a viable alternative in one’s work environment is significant.

On the other hand, the literature offers rather puzzling evidence regarding how growing levels of organization or bureaucracy are associated to satisfaction with autonomy. Some studies, particularly those by Ben-David (1958), Mechanic (1972), and Breslau, Novack and Wolf (1978), entail that the relationship between satisfaction (particularly autonomy) and bureaucratization is inverse and linear - that is the more bureaucratized the setting, the less satisfied the physician, mainly with his/her autonomy.

Other authors mainly Engel (1969), and also Freidson and Rhea (1963) perceive this relationship not as linear but rather as U-shaped or as dependent on other factors. Efforts to increase physician satisfaction with clinical autonomy may also increase quality of care (Melville, 1980; Schulz & Schulz, 1988).

Stoddard, Hargraves, Reed and Vratil (2001) examined the degree to which professional autonomy, compensation and managed care are determinants of career satisfaction among physicians. They hypothesized that professional autonomy is a strong predictor of career satisfaction among physicians, after controlling for the effects of other important determinants such as income and managed care. They tested both for the direct effects of managed care on satisfaction and for indirect effects exerted through autonomy and income. Multivariate analysis demonstrated that traditional core professional values and autonomy were the most important determinants of career satisfaction after controlling for all other factors. Relative income was also an important independent predictor. Their results suggested that when managed care corrodes professional autonomy, the result is a highly negative impact on physician career satisfaction.

Gazewood, Longo and Madsen (2000) conducted a study to measure physician satisfaction with Medicaid managed care. They carried out a cross-sectional survey of primary care physicians involved with Medicaid managed care or in traditional Medicaid managed care in Eastern and Central Missouri. Physicians involved with Medicaid managed care were less satisfied with clinical autonomy in comparison with their past experience with traditional Medicaid. In multiple linear regression analyses, clinical autonomy was a strong predictor of overall satisfaction with Medicaid managed care. The authors concluded that improving physicians' clinical autonomy might result in better satisfaction with Medicaid managed care.

METHODOLOGY

The conceptual framework for this study is based on existing literature and research and is determined by characteristics of the individual, the practice environment or institutional characteristics, and autonomy (see Figure 1). This conceptual framework is drawn from several different theoretical perspectives including Maslow's (1943) hierarchy of needs, Herzberg's (1966) two-factor theory, and expectancy theory (Vroom, 1964). We will test the relationships among the variables.

This research aims to answer the following questions:

1. What is the relationship, if any, between and among individual-related factors, institutional characteristics, clinical autonomy and job satisfaction?
2. What is the relationship between clinical autonomy and job satisfaction?
3. What does job satisfaction imply to independent physicians?

Based upon the research questions and literature review, the following hypotheses will be tested:

-
- H1_A: There is a positive relationship between individual-related factors (gender, years in practice, age, income, professional activity and local market) and clinical autonomy.*
- H2_A: There is a positive relationship between the institutional characteristics (size and bureaucratic structure, resources, type and number of patients, and management practice) and clinical autonomy.*
- H3_A: There is a positive relationship between clinical autonomy and job satisfaction.*
- H4_A: There is a positive relationship between individual-related factors and job satisfaction.*
- H5_A: There is a positive relationship between the institutional characteristics and job satisfaction.*
- H6_A: There is a positive relationship between individual-related factors, institutional characteristics, clinical autonomy, and job satisfaction.*

To test the proposed hypotheses, we used two existing questionnaires: (1) the instrument, known as the Stamps and Cruz's (1994) medical practice patterns scale with six interpretable factors, and (2) the index of perceived clinical autonomy, a set of eleven questions administered by Schulz and Schulz (1988). The sample group that was tested consisted of 350 independent physicians practicing in the State of Florida. Copies of the survey were mailed to them with a cover letter explaining the purpose of the research and directions on how to complete the survey. It was also a self-administered survey that was distributed based upon a contact list of independent physicians practicing in the State of Florida. The survey method was a mailed questionnaire.

The format of the survey instrument consisted of ten pages in a booklet format. Attached to the front of the survey is a letter that explains the purpose of the research study and procedures for completing and returning the survey. The questions were divided into six sections: the first section consisted of two questions relating to some information regarding the medical practice; section two consisted of 6 questions assessing the level of satisfaction in the practice (39 items); section three consisted of two questions gathering information regarding changes made to the practice (11 items); section four consisted of eight questions gathering information regarding the characteristics of the practice; section five consisted of nine questions assessing the degree of clinical autonomy; and section six consisted of eight questions gathering information regarding the profile of physicians and some optional information. Of the 350 questionnaires mailed, a total of 117 responses were returned. This reflected a total survey response rate of 33%. Generally, a 20% response rate is desirable (Yu & Cooper, 1983). Out of the 117 responses, 21 were unusable because they were not answered completely. For the analysis, the remaining 96 questionnaires were used. The population under study in each of these sites was physicians who own their own practice or physicians who are employed in a privately owned medical practice.

VALIDITY AND RELIABILITY OF RESEARCH CONSTRUCTS

Factor analysis was used for construct validity. Factor analysis is generally utilized for data reduction and summarization in which superfluous items are blended and unsuitable items removed (Hair, Anderson, Tatham & Black, 1998). In addition, it is one of the power methods to test construct validity (Kerlinger, 1986; Schwab, 1980, Cooper & Schindler, 1998). The results are reported here for the factor analysis that investigated whether multiple variables measured the same concept. Hair et al. (1998) contended that loadings greater than 0.50 are deemed extremely significant.

Factor analysis was completed on the measure using SPSS for Windows. Principle component analysis was applied for the extraction method using the VARIMAX method for rotation. An iterative approach was employed to perform factor analysis. Items that did not make the loading cutoff and/or items that loaded on more than one factor were dumped from the investigation. The remaining items were then resubmitted into an additional cycle of factor analysis. This procedure continued until a significant factor structure was attained.

To measure the reliability of constructs used in this study, the internal consistency method that measures consistency and homogeneity among items that encompasses the measurement was utilized. One such technique is Cronbach's Coefficient Alpha, which is commonly used in social science research. An alpha value of more than 0.7 is desirable, though this limit may be as low as 0.60 for exploratory research (Nunnally, 1978; Hair et al., 1998). The alpha values in this study well varied from -.2577 (Index6) to .8148 (Autonomy) that is prior to administering the factor analysis. As a result of the factor analysis, most of the measures used in this study have been modified. Consequently, the reliabilities of these measures have to be determined again and were as follows: .7979 for the personal dimension or index 1, .7030 for the resources dimension or index 2, .8517 for the review of profession or index 3, -.5144 for satisfaction with medicine as a profession or index 4, .8118 for regulatory climate or index 5, -.5561 for place to practice or index 6, and .8012 for autonomy.

RESULTS

Regression analysis was used to test the hypotheses concerning the relationships of the independent variables to the dependent variable, job satisfaction. The independent variables consist of: individual related factors that consist of gender, years in practice, age, income, professional activity and local market; and institutional characteristics that include the institutions' size and bureaucratic structure, financial resources, type and number of patients and management practices; and clinical autonomy.

Analysis of Hypothesis 1

A regression analysis was performed. Clinical autonomy was the dependent variable while gender, years in practice, age, income, professional activity and local market, regulatory climate of Florida (index 5), Florida as a good place to practice (index 6) and personal factors (index1) were the independent variables. The coefficient of determination (R^2) was calculated to be .410. The independent variables accounted for 41% of the variation in clinical autonomy. The calculated F of 2.979 was

significant at an $\alpha < 0.01$, so we can reject the null hypothesis that there is no or a negative relationship between individual-related factors (gender, years in practice, age, income, professional activity, and local market) and clinical autonomy. The positive betas for most of the independent variables indicated that these variables had significant positive effect on clinical autonomy. This in turn indicates that there is statistical evidence for the positive relationship between the independent variables and clinical autonomy.

Analysis of Hypothesis 2

A regression analysis was performed. Clinical autonomy was the dependent variable while the institutional characteristics were the independent variables. The coefficient of determination (R^2) was calculated to be .267. The institutional characteristics accounted for 26.7% of the variation in the dependent variable clinical autonomy. The calculated F of 2.783 was significant at an $\alpha < 0.01$, so we can reject the null hypothesis that there is no or a negative relationship between institutional factors and clinical autonomy. The positive betas for most of the independent variables indicated that these variables had significant positive effect on clinical autonomy. This in turn indicates that there is statistical evidence for the positive relationship between the independent variables and clinical autonomy. Hypothesis 2 is supported.

Analysis of Hypothesis 3

A regression analysis was performed. Job satisfaction was the dependent variable while clinical autonomy was the independent variable. The coefficient of determination (R^2) was calculated to be .067. Clinical autonomy accounted for 6.7% of the variation in the dependent variable job satisfaction. The calculated F of 1.294 was insignificant at an $\alpha < 0.01$, so we can accept the null hypothesis that there is no or a negative relationship between clinical autonomy and job satisfaction. Hypothesis 3 is not supported.

Analysis of Hypothesis 4

A regression analysis was performed. Job satisfaction was the dependent variable while the individual-related factors were the independent variables. The coefficient of determination (R^2) was calculated to be .581. The individual-related factors accounted for 58.1% of the variation in the dependent variable job satisfaction. The calculated F of 5.941 was significant at an $\alpha < 0.01$, so we can reject the null hypothesis that there is no or a negative relationship between individual-related factors and job satisfaction. The positive betas for most of the independent variables indicated that these variables had significant positive effect on job satisfaction. This in turn indicates that there is statistical evidence for the positive relationship between the individual-related variables and job satisfaction. Hypothesis 4 is supported.

Analysis of Hypothesis 5

A regression analysis was performed. Job satisfaction was the dependent variable while the institutional characteristics were the independent variables. The coefficient of determination (R^2) was calculated to be .302. The institutional characteristics accounted for 30.2% of the variation in the dependent variable job satisfaction. The calculated F of 2.735 was significant at an alpha < 0.01, so we can reject the null hypothesis that there is no or a negative relationship between institutional characteristics and job satisfaction. The positive betas for most of the independent variables indicated that these variables had significant positive effect on job satisfaction. This in turn indicates that there is statistical evidence for the positive relationship between the institutional characteristics and job satisfaction. Hypothesis 5 is supported.

Analysis of Hypothesis 6

A regression analysis was performed. Job satisfaction was the dependent variable while individual-related factors, the institutional characteristics and clinical autonomy were the independent variables. The coefficient of determination (R^2) was calculated to be .816. The individual-related factors, the institutional characteristics along with clinical autonomy accounted for 81.6% of the variation in the dependent variable job satisfaction. The calculated F of 7.262 was significant at an alpha < 0.01, so we can reject the null hypothesis that there is no or a negative relationship between individual-related factors, institutional characteristics, clinical autonomy and job satisfaction. The positive betas for most of the independent variables indicated that these variables had significant positive effect on job satisfaction. This in turn indicates that there is statistical evidence for the positive relationship between the independent variables and job satisfaction. Hypothesis 6 is supported.

DISCUSSION

The health-care field continues to change and the factors interrupting the professional lives of physicians vary, and it is time for privately-employed physicians to gain more insight about their jobs and the overall industry of private medicine. However, the focus of this study was to provide more insight for the physicians' review so that changes may be made to better their work environment and the environment of their respective colleagues.

Financial, technological, and delivery system changes though important, appeared to be more directly affecting physician job satisfaction. Many observers have suggested that the autonomy of physicians is being constrained as purchasers, employers, and consumers exercise countervailing power (Navarro, 1988; McKinlay & Stoeckle, 1988; Haug, 1988 and Light, 1993). In addition, participation in HMOs and other contractual-based provider programs, presets the revenue earnings potential for the physicians, but there is no pre-set capitation on operating costs, employment costs, tax rates, etc. Many of these participative programs outline in advance what level of autonomy the physicians have regarding what tests or procedures may be ordered for their patients.

The following discusses how these research findings answer the key questions addressed in this study. The study research questions were answered by formulating six hypotheses. Five hypotheses were supported. Only hypothesis 3 was not supported. The empirical results of this study indicate a significant relationship between the four constructs (individual factors, institutional characteristics, clinical autonomy and job satisfaction).

Until recently, it was widely perceived that physicians had good jobs, they had clinical autonomy, power to determine working conditions considerable financial rewards, and job security (Williams, Linzer & Pathman, 2001). Things have changed since the golden age of medicine, and the sources of change are numerous and well documented (Starr, 1982). It may be argued that a physician in today's environment, is working longer hours, covering on a twenty-four hour basis the medical practice's weekend call schedule, which may span from Friday evening through the following Monday morning, is second guessing the care provided based on increased malpractice lawsuit activity, and is viewing friends and family members, who work in other businesses and industries, as having more autonomy and earnings power as compared to the physicians.

With this study, hypotheses 1, 2, 4, 5 and 6 tested consisted of four constructs, the individual related factors, the institutional characteristics, clinical autonomy and job satisfaction. There is strong support in the literature, both theoretical and empirical for all these hypotheses (Schulz & Schulz, 1988; Bovier & Perneger, 2003; Stevens, Philipsen & Diedericks, 1992; Stamps & Cruz, 1998; Baker & Cantor, 2003; Landon et al., 2003; Schulz et al., 1992; Schulz et al., 1997)

LIMITATIONS OF THE STUDY

This study has several limitations that must be acknowledged. This research was limited in that the study sample was derived from a limited geographic area. Independent physicians located in other parts of the United States might have responded differently to the survey questions than did the participants in this study. The sample population of independent physicians was from one state, limiting generalization of the results to independent physicians nationwide. Moreover, it is arguable that malpractice insurance rates and malpractice legal activity has been increasing in Florida over the past decade.

The survey population was also relatively small when considering the national population of independent physicians and their diverse employment arenas.

Another concern is whether a sample bias was introduced into the results since physicians, who did not return the survey, might have felt differently about the practice of medicine as compared to physicians, who returned the survey.

This research was also limited by its cross sectional nature, measuring job satisfaction at a particular point in time. The stability of these perceptions over time in response to changed conditions is not known.

IMPLICATIONS

The results of this study have implications for the organizational structure of the practice of medicine in this country. Given the current problems of escalating health-care costs, limited access to medical care for many people and an overall decrease enrolment in medical schools within the past ten years, there may be a need for changes with the delivery of and payment for healthcare in the United States. If we hope to retain and recruit the number of physicians needed under any system of healthcare, we will have to devise a system that can effectively meet the needs of both patients and physicians.

As the practice of medicine through privately-owned physician offices continue to evolve, it becomes increasingly important to understand how the level of job satisfaction is changing and whether physician owners, medical-practice managers and policy makers at the local or national level can influence these changes. There may come a day when the era of the “solo medical practitioner” becomes extinct because of the enormous overhead expenses associated with the requirements of maintaining a medical office. As physicians are forced to hold not only a medical bag but also a business briefcase, to consider merges, to consider consolidations with or selling to larger, national or regional corporations, just to keep pace with the business pressures and economics of medicine, insurance companies, governmental entities and the general public should consider what physicians are facing to keep their doors open to serve the needs of the patients.

However, findings from this study suggest the independent physician practice is increasingly attractive as a choice. Rising demands for physicians, increasing incomes, and the increasing role of primary-care physicians in controlling the total health-care services of their patients contribute to increased satisfaction among physicians. Clinical freedom is the best example of higher satisfaction. This study also suggests opportunities for maintaining satisfaction in an increasingly managed health-care environment. Clinical freedom continues to be a very important aspect of physician job satisfaction. Past research has found that involving physicians in important decisions that will affect them tends to increase their satisfaction with their work environment.

While the chosen counties may be unique in many aspects of the development of its health-care market structure, it nonetheless provides a benchmark case study that may provide insights applicable to other markets and one against which trends in other settings can be compared. During this research, several physicians commented that they went into the field of medicine to help people and they were not particularly motivated by the money. Some of those same physicians also commented that they felt more restricted in today’s managed care environment because the physicians are somewhat restricted from ordering certain test or procedures for their patients because the pre-described treatment program of the insurance plan did not call for the respective test or procedure. Insurance companies and researchers may consider this information to conduct further research as to the conflict between what the front-line practitioners are saying about the required healthcare for their patients versus what insurance administrators feel are the correct treatment plans.

FUTURE RESEARCH AND CONCLUDING REMARKS

Several areas for future research have surfaced from the results of this work. First, quantitative methods were utilized and accordingly questionnaires to collect data; future research should also utilize qualitative methods. Real observation of physicians or focus interviews may present valuable insights regarding the job satisfaction of these classes of physicians. Additional insight as to how tenured physicians view their positions and satisfaction as compared to other professions may also prove to be helpful in training the newer physicians graduating from medical school.

Further replication of our study is needed in diverse populations with a large sample size to confirm the full validity of this measurement model and to reconfirm the interrelationships among the dimensions that were presented here. It is the goal that by gaining clearer insight into physicians' perceptions of working within a managed-care environment, we can bridge the gap between the goals of the physicians and the goals of the health-care administrators to allow the creation of a health-care system that offers the best healthcare for all.

Third, since regression analysis was used to examine the strength of the relationships among the dependent variable and independent variables, future research will test the model using path analysis. Path analysis allows a researcher to reveal the indirect effects of the variables in the model. In consequence, a goodness of fit can be generated that demonstrates how the model fits the data collected (Hair et al., 1998).

This study used the Stamps and Cruz's scale to measure physicians' job satisfaction. A comprehensive literature review was conducted, factors that contribute to independent physicians' job satisfaction were identified, and hypotheses were proposed. A survey instrument was then developed to collect data from independent physicians. Multiple regression techniques were used to test the hypotheses, and the results supported most of the proposed relationships. However, no evidence was found to support the direct causal relationship from clinical autonomy and job satisfaction.

Limitations of this research were discussed. Implications for future research and the practice of medicine were also explored, as well as presented select areas to use for researchers involved with physicians' job satisfaction.

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THE ENORMOUS COST OF MEDICAL ERRORS

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ABSTRACT

The Institute of Medicine (1999) reports that as many as 98,000 patients die each year from preventable medical errors. According to Sultz and Young (2009) medical errors, especially in hospitals, have been a well known problem which commands very little attention by those in power in health care institutions. In many instances physicians and hospitals are actually reimbursed for having the error and then reimbursed again for rectifying the error if the patient lived. These errors included diagnostic and treatment errors, surgical errors, drug errors, hospital acquired infections and delay in treatment to name a few. When these errors are investigated the cause quite often is lack of communication among health care staff.

Brownlee (2007) cites that lack of cooperation among employees in health care delivery systems as one of the major reasons for the epidemic of medical errors in medical care. Emanuel (2008) points out that too many patients are the victims of preventable medical errors and infections that occur in the hospital. This paper will attempt to find the major causes of medical errors and make recommendations to reduce these preventable mistakes that result in lives lost, disability and enormous costs for our health care delivery system.

INTRODUCTION

The health care delivery system in the United States is facing tremendous challenges as it attempts to respond to calls from everyone for reform. There are calls from government, businesses and consumers for better health care at a price that we can all afford. This reform effort is uncovering many problems involving costs, access and our poor health status when compared to other countries. There is another problem found in health care that is rarely mentioned by the media that involves errors in medical care delivery. There is overwhelming evidence that many people are being hurt by the very system that is supposed to be offering them a cure for their medical problems.

According to Lee and Mongan (2009) the major problem of the chaos in health care today is progress. This progress in medical technology is also increasing the number of medical procedures which in turn places the patient at increased risk for medical error. Medical care and hospitals on one hand provides us with a hope of the cure of illness and disease and on the other hand can be very dangerous and in some cases actually be a threat to our life. There are mistakes being made in medical care delivery every day that could be avoided if proper procedures were followed.

The Institute of Medicine (IOM) (1999) released a study revealing that as many as 98,000 of the 33 million individuals hospitalized each year die and many more receive secondary infections because of poor quality health care while hospitalized. According to Black and Miller

(2008) the percentage of hospital admissions experiencing injury or death is 2.9 percent on the low side and 3.7 percent on the high side. Medical errors and hospital acquired infections have become epidemic in this country and the problem seems to be getting worse. It is frightening to think that many medical errors are actually reimbursed for by the patient's insurance company.

The IOM (1999) defines medical errors as "the failure of a planned action to be completed as intended or the use of a wrong plan to achieve an aim." These medical errors typically occur in operating rooms, emergency departments and intensive care units. There is mounting evidence that entering the medical care system at any location increases the risk of adverse drug events, errors in care delivery and hospital acquired infections. These errors are increasing the cost of health care delivery, requiring longer hospital stays, and causing disability, death and the loss of trust in medical care. In fact, medical errors are now estimated to be the eighth leading cause of death in the United States.

Health care services are produced as required and are not prepared ahead of demand so they must be evaluated as produced. These services are produced and delivered by people so the improvement process must begin and end with people. According to Black and Miller (2008) the solution to problems in delivering health care services will be found in the skills and ideas of the people who do the work in delivering health care services to their patients. The service providers control the creative power so necessary for success in problem resolution. Unfortunately, health care institutions pay very little attention to the very people who could solve the errors found in health care delivery. This lack of attention to medical errors must change as our health care system reforms

Since health care services are produced as needed the process needs to be produced error free. This makes medical errors a systems problem which requires immediate attention when a problem occurs in order to prevent the problem from occurring again in the future. If mistakes are made in the delivery of these services it is too late to correct the faulty delivery. This makes it very important that systems be designed to prevent errors in the delivery of health care services before they are delivered. If mistakes are made they should be evaluated and corrected immediately to prevent future occurrence.

EPIDEMIC OF MEDICAL ERRORS

According to Sultz and Young (2009) medical errors, especially in hospitals, have been a well known problem which commands very little attention by those in power. In many instances physicians and hospitals actually received reimbursement for having the error and then are reimbursed again for rectifying the error if the patient lives. According to Brownlee (2007) the most common error in medical care delivery involves administering drugs to patients. These drug errors include the administration of the wrong drug, the wrong dose of the right drug or drug interactions that harm the patient. The IOM (1999) points out that these drug errors alone add \$5,000 to the cost of every hospital admission. If the cost of drug errors is not enough to command national attention the unnecessary disability and death following administration of the wrong drug should motivate those in charge of health care to take action.

Emanuel (2008) argues that too many patients are the victims of preventable medical errors and infections that occur in the hospital. These errors are a result of health care delivery

that is poorly organized, very inconsistent and very dysfunctional. A great deal of recent research is finding that one of the major causes of medical errors is miscommunication among health care professionals. There seems to be an actual disconnect between many of the connectors in medical care delivery. It is also becoming painfully clear that many providers simply do not work together to produce the best medical outcome for the patient.

Brownlee (2007) points out that lack of cooperation among the players in the current health care delivery system is one of the major reasons for the epidemic of medical errors in medical care. In many instances the teams of medical care professionals simply do not talk to each other about the care of their patient. These mistakes are often made because there is not adequate knowledge or incentive on how to make the system work error free. This is happening all too often because many providers are still using paper records with handwriting that is not legible. This is happening even though electronic medical record keeping is not only available but producing error free care delivery in many hospitals in this country.

According to Dlugacz (2010) the Centers for Medicare and Medicaid Services (CMS) calls safety issues “never events” that are preventable and should never happen. The information concerning the magnitude and cost of this poor quality of care by hospitals is becoming a driver of financial penalties for the occurrence of “never events.” Dlugacz argues that many external pressures are forcing hospitals to see quality and safety issues as a large part of their future financial success. The link of finance to the reduction in medical errors is a step in the right direction. The incentive for providers must become payment for good outcomes rather than payment for activities that are not necessary and may place the patient at great risk.

Lighter (2011) argues that hospitals are being forced by non-reimbursement for medical errors causing drastic action to reduce these errors or risk financial losses. There is a real need to balance a desire to reduce cost and waste while paying enormous attention to quality improvement. This effort will include a system designed to prevent failed procedures or the utilization of the wrong intervention. By linking financial reimbursement to quality improvement issues there will be a changing attitude concerning medical errors that will ripple through the entire health care facility. These changes cannot happen fast enough if we are ever to improve health care delivery in this country.

HOSPITAL ACQUIRED INFECTIONS

According to the Centers for Disease Control and Prevention (CDC) (2009) healthcare-associated infections, or nosocomial infections, are infections that patients acquire during the course of receiving treatment for other conditions within a healthcare setting. They are secondary to a patient’s original medical problem and usually appear shortly after admission to a hospital or health facility or up to a month after discharge. According to CDC hospital acquired infections affect over 2 million patients every year with an annual cost of as much as 11 billion dollars every year.

These infections are caused by housing large numbers of individuals together who have an immune system that is often not functioning properly due to illness. This makes hospital patients a large cohort of ill individuals who are susceptible to a secondary infection. These

infections can result from something as simple as providers not washing their hands with soap and water between medical procedures.

The most common way to transmit microorganisms in a hospital setting is known as contact transmission. This route of transmission can be direct contact or indirect contact transmission involving the health care provider carrying an organism and transmitting it to another host usually an ill patient. The vast majority of these infections can be prevented by adhering to good sanitation techniques like hand washing or the use of alcohol rubs by all medical personnel before and after each patient contact.

A very good example of this type of hospital acquired infection is Methoclyline Resistant Staphylococcal Areaus better known as MRSA. These healthcare-associated infections are one of the top ten leading causes of death in the United States. They are quite often the result of poor sanitation practices which are for the most part preventable if monitored correctly. These infections need to be reported and dealt with as soon as they are reported. They need to be considered totally unacceptable in a health care setting.

THE DELIVERY OF TOO MUCH HEALTH CARE

A very serious problem found in health care services has been referred to as “moral hazard.” This is the term that is used to describe the changes in behavior that occurs as a result of having health insurance cover many medical procedures making them free to the patient. Therefore, moral hazard may increase the use of health services simply because they do not cost the patient anything to purchase these services. According to Brownlee (2007) as much as one third of our health care bill comes from the provision of unnecessary care. This unnecessary care not only costs over seven hundred billion dollars but also results in a very real danger to the patient receiving care that is not needed. This problem will only get worse if providers have incentives to complete more activities in order to increase their own income. Providers should be paid on their patient’s health outcomes not on how many tests or hospital admissions ordered by the physician.

Black and Miller point out that health care institutions need to concentrate on offering all patients efficient, defect free services. This would require health care providers to concentrate on providing only value added care which would eliminate low value services. These low value services not only waste time but may also pose additional dangers to the patient in terms of more testing and longer hospital stays. This needs to be a critical component of any health care reform effort.

EMPHASIS ON HEALTH CARE WORKERS

It must be assumed that health care workers do not deliberately injure their patients. The vast majority of people enter the health care employment sector because of a desire to help other people not hurt them or cause their death. The fact that so many errors are occurring indicates that the health care system is failing and not the individual worker. Therefore, in order to reduce errors in the delivery of health care services, time must be devoted to how the errors occur from a systems perspective. Although we are not placing blame on the individual health care worker

for errors we do need their individual and collective help in the reduction of errors. Since health care services are for the most part provided by individuals the solution to the problem of medical errors is a very human problem.

According to Smits, Groenewegen, Timmermans, Van der Wal and Wagner (2009) 60 percent of events that could cause harm to patients in the emergency room are caused by human error. The study cited for this data was conducted in ten hospitals in the Netherlands and reported in the September issue of BMC Emergency Medicine. In this study of over five hundred reported events, sixty percent were linked to human error, twenty five percent were caused by organizational problems and eleven percent was caused by technical problems. A closer examination of the human errors revealed that many were the result of "human intervention errors" such as not recording the time when medications were administered or not plugging in a medical device. These errors represent a systems breakdown that involved human errors affecting their patients.

Several large medical facilities are utilizing lean managerial tools designed to increase productivity in health care delivery. Lighter (2011) points out that one of the lean tools and concepts involves error proofing. This concept requires an approach that ensures quality and error free manufacturing of products or services. This method does not allow defects in the process to be passed on to the next operation. It requires the employee and the team to be empowered to look for defects in process design and then correct the process in order to eliminate the defect at the earliest possible point. This empowerment of health care workers is a necessary prerequisite to improve health care delivery in this country.

The empowerment of workers and teams in health services delivery requires the application of expertise by team members to resolve errors at the moment they occur, sharing the event with team members and team acceptance of accountability for the actions of individual team members. This will require tremendous trust and confidence among team members and their immediate supervisors. One of the more important components of improving system performance is found in the culture of the organization. According to Atchison and Carlson (2009) trust is the glue that will hold a culture together and quite often strengthen the existing organizational structure. This trust can be demonstrated in solving medical errors in health care delivery by empowering the workers to solve the system problems that result in medical errors at the time of occurrence of the error.

THE NEED FOR TEAMWORK AND COMMUNICATION

The current health care delivery system is a fragmented system of care that usually requires patients to see multiple providers in many locations virtually guaranteeing that these providers do not have access to complete patient information. Making matters worse there is no incentive to improve safety and quality of care. These medical errors are caused by a faulty system that actually encourages mistakes.

The causes of the vast majority of these medical errors are a direct result of poor communication among health providers and a lack of team work in the delivery of health care services. The solution to this problem will require the development of a culture of safety in health services delivery. This culture of safety will rely on team work as the norm when

delivering health care services to patients. These teams will be empowered to develop their own protocol to prevent errors from occurring and dealing with an error immediately if it does happen.

The system must be better designed so that it becomes more difficult for mistakes to be made. Brownlee (2007) argues that the system requires far too many people to do everything right every time in order to arrive at a successful patient outcome. This type of system is perfect for “latent errors.” These are mistakes in medical care delivery that are waiting to happen. Even though they are quite often labeled as never events they are occurring all too frequently causes health costs to rise and patients being hurt by the very system that is supposed to heal them.

According to Spear (2009) the old approaches to medical care delivery must be replaced with a more sophisticated approach that is improved when problems are revealed and modified or dropped completely when the situation changes. This is clearly the case with medical errors which need to be eliminated by dealing with the known flaws found in this complicated system. This can only be accomplished by medical staff not attempting to work around this problem but immediately redesigning the process when problems are uncovered. In order to accomplish the elimination of system flaws it is very helpful to look at other companies that have dealt with and solved the problem of errors in the workplace.

Spear (2009) recommends that the approach followed by ALCOA in reducing workplace injuries by a substantial amount be applied to the epidemic of medical errors currently found in the delivery of health care services in this country. The new CEO of ALCOA, Paul O’Neill, made safety problems reportable directly to him within twenty four hours of their occurrence. He then designed a system that had the ability to detect problems when and where they occur. These safety problems are then swarmed at the time and place of occurrence. This makes it possible to gather information that would otherwise probably be lost over time. After a solution to the problem is discovered the new knowledge is then shared with everyone who needs to know. This approach, utilized by high velocity organizations, usually exhibit the following capabilities: it is designed to capture existing knowledge and building in tests to reveal problems, swarming and solving problems to build new knowledge and sharing the new knowledge gained throughout the organization.

DISCUSSION

The cost of delivering health care to Americans has risen to over 2.5 trillion dollars and currently consumes over 17 percent of our gross domestic product on an annual basis. Unfortunately, a large portion of these costs are a result of unnecessary care that can also be very dangerous for the patient. There is an epidemic of medical errors and hospital acquired infections that are increasing the costs of health care delivery and causing disability and even death for many patients.

These medical errors and hospital acquired infections can be prevented but it will require a great deal of reform in the way medical care is delivered in this country. Medical care is a service that is intangible and produced by individuals who are quite capable of making mistakes in the way the service is delivered. This care is produced by the health care system that has been developed to deliver medical care services to Americans. Systems usually get precisely the

outcome that they are designed to deliver. Therefore, in order to prevent medical errors and infections in health care institutions the system of delivering this care must be redesigned.

There are several targets that require transformation in health care. These targets are unjustified variation in care, fragmentation of care giving and perverse payment incentives that reimburses by units of work rather than payment for predetermined outcomes. The health care delivery system needs to approach medical errors the way ALCOA reduced safety problems. They need to solve the problems the minute they occur and not accept them as a cost of doing business. They need to swarm the problem, discover the cause and immediately share the results with the entire organization.

The answer to this epidemic of medical errors is found in the use of reimbursement techniques by third party payers to demand quality care or use finance to penalize offenders. Providers of healthcare services must develop service delivery systems that are capable of detecting medical errors as they occur and then change the system flaw so that it never occurs again. These medical errors are almost entirely preventable if proper attention from the top of the organization is directed towards abatement of the error process. There is also an immediate need to utilize available technology like electronic medical records to prevent medical errors from occurring.

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WORK SCHEDULING SATISFACTION AND WORK LIFE BALANCE FOR NURSES: THE PERCEPTION OF ORGANIZATIONAL JUSTICE

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ABSTRACT

The shortage of nurses and other qualified health care workers has become a universal problem in the United States and other regions in the world. Recruitment and retention of quality healthcare workers in general and nurses in particular are of paramount importance to health care organizations. Previous research indicates that employees who are satisfied with their jobs are less likely to leave an organization. One of the areas of employee satisfaction for nurses is the availability of workforce scheduling that allows them to coordinate their professional and personal lives for work life balance. The results of this study indicate perceptions of fairness for the actual work schedules (distributive justice) as well as the process used to generate that schedule (procedural justice) are important for satisfaction with the assigned schedule. This study provides work schedule satisfaction as an additional option for hospital administrators trying to attract and retain nurses.

INTRODUCTION

Nurses are essential to the management of patient care in hospitals and other health care facilities. The shortage of nurses and other qualified health care workers has become a universal problem in the United States and other regions in the world. Recruitment and retention of quality healthcare workers in general and nurses in particular are of paramount importance to health care organizations. Previous research indicates that employees who are satisfied with their jobs are less likely to leave an organization. One of the significant areas of employee satisfaction for nurses is the availability of workforce scheduling that allows them to coordinate their professional and personal lives. Although the workforce scheduling challenge is relevant in other industries, factors such as 24 hour/7 day coverage, unpredictability in patient volume and a range of illnesses exacerbate scheduling problems in a hospital setting. These factors necessitate variability in degree of specialization of tasks and require differing skill sets and certifications.

Consequently, the "perfect state" solution is a work schedule that consistently allows nurses to meet their personal/family needs and also satisfies the requirements for quality delivery of healthcare (Tarpey & Nelson, 2009). Since perfection is unlikely, the provision of quality patient care will in most instances take priority over meeting the personal needs of nurses. It is

therefore important that nurses feel they are treated fairly when their work schedules are generated and are satisfied with the process used to develop those schedules.

The perception of being treated fairly in the workplace has been termed organizational justice; a phrase coined in the later 1970s by researchers examining fairness and justice in social exchanges. The theory of organizational justice conceptualizes organizational justice as two distinct variables, distributive justice and procedural justice (Folger & Konovsky, 1989; Greenberg, 1990; McFarlin & Sweeney, 1992). Researchers suggest people distinguish between what they get (distributive justice) and how it was given to them (procedural justice). Furthermore, these processes determine fairness for outcomes and fairness for procedures, respectively. Another aspect of procedural justice involves the treatment of members of the group or the fairness of the interpersonal treatment referred to as interactional justice. Although some research distinguish distributive, procedural, and interactional as three distinct dimensions of organizational justice, this paper focuses only on distributive and procedural justice and views interpersonal treatment as one aspect of the process evident in procedural justice (Cropanzano & Greenberg, 1997; Harvey & Haines, 2005).

A search of the literature did not reveal previous research that applied the theory of organizational justice to nurses' work schedules and work-life balance. The purpose of this paper is to transfer theory to practice and investigate whether distributive and/or procedural justice has an impact on the satisfaction of nurses' for their work schedules. We also examine the relationship of nurses' work schedule satisfaction to their work-life balance. The first section of the paper provides a summary of prior research on organizational justice theory and the conceptualization of procedural and distributive justice. The next section discusses work life balance and its relationship to job satisfaction. Finally, we test hypotheses to investigate the relationship between organizational justice, work schedule satisfaction and work life balance.

ORGANIZATIONAL JUSTICE

Procedural justice originated in legal context as attempts were made to develop fair procedures for determining outcomes (Thibaut & Walker, 1975). Research in organizational justice began with distributive justice as attempts were made to understand employees' perceptions of fairness for the distribution of outcomes (Hegtvedt, 1995). Distributive justice is defined as the perception of fairness for the distribution of outcomes and procedural justice is defined as the perception of fairness for the procedure or decision process used to distribute outcomes (Greenburg, 1990). Distributive justice therefore focuses on what individuals get (the ends) while procedural justice focuses on how they get it (the means). Much of the early research on distributive justice focused on compensation and pay satisfaction (Folger, 1977; Folger & Konovsky, 1989). Previous research has shown that individuals' perceptions of fairness of outcomes affect their attitudes and behaviors for pay satisfaction and job satisfaction (Dittrich & Carrell, 1979; Moorman, 1991). Thibaut and Walker (1975) found that even when individuals

felt they received unfavorable outcomes, they evaluated the outcome more positively when they believed the process was fair. Other studies (Konovsky, Folger & Cropanzano, 1987; Folger and Konovsky, 1989) have also found that procedural justice accounted for more variance in organizational commitment than distributive justice. Organizational commitment reflects individuals' feelings of attachment to the organization and perceived unfairness could impact their job satisfaction and result in turnover.

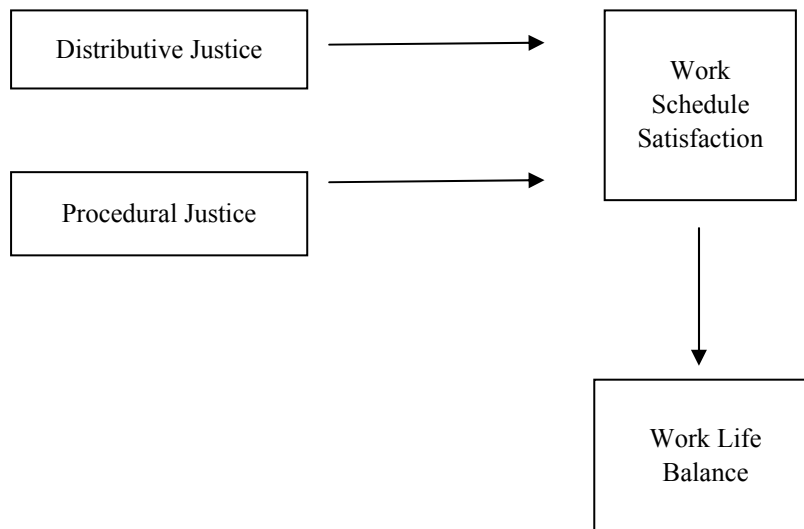
In some studies, procedural justice had an effect on certain outcomes when distributive justice did not, indicating that procedures are more important than outcomes. Some researchers have concluded that the type of outcome determines whether distributive or procedural justice prevails (Folger & Konovsky, 1989; Greenberg, 1990; McFarlin & Sweeney, 1992). Personal outcomes, such as pay, benefits and raises, have been attributed to distributive justice; and organizational outcomes, such as trust in management, organizational commitment and organizational citizenship behaviors, have been attributed to procedural justice. In a study on downsizing experiences, researchers found that distributive justice was a stronger predictor of organizational commitment for victims of downsizing while for the survivors of downsizing, procedural justice was a better predictor (Clay-Warner, Hegtvedy, & Roman, 2005). In a study investigating flexibility on employee benefit satisfaction, results indicated both distributive and procedural justice accounted for the variance in benefit satisfaction; however the greatest impact was evident when employee preferences were considered (Tremblay, Sire & Pelchat, 1998). When employee preferences are considered during decision-making, employees are in essence given voice which increases their satisfaction with the process or procedural justice.

There is evidence that distributive and procedural justice are integrated and that the perception of one influences the other. For example, if nurses are satisfied with their work schedules (distributive justice) they are more likely to perceive the process as being fair (procedural justice). Likewise, if nurses are satisfied with the process used to determine their work schedules, satisfaction with the schedules is likely. Hegtvedt recommended an integrative approach to applying distributive and procedural justice by emphasizing the commonalities among them (1993). Both distributive and procedural justice were based on the perceptions of self-interested individuals involved in social exchange. In a study utilizing respondents from various industries, including healthcare, researchers concluded that both distributive and procedural justice were important when examining ethical frameworks and perceptions of fairness (Schminke, Ambrose & Noel, 1997). In a review of 45 studies, Brockner and Wiesenfeld (1996) also determined that distributive and procedural justice were interrelated. When outcomes were unfavorable, procedural justice was more positively related to individuals' reactions. Likewise, when the process was unfavorable, distributive justice was more positively related to individuals' reactions. Given the importance of fairness to employees for satisfaction with pay and benefits, organizational commitment and organizational citizenship behavior, distributive and/or procedural justice should be positively related with their work schedule satisfaction as shown in Figure 1. Thus,

Hypothesis 1: Distributive justice will be positively associated with work schedule satisfaction.

Hypothesis 2: Procedural justice will be positively associated with work schedule satisfaction.

FIGURE 1
A Model of Perceptions of Distributive and Procedural Justice with Work Schedule Satisfaction and Work Life Balance



WORK-LIFE BALANCE

The issue of work-family conflict has received an increasing amount of attention as researchers explore the causes and consequences of this role based conflict. Today's work and family environments place ever-increasing demands on individuals who are finding it more difficult to achieve an acceptable balance. Relevant past literature provides several differing definitions for this phenomena, but all of these definitions center on an individual's subjective perception that both work and family make legitimate demands which cannot all be adequately fulfilled within available time (Jacobs & Gerson, 1998; Tausig & Fenwick, 2001). The perception of an imbalance causes stress and pressure to accumulate within the individual as either work and/or family demands go unfulfilled. These unfulfilled demands potentially affect an individual's performance and ability to experience happiness in either role (Greenhaus and Beutell, 1985).

While the issue of work-life balance is likely to be more individual dependent than industry or profession dependent, there is supporting evidence to suggest several common factors have a higher probability to contribute toward a greater challenge in achieving balance such as:

work overload or stress, irregular or inflexible work schedules, and long work hours (Burke et al., 1980; Keith & Schafer, 1980; Pleck et al., 1980; Yildirim & Aycan, 2007). An additional possible contributor is a lack of choice in the above factors. Literature suggests there may be offsetting compensations for working irregular/non-standard work schedules, long work hours, or overtime, in the form of pay differentials and the availability of typical standard work hours to pursue other interests such as education (Presser, 1995). Individuals may view offsetting compensations as an individual choice to accept the consequences of the work schedule/hours as a lesser cost than the associated benefits received and therefore lead to more tolerance in achieving a balance. Individuals without a choice or input toward setting work schedules/hours, on the other hand, may not view the compensations as sufficiently offsetting and may be more susceptible to experiencing work-family conflict.

An individual's perception that a work schedule accommodates work and family demands can serve to lessen the potential for work-family conflict (Ruggiero, 2006). Likewise, a perception that a work schedule is unaccommodating should serve to increase the potential for work-family conflict. The nursing profession provides an excellent opportunity for this investigation as it includes many of the criteria that have been demonstrated to contribute to an environment conducive to the creation of conflict. Nurses must be scheduled to provide patient care in many hospital units 24 hours a day necessitating the assignment of irregular and/or non-standard shifts (outside typical 9am – 5pm Monday through Friday timeframes). The work itself is demanding by nature comprised of high-contact, time critical work that can be stressful. Additionally, many nurses do not have input into their schedules and may not have specifically chosen to work non-standard or irregular hours. Based on the hospital's need to provide patient care 24 hours a day, 365 days a year nurses may have been placed on a night shift (or some other irregular schedule) due to less experience or low seniority. In facilities where there is not a large consideration for schedule preference or utilization of "self" scheduling, nurses have little input to their schedules further limiting choice.

Previous work-family conflict studies have also indicated that there is a difference in levels of work-family conflict perception between males and females (Tausig & Fenwick, 2001; Milkie & Peltola, 1999; Gutek, Searle, & Klepa, 1991). Several of these studies have also indicated that the majority of pressure females experience comes from family demands rather than work demands especially when the family has children (Tausig & Fenwick, 2001; Milkie & Peltola, 1999). One possible explanation is that a larger portion of family role tasks that are time constrained typically falls on the female of the family. While males usually assume responsibility for tasks such as home maintenance, females normally are responsible for tasks that must be done on a regular basis regardless of the quantity or pressures of work demands. Therefore, while many generally male dominated family tasks can be put off if work demands increase, the same is not true for the female dominated tasks such as laundry, cooking, or direct child care (Milkie & Peltola, 1999). According to the U.S. Department of Labor (2007), 91% of the over 2.5 million Registered Nurses are females. Therefore, the propensity for nurses to

experience work-family conflict is high due to irregular, inflexible or long work hours, potential limited choice in work schedules, and personal or family demands. Additionally, nurses with families can experience more demanding family role tasks in addition to their potentially high demand work role tasks causing a further perception of a lack of balance.

The implications of the work schedule on an individual's ability to achieve a work-family balance are clear and demonstrated in previous studies (Yildirim and Aycan, 2007; Burke and Greenglass, 2001; Simon et al., 2004). An employee's negative perception of a work schedule should increase the potential for the existence of work-family conflict through the perception of the scheduled hours as too excessive, irregular, or inflexible. These perceptions should increase pressures on the nurse's perception of ability to serve in the family role and fulfill expected demands. Thus,

Hypothesis 3: Work schedule satisfaction will be positively related to work-life balance.

METHODOLOGY

Our sample included clinical nurses at a large hospital (over 700 licensed beds and over 1000 clinical staff) in the midwest region of the United States. The "Daily Staffing/Scheduling Satisfaction Survey" was developed to ascertain scheduling satisfaction for nurses. The survey was distributed to 1565 staff members in all clinical departments including patient direct care and patient care support staff at the beginning of their shifts. Shift managers and charge nurses asked and reminded staff to complete the surveys each day during the period and return the survey within 10 days. Several collection points were established at various sites within the hospital outside of the individual departments for employees to return the anonymous survey forms. The response rate was 30% with 529 returned surveys. Demographics indicate 88% of the respondents were female, 6% male and the remaining 6% declined to give their gender.

MEASURES

All measures utilized a six point Likert format with a scale of 1 = disagree strongly; 2 = disagree moderately; 3 = disagree slightly; 4 = agree slightly; 5 = agree moderately; and 6 = agree strongly. The Cronbach alphas for all measures indicate acceptable inter item reliability.

Distributive justice was measured by responses to two statements about the work schedule received. The statements were "Overall schedules in my unit have been fair" and "Overall I agree with the work hour decision made in my unit." The Cronbach alpha for this measure was 0.71.

Procedural justice was measured by responses to two statements about the fairness of the process involved in the work schedule received. The statements were "I believe weekends

have been scheduled fairly across the unit" and "I believe holidays have been scheduled fairly across the unit". The Cronbach alpha for this measure was 0.81.

Work schedule satisfaction was measured by responses to three statements regarding satisfaction with the work schedule received. The statements were "Overall I am satisfied with my work hours", "Overall I am satisfied with my 4-week schedule" and "I receive the 4-week schedule I prefer the majority of the time." The Cronbach alpha for this measure was 0.76.

Work life balance was measured by responses to two statements regarding quality of personal life and work schedule. The statements were "I believe I have enough flexibility in my work hours to take care of personal needs" and "I am able to schedule my days off to fit the needs of my personal life". The Cronbach alpha for this measure was 0.75.

DATA ANALYSIS

Table 1 shows the intercorrelations and descriptive statistics for the variables in this study. Distributive justice has a significant positive correlation with both procedural justice and work schedule satisfaction. Procedural justice also had significant positive correlation with work schedule satisfaction but at a lower level. It is interesting to note that both distributive and procedural justice also had significant positive correlations with work life balance. In addition, there is a significant positive correlation between work schedule satisfaction and work-life balance.

Regression analysis was used to determine the results from all hypotheses. Hypothesis 1 posited that distributive justice will be positively associated with work schedule satisfaction. In this analysis, the dependent variable, work schedule satisfaction, was regressed on the independent variable, distributive justice as shown in the following equation:

$$y = b_0 + b_1x$$

where y = work schedule satisfaction and x = distributive justice. The relationship between distributive justice and work schedule satisfaction is positive and significant ($F = 1377.8$, $p < .001$), supporting hypothesis 1a.

Measures	1	2	3	4	Mean	Std. Dev.
Distributive Justice (DJ)	1				9.22	2.2852
Procedural Justice (PJ)	.584**	1			8.754	2.9445
Schedule Satisfaction (SS)	.866**	.558**	1		14.276	3.0908
Work Life Balance (WL)	.699**	.561**	.664**	1	8.624	2.8165
**Significant at the .01 level						

Likewise, hypothesis 2 posits that procedural justice will be positively associated with work schedule satisfaction. The dependent variable, work schedule satisfaction is regressed on procedural justice, the independent variable as shown in the following equation:

$$y = b_0 + b_1x$$

where y = work schedule satisfaction and x = procedural justice. The relationship between procedural justice and work schedule satisfaction is also positive and significant (F = 201.8, p < .001), supporting hypothesis 2.

TABLE 2		
Results of Regression Analysis: Hypothesis 1 & 2		
Dependent Variable	Work Schedule Satisfaction	
Independent Variables	Distributive Justice	Procedural Justice
R square	0.75	0.311
Adj. R square	0.749	0.31
F value	1377.809	201.822
*p<.001		

Hypothesis 3 posits that work schedule satisfaction will be positively related to work- life balance. The regression equation is shown as follows:

$$y = b_0 + b_1x$$

where y = work- life balance and x = work schedule satisfaction. The relationship between work schedule satisfaction and work-life balance is also positive and significant (F= 362.2, p < .001), supporting hypothesis 3.

TABLE 3	
Results of Regression Analysis: Hypothesis	
Dependent Variable	Work Life Balance
Independent Variable	Work Schedule Satisfaction
R square	0.441
Adj. R square	0.44
F value	362.237
*p<.001	

DISCUSSION

A question that goes unanswered in previous studies on work schedule satisfaction concerns the importance of perception. Much of the precedent work studies the affects of irregular, long, or overtime hours on work-family conflict, but does not adequately define standards concerning irregular, long, or overtime hours for professions that may consistently accept definitions that differ from typical Monday through Friday, 9AM-5PM, 8 hours per day, 40 hours per week parameters. Nursing is a profession where these typical standards are not generally accepted norms. Nurses, for the most part, accept work schedules that fall outside these parameters given the 24-hour, 7-day a week nature of the profession. Unnecessarily irregular, long, or overtime hours are more a function of individual perception than standards. Three consecutive days of 12-hour shifts may be perceived by one nurse as unduly burdensome toward his/her ability to fulfill family obligations during those three days while another nurse may perceive this as an acceptable sacrifice toward being able to be with the family for the other four consecutive days without working. Therefore, this study focused more on the perception of fairness/satisfaction in the work schedule. The implications of the findings could serve to guide the work schedule creation process toward focusing on the perception of fairness, input and satisfaction in order to reduce the potential for work-family conflict.

Health care organizations have in recent years utilized increases in wages and benefits to attract and retain nurses and other health care workers. This has resulted in enormous labor costs in an effort to compete with other health care organizations to attract and retain quality workers. The results of this study provide work schedule satisfaction and work life balance as additional options for hospital administrators. Perceptions of fairness for the actual work schedule as well as the process used to generate that schedule are important for satisfaction with the assigned schedule. Nurses satisfied with their schedules are less likely to leave the organization. This is most likely true for a group of predominately female nurses who generally have family and other personal demands. The nursing profession in many cases requires priority to the needs of the patient and the organization in order to provide quality health care. Health care organizations can use the results of this study to determine best practices for nurses' work force scheduling. Positive consequences of nurses' perception of fairness in their schedules could include job satisfaction and retention, both of which are important for patient care effectiveness and efficiency in the unit. An additional outcome could also include recruitment as new hires (nurses) would be attracted to an organization with a reputation for fairness in work schedules and work life balance.

LIMITATIONS OF THE STUDY AND FUTURE RESEARCH

The present study is cross-sectional and conducted at only one hospital. Future research should consider collecting data at various times and in additional hospitals to provide for more

generalizability of these results. One could also argue that when nurses are satisfied with their schedule they perceive distributive and procedural justice although logic seems to suggest justice predicts satisfaction with the schedule. A longitudinal study could show the causality necessary to support the hypotheses presented in this model. Future research should also seek to determine if there is a difference in the perceptions of male versus female nurses for justice and work life balance. More men are assuming maternal roles in the home and functioning as single parents, therefore it is worthwhile investigating the potential impact of gender on perceptions of satisfaction. Each of these future investigations could bring an improved focus on the importance of justice perception on work satisfaction. Distributive justice could then be achieved by ensuring that fair and equitable schedules are created and procedural justice could then be achieved through scheduling process clarity, consistency, and communication. In the end, both distributive and procedural justice could produce an organization with the desired results of work satisfaction and retention.

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AN EMPIRICAL EVALUATION OF HOSPITAL PROJECT IMPLEMENTATION SUCCESS

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ABSTRACT

The management literature contains a number of studies regarding project critical success factors. Unfortunately, these studies do not focus on hospital organizations. Using a survey research methodology, this study empirically tests the factors proposed in the literature as important to project success within the context of hospital implementation projects. The following questions are placed in consideration: (1) Do the critical success factors identified in previous research apply to hospital implementation projects? (2) What factors are perceived to be most important during each phase of a hospital implementation project?

The findings strongly suggest that the application of critical success factors to project management within hospital environments positively impacts project success. Separate analyses based on the stage within a project's life cycle, selected by survey respondents to focus their responses, offer support for many of the factors specified in prior efforts; however, the order of importance or dominance of the respective critical success factors differs from that reported in prior research directed at general business environments. These empirical outcomes provide insight into which activities are deemed as most important for project success when viewed from the perspective of experienced hospital project managers. In closing, recommendations are tendered for future research efforts.

INTRODUCTION

Hospitals face intense demands to lower costs, improve quality and expand access to a growing uninsured population. While these multifaceted demands can result in critical consequences to millions of people, health care managers often have difficulty tackling these demands due to their lack of familiarity with management best practices. As Fetter (1991, p. 7) states, "attempts at applying industrial concepts to hospital management date back to the early 1900s. Advances in technology and skyrocketing health-care costs provided the means and the necessity to recommence such efforts." However, "many common management practices in healthcare organizations ... have not been subject to widespread assessment through empirical research," (Kaissi & Begun, 2008, p.197). As a result, healthcare managers frequently lack fundamental knowledge relative to healthcare-specific management to call upon as a platform for

success when they face critical project decisions (Knight, 2005; Austin, Homberg, & Shmerling, 2000; Carden & Egan, 2008).

To further complicate matters, hospital organizations are qualitatively different from other business organizations. Changing reimbursement policies, as well as private and public quality and access regulations constantly challenge the ability of hospitals to survive and even thrive competitively (Langabeer, 2008). Tucker, Nembhard, and Edmondson (2008, p.894) describe hospitals as complex service organizations, which are characterized as organizations “with interdependent work units whose work must be coordinated to provide customer service but whose units often have conflicting priorities.” According to Tucker et al. (2007, p.894), “hospitals epitomize the definition of a complex service organization because task responsibilities are divided among multiple, interdependent departments—such as pharmacy, laboratory, physicians, and nursing—that have conflicting priorities regarding what service to provide and at what time.”

Modern project management techniques are increasingly utilized in a broad variety of business environments (Carden & Egan, 2008; Hyvari, 2006). The adoption and successful application of these management support tools within hospital settings may lead to reductions in costs and enhanced real and/or perceived quality (Sa Couto, 2008). A review of the healthcare and project management literature reveals few empirical studies that consider the application of project management concepts to healthcare settings. Additionally, prior research has not identified which factors are critical to a project’s success within the unique environment of a hospital. Hospital administrators responsible for managing projects within their organizations cannot and should not simply presume that critical success factors relevant in other industries will persist within their industry.

This study uses a proven survey instrument and methodology to empirically consider the various factors proposed in the existing management literature as important to project implementation success within the context of hospital environments. Specifically, the following questions are considered: Do the critical success factors (CSFs) identified by Slevin and Pinto (1986, 1987) and empirically tested by Pinto and Prescott (1988) apply to hospital implementation projects? Which factors, if any, are perceived as most important during the respective phases of a hospital project’s life cycle? The research builds upon and extends prior research leading to two significant outcomes: (1) a refined understanding of the portfolio of CSFs in the aggregate and (2) a better appreciation for the predominance of these factors within the specific context of hospital project management.

THEORETICAL BACKGROUND

The hospital industry has many stakeholders, each with a unique agenda (Herzlinger, 2006). Additionally, insurance reimbursement practices (Langabeer, 2008), government regulations (Herzlinger, 2006) and high cost structures (Langabeer, 2006) hinder the capability

of a hospital to compete and prosper. Given these distinctive characteristics that face hospital organizations, it is reasonable to investigate the application of traditional project management practices within these environments.

Project implementation success is defined by the achievement of planning, budgetary, and functional goals (Finch, 2003). This study examines project implementation success using project management as a focal point for measuring success. Project management is a key activity in most modern organizations (Belout & Gauvreau, 2004). The concept of project implementation success is a matter of perception (Baker, Murphy, & Fisher, 1988) because various project stakeholders utilize different criteria and factors to develop their assessment of project implementation success (Belout & Gauvreau, 2004; Fowler & Walsh, 1999). Traditionally a project implementation is considered a success, from the perspective of a project manager, when the project is completed on time, within budget, and according to specifications (Jugev & Muller, 2005; Pinto & Slevin, 1988; Rosacker & Olson, 2008).

Rockart (1979) defined CSFs as the few key areas in which things must go right for an organization to thrive. If results in these areas are inadequate or deficient, the organization's efforts will be without reward. Further, these mission-critical areas must be acknowledged and acted upon in an effective manner or it will not be possible to ensure success for a manager or an organization (Rosacker & Olson, 2008). Thus, CSFs are "areas of activity that should receive constant and careful attention from management" (Rockart, 1979, p. 85).

In a project context, the CSFs approach attempts to identify the set of generic factors that are perceived as critical to project success (Pinto & Prescott, 1990; Soderlund, 2009). "Project managers find CSFs particularly useful because most of their time is spent on dealing with a multitude of details and continuously 'putting out fires.' As a result, they rarely have enough time to focus on issues that are less urgent, but critically important, to the success of the project" (Jurison, 1999, p. 39). An empirically derived, tested, and evaluated list of CSFs would help project managers "think through what is important, maintain focus on critical factors, establish priorities, and enhance communication and shared understanding" (Jurison, 1999, p. 41).

While the project management literature contains many studies on CSFs, "the most important empirical studies on the [CSFs] in project success have been conducted by Pinto with coauthors" (Belout & Gauvreau, 2004, p. 2). Slevin and Pinto (1986) developed the project implementation profile (PIP), which is both a framework for the project implementation process as well as a diagnostic instrument for project managers. This profile, developed and confirmed through field research, identified ten factors as critical to project implementation success. The PIP framework can also be used to identify and assess potential problem areas during implementation (Pinto & Mantel, 1999), which can then be addressed through appropriate corrective action initiatives (Pinto & Slevin, 1987). Additionally, the PIP framework can be utilized as part of post-project reviews facilitating learning that can assist future projects (Finch, 2003).

CONCEPTUAL FRAMEWORK AND HYPOTHESES

This study uses the PIP framework to examine and empirically assess the relationship between project implementation success and ten CSFs as specified by Slevin and Pinto (1986) within the unique context of a hospital implementation project.

Project Implementation Success

An implementation was deemed successful if it satisfied three objective measures. First, the project was implemented in a timely manner. Second, the project's overall cost was within original budgetary constraints. Third, the implemented solution contained the features and functionality requested by the end-user. The dependent variable of project implementation success was formed as a composite measure from seven items adapted from Pinto and Slevin (1988).

The project will come in on time.

Project schedules are being adhered to.

This project will come in on budget.

The project cost objectives will be met.

The project will be used by its intended clients.

The project will have a positive impact on those who make use of it.

All things considered, this project will be a success.

Critical Success Factors

The specific CSFs considered are presented in Table 1 and include project mission, top management support, client consultation, project schedule and plan, personnel, technical tasks, client acceptance, monitoring and feedback, communication, and troubleshooting.

Project mission refers to a condition where the objectives of the project are clearly understood by all the individual operatives and stakeholders involved in or interested in the project and its outcomes (Olson, 2004).

Top management support refers to the willingness of top management to provide the resources required for project success. Sharma and Yetton (2003) offer that top management support (also referred to as management support) is the single most frequently hypothesized contributor and influence with respect to successful project implementation.

Project planning and scheduling was considered as two separate yet interrelated activities. “Planning is comprised of scope definition; creation of work breakdown structures; and resource and activity assignments [while scheduling refers to] the setting of the time frames and milestones for each important element in the overall project” (Pinto & Millet, 1999, p. 55).

The terms client consultation and user involvement are used interchangeably and refer to the overt communication and consultation link that encompasses seeking input from and listening to all vested parties (Belout & Gauveau, 2004).

The Personnel attribute measures and encompasses the various aspects and activities associated with recruitment, selection, and training of project team members (Belout, 1997). More specifically, for purposes of the study this variable is concerned with the constitution and on-going development of an implementation team (Belout & Gauveau, 2004).

Technical tasks refers to having the necessary personnel resident on the implementation team, as well as ensuring that the team members have the necessary technical skills and access to adequate technology to perform their tasks (Pinto & Prescott, 1990; Pinto & Slevin, 1987).

Monitoring and feedback relates to the project control process whereby key personnel and interested parties (e.g., end-users) accumulate, assess, and utilize feedback on how the project is progressing relative to initial and on-going projections.

Client acceptance is the final stage in the implementation process (Pinto & Slevin, 1987). Client acceptance refers to the act of selling the final project to its intended users and obtaining sign-off by those having responsibility for approving completion and, therefore, termination of the project (Jiang, Klein, & Balloun, 1996).

Within the context of project implementation, communication refers to the provision of an appropriate network and necessary data to all key actors in the project implementation. A good communication plan is essential for project success (Hartman & Ashrafi, 2002). Project personnel and end-users frequently converse in different languages—one the terminology of the project and the other the language of business. A formal communication plan is required to create the “semantic equivalence” (Gillard, 2005, p. 39) necessary for these diverse groups of individuals to communicate.

All project implementations encounter difficulties that are unforeseen at the inception of the project. As a result, it is essential that the implementation plan include mechanisms to

recognize problems, trouble-shoot and correct these problems as they occur. Trouble-shooting and corrective devices “make it easier to react to problems as they arise, but also foresee and possibly forestall potential problem areas in the implementation process” (Pinto & Millet, 1999, p. 57).

Factor	Description
1. Project mission	Clear statement of goals and objectives
2. Top management support	Necessary resources and authority present
3. Client consultation	Communication, consultation and active listening to all stakeholders
4. Project schedule/plan	Detailed specification of actions required for project implementation
5. Personnel	Recruitment, selection and training of necessary team personnel
6. Technical tasks	Availability of required technology and expertise
7. Client acceptance	The act of selling final projects to their ultimate intended users
8. Monitoring and feedback	Timely provision of an appropriate network and necessary data to all key actors
9. Communication	Appropriate network and necessary data to all key stakeholders in project implementation
10. Troubleshooting	Ability to handle unexpected crises and deviations from plan

This leads to the initial hypothesis of this study:

H1: Each of the CSFs is significantly correlated with project implementation success within hospital organizations across the entire project life cycle.

A project is not a static entity; rather, it navigates a life cycle progressing through four phases: conceptualization, planning, execution, and termination (Adams & Barndt, 1988). The project management literature contains a number of studies which consider the impact of project life cycle stage on a variety of factors including the use of risk management techniques (Lyons & Skitmore, 2004), project failure (Pinto & Mantel, 1999), and project success (Belout & Gauvreau, 2004; Pinto & Prescott, 1988). Therefore, to further refine our analysis and build upon the work of Pinto and Prescott (1988), consideration was given to project implementation success within the context of project life cycle. The second hypothesis is:

H2: The relationship between the CSFs and project success is affected by project life cycle stage.

RESEARCH METHODOLOGY AND SUBJECT SELECTION

The survey instrument was derived from prior research thereby enhancing the validity and reliability of this research effort (Nunnally & Bernstein, 1994). CSFs were identified and selected by reference to a modified version of the PIP framework originally developed by Slevin and Pinto (1986). Each of the CSFs used in the analysis was comprised of five to ten indicators. Respondents were asked to indicate their degree of agreement or disagreement on a seven point Likert-type scale to a series of 50 questions that measured aspects of the CSFs regarding project implementation success. To compare the different variables, the responses to the indicators for each dimension were summed to develop an aggregate score for each respective respondent-variable combination.

Each participant was asked to consider a hospital implementation project that was currently underway or had recently been completed and in which they had participated as a member of the project team. The identified project served as the participant's frame of reference in developing responses to the survey questionnaire. Adams and Barndt's (1988) project life cycle phases (conception, planning, execution and termination) were used to permit the specification of a distinct phase for each project. Respondents were given a brief description of each of the four phases of the project life cycle. These descriptions enabled participants to respond to the questionnaire from the perspective of both a specific project and a specific phase within that project.

To validate the survey instrument and internet-based data collection process, a panel of five experts was identified and asked to participate in a pilot test. These experts were drawn from the academic and practitioner communities. Each person was independent of and unknown to the other experts. They were asked to individually evaluate an initial version of the survey instrument which was presented to them as a web-based survey exactly as it would be deployed for the study. The experts provided comments with regard to the form and content of each survey question as well as the Likert-type scaled statements. As necessary, the final survey instrument was modified to address any items (all minor in nature) that were identified during the pilot phase as presenting possible sources for misinterpretation. This exercise facilitated the validation of the survey instrument in the context of a hospital project.

The final survey instrument was included as a web link in an email to selected hospital administrators that described the research effort and asked them to forward the email and survey link to project personnel within their organization. This resulted in a snowball sampling with key informants strategy. Hospital administrators were identified using the American College of Healthcare Executives (ACHE) database. Administrators were contacted in multiple geographical location across the United States and from a variety of hospital sizes, ownership structures, locations (urban vs. rural), and service levels (critical access vs. not critical access).

RESPONDENT DEMOGRAPHICS AND SURVEY INSTRUMENT VALIDATION

A total of 192 hospital project personnel agreed to participate in this research effort resulting in 180 valid survey responses. T-tests of the mean responses for each of the survey variables for the early versus late respondents revealed no response bias. As discussed above under H2, a key component of the analysis involved addressing the responses within the context of project life cycle phases. Of the 180 usable survey responses, 36 respondents indicated that their frame of reference was the conceptual phase, 40 selected the planning phase, 72 chose the execution phase, and 32 indicated the termination phase. As a result, it was determined that the sample size of 180 responses was sufficient to proceed with the analysis in total and across the four life cycle phases.

As shown in Table 2, the projects described by respondents represent a wide range of hospital initiatives. Respondents identified their projects as facilities construction or renovation (23.79%), process improvement (17.24%), information technology (15.17%), efficiency or financial improvement (14.14%), quality improvement (12.76%), new service development (9.66%), human resource development (5.17%), or other (2.07%). In general, the projects had relatively low aggregate budgets with over half of the projects budgeted at \$500,000 or less.

Characteristic	Percentage of Responses
Type of Project	
Facilities construction/renovation	23.79%
Information technology	15.17
Human resource development	5.17
Process improvement	17.24
Quality improvement	12.76
New service development	9.66
Efficiency/financial improvement	14.14
Other	2.07
Aggregate Budget	
Less than \$100,000	29.17%
\$100,00 – 500,000	23.44
\$500,001 – 1,000,000	8.33
\$1,000,001 – 5,000,000	20.83
\$5,000,001 – 10,000,000	4.17
Greater than \$10,000,000	14.06

To assess scale reliability for responses, Cronbach's alpha was calculated for each variable, with scores ranging between 0.730 and 0.899. Each individual score exceeded the

acceptable level suggested by Nunnally and Bernstein (1994), providing evidence that the measures were reliable and all could be included within the analyses.

Confirmatory factor analysis was used to evaluate the construct validity of the survey instrument (Nunnally & Bernstein, 1994). This procedure indicated that the dependent variable and eight of the ten independent variables were adequately represented by the respective sets of indicators. The items measuring the Monitoring and Feedback and Troubleshooting variables all loaded onto one factor. As Pinto and Slevin (1987) noted, these two variables both relate to identifying and preventing problems. Additionally, both project monitoring and troubleshooting are ongoing activities throughout the project (Pinto & Slevin, 1987). Further, Tucker, et al. (2007) assert that teams in hospital settings rely heavily on problem-solving and experimentation to implement new practices or improve current knowledge. For these empirical and theoretical reasons, Monitoring and Feedback and Troubleshooting were combined into one variable for assessment purposes, labeled Monitoring & Troubleshooting.

HYPOTHESIS ONE: CORRELATION BETWEEN PROJECT IMPLEMENTATION SUCCESS AND CSFS

Pearson's correlation analysis was employed to test H1. As shown in Table 3, correlations between the nine independent variables resulting from confirmatory factor analysis and the dependent variable (project success) were obtained ranging from a high of 0.654 to a low of 0.351. All of the correlations were statistically significant at ($p < .01$) for a one-tailed test. These findings strongly suggest that nine of the CSFs identified in prior research (Pinto & Prescott, 1988) are significantly correlated with project implementation success when considered within the unique context of hospital projects.

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10
1. Project Success	40.914	7.090	(.814)									
2. Project mission	32.043	4.059	.654	(.786)								
3. Top management support	29.124	6.143	.553	.594	(.852)							
4. Project schedule/plan	25.919	6.203	.592	.478	.496	(.747)						
5. Client consultation	28.945	6.091	.469	.523	.519	.429	(.899)					
6. Personnel	24.838	6.572	.406	.412	.473	.594	.382	(.750)				
7. Technical tasks	28.438	5.362	.424	.374	.414	.477	.321	.571	(.730)			
8. Client acceptance	26.495	7.376	.351	.353	.352	.445	.476	.453	.399	(.798)		
9. Monitoring & feedback/Troubleshooting	58.284	9.308	.577	.547	.573	.530	.560	.584	.570	.502	(.893)	
10. Communication	26.377	7.166	.414	.394	.387	.423	.449	.505	.491	.404	.645	(.812)

Note: Project Success composed of 7 items; Monitoring & Feedback/Troubleshooting composed of 10 items; all other variables composed of 5 items each. All coefficients are significant at $P < .01$ (one-tailed). Reliabilities () on diagonal. $N=180$

Once the correlations among project success and the independent variables were established and in keeping with Belout and Gauvreau (2004), multiple regression analysis was performed to evaluate the influence of each independent variable on the dependent variable (project success). As problems with collinearity among the independent variables of the PIP are well-documented in the literature, the degree of association between the independent variables was considered as part of the analysis. While the Personnel and Monitoring & Troubleshooting variables exhibited some collinearity, none of the values were deemed serious enough to warrant removing the variables from the analysis.

Variable	B	SE B	β	Adjusted R ²	F
Project Mission	.632	.119	.365**		
Top Management Support	.119	.081	.103		
Project Schedule/Plan	.357	.080	.309**		
Client Consultation	.028	.079	.024		
Personnel	-.130	.079	-.120		
Technical Tasks	.080	.091	.059		
Client Acceptance	-.030	.062	-.030		
Monitoring & Feedback/Troubleshooting	.140	.064	.184*		
Communication	.015	.069	.015		
Overall model				.544	24.741**
* $P < 0.05$					
** $P < 0.01$					

As shown in Table 4, the linear regression results indicate that Project Mission, Project Schedule/Plan, and Monitoring & Troubleshooting are significant predictors for project success. Interestingly, Personnel and Client Acceptance did not contribute to project success. The overall model adjusted R-square was 0.544.

HYPOTHESIS TWO: THE MODERATING EFFECT OF PROJECT LIFE CYCLE

To assess H2, a correlation analysis between the independent and dependent variables under the control of different project life cycle phases was conducted (Table 5). In the conception, planning, and execution phases, all nine independent variables were significantly related to project success, albeit at different levels of significance. In the termination phase, Project Mission, Project Schedule/Plan, Technical Tasks, and Monitoring & Troubleshooting were significantly correlated with project success, again at differing levels of significance.

These results provide evidence that the relationships between independent variables and project success varies according to the project life cycle phase.

Project Life Cycle Phase	Independent Variable	Project Success
Conception	Mission	.835***
	Top Management Support	.776***
	Project Schedule/Plan	.758***
	Client Consultation	.697***
	Personnel	.473**
	Technical Tasks	.417**
	Client Acceptance	.393**
	Monitoring & Feedback/Troubleshooting	.737***
	Communication	.589***
Planning	Mission	.550***
	Top Management Support	.653***
	Project Schedule/Plan	.438**
	Client Consultation	.438**
	Personnel	.466**
	Technical Tasks	.460**
	Client Acceptance	.360*
	Monitoring & Feedback/Troubleshooting	.672***
	Communication	.526***
Execution	Mission	.476***
	Top Management Support	.431***
	Project Schedule/Plan	.578***
	Client Consultation	.350**
	Personnel	.458***
	Technical Tasks	.406***
	Client Acceptance	.369***
	Monitoring & Feedback/Troubleshooting	.645***
	Communication	.428***
Termination	Mission	.521***
	Top Management Support	.302
	Project Schedule/Plan	.457**
	Client Consultation	.240
	Personnel	.184
	Technical Tasks	.595***
	Client Acceptance	.289
	Monitoring & Feedback/Troubleshooting	.301*
	Communication	.226
* $P < 0.05$ (one-tailed) ** $P < 0.01$ (one-tailed) *** $P < 0.001$ (one-tailed)		

Stepwise regression analysis was used to further examine H2 and to consider which independent variables were dominant in each life cycle phase. The criterion for a factor to enter the regression equation was established at $F < .05$ and removal was set at $F > .10$. As with the multiple regression analysis for the total model, all nine independent variables were available in the stepwise model.

As shown in Table 6, the stepwise regression analysis supports the conclusion that, in hospitals, the relative importance of CSFs differs across the four project life cycle phases considered in this study. Further, the specific findings with respect to the dominant factors for each phase of hospital implementation projects are at variance with those reported in prior efforts that used a cross section of organizations as their focal point.

Project Life Cycle Phase	Number of Projects	Factors	Adjusted ΔR^2	Adjusted R^2	F
Conception	36	Mission	.688	.688	78.220**
		Top Management Support	.030	.718	45.659**
		Project Schedule/Plan	.056	.774	40.887**
		Personnel Monitoring & Feedback/Troubleshooting	.026	.800	36.047**
			.036	.836	36.561**
Planning	40	Mission	.284	.284	16.506**
		Top Management Support	.138	.422	15.236**
		Monitoring & Feedback/Troubleshooting	.055	.477	12.855**
Execution	72	Mission	.216	.216	20.517**
		Top Management Support	.058	.274	14.407**
		Project Schedule/Plan	.130	.404	17.017**
		Client Consultation Monitoring & Feedback/Troubleshooting	.027	.431	14.433**
			.073	.504	15.412**
Termination	32	Mission	.247	.247	11.149**
		Project Schedule/Plan	.072	.319	8.263**

** $P < 0.01$

With respect to the conception phase, the analysis revealed that Project Mission, Top Management Support, Project Schedule/Plan, Personnel, and Monitoring & Troubleshooting were the dominant CSFs (in order of importance). Top Management Support, Project Schedule/Plan, Personnel, and Monitoring & Troubleshooting were not identified as dominant factors for this phase of the project life cycle by Pinto and Prescott (1988).

During the planning phase, Project Mission, Top Management Support, and Monitoring & Troubleshooting were identified as the three dominant CSFs (in order of importance). Monitoring & Troubleshooting was not identified as a dominant factor for this phase of the

project life cycle in prior research since this particular factor had not been used previously. As previously noted, confirmatory factor analysis lead to the creation of a combined factor for Monitoring and Feedback and Troubleshooting.

In the execution phase, Project Mission, Top Management Support, Project Schedule/Plan, Client Consultation, and Monitoring & Troubleshooting are the dominant CSFs (in order of importance). Each of these factors had been identified as dominant during this phase of the project life cycle by Pinto and Prescott (1988). This confirmatory finding is important, as this phase is the time of actual work for the project as opposed to planning. Importantly, this is the point at which a project manager has the greatest control over how resources are applied to reach the goals established for a given project.

Finally, during the termination phase, Project Mission and Project Schedule/Plan were the dominant factors. Project Schedule/Plan, which addresses detailed specifications of actions required for project implementation, was not identified as dominant during this phase of the project life cycle by Pinto and Prescott (1988). Tucker et al. (2007, p.903) offer that within a hospital implementation “developing an understanding of the relationship between inputs and outputs is an important activity.”

Taken in aggregate, these findings indicate that in a hospital project implementation setting, Project Mission, Project Schedule/Plan, and Monitoring & Troubleshooting are critical success factors. Top Management Support plays an important role in the early phases of a project. The results offered here provide an understanding into the factors that affect a hospital project manager’s decision-making throughout the life cycle of a project implementation. While some similarities exist between these findings and prior research efforts (Pinto & Prescott, 1988) in many regards it appears that the perceptions of hospital project managers regarding CSFs are substantively different from other project managers’ perceptions.

CONCLUSIONS

Hospital organizations are qualitatively different from other types of organizations. As a result, CSFs identified as relevant to general business organizations must be assessed within the unique context of hospital implementation projects to determine the advisability of applying such general knowledge to the more specific context.

The findings for H1 indicate that the portfolio of CSFs specified in prior research (Slevin & Pinto, 1986; Pinto & Prescott, 1988) as crucial for project management while similar are not identical for a hospital implementation project. Additionally, Pinto and Slevin (1987) theorized that the two factors – Monitoring and Feedback and Troubleshooting – would be dominant throughout the entire implementation process. During confirmatory factor analysis associated with this study, Monitoring and Feedback and Troubleshooting loaded on a single factor. Given this prior theoretical foundation and the empirical results, Monitoring and Feedback and Troubleshooting were combined into a single factor labeled Monitoring & Troubleshooting.

Therefore, the application of the portfolio of CSFs to project management within the unique hospital environment would appear to be a reasonable course of action.

Concurrently, however, the order of importance or dominance of each CSF factor may differ between organizational environments as evidenced by the findings associated with assessment of H1. Dominant factors are important in any case where project resources are limited meaning that choices must be made as to where to concentrate attention or resources. It can, therefore, be safely concluded that the portfolio of CSFs provides a good starting point for planning, managing, and implementing projects

A hospital project manager's primary source of project management knowledge may well consist of hearsay evidence shared by experienced cohorts and empirical findings presented by research efforts such as that presented here. And, most importantly, to further compound this situation for project managers, hospital project managers often are selected once and only once to manage such an endeavor. The findings of this study will serve as a useful and practical guide for both experienced and new hospital project managers as they seek to understand the key steps and processes that must be addressed throughout the life cycle of an implementation project. Additionally, these findings have the greatest potential to positively impact the project outcomes that accompany first-time project managers, a particularly prominent type of person found in hospital projects.

This study considered project implementation success from the perspective of hospital project managers. The findings may not be generalizable to other hospital stakeholders, such as end users, patients, executives and government agencies. Future research should be directed at these populations. It is clear that project implementation success is a matter of perception and that various project stakeholders would likely exhibit diverse expectations.

Project implementation success was the focus of this effort; future research may investigate project success as an assessment of the "effective use of the project's final products and the sustainable achievement of the project purpose and long-term goals" (Khang & Moe, 2008, p. 75). Future research in this area is needed to develop a better understanding of what constitutes project success from the perspective of the diverse group of interested parties and therefore a more complete interpretation of the resulting portfolio of CSFs.

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HEALTH CARE AND SOCIAL MEDIA: BUILDING RELATIONSHIPS VIA SOCIAL NETWORKS

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ABSTRACT

This paper examines the use of social media networking in the health care industry, and provides suggestions for successful implementation of social media applications in health care marketing strategy. Current applications on popular social networks such as Facebook, Twitter, YouTube, along with other platforms specific to the health industry are examined, and examples of current usage are provided. Two social networks dedicated to health care are also examined. Finally the paper examines possibilities for future innovations and applications of social media in the marketing mix by health care industry members.

INTRODUCTION

Health care companies must choose their marketing channels wisely to reach consumers effectively. Health care marketers promote a service that is complicated, expensive, and even frightening (Shaw, 2008). Until recently, the only channels that these marketers had to choose from included television, radio, magazines, and newspapers. New technological advancements have health care marketers thinking of more unique ways to reach consumers. Since health care is such an intimidating service, it is more important for marketers to establish relationships with their customers, not just marketing services to individuals. These relationships should embody trust and honesty between the health care providers and their potential customers. This type of relationship is easier to create thanks to social media networks and other online communities that are available for use by health care providers.

More than 60 million Americans are consumers of “health 2.0” resources. They read or contribute to blogs, wikis, social networks, and other peer-produced efforts, using Google as the de facto starting point (Kane, Fishman, Gallaugh, & Glaser, 2009). The development of Web 2.0 applications such as video and photo sharing, streaming media, podcasting, social networking, social bookmarking, user-driven ratings, and open access content allow health care providers to create applications and tools on the industry’s social media networks that offer more convenience to their consumers. Considering the history of technological advancements and consumer adoption rates, it is realistic to predict the average consumer will spend more time online than in a doctor’s office. Thus, it should be the goal of health care providers to create a

presence online to better serve their customers and have a competitive advantage in the industry. This paper will outline the existing uses of social media networking and Web 2.0 applications, benefits to the health care provider and consumers, suggestions on how to successfully implement these applications, and future innovations that lie ahead.

NEW AND ADVANCED HEALTH CARE MARKETING

Just like any other company, it is necessary for health care service providers to market their services and gain a competitive advantage over other industry providers. Developing and implementing a marketing plan may sound simple, given the many channels that can be used and extensive knowledge on what works and does not work. However health care providers face one major challenge: the services they provide are not the most desirable to consumers. How do you lure consumers to your specific health care facility? One thing is certain, a majority of the population bases health care decisions on the advice given by the people they trust the most, friends and family. This recommendation can be received instantaneously through social media networks. Social networks provide a meeting place for consumers to share experiences, be they good or bad. Consumers are very willing to share information with one another, and this platform offers health care providers the opportunity to discover what consumers are thinking and saying. This open platform of communication also provides the opportunity to develop a relationship with health care consumers. Social media networks can assist health care providers promote deep relationships, allow fast organization, improve the creation and synthesis of knowledge, and permit better filtering of information (Kane, et al., 2009). As the number of users of social networks such as Facebook, Twitter and YouTube increase exponentially, it is inevitable that users discuss the treatment they received during their most recent visit to their health care provider. Comments, both good and bad, are going to be made regarding health care providers. In the social network, these comments are viewable to many other users. Good comments will result in positive publicity and a possible increase in business. Negative comments will also provide publicity, but not the kind health care marketers want. It is imperative that health care providers become involved in these communications, not in an attempt to direct market to these consumers, but as a way to read the comments and improve shortcomings of the provider. Furthermore, this communication can be use to develop personal, yet professional relationships with their customers. Social media networks that incorporate the capabilities of Web 2.0 technologies, which allow health care providers to offer video and photo sharing, as well as podcasts also allow health care service providers distribute health-related information and instruction. These Web 2.0 technologies provide the means for health care providers and marketers alike to provide actual content—not just marketing to the consumer, but providing the consumer with valuable information about health care topics, concerns, issues and controversies. Currently, Twitter, YouTube and Facebook are the most popular social media for hospitals, and the most effective in driving traffic to a web site (Cummins, 2010). Many believe

the issue now is not *if* the health care industry should be joining the social media frenzy, rather the issue for individual providers and members is *what* social media application or network should they employ.

USE OF SOCIAL MEDIA NETWORKS

Facebook

This unique social media network links 400 million users together in over 80 different countries (Puck, 2009). In order to reach these users, health care providers create fan pages that allow them to post contact information, recent updates, and most importantly allow “fans” and the health care provider a means of communication on the main page and through the implementation of discussions on the fan page. Facebook allows health care providers to create statuses that can inform their “fans” of what’s going on with the company, such as new services provided by the health care firm. Discussion posts can allow the health care provider or the “fans” to post a question that can be responded to by either party. This allows the provider to develop a trusting relationship with their consumers, particularly by answering posts honestly and promptly. Based on the Facebook etiquette of these health care providers, many consumers are choosing their next health care provider. Health care companies also have the opportunity to post videos and pictures of the facility and staff, to give “fans” a better idea of what the provider is like and what to expect if they do choose a specific service firm as their health care provider. In order to be effective on Facebook, attentiveness and honesty are imperative.

To better understand the use of Facebook, an example may be necessary. Mayo Clinic on Facebook posts phone numbers for their Arizona, Florida and Minnesota locations so that fans may contact the clinic to request an appointment (<http://www.facebook.com/MayoClinic>). Mayo clinic also utilizes the Web 2.0 applications described earlier by sharing videos of their doctors discussing important issues to the consumer. The Facebook discussion board is used to create conversations on the clinic’s fan page. On an April 22, 2008 discussion, Mayo Clinic asked, “When you describe Mayo Clinic to someone who hasn’t been there, what’s the main thing you talk about?” Through the comments created by this question, the administration of Mayo Clinic determined what was working for the firm and what to improve so that customers referring their friends and family members to the clinic would talk about everything the health care provider has to offer. This communication between its fans and the Mayo Clinic is continued on its main page. One fan posts, “I have a question about my mom. She is very very sick and no one knows what exactly is wrong with her. She has an immunoglobulin deficiency. No one will tell her what’s going on when she has to have tests run. The Mayo Clinic has been mentioned a few times to her in the form of questions. She got asked twice during a ct today if anyone had told her she would have to go to the Mayo clinic. I am her power of attorney so I have access to her records but I do not know what they are looking for or how it involves the Mayo clinic. Any

suggestions would be helpful.” This post was made on Thursday, February 10, 2010 and was responded to by Mayo Clinic on Saturday, February 13, 2010 (less than 48 hours turn-around time), “Will be in touch via inbox to provide a way for you to send questions, and will pass along to an appropriate person here.” The Facebook application/use portrayed by Mayo Clinic proves how the company maintains a successful fan page with 12,578 fans, and serves current as well as future consumers/patients.

Twitter

When using Twitter, health care providers must develop catchy and clever ways to express the most recent company information in 140-character long statements. This distinctive social network is growing at over 40% a month (Puck, 2009) If a person is intrigued by the company and wishes to stay up-to-date with what the company is doing and striving towards, a person can become a follower of this company. Health care firms can build relationships with the stakeholders of their company, as there is a high communication flow from the stakeholders to the company. Consumers can share recent experiences with the company, as well as recommend potential product ideas. Based on this feedback, the health care firm may then analyze the information received in order to make adjustments to improve their health care community. When effectively used, both parties benefit greatly from the use of this inimitable social network. Twitter provides opportunities, as well as challenges. The 140-character limit to the posts, Tweets, may not be the appropriate social platform for extensive, heavy-content information, but rather more effective for timely, immediate condition updates.

Again, an example may help to make a clearer definition of the uses of Twitter for health care providers. Scripps Health is a health care provider in San Diego, California that houses 2,600 affiliated physicians and provides home health services, outpatient care and support services, along with four “acute-care” hospitals (“Scripps Health,” 2010). Scripps Health uses Twitter on a daily basis to keep the people interested in its business informed. Such postings shared include, “Scripps Health Medical Response Team Returns from Haiti: Chris Van Gorder, Scripps Health President and CEO talks...<http://bit.ly/botpg4>”(Health, 2010b) (on February 12, 2010 at 4:42 p.m.) and “Watch an interview w/ 2 of our docs on Melanoma – the past 20 years and the future of Melanoma research <http://bit.ly/cUiV8v>” (on February 11, 2010 at 9:39 a.m.)(Health, 2010a). These short statements allow the health care service provider to inform its 4,579 followers of what the company is currently doing, and provides links to the service providers own network with greater detailed content and information. This example shows how Twitter can be used to drive traffic to other Web 2.0 platforms and individual health service providers’ websites.

YouTube

YouTube visitors are viewing 13 billion videos every month, approximately 325 million hours or 13.5 million days worth of video (Puck 2009). YouTube allows its users to easily upload and share videos. Once uploaded, anyone has the ability to view the videos. YouTube also lends its help to amateur video creators by providing instructions (via a YouTube video) on how to upload a video, edit a video, and potential project ideas. Once a video has successfully uploaded, it is available for view by millions and millions of people. Health care providers can take advantage of the benefits YouTube offers by posting videos related to the current events and recent news of the company. YouTube viewers may subscribe to the health care provider's YouTube page to receive updates when new videos are added, and they have the opportunity to post comments and feedback under the video being played. Again this important feedback can be used to improve the online community of the health care service provider, and enhance the relationship with consumers.

An example of how health care providers are currently implementing YouTube is necessary to better understand the benefits of this social network. Backus Hospital, located in Norwich, Connecticut, has uploaded several videos to their YouTube page since it joined in April of 2009 and has 5 subscribers. One of the most recent videos uploaded by Backus Hospital is titled, "Prepare for Surgery, Heal Faster" (Hospital, 2010). This two minute and thirteen second video clip allows the viewer to learn how he/she may prepare for an upcoming surgery in such a way that will allow a faster recovery time. Another video, "Backus Patient Gets His Life Back," (Hospital, 2010) documents the experience of a hip surgery patient at Backus Hospital. This testimonial gives potential surgery clients an inside look at the hospital from a past surgery patient's perspective. These videos provide an important resource to potential clients of Backus Hospital, and provide a great way for the hospital to communicate with these consumers.

WEB 2.0 APPLICATIONS

Rather than subscribing to a specific health care provider on one of the general social media networks, there are networks dedicated specifically to health care. PatientsLikeMe and Inspire are two current examples examined below.

PatientsLikeMe

Unlike the three previously discussed social networks, PatientsLikeMe is specifically targeted to the health care industry ("patientslikeme," 2010). This network provides a communication channel for doctors, patients, and organizations to discuss health issues important to them. The goal of PatientsLikeMe, as stated on their website, is "...to enable people to share information that can improve the lives of patients diagnosed with life-changing

diseases.” To achieve this goal, members are enabled with the abilities to communicate their real life experiences. The site is also partners with doctors, as well as pharmaceutical and medical device companies to provide additional expert information. Users of this social network greatly benefit by learning first-hand what steps to take during the course of their disease. Users can search other active profiles on the site based on location, age, username, treatment, and symptom. Active users update their profiles continuously to inform others of their progress and any changes that have occurred. One user that has been a member since January 2009 updated his profile on February 14, 2010. This particular user suffers from Cyclothymia, a mild form of the bipolar disorder. By viewing his profile, you can view a chart that follows the user’s mood over a specified time period. Symptoms are also listed (such as headaches, social withdrawal and mood swings) and the user tracks the progress and improvement or lack thereof of these symptoms based on the scale of none, mild, moderate, or severe. From the user’s profile, a member can also learn of the side effects that have been experienced, along with lists of all prescribed medications and dosages. Both items are shown over a period of time. Supplements, lifestyle modifications, nutrition/diet, and weight of the user are shown. This information may be very useful when making decisions on what health care actions others may want to take during their own personal battles with a similar disease.

Inspire

Similar to PatientsLikeMe, Inspire provides a platform for patients, families, friends, caregivers, and health professionals to connect and provide support for one another. Inspire was founded in 2005 (Haynes, 2009), and currently site consists of 130,000 members, and partners with 70 associations that advocate for patients with various diseases. The mission of Inspire is stated: “We believe no one should have to go it alone, we all need a safe place to talk, and we can help one another” (“Inspire,” 2010). To effectively deliver a site like this, the founders have partnered with well-respected not-for-profit health organizations. Some of these trusted partners include U.S. News Health, National Cervical Cancer and HPV Coalition, Hereditary Neuropathy Foundation, Discovery Health, and many others. Inspire was founded upon the trust that it offers to its members and maintaining this trust is marked as their highest priority. Their efforts are successful because of the platform that they have established that includes the principles of transparency, member control, clarity, and safety. This foundation has helped Inspire become a well respected and greatly trusted community for patients, families, friends, caregivers, and health professionals. Inspire aims to provide a safe and secure network for users to discuss their health and wellness-related experiences. Support groups are created for everything from pregnancy to osteoporosis. These support groups give members the opportunity to ask questions for others to respond to, and gain advice about how to handle their health care situations. Recommendations are given regarding diet, exercise, medications, health care providers, and many others. This site is an extremely important resource for all of its members. Currently there

are more than 40 support communities for specific health issues, and support organizations are encouraged to join the network. Inspire provides the technical support, and moderates the individual communities at no cost to members or the nonprofit organization. One of the major priorities is that this network maintains the individual community's and its members' privacy and security, unlike the general social networks such as Facebook and Twitter. Members have complete control over their personal information and what they choose to make available, as well as with whom it is shared.

BENEFITS FOR HEALTH CARE PROVIDERS AND SOCIAL NETWORK CONSUMERS

Social networks are changing the way health care providers market their services. A presence on one or more of the networks such as the ones discussed here, allows providers to establish relationships with their clients through immediate and accurate communication. The feedback received from clients allows health care firms to determine where improvements should be made and what is working successfully for the company. Health care service providers are not the only party to benefit from social networks. Patients can research health care providers and receive recommendations from other patients, and learn what to expect from a prospective service provider. Consumers have the opportunity to find information deemed relevant to his/her individual situation. Each individual social network has its own unique benefits, from the consumer/patient, as well as health care provider perspective.

Facebook provides a venue for one-on-one communication, as well as group discussions. If a consumer has a major concern or question that they wish to ask of the health care provider, they have the option to send that provider a message via the Facebook fan page that will only be viewable by the health care provider and the person who sent the message. This allows for much greater privacy than the typical group discussions that are associated with social networks. Facebook also allows the health care provider to guide the communications of the fan page by posing questions or topics on the discussions page, in order to generate conversation among its Facebook fans.

Twitter is unique as it allows consumers to view short tidbits of information, designed to garner attention, rather than to provide substantial amounts of information. The limited number of characters assists the health care provider in generating extra interest directing consumers to the website or other posted link to learn more about the accomplishments and recent news of the providers. Twitter can serve as the "press service hotline" for breaking news headlines in rapidly changing environments. This social network provides the opportunity to let patients know how long they might have to wait at the emergency room or pharmacy, or the availability of flu vaccine at scheduled clinics.

YouTube, unlike any other social network, relies solely on video uploads. If a picture is worth a thousand words, then a video must be worth a million. These videos allow the health

care provider to give the client a deeper look into the workings of their company. It brings life to the ever popular, impersonal use of social media networks. This allows the provider to connect better with clients and creates a sense of comfort for the client. Videos can be instructional, entertaining, or just informative. In any of these situations, YouTube allows health care providers the opportunity to create a greater level of connection, by adding the visual persona in the video medium.

The health and wellness focused PatientLikeMe social network allows many different patients to connect based on a shared disease or illness. Patients have the opportunity to share past experiences and information that they have learned along the way. By doing so, new patients may educate themselves on what to expect in order to better prepare themselves for their doctor's visits. The greatest benefit to the patient offered is the support that is gained through this site. This encouragement is considered to be just as important, if not more so, than any medicine prescribed by the doctor, when battling critical illnesses.

Privacy is a great benefit to patients that the Inspire site provides. In order to view much of the information posted by users of the network, one must sign-up as a member. This site places a greater emphasis on privacy and security, given the subject and content members post as a moderated site, which provides a greater sense of security, as well as reliability of the information shared by members. Similar to PatientsLikeMe, Inspire supplies the framework for support and encouragement of members that are diagnosed with the same disease.

PITFALLS OF SOCIAL MEDIA NETWORKS IN HEALTH CARE MARKETING

While there are many benefits to using social media networks in the health care industry's marketing strategies, there are some disadvantages. One of the major concerns regarding social networks is the constraints placed on health care providers by the Health Insurance Portability and Accountability Act (HIPAA). However, HIPAA is simply a set of consumer protection standards implemented in response to the unethical or discriminatory use of patient information and abuse of information exchange that were common before the inception of the act (Rooney, 2009). Specifically, HIPAA does not apply to social networks, patient privacy is essential regardless of the medium. This will not be an obstacle if social network users do not participate in behaviors prohibited by HIPAA laws and if patients consent to letting their physicians (and other community members) communicate with them on these online sites (Hawn, 2009). HIPAA restrictions as well as the security of patient information must always be considered in the interactions of health care providers on social media networking sites.

The lack of information filtering systems may also be considered a weakness of social media networks in health care marketing (Kane, et al., 2009). Information filtering helps to control or maintain fraud and misrepresentation, thus asserting information shown on social networks is accurate and reliable. One of the primary purposes of social networks in health care marketing is to encourage and facilitate the generation of honest relationships between provider

and patient. Excellent information filtering systems will allow users to determine sources of accurate information. An example that could be considered would allow users to evaluate other users by rating them on their credibility. The credentials of users that claim to be medical professionals should also be verified. By taking these precautions, social networks can become much more reliable and trusted.

TIPS FOR SUCCESS

The marketing possibilities offered by social media networks, make it important for health care providers to develop a presence on these sites. Not only will firms be able to market their services economically, they will also be able to reach a much broader range of clients with the use of one page on one or more of these social networking sites. These two advantages alone should persuade health care providers to perfect their ability to successfully market their services on these sites. However, as with any marketing tactic, social media networks provide challenges and unique considerations. Based upon a review of literature, we provide a list of important considerations for health care marketers when employing social media networking:

- * Interact with clients regularly – Get social network users involved by introducing questions to help create conversations among all community members. When members begin to respond, make sure to provide them with feedback so that the company seems like a real person and not a large health care corporation.
- * Talk about your company – Health care consumers wish to know how an organization's products or services will directly benefit him/her (Rooney, 2009). Based on this information, health care service providers should inform communities about new products or services they are offering and about any recent news that would be significant and beneficial to the stakeholders of the firm – refer to the examples discussed in the description of the many different social media networks.
- * Beat the obstacles – Remember the disadvantages discussed earlier and find a technique to overcome them. There are several ways to accomplish that. Health care service providers should strive to make their clients feel comfortable with the use of social networking by eliminating the risks that are associated with it.
- * Be transparent and honest – In order to attract clients to your business, it is necessary to be completely honest and transparent in the use of social networks (Cocheo, 2009). The service provider should inform their clients about everything that is going on with the company.
- * Empty the suggestion box – The feedback received from patients on social media networking sites can be very beneficial to health care providers by giving them an inside look at what their patients want (Kahn, 2009). If a patient is dissatisfied with some aspect of their most recent experience with that provider, the firm should look at what it can do to improve.

- * Community involvement – Remember that social networks should not be used for direct marketing, but as a tool to develop relationships with patients (Rooney, 2009). Health care providers should maintain communication on their networking sites, but encourage conversations among other members in order to create a community as well.
- * Identify your target audience – Define you target audience(s) and how they use social media. This will determine how you can use social media most effectively to reach each audience group (Cummins, 2010).
- * Monitor conversations – Actively monitor the conversations (Cummins, 2010). It is essential you know what is being said about your brand/organization online.

PATIENT RESPONSE TO SOCIAL MEDIA NETWORKING

Though more and more health care providers are implementing the use of social media networks in their marketing plans, it would be constructive to determine the effectiveness of this effort. A study produced by Harris Interactive ("Patients Respond Well to Online Health Advice," 2002) finds that the majority of patients (in the United States, France, Japan, and Germany) are extremely responsive and pleased with the use of social networking in the health care industry. Individuals who responded to the survey believed that the information they found on health care provider's social networking sites were trustworthy (93% of U.S. and French respondents agreed) and easy to comprehend. A small percentage of individuals in Japan and Germany were motivated to make an appointment and talk with their doctor based on the information that they discovered on health care provider's social network sites. Of the four countries surveyed, respondents from the United States seemed much more influenced by the presence of health care providers on social media networks. According to the survey, information found on these sites swayed 38% of patients to discuss information found with a doctor; 23% of patients to take over-the-counter medications; 14% of patients to ask a doctor for prescribed medications; 14% of patients to make an appointment to see a doctor; and 9% of patients to start an alternative treatment. Based on the results of this survey, it is apparent that the marketing efforts of health care providers on social networking sites are very effective. High percentages of patients are obtaining information to further their health education and be more prepared to speak with their doctors about new medications or alternative treatment options. Another study a few years later (Landro, 2006) by Harris Interactive found that 80% of US adults searched for health-related information online , and the total number of adults who had ever searched online for health information rose 16% to 136 million. These statistics continue to support the fact that consumers are using the Internet, in particular Web 2.0 technologies, to find health care information.

FUTURE INNOVATIONS

An online survey conducted by Harris Interactive in 2006 (Boulos & Wheelert, 2007), for the Wall Street Journal Online, of 2624 US adults, aged 18 and older, showed that few patients use or have access to online services for communicating with their doctors, but most would like to. This survey also unveiled that over half of all adults in this study said a doctor's use and investment in health information technology would influence their choice of a doctor a great deal or to some extent. Given these findings, we can expect to see more and more health care providers putting these social network and Web 2.0 applications into operation to better meet the needs of their patients. Not only will the amount of health care providers with a presence on such social networks as Facebook, Twitter, YouTube, PatientsLikeMe, and Inspire increase, but these health care providers will find a way to differentiate themselves from their fellow providers by developing their own communities, offering ground-breaking features and applications that will greatly benefit all community members. For inspiration, health care providers may look at already existing social networks for ideas on where to improve their social networks. Some of these applications may include:

- * Rate my doctor: A site that will allow patients to rate their experiences with certain doctors and post anonymous comments so that others may view them (Huber, 2008).
- * Chat capabilities: A site that will allow patients to chat and video chat to receive immediate answers to their questions from caregivers and health professionals, such as Dr. Jay Parkinson's "Hello Health" (Hawn, 2009).
- * Online administrative applications: The addition of certain applications to a health care provider's already established social network. Consumers want to be able to schedule appointments, view and pay medical bills, and view portions of their medical records ("Health Care Technology Today," 2009). Health care providers may consider uploading new patient or other informational forms that patients can download and print in order to make their check-in run more smoothly when they arrive at the health care provider's office.
- * Match.com – Health version: Like the ever-popular dating service sites that require personality tests and use these results to match up compatible users in order to form a successful relationship, a health care social network could be devised to match patients to the right doctor (Rooney, 2009). The doctor and patient could complete a survey similar to a personality test and could be paired for compatibility to ensure a successful and lasting caregiver/patient relationship.
- * Increase in stealth ads: Online videos are the key to converting web surfers into engaged viewers (Rooney, 2009). In order to better relate to their patients, health care providers may try to create ads that look homemade, but are actually professionally made. This

makes the patient feel that they are not the target of a direct marketing advertisement and may make the video much more popular and successful.

CONCLUSION

According to a report conducted by Manhattan Research, more than 60 million Americans are consumers of “health 2.0” resources (Kane, et al., 2009). The number of social network users increases on a daily basis as more individuals are logging onto Facebook, Twitter, YouTube, PatientsLikeMe, and Inspire. Given these statistics, health care providers are going to have to change their traditional marketing communications platform to integrate the use of and focus on social networks. Instead of paying large sums to advertise their products and services through such marketing channels as television and print articles, providers should look further into the employment of social networks which can be less expensive than traditional marketing media. The costs associated with social media will be the investment of time to keep up with the content, and mining the information posted by patients and subscribers. There are many outlets for these companies to take advantage of the social network community and many opportunities to develop new and improved forms of these networks. Before diving head first into the pool of social networks, health care providers should be aware of the risks associated with them and develop a strategy to eliminate these risks and ensure the success of their efforts. The benefits of using social networks in the health care industry greatly outweigh the disadvantages, when done correctly. Steve Cocheo (2009) emphasizes “The beauty of the whole social media platform is that people recommend to other folks things they think are valuable” (p. 14). SM will not work if organizations treat it like direct marketing or selling; however it is an excellent medium for creation of brand identity.

Social networks related to health care rapidly populating the Web 2.0 environment, so much so the term “Health 2.0” is applied to this trend or movement (“The Wisdom of Patients: Health Care Meets Online Social Media,” 2008). Online collaboration between groups of patients and medical care providers has replaced the concept of one-to-one patient to doctor in the exam room conversations. Consumers in particular are the one leading this movement, especially those with chronic conditions. These individuals are looking for clinical knowledge in addition to emotional support. As more people take control of their health and health care, they are embracing social media (Solomon, 2009). A February 2009 Harris Interactive survey found 47% of engaged Americans wanted to stay in contact with health care professional via social media. Perhaps even more interesting is that these results cross all age groups, with 43% of those 50-64 years of age with an “interest.” Thus, this social media trend is not limited to young consumers. Solomon concludes that while people have always relied heavily upon their peers, family and public institutions along with medical professionals to guide health care decisions, these social networks are no longer bounded by geography, but it seems being driven by convenience and the content value provided by social networks. Social media is about altering

the relationships between care givers and receivers (Hawn, 2009), and moving the locus of control to the patient. Social networks are having a major impact on how the health care industry distributes information. The technology is making information and knowledge of health care issues more accessible to patients (Huber, 2008). As patients gain more knowledge, health care providers must change the way they operate, and go directly to the patient. Social media networks are the most accessible tool to use in today's environment.

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THREE LESSONS FROM CALIFORNIA'S COMPASSIONATE USE ACT

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ABSTRACT

In this paper, we will discuss California's recent experiment with medical marijuana. To that end, we will first discuss the history of marijuana use. Next we will discuss the history and current trend in federal marijuana regulation. We will then examine California's medical marijuana law. We will conclude with three lessons for other states from California's attempt to regulate medical marijuana. The three practical lessons are: limit the eligible conditions; limit the number of dispensaries; and tax the marijuana.

INTRODUCTION

In 1996, California made a bold experiment, to legalize the sale and use of marijuana for medical reasons. The law encouraged an exception to criminalization of marijuana for the terminally ill. Like the law's name, the California act allowed for the compassionate use of marijuana. The intentions were noble. If you had ever seen a person waste away from the effects of cancer and its potent cures, you would understand the reason for compassion.

A fraternity brother and former roommate of the author recently passed away from cancer. Lance had gone from a healthy man to a skeleton in months. The illness was devastating and debilitating. Pain from the illness mixed with reactions from a variety of medicines. The potential treatments made matters worse. Radiation therapy and chemotherapy have terrible side effects, including loss of hair, and constant nausea. Patients literally waste away. Lance's story is not unique.

Cancer is one of the leading causes of death in America. Many if not most families have been affected by the ravages of cancer and similar illnesses and the horrid side effects of the cures. While recreational users talk of the "munchies" from marijuana as a side effect, the truly ill benefit from this increased appetite. Those exposed to THC regain their appetite and manage to keep healthier through the difficult process of cancer treatment. Denying any potential treatment to the terminally ill seems heartless and uncaring. With this as emotional justification, the bill allowing for the compassionate use of marijuana easily passed in California.

However, emotional justification and voter support is not enough to make a program work. And recent history has shown that California's law has been a disaster. To be blunt, the

California Compassionate Use Act was a good idea which lacked the detail necessary to make it work in a society of thirty million people.

In this paper, we will discuss California's recent experiment with medical marijuana. To that end, we will first discuss the history of marijuana use. Next we will discuss the history and current trend in federal regulation. We will then examine California's medical marijuana law. We will conclude with how other states have used California's attempt (and their mistakes) as a guide for policy. We will predict avenues for further research on this topic.

History of Marijuana Use

Marijuana has been used in numerous cultures for thousands of years without a fatality, in every continent, including many Native American tribes (Cohen, 2009; Parloff, 2009; Walker & Huang, 2002; Welch & Martin, 2003). Historically, marijuana was used as a medicine in America. It was a simple remedy since it could be taken in any form (smoked, eaten, converted to a liquid and drank, even injected). Further, the plant grew wild in many regions of America. It had long been a traditional remedy for a variety of ailments. In 1851, marijuana was regarded as a legitimate medical compound (Pharmacopoeia, 1851). Even big-time manufacturer Eli Lilly sold cannabis in early 1900s as a painkiller (Parloff, 2009).

Many studies confirm effectiveness of marijuana as a pain reliever (Cohen, 2009). However, the sedation does not benefit the cancer patients. They need relief from the constant nausea and the wasting which results. Studies show marijuana (THC) relieves nausea and improves appetite for those getting chemotherapy (Gardiner, 2010). Marijuana had a strong effect of preventing wasting, which is quite common in patients getting chemotherapy and radiation treatments. However, the use of marijuana always had a sinister reputation.

Those against medical marijuana always claim the shortage of studies of marijuana's benefits. This too is a result of the war on drugs. Researchers trying to study marijuana face federal roadblocks (Gardiner, 2010). Ironically, researchers wanting to study LSD or ecstasy can find many suppliers approved by the FDA (Gardiner, 2010).

In 1985, the Food and Drug Administration (FDA) approved Marinol, a prescription pill of THC (Gardiner, 2010; Parloff, 2009). Converting marijuana into a pill was more politically popular. However, the research indicates Marinol has a slow response (compared to smoking the real thing). Patients will not see a response from the pill form for many hours, while the smoked version can see a reaction in minutes. Further, Marinol takes a treatment period to work. Patients may have to build up Marinol in their system, often for several weeks, before the full benefits can be seen. The previous comments should be taken as only rudimentary description of some very technical medical research. These details are mentioned because they are often raised as issues by those who oppose medical marijuana.

While the use of marijuana is increasingly common in America, it is not without severe risks. Using marijuana while driving or other activities is just as dangerous as abusing alcohol.

But there are additional problems besides the roadways. Marijuana now is five times stronger than in the 1970s (*Economist*, 2009a). Besides the mental effects, the consumption of marijuana is harmful to fertility and quality of sperm (Brown, 2009). As a result of these worries and others, rather than legalization, most supporters have favored heavy regulation of marijuana. Even conservative icon William F. Buckley Jr. favored legalized but regulated marijuana (Vlahos, 2009).

History of U.S. Medical Marijuana Regulation

To the surprise of most Americans, legal medical marijuana is not a new idea from California. America has had a federal medical marijuana program for several decades. By 1991, the federal compassionate use of marijuana program had 13 patients, and stopped admitting new patients. Today just four patients are left, and continue to get free, federally grown marijuana each month (Parloff, 2009). Since marijuana remains illegal, the government must grow, cultivate and sell marijuana for the program to work. The University of Mississippi has the only federally approved marijuana plantation (Gardiner, 2010). Their products are sent to the four remaining approved patients.

While we are wrestling with the issue of federal medical reforms, marijuana can add to the debate. Medical use of marijuana could save health care money, as it can be substitute for more expensive drugs (Parloff, 2009). The high cost of prescription drugs is one of the main complaints in the health care debate. Big pharmaceutical companies seem to be the ultimate villain in the system. Medical marijuana can be an alternative which can be grown in a patient's home for little if any cost.

Current Federal Marijuana Regulation

The Bush Administration followed the pattern of the previous three decades, continue the War on Drugs. Medical marijuana, by their view, was just a sham to allow drug legalization. As a result, Bush encouraged numerous raids on California's dispensaries. These raids were successful in catching a great many sellers of marijuana. However, within hours the sellers were replaced by others.

Obama, while a candidate, promised to stop raiding dispensaries, claiming it was not a good use of resources (Vlahos, 2009). Last year, DEA officers shut down 14 dispensaries and arrested 30 people in California (Welch, 2009b). However, Obama's administration has promised to relax prosecution of medical marijuana cases in states that allow its use (Dickinson, 2009). Obama advocated using the states as our fifty laboratories in democracy. This problem is not going away any time soon. Fifteen more states are considering medical marijuana (Parloff, 2009). Two Missouri cities (Cliff Village and Columbia) have passed a local marijuana policy (Vlahos, 2009).

War on Drugs

Our conventional wisdom on marijuana stems from the War on Drugs. Marijuana was an evil, gateway drug, responsible for many of America's ills. The goal of the War on Drugs was simple. Eliminate drugs and eliminate those who sell drugs. Despite our forty year War on Drugs, the flow of drugs remains undiminished (Dickinson, 2009). And the collateral costs have continued to rise. Incarcerated drug offenders have increased 1200% since 1980 (Dickinson, 2009). Another unintended consequence of the War on Drugs is the enrichment of violent drug cartels. It has been estimated that legalized drugs would cut off 65% of Mexican drug cartel income (Dickinson, 2009).

The goals of the War on Drugs have not been realized, even after four decades. In reality, the War on Drugs has left America with a plentiful drug supply and made the sellers of drugs quite wealthy. While politicians can debate about their intentions, and the results of specific programs, the results are clear. The War on Drugs has been an abject failure.

It would be equally naïve to assume that all drugs should be unregulated. We cannot imagine a responsible person advocating for heroin in vending machines at elementary schools. However, the War on Drugs policy (no drugs to any one, under any condition), seems equally as unworkable.

California's Medical Marijuana

California was first state to authorize medical marijuana (Behring, 2006). California allows personal cultivation (Vlahos, 2009). While California intended medical marijuana for the terminally ill, the California code added a catchall, "or any other illness for which marijuana provides relief" (Compassionate Use Act, 2009). This is one of the major flaws of California's law. By extending protection beyond the terminally ill, the statute has de facto legalized marijuana. As long as a single physician in California believes it could better some illness you have, you can have access to marijuana.

Another problem was the number of sellers. There were at first no restrictions on the numbers of sellers of medical marijuana. A business did not have to be a complete pharmacy to sell it. In fact, many were no more than storefronts for what had been street dealers.

What lessons can be gained from California's Medical Marijuana law? Three easy improvements can be made to future states considering medical marijuana.

Limit the Eligible Conditions

The program should specify what medical conditions are eligible for marijuana. This makes sense, as not all medicines treat all illnesses. The temptation of a financially lucrative product combined with a free market was bound to cause problems. Doctors advertise on

billboards and the internet to recommend marijuana to their patients for a fee as low as \$200 (Parloff, 2009; Welch, 2009a). Some claim they will recommend medical marijuana even without an office visit. Simply email or fax your medical records and the doctors will find if you are eligible. With the statute in California being so broad, a doctor could recommend pot for chemotherapy, or back pain, writer's block or ingrown toenails (Parloff, 2009). The program has strayed far from its intentions of helping the terminally ill. Other states have learned the lesson. For example, New Jersey's new law will require a patient to have a specified condition (Kocieniewski, 2010). By limiting marijuana to ailments which could truly benefit, a state could avoid a lot of the misuse in California.

Limit the number of Sellers

Medical marijuana dispensaries are everywhere in California. Estimates range from over 400 up to 1000 stores in Los Angeles alone (Welch, 2009a; Parloff, 2009). While Los Angeles is large, some comparisons are in order. There are more medical marijuana stores in Los Angeles than public schools (James, 2010). There are more medical marijuana stores in Los Angeles than taco stands (Welch, 2009a). There are three times more medical marijuana stores in Los Angeles than McDonalds (Parloff, 2009). As a result, the market is flooded with medical marijuana. It is easier for kids to get marijuana than alcohol (Dickinson, 2009).

Besides the rampant growth of dispensaries, all of whom must sell to make a profit, other factors increase the amount of marijuana for sale. The high competition in the medical marijuana dispensaries has also led to some unintended effects. Some dispensaries give discounts to customers who do not drive to dispensary because it is greener (Parloff, 2009). Ride your skateboard over to the dispensary to save money! Did the legislation's authors really expect the terminally ill to ride skateboards to the dispensaries? It seems unlikely.

Some states have reacted to California's lack of dispensary limits. Colorado approved medical marijuana in 2000 (Perez-Pena, 2009). There are only fifteen dispensaries in Colorado (Parloff, 2009), but they are planning a drive thru dispensary (Perez-Pena, 2009). New Jersey legalized medical marijuana with bipartisan support, but has only allowed six official dispensaries (Kocieniewski, 2010). The restrictions can go too far. New Mexico only has one dispensary and it is overwhelmed (Welch, 2009a). Obviously there is a middle ground in between one per state, like New Mexico, and one on every street corner, like California.

Another option to limit the number of dispensaries, and their unintended side effects is to require patients to grow their own, removing the for-profit-exchange. In Oregon, nearly 1 in 4 physicians has authorized a patient to grow their own pot (Parloff, 2009). Michigan marijuana patients can have 12 plants and 2.5 ounces of marijuana (Ananny, 2009). By making marijuana abundant, while still technically illegal, the economists have been proven correct. Marijuana costs have dropped 33% from a decade ago (O'Brien, 2009).

Sale Taxes on Medical Marijuana

Marijuana sales tax has been an untapped gold mine of government revenue. In Los Angeles, one store averaged \$140,000 in medical marijuana sales each month (Welch, 2009a). A store in San Diego sold \$700,000 worth of marijuana in six months (Welch, 2009a). This industry is ripe for the entrepreneur. In Oakland, a chain of four stores had sales of \$19,600,000 in 2008 (Welch, 2009a). At one of the recent federal raids, DEA agents found \$70,000 in cash and six guns (Welch, 2009b).

Now California wants dispensaries to pay sales tax (Parloff, 2009). If California had started with the marijuana being taxed, the implementation would not have been so difficult. Estimates of sales tax revenues for California range from \$220 million to over a billion dollars a year (Parloff, 2009; *Economist*, 2009a). Cities have started their own sales taxes. Oakland increased their city taxes on marijuana by 1500% (Parloff, 2009). Oakland's vote for city tax on cannabis got 80% approval (*Economist*, 2009a).

Interestingly, while some may not support medical marijuana, virtually everyone supports heavy taxes on marijuana sales. During a troubled economic time, income from medical marijuana sales could bring in a fortune. On a national scale, Harvard economist Miron estimated legalized marijuana could make \$7 billion in tax and save \$13.5 billion in law enforcement spending (Parloff, 2009).

States seem very willing to experiment with medical marijuana. Fourteen states have approved measures and several state legislatures are pending. So far, every medical marijuana proposal has passed, except one. South Dakota was the only state to reject medical marijuana legislation (Vlahos, 2009).

Further research is obviously needed on this new series of programs. All the states allowing medical marijuana should be examined and the statutes and programs be compared. Given time, future research can compare different statutes and their results to see what programs really are effective at helping the terminally ill, and which ones have the potential for widespread abuse.

CONCLUSION

California's example can provide needed information for a state wishing to experiment with medical marijuana. First, the state must regulate dispensaries and limit their number. Second, the state should clearly define the conditions for which a patient can receive medical marijuana and not allow the expanded use. Third, the state should tax (heavily) the sales to generate funds for the unintended effects of the marijuana and their social cost.

Future issues which need to be resolved are many. First, insurance coverage for medical marijuana has scarce research. Second, the conditions eligible for marijuana should be monitored by a national panel of medical experts. Having a national standard would avoid state-statute

shopping for your specific condition. Further, the public would have more support for a program supported by doctors rather than politicians.

The issue of medical marijuana, while starting on the west coast, is creeping eastward. Many states are acting, but the programs are a hodgepodge of ideas. By using California's example as an experiment, states can design a policy with a better chance of success.

AUTHORS' NOTE

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This paper is dedicated to the memory of Lance Bradshaw.

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HOW TO MANAGE AND FLOURISH INNOVATION IN HOSPITALS CLINICAL IT?

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ABSTRACT

The rapid pace of technological change has caused many competitive challenges for hospitals. The emergence of sophisticated technologies in the health care industry determines the important need for continuous and quick changes in organizational activities. New clinical Information Technology is supposed to improve the quality of health care delivery as an innovation. But it is fully naive if any new technology simply considered as an innovation. New technologies flourish as an innovation if the process of introduction and implementation is managed successfully. Also, if a new technology can change the process of health care delivery, it can emerge as an innovation and provides a competitive advantage for hospitals. Otherwise all the effort and investment are doomed to failure. This research as a conceptual study highlights how new clinical IT systems can contribute to organizational performance in hospitals.

INTRODUCTION

Managers, policy makers, and researchers have paid much attention to the important role of new technologies and innovations for competitiveness and growth. Yet, all new technologies and innovations don't result in success. Firms can potentially choose technological opportunities and various types of innovations, but it is important to know which innovative activities and technologies are most clearly related to improved competitiveness and growth. Even more desirable is to understand the factors affecting the success of new technologies and innovative initiatives (Koellinger, 2008). The aim of this article is to shed some new insights regarding this issue.

Keeping pace with new technological changes in market and subsequent firm innovation are crucial for the survival and growth of organizations (Bello, Lohtia, & Sangtani, 2004; Damanpour & Gopalakrishnan, 2001; Hurley & Hult, 1998). Porter (1990) has suggested that by the late twentieth century, firms had moved to an "innovation-driven" stage to compete on how to develop innovation profitably. In this context, it's critical to identify factors make the successful development of firm innovations. Although improved organizational performance is a function of firm innovation, many firms do not or cannot properly develop it (Aragon-Correa et al., 2007). Therefore, researchers are seeking for factors which make it possible for firms to develop innovation (Zollo & Winter, 2002). For example, many authors have been analyzing

whether investment and adoption of new technology affect the generation of innovation in organizations, while others have searched the role of organizational factors such as organizational learning. In this study, we want to highlight the simultaneous influence of both factors.

The effects of organizational influences on innovation are significant. Several studies have paid growing attention to the possibility of determining innovation by the collective capability of organizational learning (Senge, 1990; Senge, Roberts, Ross, Smith, & Kleiner, 1994; Tushman & Nadler, 1986). Organizational learning (OL) corresponds to collective capability based on experiential and cognitive processes as well as knowledge acquisition, knowledge sharing, and knowledge utilization (DiBella, Nevis, & Gould, 1996; Zollo & Winter, 2002).

We propose that both collective factor (organizational learning) and issues related to new technology affect firms to develop and implement organizational innovation. Regardless of significant contribution of previous studies, it is still not fully clear how the efficacy of innovation might be affected by both direct and indirect influences of different organizational factors. Identification of those influences will complement and provide better understanding of the general mechanism that firms should innovate.

Additionally, the ultimate purpose of firm innovation is creating new knowledge and new applications, especially those lead to organizational improvements (Calantone, Cavusgil, & Zhao, 2002; Celuch, Kasouf, & Peruvemba, 2002). Many researchers have proposed that organizational learning is positively related to performance. We seek to reinforce this work by analyzing of the influence of innovation on performance. Further, we try to find how the effect of organizational learning and technology on performance is supported by the generation of innovation.

This study also targets at exploring the influence of information technology (IT) on OL through the process of knowledge creation. We also examine how IT and OL contribute to business performance. The need for OL is necessary because it responds to the arising challenges in a constantly changing business environment and can help companies to deal with their long-term survival challenges (Real et al., 2006). IT plays the role of an enabler in the OL process and contributes to the development of competitive advantage, which facilitates the achievement of an improved organizational performance.

The most important issue is that companies are not only supposed to accumulate knowledge (static focus), but they should be able to learn continuously through creating new knowledge which they transfer and use (dynamic focus) (Real et al., 2006). The innovation process is usually described by the concepts of learning and knowledge creation (Nonaka & Takeuchi, 1995). In this study, OL is as a dynamic process of knowledge creation generated in a hospital via its healthcare professionals and occupational groups that leads to the generation and development of distinctive competencies which enable the hospital to improve its performance.

Moreover, according to the Resource-Based View (RBV) approach and its extension, the Knowledge- Based View approach, competitive advantage can be achieved from the company's capabilities and skills in continuous learning as a fundamental strategic aspect (Real et al., 2006). Therefore, these complementary resources, such as OL and information technology (IT) can be converted into a competitive advantage for the company through innovation (Real et al., 2006). As a result, organizations should develop a continuous changing environment in order to achieve and maintain competitive advantage and sustained organizational performance.

In the era of knowledge economy, if companies desire to obtain sustainable competitive advantage they should implement strategies to develop innovation (Daghfous, 2004; Prajogo & Ahmed, 2006). For example, to improve innovation capabilities, companies are motivated to be involved in learning activities under the context of technological changes and intense global competition (Chen et al., 2009).

In this study, a conceptual framework is proposed to better analyze the relationship between new technology, OL, innovation, and hospital performance. It is argued that the performance implications of new technologies are mediated by innovation that result from the investments in and adoption of these technologies.

DEVELOPMENT OF A THEORETICAL FRAMEWORK

In this article, our focus is primarily on research questions that concern innovation and hospital performance. We first examine the nature and strength of introduction and implementation of technology and organizational learning as two antecedents of innovation in hospitals. We then investigate whether hospital innovation, affect financial performance through a competitive advantage. And finally, based on the research variables, we develop a conceptual model to illustrate the direct and indirect influences of new technology in hospitals to guide future research in this field.

The influence of Clinical IT on hospital innovation

Many organisations deal with competitive challenges owing to the rapid pace of technological change in the turbulent business environment. Industries with a strong need for highly sophisticated technologies in a competing global environment are particularly supposed to have continuous and rapid alterations in organizational activities (Teece, 1987; Waterman, 1987). Having a tight fit between constant effort to change as well as investment (such as in technology) and the dynamic environment is required to maintain keeping pace with the environment (Hall, 1991).

A review of literature (e.g. David, 1990; Drazin, 1990; Ettlie, 1990) has indicated that improved technology reduces organizational cost and therefore improves performance. These findings reveal that organisational performance is related to organisational innovation. Yet, the

relationship between different forms of organizational innovation and competitive strategy is little analyzed in the literature (Chen et al., 2009).

Introduction and a successful implementation of a new technology can leave its marks on organizational performance when the company can make use of new technology to improve operation process and enhance productivity (Cordero, 1990; Govindarajan & Kopalle, 2006). IT also plays a role in the process of converting capabilities into a competitive advantage, when the capabilities are rare, valuable, difficult to imitate and imperfectly substitutable (Real et al., 2006). The issue of technology productivity paradox emerges (Lucas, 1999), according to the fact that there is no guarantee for IT to be transformed automatically into improved results for the companies using it (Real et al., 2006). Powell and Dent-Micallef (1997) have stated that new IT itself is not a strategic resource, but it becomes a source of competitive advantage through complementary resources. Therefore, it is shown that IT will not necessarily result in competitive advantage. To achieve a sustainable competitive advantage, organizations should develop IT management skills because sustainability dose not reside in the technology itself (Mata et al., 1995).

The adoption of new technology, as an indicator of technology management, can be considered as an enabler of process innovations if the implementation process succeeds, the traditional work routines are changed, and the new system is actually applied. Newly adopted technology can also contribute to product or service innovations if it is successfully used to offer a new service or to deliver new products to customers. For example, a hospital that adopts and implements new IT usually changes the routine of organization and keeps patients' records updated (Waltter and Lopez, 2008). This is an example of process innovation. Taking the adoption of new technologies into consideration as an enabler of innovation has a significant advantage in a way that it directs us to identify the mechanisms leading to different results for firms invested in the same technologies (Koellinger, 2008). Based on Koellinger (2008), the relationship between technology and firm performance is mediated by innovative initiatives.

In healthcare sector, investments in and the adoption of a particular technology, such as clinical IT, can make innovations possible, either by improving processes or by helping the hospital offer new healthcare services to its patients. Technology investments without resulting in innovations are viewed as sunk costs that will not enhance hospital performance. The ability of hospitals to transfer technology investments into innovation is most likely to be affected by hospital-specific resources such as managerial skills, experience, the presence of technical experts, and prior technological investments.

Most of previous studies examined how much hospitals invested in IT instead of focusing on how these IT investments qualitatively change healthcare delivery. Therefore, literature still argues the mediating role of innovation between the effects of technology investments on performance. Logically, the simple purchase of or investment in new technology that will not deliver any subsequent qualitative change in production processes or product cannot be viewed as a source of improved performance (Koellinger, 2008).

As the share of health care in GDP is highly increasing, the health care industry is trying to utilize IT to enhance health care services. As the cost of health care increases, the health care industry concentrates on the application of IT more than before. The target of this initiative is to utilize IT as a prevalent means of reconstructing health care for the 21st century (Flower, 2004).

As mentioned by Chang et al (2007), although a technology carries potentially technical merits, if it remains unused, it cannot be effective for organizations. However, despite a number of studies in health sector, healthcare professionals have not fully adopted the clinical IT (Tung et al., 2008; Yi et al, 2006; Chismar & Wiley-Patton, 2003; Dearne, 2003; Murray, 2002; Wenn et al., 2002, Western 2001). According to Lowenhaupt (2004), physicians are very slow in terms of accepting clinical information systems. Based on a body of literature, healthcare professionals are not willing to integrate new IT with their day-to-day work activities if they perceive new IT as interfering with their traditional work routine (Anderson, 1997; Anderson and Aydin, 1997). However, according to Walter and Lopez (2008), only with greater acceptance of healthcare professionals, new technology can play a fundamental role in advancing health care delivery.

Based on a body of literature, the key issue in the successful adoption of a new IT has been identified by researchers as user acceptance (Davis, 1989 & 1993; Davis and Bagozzi, 1989; Kottemann and Davis; 1991; Igarria, 1993; Igarria, Guimaraes, and Davis, 1995). A variety of IT adoption models have been developed with the aim of explaining and predicting user acceptance of a new IT. (Davis, 1989 & 1993; Davis and Bagozzi, 1989; Igarria, 1993; Kottemann and Davis; 1991; lee, Lee, and Kim, 1995). As the users accept the new IT, they become more willing to making changes in their existing work routines. Also they are more likely to take on and incorporate a new IT into the flow of their everyday work practices (Walter and Lopez, 2008). Therefore, if a new clinical IT system is adopted appropriately it can result in innovation.

HIT is an umbrella term that includes a set of IT systems (such as telemedicine, clinical IT and ...) in the medical practice. In this study, more focus has been placed on clinical IT which is one of the most challenging sub-group of HIT in terms of adoption. With reference to a rich body of medical literature, there are two main types of clinical IT in the medical care industry as follows:

- (1). The first one is Electronic Medical Records (EMR) systems which are computer systems that provide a health professionals with making, storage, and recovery of patient charts on a computer. So, these systems help the rapid retrieval of information regarding patients' problem lists, allergies, and medications. In brief, EMR is one of the clinical IT products that enhances health care practice through the improved quality and efficiency of results (Burt and Hing, 2005; Shortliffe, 1999; Thompson and Brailer, 2004; Tierney, 1997).
- (2). The second one is Clinical Decision Support (CDS) systems which refer to computer systems that give professional advice. These systems are knowledge-based systems that are given patient data as an input and by the use of series of reasoning techniques can

generate diagnostic and treatment options as well as care planning (Walter and Lopez, 2008). Pain et al. (2003) defined CDS as a system that assists physicians in treatment of patients by offering some medical options with correct dosage and minimum possible side effects. Another feature attributed to CDS is that it makes more knowledge available for health professionals to decide the best cure options.

Clinical IT has a great potential to improve the quality of healthcare delivery, hospital effectiveness and efficiency, and also to facilitate specialized tasks. But, it is naive to believe that only investments in and adoption of clinical IT will lead to innovation. If hospitals invest in and adopt new clinical IT properly and transform the benefits and potentials of clinical IT into organizational changes, it results in organizational innovation.

The influence of clinical IT on organizational learning

According to the literature, organizational learning is related to a collective capability in the light of knowledge acquisition, knowledge sharing, and knowledge utilization (DiBella, Nevis, & Gould, 1996; Zollo & Winter, 2002). The most important issue is that organizations shouldn't stop effort up to accumulating knowledge, but they are supposed to learn continuously by creating new knowledge and have a dynamic focus (Real et al., 2006). OL is viewed as an organizational process occurring at individual, group and organizational levels (Crossan, Lane, & Wclincinal ITe, 1999).

Clinical IT can facilitate knowledge codification in organizations and assist organizational members in getting access to the specialized knowledge previously resided in the mind of healthcare professionals. Based on the existing literature on knowledge management, knowledge codification refers to converting tacit knowledge to explicit knowledge in a way that it can be usable by all the organizational members (Zack, 1999). Therefore, knowledge codification will lead to more knowledge distribution and contributes to knowledge sharing in the organizations. On the other hand, literature on IT adoption in hospitals indicates that the ability of knowledge codification and also knowledge sharing by clinical IT is an antecedent of perceived threat to physicians' professional autonomy. It means healthcare professionals perceive that investment in new clinical IT results in decreasing their control over the conditions, content and procedures of their work. Due to abstract and expert body of medical knowledge possessed by healthcare professionals, they are less likely to accept and adopt those types of IT that organize, codify and distribute their knowledge which makes them distinct from other occupational group working in a hospital. Healthcare professionals believe that clinical IT (like CDS) can codify their esoteric knowledge to a high extent and consequently distribute their knowledge to all non-professionals and para-professionals work in the hospital. By doing so, healthcare professionals could no longer claim possession of abstract knowledge and they couldn't control the subordinates' performance. Therefore, if the function of a clinical IT is more

tied to knowledge codification and sharing, healthcare professionals perceive it more as threatening to their professional autonomy (Walter and Lopez, 2008). Therefore, new clinical IT should be fully adopted by healthcare professionals to be effective for organizational learning. To do so, hospital managers are supposed to reduce healthcare professionals' perceived threat to professional autonomy in order to improve overall acceptance of clinical IT. Otherwise, new clinical IT will remain underutilized and its benefits regarding organizational learning cannot be reaped.

Knowledge sharing is an indicator of collaboration in organizations (Bock et al, 2005) and also knowledge sharing can help organizational learning. It means by sharing ideas, information and insights, healthcare professionals can have more collaboration to deliver high quality healthcare services. An emerging stream of research on the role of IT in the development of OL seeks to explain the application of technologies that support OL (Robey et al., 2000). IT plays an important role in the various knowledge management processes, which include knowledge creation and sharing (Alavi & Leidner, 2001; Pawlowsky, Forslin, & Reinhardt, 2001). A great deal of procedures, tools and activities may support the knowledge generation/creation process (Nonaka, Toyama, & Byosie`re, 2001). In the health sector, the design of clinical IT applications can support organizational learning by knowledge codification and knowledge sharing. According to Tippins and Sohi, (2003), IT should be integrated into organizational learning for firms in order to be successful. According to Real et al. (2006), IT contributes to the sharing of knowledge and the relevant know-how to obtain distinctive competencies for the organization. Real et al. (2006) have argued that IT itself is not be able to maintain sustainable competitive advantage. Thus, hospitals should make a serious effort to increase their investment in clinical IT to influence the process of organizational knowledge creation which allows new knowledge to be more accessible. But they still cannot fully expect to improve the performance only by the increased investment in clinical IT. According to Ruiz-Mercader et al. (2006), organizational learning can be significantly supported through investing in information technology. In the health sector, clinical IT also considered as the shared IT capabilities that allow the flow of knowledge in hospitals. However, hospital performance can be improved through organisational learning but not through new information technology itself. Therefore, information technology contributes to obtain better outcomes indirectly via organisational learning.

The influence of organizational learning on innovation

The significant role of organizational learning (OL) for a company's survival and effective performance has been given much attention in the literature (Argyris & Schon, 1996; Huber, 1991; Senge, 1990; Zahay & Handfield, 2004). Dutrenit (2000) defines OL as a process by which organizations are involved in the creation of knowledge and also acquire technological competencies. As indicated by Nonaka and Takeuchi (1995), innovation is described with the

use of learning and knowledge creation. A body of literature indicates that innovation is determined by the collective capability of organizational learning (Senge, 1990; Senge, Roberts, Ross, Smith, & Kleiner, 1994; Tushman & Nadler, 1986).

OL is associated with acquisition of new medical knowledge opportunities (Lipsclinical ITz and Popper, 2000). Therefore, in healthcare sector, the main goal of innovation is to create new knowledge resource and subsequently generate new applications to improve organizational performance. Further, Aragon-Correa et al. (2007) have shown how the influence of organizational learning on performance is strengthened by the generation of innovation.

Many studies in the growing literature on organizational learning have indicated that organizational learning is positively related to firm innovation (Calantone et al., 2002; Tushman & Nadler, 1986). Organizational learning enables creativity (Sanchez & Mahoney, 1996), inspires new knowledge and ideas (Damanpour, 1991; Dishman & Pearson, 2003), and supports ability to recognize and utilize them (Damanpour, 1991). Generative learning, as the most advanced form of organizational learning, happens as an organization is likely to challenge long-held assumptions about its mission, procedures, long-standing practice patterns, customers, capabilities, and strategy and make changes in its practices, strategies, and set of values (Argyris & Schon, 1996; Senge, 1990). This kind of learning is a fundamental pillar for radical innovations in products (services) and processes (Senge et al., 1994).

According to Aragon-Correa et al. (2007), innovation does not directly emerge in all organizations at all times, but only to those kinds of firms with the appropriate internal characteristics such as the collective capability of organizational learning. OL as a means can enable competencies that are valued by customers due to difficulty of imitation, and it finally contributes to competitive advantage (Crossan & Berdrow, 2003). Helfat and Raubitscheck (2000) have proposed a conceptual model to explain how organizations can be successful by creating and using knowledge and organizational competencies via a learning system. According to Aragon-Correa (2007), organizational learning has a positive impact on performance, but this effect is mainly exerted through innovation.

By organizational learning in hospitals, insights and experience of healthcare practices can be shared among physicians and new practice patterns can be created. These new patterns can challenge the long-standing work activities and process of clinical decision-making. Organizational learning can also change and improve traditional treatment options and care planning and introduce new diagnostic options.

The influence of innovation on competitive advantage

According to Koellinger (2008), in any case, the strategic importance of innovation has gained much emphasis and the possibility of growth for innovative firms is significantly more than non-innovative firms. Improvement of organizational performance has been given more focus for firm innovation rather than non-innovative firm (Damanpour, 1991; Zaltman et al.,

1973). Yet, according to previous work, only certain characteristics of an innovation contribute to organizational performance not the innovation itself (Danneels & Kleinschmidt, 2001; Gopalakrishnan, 2000). For instance, Irwin, Hoffman, and Lamont (1998) have taken a resource-based view to illustrate the positive relationship between technological innovations and organizational performance. They have also claimed that this relationship is moderated by the innovation characteristics such as rarity, value, and inimitability. These characteristics make innovation result in competitive advantage. Competitive advantage has been defined as a company occupies an undefeatable position where the competing firms cannot imitate its successful strategy easily and the company can gain long-term benefits from this successful strategy (Barney, 1991; Coyne, 1986; Porter, 1985). As supported by Koellinger (2008), not all new technologies and innovations lead to success for organizations. Therefore, it is vital for all organizations (such as hospitals) to find which characteristics of innovative activities and technologies are most related to improved competitiveness and growth.

Literature indicates that both types of innovations (process and product/service) have clear economic results. A product/ service innovation refers to the generation of a new production/ function or new ways of delivering services, with characteristics which make them different from existing products/services (Beath et al., 1987; Shaked and Sutton, 1982; Vickers, 1986). A process innovation can be seen as an outward shift in the production of an existing product/service which yields lower variable costs and gives rise to a productivity increase (Beath et al., 1995; Dasgupta and Stiglitz, 1980; Reinganum, 1981). Thus, beside private profits gained by the innovator from the investment in an appropriate innovation, both product and process innovations can contribute to growth of the innovator (Gotz, 1999; Hannan and McDowell, 1990; Reinganum, 1981; Sutton, 1991).

Reaction of competing firms makes the relationship between innovation and profitability more complex. The fundamental challenge arises for the innovator is to protect its novel process or product from imitation by rivals. Immediately after imitation of the improved process or new product, the innovator that first brought the innovation to the business environment will not be able to outperform its rivals (Teece, 2006). With attention to appropriability problem, the quicker an innovation is imitated by competing firms, the less time the innovator has to gain additional profit from the investment in the innovation (Geroski, 1995).

According to Yamin et al. (1997), competitive advantage can be obtained through organisational innovation. In the health sector, if investments in and adoption of new clinical IT leads to subsequent qualitative change in service-based offering and healthcare delivery, it gives the hospital a competitive advantage to outperform other hospitals. According to the resource-based view, there are four elements to measure the potential of firm resources to make sustainable competitive advantages. These indicators are value, rareness, imitability, and substitutability. For example, if a hospital obtains valuable and rare resources, it is able to develop and implement value-creating strategies that cannot be imitated by other rivals to obtain sustainable competitive advantages. Resources of hospitals consist of physical assets, capacities,

physicians, organizational culture, trademarks, information, and knowledge, etc. If hospitals have valuable, rare, imitable, and substitutable resources such as knowledge, they can use them to gain competitive advantages.

Innovation is viewed as a significant source of competitive advantage in the era of knowledge economy (Daghfous, 2004; Prajogo & Ahmed, 2006). By the use of new clinical IT as well as knowledge involved in organizational learning and following changes in quality of offerings as well as procedures, processes, and content of work, a hospital can create a unique and inimitable innovation which generates value. This value-creation innovation can be considered as a competitive advantage for the hospital to do better than other competing private and public hospitals. A long-lasting innovation can protect profit margins and allow benefits to be gained for the innovator (Lavie, 2006). Also, innovation allows companies to create and utilize their capabilities that support the long-run business performance (Teece, 2007). As supported by Gracia-Morales et al. (2007), successful innovation can make imitation more difficult and allow companies to maintain their advantages better.

According to Chen et al. (2009), innovation performance is positively related to competitive advantage. Yet, profits resulted from investment in innovation are only sustainable until the moment that the innovation is copied by the competing companies. In addition, if the innovations are based on the new technologies, early mover advantages are limited to falling prices or rapid technological improvements over time (Beath et al., 1995).

The influence of competitive advantage on hospital performance

According to Porter (1985), in the long term, the capability of firm to create an undefeatable position in an industry is determined by the success of firms to outperform its competitors. According to a literature review, organisational performance is dependent on the ability of the organisation to achieve a position of competitive advantage (Yamin et al., 1997).

A variety of variables have been used to conceptualize and measure organizational performance in strategy research. Some studies have categorized these measurements into two wide groups: objective measures (such as return on assets) and perceptual measures (comparisons of self with competitors). In this study, organizational performance is measured in terms of profitability and growth. Growth is quantified as changes in revenue. Economic theory proposes that the organizational performance outcomes depend on the type of innovation, the extent to which the competition is intensified, and the timing of the innovation whether the firm is a first mover, a follower, or a laggard in implementation of a particular innovation (Koellinger, 2008). Therefore, having a competitive advantage can help hospitals outperform other competitors and affect their performance.

PROPOSITIONS

The following propositions indicate the relationship between constructs of this paper:

- Proposition1:* Investment and adoption of new clinical IT systems positively influence hospital innovation.
- Proposition2:* Investment in and adoption of new clinical IT positively affect organizational learning in hospitals.
- Proposition3:* Organizational learning in hospitals positively affects innovation.
- Proposition4:* Innovation in hospitals is positively associated with competitive advantage.
- Proposition5:* Innovation mediates the relationship between the effect of new clinical IT (investment and adoption) and competitive advantage.
- Proposition6:* Innovation mediates the relationship between organizational learning and competitive advantage.
- Proposition7:* Competitive advantage positively affects hospital performance.

FIGURE

Based on the propositions mentioned above, the conceptual framework of this study is depicted in the following figure (figure 1):

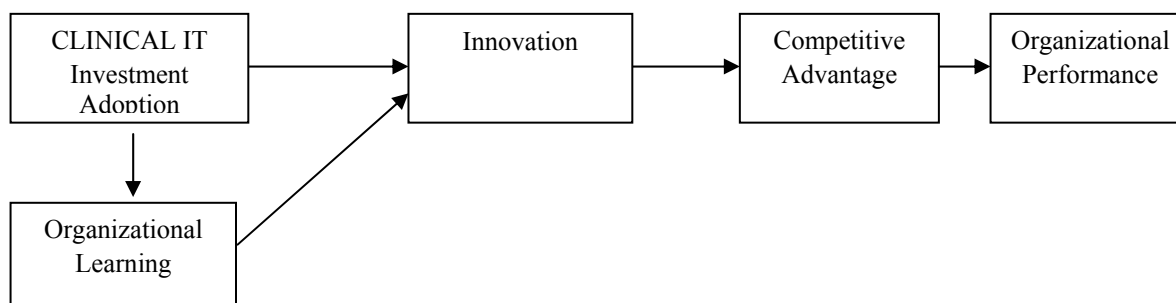


Figure1. Conceptual Framework

IMPLICATIONS OF THE STUDY

his study is of interest from both theoretical and practical perspectives. This research as a conceptual study provides some implications for both practitioners and scholars. Therefore, implications of this study are divided into two parts as follows:

Theoretical

Hospitals need innovation to improve their performance in changing environment. This study contributes to such performance improvement by showing that organizational innovation in hospitals is based on two factors. Theoretically, we have examined using the literature on clinical IT, organizational learning, innovation, competitive advantage and organizational performance to propose a theoretical model in medical context.

We have verified that clinical IT is not in itself able to maintain competitive advantage. The theoretical model has demonstrated the importance of investments and adoption of clinical IT as a dynamizing element of organizational learning. So, the failures in investing and adoption of new clinical IT systems can result in a lack of organizational learning and improved organizational performance in turn.

In this model, the relationship between organizational learning, innovation and performance has been discussed. We argue that innovation mediates the effect of new clinical IT (investment and adoption) on competitive advantage. Also, the influence of organizational learning on competitive advantage is mediated by innovation. It means investments in and adoption of new clinical IT as well as building a sound organizational learning cannot be considered as a source of improved performance if no change in the quality of health delivery results. Therefore, the research adds to the body of knowledge and extends the understanding in the field of innovation and organizational performance in the medical context. Also the study would propose a number of implications for IT practitioners.

Practical

From a practical point of view, the functional contribution of the research is to help health care management and practitioners better understand how to gain competitive advantage in hospitals. This study proposes that innovation is not directly available to all hospitals without appropriate clinical IT system adoption and organizational learning.

This study proposes that hospital management should keep abreast of new technological change and invest in new clinical IT. Only when new clinical IT systems are accepted and adopted by healthcare professionals, the achievable gains of the systems can be reached. Otherwise, if new clinical IT investment is not followed by the utilization of the system, healthcare professionals can resemble “chevaliers without sword”. This study also proposes that, beside new clinical IT, management should place much emphasis on organizational learning in order to manage innovation in hospitals. With a qualitative change in healthcare delivery, hospital can outperform other competing hospitals. Finally, from a managerial standpoint, this study may contribute to propose the factors that might be encouraged by hospital management to improve organizational performance.

CONCLUSION

New knowledge has been found as a considerable source of obtaining competitive advantage in hospitals. New knowledge will lead to new applications in medical practices and finally influence organizational performance. Therefore, making a serious effort to create new knowledge and develop competencies can lead to various types of innovations.

New clinical IT such as Electronic Medical Records (EMR) systems serve as digital repositories to improve organization and sharing data to enhance efficiency. Another type is called Clinical Decision Support (CDS) systems which are considered as knowledge-based systems which improve clinical decision-making and contribute to knowledge creation and distribution. Therefore, new clinical IT is concerned with creating and sharing new knowledge among different occupational groups working in hospitals. Also, new clinical IT affects organizational factors such as the collective capability of organizational learning which plays a key role in shaping innovation through knowledge creation, sharing and utilization.

This study proposes two determinants for managing innovation in hospitals: new clinical IT investment and adoption as well as organizational learning. As a conclusion, the process of a successful implementation and adoption of new clinical IT as well as building a sound organizational learning in hospitals are conducive to an innovation. Yet, innovation in hospitals is widely prescribed as a means to enhance organizational performance, many hospitals can not develop and manage it properly. This study (as a theoretical study) is designed to explain the role of innovation in creating competitive advantage and organizational performance in hospitals.

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