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## LETTER FROM THE EDITOR

We are extremely pleased to present the *Academy of Health Care Management Journal*, the official journal of the Academy of Health Care Management. The AHCM is an affiliate of the Allied Academies, Inc., a non profit association of scholars whose purpose is to encourage and support the advancement and exchange of knowledge, understanding and teaching throughout the world. The *AHCMJ* is a principal vehicle for achieving the objectives of the organization. The editorial mission of this journal is to advance the knowledge and understanding of the management of health care organizations throughout the world. To that end, the journal publishes high quality, theoretical and empirical manuscripts which advance the discipline.

The manuscripts contained in this volume have been double blind refereed. The acceptance rate for manuscripts in this issue, 25%, conforms to our editorial policies.

Our editorial policy is to foster a supportive, mentoring effort on the part of the referees which will result in encouraging and supporting writers. We welcome different viewpoints because in differences we find learning; in differences we develop understanding; in differences we gain knowledge and in differences we develop the discipline into a more comprehensive, less esoteric, and dynamic metier.

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Shawn Carraher, Editor  
Minot State University

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# HEALTH CARE AND SOCIAL MEDIA: BUILDING RELATIONSHIPS VIA SOCIAL NETWORKS

**Brittany A. Hackworth, Morehead State University**  
**Michelle B. Kunz, Morehead State University**

## 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, Gallagher, & 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,

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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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# **EMPLOYEE PERCEPTIONS OF INDIVIDUAL AND ORGANIZATIONAL COMMITMENT TO THE GREEN MOVEMENT AND THEIR PERCEIVED IMPACTS IN HEALTHCARE VS. NON-HEALTHCARE ORGANIZATIONS**

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## **ABSTRACT**

*In this research, we find support for a proposed set of linkages among employee perceptions of organizational green orientation, individual green orientation, and impacts of the green movement on organizational performance in healthcare vs. non-healthcare organizations. Specifically, we find that employees who believe that they and their organizations are aligned with the green movement are more likely to have higher outcome perceptions. These findings are not, however, consistent when respondents from healthcare organizations are compared to those in non-healthcare settings. We discuss differences, consider possible causes, and suggest future research.*

## **INTRODUCTION**

In this research, we consider how employee perceptions of their own and the organization's commitment to the "green" movement and employee perceptions that the organization has implemented perceptions of outcomes. We examine differences that may be occurring in healthcare vs. non-healthcare settings. A stimulus for our work has been widespread recent discussion of the need to shift attention to issues of *sustainability*, a concept that is central to the green movement.

## **THE GREEN MOVEMENT**

Recent events, and especially rising gasoline prices, a depressed housing market, and instabilities in the world economy, have led to considerable discussion of the current status of the "green movement", a phenomenon that has appeared over the past 20 years (Stafford, 2003). It encompasses areas such as "green buying" by consumers (Mainieri, et al., 1997), Environmentally Preferable Purchasing (EPP) by government agencies and ultimately by

organizations in the private sector (Elwood & Case, 2000), Environmentally Benign Design and Manufacturing (EBDM) (Newsdesk, 2006), and Socially Responsible Investing (SRI) (Blodgett, 2007). In each case, discussion has centered on purchasing, manufacturing, and investing in ways that are environmentally beneficial. Historically, emphasis has been placed on insuring that EPP products are attractive to consumers (Ottman, Stafford & Hartman, 2006; Dale, 2008) and insuring that organizations have sufficient incentives to behave in environmentally-constructive ways (Elwood & Case, 2000).

In contrast, a second stream in the literature has suggested that the “green movement” may be in decline. Specifically, one of the “Current Issues in the Greening of Industry” (July 2007) suggests that the current “new-found environmental ethic” may be somewhat ephemeral and that “... corporate greening could go bust” in ways analogous to other recent fad-like phenomena. Moreover, Stafford (2003) points out that “... green issues as a whole appear to be taking a back seat to concerns of terrorism, war, and the economy.” In view of the current recession, these trends could quickly be exacerbated. However, Dale (2008) points out that, with soaring energy prices pushing up the price of mainstream goods, green products are becoming just as -- or even more -- affordable these days. Stafford also notes that concerns about oil could lead to a movement to reduce dependence on oil in the U.S., and thus foster this aspect of the green movement.

Environmental friendliness and sustainability are the major concerns of green products, green manufacturing and service, and green organizations (Liu & He, 2005). All of the green activities, such as reducing waste, using harmless materials, and providing organic food can be placed under the umbrella of greening. Providing a clean, ethical and safe environment to human beings and all creatures is the goal of green movement, and is one which potentially requires the efforts of all the people, industries and governments on the earth (Grewe 2002; Holden 2004; Patulny & Norris, 2005; Tiemstra, 2003).

## **ORGANIZATIONAL CULTURE AND SUSTAINABILITY**

In this research, we also speculate that *organizational culture* may impact employee perceptions of the green movement and its importance to the organization and to them personally. Moreover, culture may impact perceptions about outcomes as well. Note, however, that the impacts between the culture and the perceptions may move in two directions. Specifically, as organizations become *greener*, we should see a move toward a more empowered, employee-centered, and customer-centered culture. Additionally, however, a culture that is supportive of the green movement should lead to better outcomes and, perhaps in part through self-selection, to employees who, themselves, are more supportive of the green movement.

Centering on quality practices, recent in-depth discussion by Zairi (2002) can illustrate what is being considered: The concept of sustainable development has been touted as a new planning agenda (Beatley & Manning, 1998). As such, it becomes a fundamental concept that

should be an important aspect of all further policy developments (Loffler, 1998). Sustainable development is based on a perceived need to address environmental deterioration and to maintain the vital functions of natural systems for the well being of present and future generations. **Sustainability** is defined as 'the ability of an organization to adapt to change in the business environment to capture contemporary best practice methods and to achieve and maintain superior competitive performance' (Zairi & Liburd 2001). This concept implies that **sustainability** is a means for an organization to maintain its competitiveness.

Quinn (2000) has a similar idea on **sustainability**. He describes it as the development that meets present needs without compromising the ability of future generations to meet their own needs. Gladwin et al. (1995), on the other hand, define it as 'development, which meets the needs of the present, without compromising the ability of future organizations to meet their own needs'.

## **TOTAL QUALITY MANAGEMENT**

(TQM) represents an integrative approach for the pursuit of customer satisfaction (Chin et al., 2001). However, facing intense pressure of global competition, organizations need to consider incorporating the idea of **sustainability** in TQM in order to sustain their competitive advantage and performance improvement. In addition, the interest of organizational survival, growth and prosperity has therefore got to be concerned with not just the present, but also the future. See also similar ideas by Hitchcock and Willard (2002), Jonker (2000), and McAdam and Leonard (2003).

## **WHAT DIFFERENCES MAY EXIST IN THE HEALTHCARE SETTING?**

There is widespread support of the premise that health care managers and executives are struggling to cope with environmental challenges in the healthcare industry (Sieveking & Wood, 1994; Dwork, et al., 1998; Smith, et al., 1998; Shewchuk, et al., 2005). Zuckerman's (2000) comments are typical of the discussion in the literature, in pointing out that it is the dynamic nature of the healthcare industry that leads organizations to struggle to survive in turbulent conditions. Moreover, Zuckerman notes that the management approaches used by many healthcare organizations continue to lag behind other businesses in similar industries.

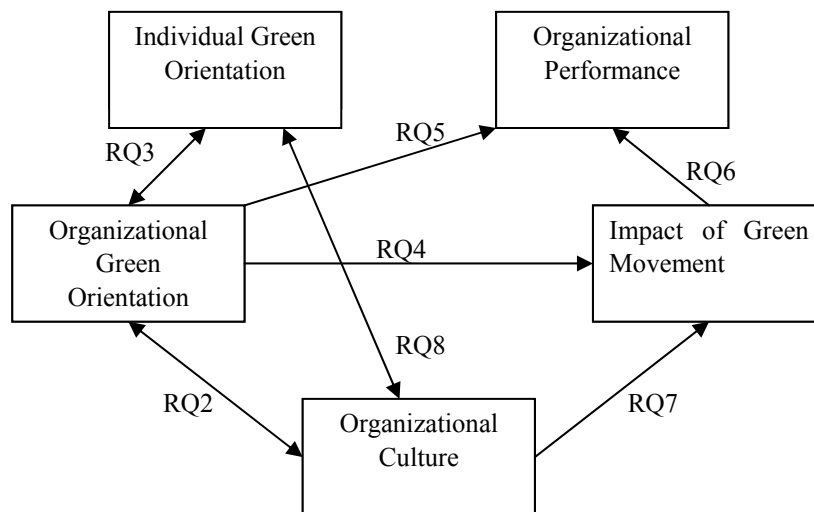
Of special significance to this research, Rundle (2000) has recently suggested that the healthcare industry is falling behind in issues of management, particularly with respect to adopting and managing automation and technology. The implication is that managers and executives in healthcare, compared to their counterparts in other industries, do not have the business knowledge and skills to fully utilize the available automation and technology. Mecklenburg (2001) has recently made similar points when considering the steps health care is taking with respect to preparing to exchange data in ways that will benefit patients. What is suggested may be that healthcare may be lagging behind at just the time when turbulence in the

industry should be moving them toward the development of sophisticated sustainability systems. Is it possible that differences in the factors we have discussed could be underlying causes of any differences between healthcare and non-healthcare?

In this research, we consider how employee perceptions of their own and the organization’s commitment to the “green” movement and employee perceptions that the organization has implemented perceptions of outcomes. We examine differences that may be occurring in healthcare vs. non-healthcare settings. In this study, we develop eight research questions to explore the possibilities.

Figure 1 shows the linkages we expect and relates linkages to the corresponding research questions. Our first research question suggests that healthcare and non-healthcare organizations would have different levels of organizational green orientation, organizational culture, organizational performance, and impacts of the green movement (Research Question 1 labeled as RQ1 in Figure 1). We also believe that more organizations with more desirable organizational culture should be more supportive of the green movement (Research Question 2 labeled as RQ2 in Figure 1). Furthermore, employees’ personal green orientation should be related to or affected by the green movement within the organization (Research Question 3 labeled as RQ3 in Figure 1). Additionally, as organizations become more green-oriented, the organization itself will be seen as “doing better” in general and the impact of the green movement will be more positive (Research Questions 4 and 5 labeled as RQ4 and RQ5 in Figure 1). We also believe that as the organization is “doing better,” the employees will perceive the impact of the green movement even better (Research Question 6 labeled as RQ6 in Figure 1). Finally, we expect that organizational culture is related to the impact of the green movement and will be shaped by employees’ individual green orientation (Research Questions 7 and 8 labeled as RQ7 and RQ8 in Figure 1).

Figure 1 :Research Model





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<i>Research Question 1</i>	<i>Healthcare and non-healthcare organizations will have different levels of organizational green orientation, organizational culture, organizational performance, and impacts of the green movement.</i>
<i>Research Question 2</i>	<i>Organizational Green Orientation is related to Organizational Culture.</i>
<i>Research Question 3</i>	<i>Organizational Green Orientation is related to Individual Green Orientation.</i>
<i>Research Question 4</i>	<i>Organizations that are described by employees as higher in Organizational Green Orientation will also report more positive feelings about the impact of the green movement.</i>
<i>Research Question 5</i>	<i>Organizations that are described by employees as higher in Organizational Green Orientation will also report more positive feelings about the organization's performance.</i>
<i>Research Question 6</i>	<i>Organizations that are described by employees as higher in Organizational Performance, they will also report more positive feelings about the impact of the green movement.</i>
<i>Research Question 7</i>	<i>Organizational Culture is related to employees' feelings about the impact of the green movement.</i>
<i>Research Question 8</i>	<i>Organizational Culture is related to Individual Green Orientation.</i>

## METHODOLOGY

### Subjects of the Current Study

Subjects in the sample were approximately 323 managers from a wide variety of industries in the South. There were approximately 83 managers who work in the healthcare industry and 124 managers who work in the non-healthcare industries (45 in utilities, 4 in financial services, 10 in high technology, 19 in government, 27 in retail, and 19 in education). Of the 83 healthcare managers, they were roughly 54.2 % male and 45.8% female with an average age of 35.07 years (Table 1). These managers had an average of 16.99 years working experience with 9.28 years in management positions. 38.6% of the subjects are employed in a company that has more than 500 employees, 7.2% of the subjects work in a company that has 251 to 500 employees, 15.7% of the subjects work in a company that has 51 to 250 employees and 38.6% of the subjects work in a company that has less than 50 employees. Of the 124 non-healthcare managers, they were roughly 43.5 % male and 56.5% female with an average age of 44.90 years. These managers had an average of 22.77 years working experience with 11.64 years in management positions. 43.5% of the subjects are employed in a company that has more than 500 employees, 6.5% of the subjects work in a company that has 251 to 500 employees, 21.0% of the subjects work in a company that has 51 to 250 employees and 29.0% of the subjects work in a company that has less than 50 employees. Subjects responded to a survey asking about their perceptions and experiences about green movement, quality management, and organizational culture in their own firms. In this study, we will concentrate on the relationships among perceptions of support for the organizational green movement, organizational culture, organizational performance, and the impact of green movement.

		<b>Healthcare</b>	<b>Non-Healthcare</b>
Gender	Male	45 (54.2%)	54 (43.5%)
	Female	38 (45.8%)	70 (56.5%)
	Valid N (list wise)	83 (100.0%)	124 (100.0%)
Number of Years	Working Experience	16.99	22.77
	Managerial Experience	9.28	11.64
	Valid N (list wise)	81	121
Number of Employees	Over 500	32 (38.6%)	54 (3.5%)
	251-500	6 (7.2%)	8 (6.5%)
	51-250	13 (15.7%)	26 (21.0%)
	Less than 50	32 (38.6%)	36 (29.0%)
	Valid N (list wise)	83 (100.0%)	124 (100.0%)

**Industry of your organization**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Manufacturing	28	8.7	8.7	8.7
	Utilities	45	13.9	13.9	22.6
	Health Care	83	25.7	25.7	48.3
	Financial Services	4	1.2	1.2	49.5
	High Technology	10	3.1	3.1	52.6
	Government	19	5.9	5.9	58.5
	Retail	27	8.4	8.4	66.9
	Education	19	5.9	5.9	72.8
	Other	88	27.2	27.2	100.0
	Total	323	100.0	100.0	

**Between-Subjects Factors**

		Value Label	N
HC Organizations	1.00	Health-Care	81
	2.00	Non Health-Care	122

## INSTRUMENT

### Organizational Green Orientation

In this study, we developed nineteen survey questions to measure the Organizational Green Movement. Table 2 provides the items and shows the results of our factor analysis.

As Table 2 indicates, we obtained a three-factor solution with 66.644% of the variance explained in the case of the organizational green orientation items. We have labeled Factor 1 as “Green Leadership”, Factor 2 as “Green Products/Services”, and Factor 3 as “Green Workplace.”

**Table 2: Factor Analysis on Organizational Green**

	Rotated Component Matrix <sup>a</sup>		
	1	2	3
Produce environmentally friendly goods and services	.222	.900	.054
Design environmentally friendly goods and services	.214	.900	.067
Reuse or refurbish a product's components	.247	.615	.257
Provide a safe and healthy workplace for employees	.108	.109	.841
Make ethical and socially responsible decisions	.169	.145	.717
Make an effort to preserve the natural environment	.680	.274	.277
Lead and support corporate responsibility activities	.606	.202	.261
Encourage employees to conserve energy/resources.	.725	.083	.242
Set goals to conserve energy/resources.	.848	.194	.108
Commit to be environmentally friendly at all levels	.806	.312	.082
Preserve employees' physical and emotional well-being	.355	.043	.690

Extraction Method: Principal Component Analysis.  
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

**Total Variance Explained**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.796	43.597	43.597	4.796	43.597	43.597	3.046	27.693	27.693
2	1.447	13.157	56.754	1.447	13.157	56.754	2.291	20.828	48.521
3	1.088	9.890	66.644	1.088	9.890	66.644	1.994	18.123	66.644
4	.770	7.001	73.644						
5	.635	5.776	79.420						
6	.610	5.549	84.969						
7	.447	4.066	89.035						
8	.422	3.834	92.869						
9	.368	3.343	96.212						
10	.263	2.394	98.606						
11	.153	1.394	100.000						

Extraction Method: Principal Component Analysis.

### **INDIVIDUAL GREEN ORIENTATION**

In this study, we developed twenty survey questions to measure the Individual Green Orientation. We obtained a three-factor solution with 51.903% of the variance explained in the case of the individual green orientation items. We have labeled Factor 1 as “Green Actions”, Factor 2 as “Green Consciousness” and Factor 3 as “Green Belief.” Table 3 provides the items and shows the results of our factor analysis.

### **ORGANIZATIONAL CULTURE**

Based on previous research (Hartman, Fok & Zee, 2009), we measured the Organizational Culture by constructing a series of paired opposite items which asked whether the organization’s climate should be described as open vs. closed, soft vs. tough, competitive vs. collaborative, and the like. Table 4 below provides the items and shows the results of our factor analysis. We obtained a two-factor solution in the case of the culture items and have labeled Factor 1 as “TQM Culture” and Factor 2 as “People-Friendly Culture.” 52.63% of the variance was explained by these two factors.

### **Impact of Green Movement**

The instruments included are items such as “Provide better products,” “Provide better services,” “Have better relationship with customers,” “Have better relationship with suppliers,” “Have better reputation,” “Provide better working environment,” “Increase profits,” “Reduce costs,” and “Improve productivity.” Factor analysis produced a two-factor solution and we named them “Strategic Benefits” and “Operational Benefits.” 82.184% of the variance was explained by these two factors. Table 5 below provides the items and shows the results of our factor analysis.

**Table 3: Factor Analysis on Individual Green Orientation****Rotated Component Matrix<sup>a</sup>**

	Component		
	1	2	3
Recycle paper, plastic, or aluminum products	.239	.575	.303
Drive a hybrid or electric car	.683	.188	.060
Plant your own vegetable garden	.402	.129	.069
Buy organic food	.544	.134	.253
Bank at an eco-friendly bank	.633	.031	.056
Buy products based on the willingness to recycle old devices	.545	.274	.295
Run your home on renewable energy	.758	.180	-.062
The city or state should provide an ability to recycle	.186	.093	.710
It is inconvenient being "green"	-.012	-.036	-.731
You think of yourself as energy conscious	.125	.889	-.070
You think of yourself as eco-conscious	.271	.842	.108

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

**Total Variance Explained**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.505	31.862	31.862	3.505	31.862	31.862	2.378	21.622	21.622
2	1.164	10.584	42.447	1.164	10.584	42.447	2.017	18.341	39.962
3	1.040	9.457	51.903	1.040	9.457	51.903	1.314	11.941	51.903
4	.960	8.728	60.631						
5	.917	8.336	68.967						
6	.725	6.591	75.558						
7	.678	6.163	81.721						
8	.619	5.625	87.346						
9	.592	5.381	92.727						
10	.521	4.741	97.468						
11	.279	2.532	100.000						

Extraction Method: Principal Component Analysis.

**Table 4: Factor Analysis on Organizational Culture**

**Rotated Component Matrix<sup>a</sup>**

	Component	
	1	2
Soft	-.036	.478
Informal	.076	.713
Decentralized	.185	.568
Quality-oriented	.803	.074
Innovation-promoting	.867	-.033
Proactive	.834	.142
Collaborative	.006	.683

Extraction Method: Principal Component Analysis.  
 Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

**Total Variance Explained**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.256	32.233	32.233	2.256	32.233	32.233	2.132	30.461	30.461
2	1.428	20.397	52.630	1.428	20.397	52.630	1.552	22.169	52.630
3	.977	13.951	66.581						
4	.788	11.257	77.838						
5	.706	10.087	87.926						
6	.505	7.219	95.145						
7	.340	4.855	100.000						

Extraction Method: Principal Component Analysis.

**Organizational Performance**

The Organizational Performance items were primarily adapted from the Malcolm Baldrige National Quality Award outcome assessment measures. The Baldrige Awards are designed to identify organizations that are performing in an exceptional manner and include criteria for identifying excellence. We used the Baldrige criteria in the form of a scale which asks respondents to provide their perceptions about their organizations along Baldrige lines. The resulting scale has been used and reported in previous research (Hartman, Fok & Zee, 2009). The instrument included are items such as “Overall, my company is performing well,” “Overall, morale in my company is high,” “Overall, I am satisfied with the use of technology in my company,” and the like. Factor analysis in this study indicated that one factor was present. We named the factor as “Organizational Performance/Success.”

**Table 5: Factor Analysis on Impact of Green Movement****Rotated Component Matrix**

	Component	
	1	2
Have better relationship with customers	.828	.374
Have better relationship with society at large	.892	.214
Have better reputation	.837	.295
Increase profits	.305	.871
Reduce costs	.267	.902
Have better relationship with suppliers	.803	.333
Improve productivity	.413	.815
Have better relationship with employees	.798	.399

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

**Total Variance Explained**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.523	69.034	69.034	5.523	69.034	69.034	3.796	47.454	47.454
2	1.052	13.150	82.184	1.052	13.150	82.184	2.778	34.731	82.184
3	.383	4.788	86.973						
4	.280	3.499	90.471						
5	.233	2.908	93.379						
6	.215	2.692	96.070						
7	.163	2.033	98.103						
8	.152	1.897	100.000						

Extraction Method: Principal Component Analysis.

**RESULTS**

Our first research question suggested that healthcare and non-healthcare organizations would have different levels of organizational and individual green orientation, organizational culture, organizational performance, and impact of green movement. As shown in Table 6, the MANOVA (Multivariate Analysis of Variance) results are significant with a p-value of .000, which implies that healthcare organizations were significantly different from non-healthcare organizations, and that subjects reported different levels of organizational and individual green orientation, organizational culture, organizational performance, and impacts of the green movement. Among the eleven factors, we found that “Green Products/Services”, “Green Actions”, and “Green Consciousness” are statistically significant at the levels of .019, .000, and .003, respectively. For “Green Products/Services”, the mean factor score of non-healthcare

organizations (0.1514456) is greater than that of healthcare organizations (-0.1867539). The results imply that non-healthcare organizations are more inclined to develop green products or services than healthcare organizations. For “Green Actions”, the mean factor score of non-healthcare organizations (0.3218496) is greater than that of healthcare organizations (-0.2387005). For “Green Consciousness”, the mean factor score of non-healthcare (0.1884967) is greater than that of healthcare organizations (-0.2440347). The results suggest that individuals in the non-healthcare organizations are perceived to have higher level of green practices and awareness than those in the healthcare organizations.

**Table 6: Summary of MANOVA Results  
Healthcare vs. Non-Healthcare Organizations**

**Multivariate Tests<sup>b</sup>**

Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	.022	.326 <sup>a</sup>	13.000	189.000	.987
	Wilks' Lambda	.978	.326 <sup>a</sup>	13.000	189.000	.987
	Hotelling's Trace	.022	.326 <sup>a</sup>	13.000	189.000	.987
	Roy's Largest Root	.022	.326 <sup>a</sup>	13.000	189.000	.987
HC_ind	Pillai's Trace	.207	3.791 <sup>a</sup>	13.000	189.000	.000
	Wilks' Lambda	.793	3.791 <sup>a</sup>	13.000	189.000	.000
	Hotelling's Trace	.261	3.791 <sup>a</sup>	13.000	189.000	.000
	Roy's Largest Root	.261	3.791 <sup>a</sup>	13.000	189.000	.000

a. Exact statistic

b. Design: Intercept+HC\_ind

**Table 6: Summary of MANOVA Results  
Healthcare vs. Non-Healthcare Organizations**

Dependent Variable	Significance
Green Leadership	.566
Green Products/Services	.019**
Green Workplace	.948
Green Actions	.000**
Green Consciousness	.003**
Green Belief	.952
TQM Culture	.200
People-Friendly Culture	.472
Strategic Benefits	.116
Operational Benefits	.093
Organizational Performance	.447

The F tests the effect of healthcare vs. non-healthcare organizations. This test is based on the linearly independent pairwise comparisons among the estimated marginal means.

\*\* F test is significant at the 0.05 level.



Our second research question examines the relationship between Organizational Green Orientation and Organizational Culture. Table 7 provides the results of our correlation analysis. We found only one pair of significant relationships in the healthcare organizations. “Green Workplace” has a significant correlation with “People-Friendly Culture” which implies that as healthcare organizations embrace culture that focuses on being soft, informal, and decentralized, they also are trying to develop a workplace that is perceived as environmental friendly by the employees.

<b>Table 7: Pearson’s Correlation Matrix Organizational Green Orientation, Individual Green Orientation, Impact of Green Movement, and Organizational Performance (RQ2 to RQ5)</b>								
<b>Healthcare Organizations</b>								
	Green Actions	Green Consciousness	Green Belief	TQM Culture	People-Friendly Culture	Strategic Benefits	Operational Benefits	Organizational Performance
Green Leadership	NS	NS	NS	NS	NS	NS	.228*	.217*
Green Products/Services	.290**	.370**	NS	NS	NS	.446**	.223*	NS
Green Workplace	NS	NS	NS	NS	.242*	NS	NS	NS
<b>Non-Healthcare Organizations</b>								
Green Leadership	.202*	.204*	NS	NS	NS	NS	.208*	NS
Green Products/Services	NS	NS	NS	NS	NS	.233**	NS	NS
Green Workplace	NS	NS	NS	NS	NS	NS	NS	NS
** Correlation is significant at the 0.01 level (2-tailed).								
* Correlation is significant at the 0.05 level (2-tailed).								
NS = not significant.								

Research Question 3 investigates the relationship between Organizational Green Orientation and Individual Green Orientation. We found two pairs of significant relationships in healthcare organizations and two pairs of significant relationships in non-healthcare organizations. The results are shown in Table 8. “Green Products/Services” has significant and positive correlations with both “Green Actions” and “Green Consciousness” at the 0.01 level in healthcare organizations. The relationships are positive and imply that healthcare organizations that produce more environmentally friendly goods and services will also report higher levels of green practices and green awareness. In non-healthcare organizations, “Green Leadership” has significant and positive relationships with “Green Actions” and “Green Consciousness” at the 0.05 level. The relationships are all positive which imply non-healthcare organizations that are described by employees as higher in Green Leadership will also report more positive feelings about their own Individual Green Orientation. The findings strongly support the idea that employees’ reported individual green orientation affects the organization’s green movement and vice versa.

Research Question 4 suggested that organizations with higher level of green orientation would be reported by the employees to have more positive feeling about the impact of the green movement. We found three pairs of significant relationships in healthcare organizations and two pairs of significant relationships in non-healthcare organizations. The results are shown in Table 7. “Green Leadership” has significant and positive correlations with “Operational Benefits” in both healthcare and non-healthcare organizations implying that green leadership within an organization leads to organizational efficiency *and* effectiveness. “Green Products/Services” has significant and positive correlations with “Strategic Benefits” and “Operational Benefits” in healthcare organizations; “Green Products/Services” has significant and positive correlation with “Strategic Benefits” in non-healthcare organizations. The results support the premise that when healthcare organizations develop “green” products/services or use “green” material in the production, show more concern with avoiding negative consequences of not being green, and help their employees at all levels to be more green-oriented, the overall impact of these green initiatives is perceived to be more positive by the employees. Non-healthcare organizations only show one pair of positive relationships between “Green Products/Services” and “Strategic Benefits.” While this finding is similar to that in healthcare organizations, the lack of other significant findings suggests weaker perceived relationships among these constructs in non-healthcare organizations.

Research Question 5 suggested that organizations with higher level of green orientation would have received more positive feelings about the organization’s performance. The results are shown in Table 7. Only one pair of significant relationships is found in the healthcare organizations. The relationship between “Green Leadership” and “Organizational Performance/Success” is significant at the 0.05 level. The relationship is positive which implies that as the organizations show more concern in helping their employees at all levels to be more green-oriented, and pay more attention to safety concerns, the organizational performance is perceived by the employees to be higher.

Research Question 6 suggested that organizations with higher level of organizational performance would be reported by the employees to have more positive feeling about the impact of the green movement. As shown in Table 8, we found two pairs of significant relationships in healthcare organizations. Two factors (“Strategic Benefits” and “Operational Benefits”) of Impact of Green Movement and “Organizational Performance/Success” have significant correlations at the 0.01 and 0.05 level, respectively. The relationships are positive and imply that healthcare organizations with higher levels of performance would also be reported by their employees to have positive feelings about the impact of the green movement. There is no significant relationship between “Impact of Green Movement” and “Organizational Performance” in non-healthcare organizations, implying that employees in non-healthcare organizations do not see a relationship.

<b>Table 8</b>			
<b>Pearson's Correlation Matrix</b>			
<b>Impact of Green Movement, Organizational Culture, and Organizational Performance (RQ6 and RQ7)</b>			
<b>Healthcare Organizations</b>			
	TQM Culture	People-Friendly Culture	Organizational Performance
Strategic Benefits	-.454**	-.329**	.310**
Operational Benefits	-.258*	NS	.233*
<b>Non-Healthcare Organizations</b>			
Strategic Benefits	NS	NS	NS
Operational Benefits	NS	-.204*	NS
** Correlation is significant at the 0.01 level (2-tailed).			
* Correlation is significant at the 0.05 level (2-tailed).			
NS = not significant.			

Our seventh research question examines the relationship between Organizational Culture and Impact of Green Movement. We found three pairs of significant relationships in healthcare organizations. "TQM Culture" has significant correlations with "Strategic Benefits" and "Operational Benefits" and "People-Friendly Culture" has a significant correlation with "Strategic Benefits" in the healthcare organizations. The findings indicate that as the organizational cultures are more green-oriented and employee-friendly; the employees see more positive impacts from the green movement. Only one pair of significant relationships in non-healthcare organizations is found. "People-Friendly Culture" has a significant relationship with "Operational Benefits," implying that these organizations do believe that the people-friendly culture does provide operational benefits, such as increase profits, reduce costs, or improve productivity.

Research Question 8 investigates the relationship between Organizational Culture and Individual Green Orientation. The results are not significant which implies organizational culture does not have significant impact on employees' view of being green at a personal level in healthcare and non-healthcare organizations.

## **DISCUSSION AND CONCLUSIONS**

In this research, we examine whether there are differences between healthcare and non-healthcare organizations in employee perceptions of and reactions to the "green movement." Our MANOVA results found significant differences between healthcare and non-healthcare in three aspects: Green Products/Services, Green Actions, and Green Consciousness. In all three, non-healthcare organizations had significantly higher scores, indicating that non-healthcare employees see their organizations as doing *better* in these areas.

We next examined the linkages among Individual Green Orientation, Organizational Performance, Impact of the Green Movement, Organizational Culture, and Organizational Green Orientation, as show in Figure 1, for healthcare and non-healthcare organizations. In general, patterns of relationships were similar for healthcare and non-healthcare and in several cases, those in healthcare saw *more* relationships, suggesting, perhaps, that when healthcare organizations *do* embrace the green movement, employees recognize their concerns and react positively.

Are healthcare organizations less supportive of the green movement than non-healthcare organizations? On a superficial level, at least, organizations with cultures, which would be expected to emphasize care and concern, would also be expected to be supportive of the green movement. Study measuring concrete organizational actions - rather than perceptions could be useful in supporting whether differences are *real*. Alternatively, healthcare organizations may be concerned with the green movement but less effective than non-healthcare in communicating their concerns to the workforce. If this is the case, and given the positive perceptions in healthcare organizations which are perceived to support the green movement, there should be a real incentive for healthcare organizations to convey their message more strongly. Where study finds no concrete differences, this possibility could be examined.

This research has shown a disconnect between healthcare and non-healthcare organizations in employee perceptions about the organization and the green movement. We have considered several explanations for the differences and feel that future research will be needed to develop understanding of what is occurring.

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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.*

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.

**This paper is dedicated to the memory of Lance Bradshaw.**

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# **CONSUMER ATTITUDES AND VISIT INTENTIONS RELATIVE TO A VOLUNTARY SMOKING BAN IN A SINGLE CASINO RESORT WITH A DENSE COMPETITIVE SET**

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## **ABSTRACT**

*The positive impact of revenues associated with casino gaming has proven beneficial at both the municipal and state levels by providing a source of funding for infrastructure projects and community development. Moreover, the industry provides a significant number of jobs. In an era marked by widespread economic recession, these sources of revenue and employment have become progressively more important. As such, the purpose of this paper is to explore the potential threats that increasingly popular smoking bans impose upon the casino gaming industry. Moreover, we introduce the findings of a large-scale research project in which the outcomes suggest a market approach to the regulation of smoking in gaming venues may provide an economically feasible strategy with mutually beneficial outcomes to governmental entities, casino operators, and customers. Due to the paucity of gaming customer research, especially relative to smoking attitudes, we posit that a critical factor in this inquiry is the uniqueness of the dataset.*

## **INTRODUCTION**

Smoking bans remain polarizing and controversial because of the threat of negative revenue implications as weighed against the public health issue. From a policy perspective, the smoking debate is ongoing. As such, the purpose of this research is to understand the impact a voluntary smoking ban would have on the visitation frequency of a regional casino resort with dense competition. This subject is contentious in the gaming industry, partly because there are numerous current threats to profit erosion. Not only are many states revisiting the amount of gaming taxes charged to gaming operators, but also competition continues to increase in markets with relatively low barriers to entry. The primary effect of increased competition is potential market share dilution for some operators. Therefore, gaming operators are highly sensitive to the threat of statewide smoking bans.

Anti-smoking legislation is clearly controversial for a number of reasons, incorporating political, medical, and economic aspects. The present study focuses on anticipated behavioral changes in visitation induced by a voluntary smoking ban. From the perspective of casino industry executives, the economics associated with smoking presents a two-sided coin. The implementation of smoking bans is considered a major threat to the economic well-being of the

industry because it is believed that such bans have the potential to reduce the participation rate of gamblers. It is asserted that this reduced participation rate occurs either because customers choose not to gamble if they cannot smoke, or because they choose to migrate to a casino where smoking is permitted (Steyer, 2009). Another consideration is that customers continue to gamble, but significantly reduce their length of stay in any given visit. Alternatively, casinos that fail to implement smoke-free regulations increasingly face a threat from employee lawsuits due to illness related to long-term exposure to secondhand smoke in the workplace.

Currently, tourism is a key component in the United States economy, and casino gaming occupies an increasingly important niche in the travel and tourism industry. Over the past twenty years, commercial casino gambling has experienced tremendous expansion as a growing number of states have become aware of the significant benefits associated with the legalization of gaming activities. In addition to the pull factors casino gaming has exhibited in attracting tourism activity to a region, the gaming industry generates billions of dollars in direct gaming taxes, which states and local communities use to fund infrastructure, transportation, education, youth services and public safety programs, to name a few. Besides providing tax contributions, gaming venues stimulate local economies by providing jobs and offering substantial economic multiplier effects that serve to stimulate new business development and growth of existing businesses. In the United States, the period from 1999 through 2007 realized steady increases in gross casino gaming revenues, averaging approximately \$1.4 billion per year (AGA, 2010). However, this growth trend ended in early 2008. It is posited that the economic recession, which began in late 2007, is the deleterious factor responsible for the recent reduction in gaming revenues. A national consumer study conducted by pollster Peter D. Hart confirmed that, in large part, this decline was based upon economic recessionary trends as consumers reduced a number of discretionary spending activities including eating in restaurants, weekend travel, and casino gambling (AGA, 2009).

Of note, full commercial casino gaming is currently legal in 13 states representing various stages of industry development. Reported revenues and state tax collections indicate growth in some markets and major declines in others. These inconsistencies suggest that factors other than the recession have also impacted revenues in some markets. To add to the complexity of the issue, revenues in a number of states were boosted by new property development and legislative changes that increased betting limits, expanded hours of operation, removed loss limits, and added additional table games. Losses over and above those attributed to recessionary trends were associated with increased competition from new casino developments and the implementation of statewide smoking bans (AGA, 2009, 2010).

### **THE ECONOMIC IMPACT OF SMOKING-BANS ON HOSPITALITY ESTABLISHMENTS**

The earliest smoking bans impacting hospitality enterprises were enacted as city ordinances affecting restaurants as early as 1974 in Connecticut, expanding over the next two decades into Colorado, California and Massachusetts, (Eriksen & Chaloupka, 2007; Glantz & Smith, 1994). Subsequently, New York City implemented a smoking ban in 1995. The bans were highly controversial across the board, with restaurant owners voicing concerns over the potential



such bans had to affect revenues in an adverse manner. The bans and resulting controversy generated a wealth of research examining the economic impact of smoking bans on restaurant revenues (Hyland, Puli, Cummings, & Sciandra, 2003; Bartoosch & Pope, 2002; Cremieux & Ouellette, 2001; Glantz & Smith, 1997, 1994).

Particularly notable among these studies was a comprehensive meta-analysis that reviewed all of the available research conducted prior to September 2002 (Scollo, Lal, Hyland, & Glantz, 2003). Of the 97 studies examined, 35 determined that smoking bans had a negative economic impact, while 60 indicated no negative economic outcomes. The remaining two studies were determined to be inconclusive. In sum, the researchers concluded that smoking bans had no adverse impact on the economic well-being of restaurant operations because the studies that supported this outcome were in the majority, better designed, and of higher quality than those that supported negative effects. Markedly, a major criterion for determining the quality of the research was the use of objective data, which took the form of meals tax receipts or sales tax data from eating and drinking establishments. Because such data are reported in the aggregate at the municipal level, it was impossible to determine if differential effects existed for individual restaurants or even for different classes of restaurants (Bartoosch & Pope, 2002; Craven & Marlow, 2008; Marlow, 2010). It should also be mentioned that there were other limitations associated with the early research, which could undermine the applicability of these research outcomes. Notably, these findings have exerted meaningful influence in generating the more comprehensive, statewide smoking bans being implemented today. Some of the limitations included the fact that revenues from eating and drinking establishments were usually combined, and bars were typically excluded from early regulations. Thus, the inclusion of restaurants with bars and independent bar operations clearly had the effect of diluting any negative economic impact in early research. Moreover, early regulations often allowed smoking if it was confined to exterior seating, restaurants with separate ventilation systems for smoking sections, or restaurants seating less than 35 patrons. Early studies finding a negative economic impact associated with smoking bans were widely associated with tobacco industry funding, thus the impact of bias could not be ruled out.

Among the more recent studies, Clower and Weinstein (2004) attributed an \$11.8 million decline in alcoholic beverage sales to the 2003 Dallas smoking ban. Similar findings were supported in New York (Ridgewood, 2004), Maryland (Thompson, 2004) and in a national study conducted for the National Restaurant Association (Deloitte & Touche, 2004). Most recently, Adda, Berlinski, and Machin (2007) investigated revenues in Scottish public houses before and after a smoking ban was implemented relative to a control group across the English border, where there was no ban. A sample of 2,724 pubs found the smoking ban resulted in a 10% decline in sales and a 14% decline in customers.

In sum there appears to be no simple conclusion regarding the economic impact of smoking bans on the hospitality sector. According to the aforementioned research, there are clearly winners and losers. If one takes an aggregate, social welfare perspective, and gains in some establishments are equal to the losses in some others, the conclusion of no harm is substantiated. If bars, taverns and only some classes of restaurants are negatively impacted, it is clear that a sector-specific analysis supports the conclusion of economic injury. Thus, smoking bans clearly exert differential effects upon some hospitality businesses relative to others, and

businesses with a greater proportion of smoking customers can expect that bans will impart a negative economic impact (Craven & Marlow, 2008). As such, the concern of casino executives appears well founded in this regard.

### **SMOKING AND GAMBLING**

In general it has been found that gamblers have a higher propensity to smoke than non-gamblers (Petry & Oncken, 2002). Notably, this relationship has been borne out in studies examining samples representing a variety of populations including clinical studies of problem gamblers, epidemiological studies, and large scale community-based samples from the general population (McGrath & Barrett, 2009). For example, in a study by Smart and Ferris (1996), data were collected from 2,016 respondents. In this inquiry, it was found that 41% of heavy gamblers were smokers, as compared to 30% of recreational gamblers, and 21% of non-gamblers. Along those lines, Cunningham-Williams, Cottler, Compton, and Spitznagel (1998) compared problem gamblers to non-gamblers and found that gamblers were twice as likely to be smokers.

Petry and Oncken (2002) found that gamblers who smoked daily spent more money gambling, and gambled more frequently, as compared to non-smoking gamblers. In a study of customers who played electronic gaming machines, it was found that the majority of these customers smoked (Room, 2005). Similarly, Maccallum and Blaszczynski (2002) found that 65% of poker players seeking treatment for problem gambling were smokers. Finally, Rodda, Brown, and Phillips (2004) found that over 82% of problem gamblers who preferred to play the slots were smokers as compared to just over 46% of non-problem gamblers who preferred to play the slots.

### **SMOKING BANS AND GAMING REVENUES**

A number of studies have examined the economic consequences of smoking bans on casino operations. Among these inquiries, Harper (2003) found that, although smokers and non-smokers played electronic gaming machines at an equal rate, smokers wagered almost twice as much as non-smokers. Harper also determined that initial losses of up to 30% were associated with a smoking ban imposed in Victoria, Australia. A follow up study examined the ensuing losses incurred over a seven-year period. In this inquiry, it was found that long-term gaming revenues were reduced by 14%, primarily due to a decline in the gaming activity of smokers (Lal & Siahpush, 2008). Notably, before the ban, 20% of smokers gambled monthly. Two years after the ban, only 14% reported monthly gaming activity.

Within the United States, Delaware was one of the first states to implement a statewide smoking ban that did not exempt casinos. Mandel, Alamar, and Glantz (2005) conducted a study of the Delaware gaming market subsequent to the smoking ban. They found no statistically significant differences in gaming revenue directly related to this phenomenon. Pakko (2006), however, corrected data errors and modified the technique to demonstrate a decline in revenue averaging 13% at three Delaware casinos that instituted the smoking ban. It was found that managerial responses to revenue declines following the smoking ban engendered additional costs

that subsequently reduced operating margins. Moreover, the author asserted that losses in business profits exceeded the estimated revenue declines.

In a follow up study that implemented additional controls, Pakko (2008) estimated statewide losses in Delaware to be approximately \$94 million per year, with a \$33 million reduction in state tax revenues. He attributed those losses to customer defection to venues that allowed smoking. In a separate study, Thalheimer and Ali (2008) found a 16% decline in Delaware casino revenue related to the smoking ban. O'Neill and Xian (2005) conducted a comparative study of the Delaware smoking ban by examining revenues in Delaware and West Virginia gaming operations over the same period. The two states operate similar types of gaming operations, which combine racetracks with video lottery machines, i.e., slot machines, and draw customers from the same feeder markets. Their model indicated a decline in Delaware gaming revenues that corresponded to an increase in West Virginia gaming revenues over the same 12-month period.

Most recently, Garrett and Pakko (2009) analyzed gaming revenues in Illinois after the implementation of a smoking ban that took effect at the beginning of 2008. Their study used revenue in adjacent states to determine if Illinois casinos were adversely impacted relative to those that had not implemented smoking bans. Prior to 2008, gaming revenue in all four states, i.e., Illinois, Indiana, Iowa, and Missouri, grew at annual rates ranging from 4% to 6%. After the smoking bans were implemented, gaming revenues continued to grow in the other states but plummeted 20% in Illinois. In the aggregate, this revenue decline equated to a reduction in customer admissions of 10%, a loss of \$400 million in gaming revenue, and tax losses of over \$200 million.

In summary, the research findings support the differential impact of smoking bans on certain classes of hospitality providers, specifically those that are more likely to attract smoking populations. Historically smoking has been associated with drinking, specifically, and socializing, in general (Craven & Marlow, 2008). Thus, it is no surprise that gaming markets have been adversely impacted by restrictions on smoking activities. However, research findings suggest that opposition to smoking declines with time (Roseman, 2005), and that an important outcome of smoking restrictions has been a steady decline in the number of smokers. After reviewing the literature associated with smoking, it appears the controversy surrounding this issue is fueled by the polarization of the two parties, each selectively searching for and interpreting evidence that reinforces their own beliefs while ignoring factors that give challenge. As such, it is posited that the arguments on both sides are prone to emotionalism at the expense of science (Siegel, 2007).

## **A MARKET PERSPECTIVE ON SMOKING BANS**

Economists argue that a market driven approach to the smoking controversy may offer the most efficient solution. In this respect, a voluntary restriction on smoking may actually serve to segment smokers and non-smokers in a manner that optimizes the economic benefit to the establishments and to the consumers. Lambert (2006) asserted that this approach would effectively provide a *laissez-faire* approach by allowing the owner of an establishment to institute the proper allocation of air rights within his or her space. The owner may opt to (a) give

the rights to smoking patrons by permitting smoking, (b) give the rights to non-smokers by banning smoking, or (c) try to accommodate both by designating some parts of the establishment non-smoking, while permitting smoking elsewhere within the space. Regardless of how owners apportion the right to air among stakeholders, Lambert asserted there would be some whose preference is implemented and whose satisfaction is therefore increased, and some whose preference is denied and whose satisfaction is therefore reduced. It is posited that, in a competitive market, it should not be necessary for all establishments to allocate their air space according to the same format. An establishment that voluntarily bans smoking may serve the needs of non-smokers, and other establishments may continue to serve a smoking public.

The findings from previous research indicate that, while a smoking ban is likely to reduce the participation of smokers, it is simultaneously likely to increase participation rates by non-smokers (Roseman, 2005). Differentiating product and service features to meet the needs of variable customer bases is a core concept in market segmentation, and it is asserted that there is no reason why this concept cannot be applied to the smoking dispute. Hence, some policymakers have posited that it should be clear why a laissez-faire approach of permitting establishment owners to set their own smoking policies would create more welfare than an outright ban on smoking in public places.

Lambert (2006) posited that, under the laissez-faire approach, a private business owner seeking to maximize his or her profits would make the smoking decision based on the stakeholders who most value their favored policy, combined with the stakeholders with the higher economic worth. The fundamental assertion was that these stakeholders are most willing to pay a premium to be in the property owner's space. The result would be a variety of smoking policies at different enterprises, as business owners react to the preferences of their stakeholders. It is inferred that, if smoking stakeholders value the right to smoke in a particular place more than non-smoking stakeholders value the right to be free from such smoke, that place should allow smoking. Conversely, if non-smoking customers value a place's clean air more than smoking customers value the right to smoke, the place should eliminate smoking. Of course, any private business owner that wishes to maximize profitability should conduct an investigation of the potential economic consequences of a voluntary ban on smoking based on customer characteristics relative to the subject business. As such, the primary inquiry in this research is focused on the behavioral perspectives of a voluntary smoking ban.

Finally, it is important to consider the influence of the smoking spouse or significant other on the non-smoker's behavioral intentions. In this inquiry, the intent to act is central to the research, so partner habits and relative influence must be considered in the assessment. The findings from previous research indicate that smoking partners have a significant influence on behavior (Homisch & Leonard, 2005; Vink, Willemsma, & Boomsma, 2003). However, it should be recognized that the framework of household decision-making has also been typified by patent role characterizations and role outcomes of household constituents. Qualls (1984) asserted that each household decision is processed with respect to role expectations, values, and obligations. Specifically, the author suggested that, given the transformation in the way household roles are arranged, differences should also be apparent in the process by which those roles are carried out by household members. Therefore, it is acknowledged that beliefs, attitudes, and the intent to act

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are not only predicated on external influences as discussed herein, but are also affected by family role obligations.

## HYPOTHESES

The present study was conducted to assess the feasibility of implementing a voluntary smoking ban at a major casino resort in an established regional gaming market in the southeastern United States. While, according to the most recent statistics, the smoking incidence rate across the country is 18.4%, the population under study has one of the highest regional smoking rates in the country at 22.4% (CDC, 2010). As such, the primary objectives of this research were to assess smoking rates among gamblers within the prescribed population, and, subsequently, to determine how the hypothetical implementation of a voluntary smoking ban at a single property in this competitively dense market would affect the attitudes and behaviors of gamblers with regard to modifying their casino choice and visitation frequency. Based upon the foregoing literature review, the following hypotheses, presented in discursive form, were formulated to guide the research objectives:

- H<sub>1</sub> The smoking rate for gamblers will be higher than the smoking rate of the relevant general population.*
- H<sub>2</sub> If a smoking ban is implemented in a smoking gambler's preferred casino, the smoking gambler will indicate the intent to migrate to an alternative casino venue that allows smoking.*
- H<sub>3</sub> If a smoking ban is implemented in a casino external to their visit portfolio, non-smoking gamblers will indicate the intent to migrate to that casino venue.*
- H<sub>4</sub> Non-smoking gamblers will indicate the intent to visit the non-smoking casino more often than their current favorite casino.*
- H<sub>5</sub> Overall indoor air quality at casinos will be more important to non-smokers than to smokers.*
- H<sub>6</sub> The presence of a smoking spouse will influence the behavioral intentions of the non-smoking gambler regarding their intentions to patronize the non-smoking casino.*

## METHOD

As previously stated, the primary objectives of this inquiry were (a) to assess smoking rates among gamblers within the relevant population, and (b) to determine how the hypothetical implementation of a smoking ban at a single property might influence the attitudes, intentions, and behaviors of gamblers with regard to modifying their casino choice and visitation frequency. With regard to this approach, it is important to note that attitudes and intentions were measured in this inquiry, with the position that these outcomes are direct antecedents to subsequent behavior.

According to Fishbein and Ajzen (1975), a specific behavior is determined by a person's intention to perform that behavior. Pursuant to their conceptual framework, a person's intentions are a function of certain beliefs, and those beliefs are directly related to the attitude toward the subject of interest. Overall, these authors asserted that attitudes and subjective norms have an effect on the intent to perform a behavior, which subsequently influences the act of behaving in a certain way. Hence, a primary premise in this inquiry is that there is a distinct path framework among beliefs, attitudes, intentions, and behaviors.

## Participants

Adults age 21 and over who indicated they gambled in the market area were eligible to be a participant in the study. The sampling area included two counties in the home state of the subject casino property and one county each in two neighboring states selected for data extraction. Pursuant to known visitation patterns to the subject property, it was determined, a priori, that the two counties in the home state of the property would constitute 75% of the sample, with the other two counties constituting the remaining 25% of the sample.

Overall, the data extraction method was a stratified random sample via telephone, with the sampling area being purposive. Data were collected in January 2011, and the sample size was  $n = 500$ . Of the participants, 30.4% were male and 69.6% were female. The median estimated gaming budget was a range of \$50 to \$99 per visit, and the median number of trips to their favorite casino in the past six months was a range of 1 to 5 times. Also of note, the mean age was 58.1 years, while the median was 59, and the range was 21 to 97. Please see Table 1 for details.

<b>Response</b>	<b>Frequency</b>	<b>Proportion</b>
<b>Gender</b>		
Male	152	30.4%
Female	348	69.6%
<b>Estimated Gaming Budget</b>		
<\$50	190	44.4%
\$50-\$99	98	22.9%
\$100-\$149	62	14.5%
\$150-\$199	21	4.9%
\$200-\$249	17	4.0%
\$250-\$299	7	1.6%
\$300 and above	33	7.7%
<b>Casino Trips in Past Six Months</b>		
1-5 times	241	57.1%
6-10 times	69	16.3%
11-15 times	29	6.9%
16-20 times	18	4.3%
21-25 times	21	5.0%
Over 25 times	44	10.4%

## Procedure

The data collection process was administered via telephone by an independent survey research firm utilizing professional interviewers and a computer-assisted telephone interviewing system. The interviewing company compiled the data, and subsequently transmitted the data to the researchers for analysis. All identifying information for the subjects was kept confidential, data were stored on password-protected computers, and no data were released in any public forum. Of note, if the randomly selected telephone respondents were under age 21 or had not gambled in the subject casino market, they were eliminated from participating in the study.

## Instrumentation

The data collection instrument utilized in this study was a customized questionnaire developed for the sole purpose of this inquiry. Participants provided information related to smoking habits, visitation intention and frequency relative to a hypothetical voluntary smoking ban, the importance of air quality when selecting a casino to visit, general visit characteristics, and demographics.

## RESULTS

Six hypotheses were presented earlier that support the research objectives. As previously discussed, the CDC (2010) reported that the current smoking incidence rate in the population under study is 22.4%. In  $H_1$ , it was predicted that the smoking rate for gamblers would be more than that of the subject population. Using the binomial test, it was surprisingly found that subjects in this study reported a smoking rate that was actually lower (18.4%) than the smoking rate in the population under study,  $z = -2.15$ ,  $p = .017$ .

In  $H_2$ , it was hypothesized that the smoking gambler would indicate the intent to migrate to an alternative casino if a smoking ban was implemented at their favorite casino. In this case, smokers were asked how likely they would be to continue to visit their favorite casino if there was a smoking ban. The responses were measured on a Likert-type scale ranging from 5-Very likely to 1-Very unlikely, with 3 representing a neutral response. Hence, a one-sample t-test was conducted to determine if the mean response was significantly different from neutral. Smokers in the study reported a response ( $M = 2.42$ ,  $SD = 1.42$ ) significantly different from neutral,  $t(91) = -3.90$ ,  $p < .001$ .

In  $H_3$ , it was hypothesized that the non-smoking gambler would indicate the intent to migrate to an alternative casino if a smoking ban was implemented at a casino other than their favorite. In this case, non-smokers were asked how likely they would be to visit a different casino if there was a smoking ban outside of their current visit portfolio. The responses were measured on a Likert-type scale ranging from 5-Very likely to 1-Very unlikely, with 3 representing a neutral response. Again, a one-sample t-test was conducted to determine if the mean response was significantly different from neutral. Smokers in the study reported a response ( $M = 4.26$ ,  $SD = 1.06$ ) significantly different from neutral,  $t(399) = 23.79$ ,  $p < .001$ .

In  $H_4$ , it was hypothesized that the non-smoking gambler would indicate the intent to visit the non-smoking casino more often than their current favorite casino. In this case, non-smokers were asked how likely they would be to visit a casino where smoking is banned indoors more often than they currently visit their favorite casino where smoking is permitted indoors. The responses were measured on a Likert-type scale ranging from 5-Very likely to 1-Very unlikely, with 3 representing a neutral response. A one-sample t-test was conducted to determine if the mean response was significantly different from neutral. Non-smokers in the study reported a response ( $M = 4.30$ ,  $SD = .94$ ) significantly different from neutral,  $t(356) = 26.14$ ,  $p < .001$ .

In  $H_5$ , it was hypothesized that overall indoor air quality at casinos would be more important to non-smokers than to smokers. In this case, all respondents were asked to indicate

the importance of air quality in this context. The responses were measured on a Likert-type scale ranging from 5-Very important to 1-Very unimportant. An independent samples t-test was conducted to determine if there was a difference between the two groups. Non-smokers indicated that air quality was more important ( $M = 4.31$ ,  $SD = 1.01$ ) than smokers ( $M = 3.36$ ,  $SD = 1.15$ ),  $t(123) = -7.24$ ,  $p < .001$ . Levene's test indicated unequal variances, so the degrees of freedom were adjusted from 491 to 123.

In  $H_6$ , it was hypothesized that the presence of a smoking spouse would influence the behavioral intentions of the non-smoking gambler to patronize a non-smoking casino. In this case, non-smokers were asked how likely they would be to visit a different casino if there was a smoking ban outside of their current visit portfolio. The responses were measured on a Likert-type scale ranging from 5-Very likely to 1-Very unlikely. An independent samples t-test was conducted to determine if there was a difference in this regard between non-smokers with a non-smoking spouse or significant other and non-smokers with a smoking spouse or significant other. Non-smokers with a non-smoking spouse or significant other were more likely ( $M = 4.35$ ,  $SD = .94$ ) than non-smokers with a smoking spouse or significant other to indicate a likelihood to migrate to a non-smoking casino outside the current visit portfolio ( $M = 3.66$ ,  $SD = 1.54$ ),  $t(47) = -2.90$ ,  $p = .006$ . Levene's test indicated unequal variances, so the degrees of freedom were adjusted from 376 to 47.

There were two additional questions pertinent to this investigation in the data collection instrument, and could be utilized in future research. Participants were asked to identify a preferred scenario when deciding on a casino to visit. The possible responses to this question were (a) a 100% smoke-free environment, (b) a large non-smoking section, (c) a small non-smoking section, and (d) it does not matter. In the other question, participants were asked to identify which type of casino game they played most often. The possible responses were (a) slot machines, (b) video poker, and (c) table games. It should be noted that there was a significant difference between smokers and non-smokers relative to the scenario-related question. The majority (51.2%) of non-smokers preferred a 100% smoke-free environment as compared to just 3.3% of smokers. Notably, smokers that responded in this manner further indicated they were trying to quit and preferred the clean air.

A chi-square test of independence was performed to examine the relationship between smoking classification and preferred scenario. Indeed, the relationship was significant,  $\chi^2(3, 493) = 89.68$ ,  $p < .001$ . Non-smokers were much more likely than expected to prefer either a 100% smoke-free environment or a large non-smoking section, while smokers were much more likely than expected to either prefer a small non-smoking section (35.2% vs. 8.2% for non-smokers) or indicate it didn't matter to them (34.1% vs. 19.4% for non-smokers). Please see Table 2 for detailed responses.

## DISCUSSION

Our goal in this paper has been to better understand the behavioral intent of gaming customers when a voluntary smoking ban is instituted by an individual casino in a competitively dense market. Based on data collected for a large-scale research study, it was found that there was a substantial difference between smokers and non-smokers in attitudes, perceptions, and



behavioral intent regarding the elimination of smoking at their favorite casino or another casino in the market. Six hypotheses were formulated to guide the stated objectives of the research.

In the first hypothesis test ( $H_1$ ), we found that gamblers reported a smoking rate that was actually lower (18.4%) than the smoking rate in the defined population (22.4%). Based on the findings of Rodda, Brown, and Phillips (2004), who found a positive relationship between gambling behavior and smoking, this outcome was surprising. However, it should be noted that we did not distinguish between frequent and infrequent visitors to casinos. The only requirement for participation in the study was to have gambled in that market.

<b>Response</b>	<b>Frequency</b>	<b>Proportion</b>
<b>Preferred Scenario</b>		
100% smoke-free casino	209	42.4%
Large non-smoking section	110	22.3%
Does not matter to me	109	22.1%
Small non-smoking section	65	13.2%
<b>Casino Game Played Most Often</b>		
Slots	395	82.5%
Table games	56	11.7%
Video poker	28	5.8%

The literature is replete with evidence of smoker migration following a smoking ban (Garrett & Pakko, 2009; O'Neil and Xian, 2005; Roseman, 2005; Hearn, 2004; Bartoosch & Pope, 2002). In our second hypothesis test ( $H_2$ ), we found that smokers expressed a strong likelihood of migrating to a smoking casino if their favorite casino were to institute a voluntary smoking ban. This finding, of course, was not at all surprising based on the aforementioned literature. However, the relative strength of the response should send a message to casino operators that a careful evaluation of the smoking habits of their core customer base is critical prior to instituting a voluntary smoking ban.

The third hypothesis ( $H_3$ ) was designed to measure the intent of non-smokers to migrate to a different casino if there was a voluntary smoking ban at a competitive property. Per the previous findings of Eriksen and Chaloupka (2007) and Roseman (2005), it was anticipated that non-smokers would express intent to migrate to the non-smoking venue. As expected, it was found that non-smokers expressed a strong likelihood of migrating to a non-smoking casino if a competitive casino were to institute a voluntary smoking ban. In fact, the strength of this likelihood was as robust as the likelihood of smoker migration in a smoke-free environment.

Stemming from the previous hypothesis test, the fourth hypothesis ( $H_4$ ) was designed to measure the intent of non-smokers to visit the non-smoking casino more often than their current favorite casino. Specifically, it was hypothesized that the non-smoking gambler would indicate a strong likelihood to visit the non-smoking casino more often than their current favorite casino. Per the previous findings of Eriksen and Chaloupka (2007) and Roseman (2005), it was expected that sustained visit migration would occur with one casino in the competitive set offering a complete smoke-free environment. As expected, non-smokers expressed a strong likelihood to visit the non-smoking casino more often than their current favorite casino.

Based on the literature (Bernat, Klein, Fabian, & Forster, 2009; Roseman, 2005; Corsun Young, & Enz, 1996; Schofield, Considine, Boyle, & Sanson-Fisher, 1993), it was hypothesized that overall indoor air quality at casinos would be more important to non-smokers than to smokers (H<sub>5</sub>). For example, Corson, Young, and Enz found that, in New York City, non-smokers who were smoke sensitive dined out more frequently after the implementation of a smoking ban. Along those lines, Schofield, Considine, Boyle, and Sanson-Fisher found that non-smokers in New South Wales, Australia were five times more likely to prefer smoke-free areas. In this inquiry, it was found that air quality in casinos was significantly more important to non-smokers than to smokers.

Lastly, based on the research of Homisch and Leonard (2005), Vink, Willemsma, and Boomsma (2003), and Qualls (1984), it was hypothesized that the presence of a smoking spouse or significant other would influence the behavioral intent of the non-smoking gaming customer (H<sub>6</sub>). Specifically, previous research has indicated that smoking partners have a significant influence on the behavior of their spouse or significant other. In this case, non-smokers were asked how likely they would be to visit a different casino if there was a smoking ban outside of their current visit portfolio, and the differences in responses were measured based on whether or not the non-smoking gaming customer had a smoking or non-smoking spouse. It was found that non-smokers with a non-smoking spouse or significant other were more likely than non-smokers with a smoking spouse or significant other to indicate the intent to migrate to a non-smoking casino outside the current visit portfolio

### **Managerial Implications**

Poutvaara and Siemers (2008) found that social norms and the will to behave respectfully determines and tilts the distribution of negotiating power among smokers and non-smokers in a social environment. It is argued that social inefficiency is generated in both cases. Of consequence, these authors also showed that the introduction of smoking and non-smoking areas is not sufficient to overcome the distortion of bargaining power generated by social norms. This is especially important to understand as casino operators continue to try to mitigate this debate by offering non-smoking areas at various sites on their respective properties.

An evaluation of the existing literature on the economic impact of indoor smoking bans leads us to several conclusions, which are in alignment with the ideas of Fox (2004). Namely, we found that this issue continues to be highly debated, polarizing, and contentious. As Fox asserted, though no studies are without limitations, several studies that maintain a systematic scientific protocol suggest that the economic impact of a smoking ban is minimal if it exists at all. However, this is contrary to the findings herein regarding the economic impact in gaming markets. Moreover, the leading researchers who appear to favor the laissez-faire approach give little evidence of impartiality in their research, often funded by external stakeholders with an unabated interest in the outcomes. Like Fox, we also believe that arguments disguising the economics of the issue, such as smoker/non-smoker or business privileges, are issues entirely separate from those having to do with fiscal impact, and should be divided from any discussion of them. The evidence, however, is unambiguous regarding the negative economic impact of gaming revenues when entire markets ban smoking.

Based on the findings in this research, we also agree with Lambert (2006) that, regardless of how, or whether, owners apportion the right to air among smokers and non-smokers, there will be some whose preferred course of action is implemented and whose satisfaction is therefore augmented, and some whose preferred course of action is rejected and whose satisfaction is consequently lessened. Thus, as Lambert suggested, there appears to be foreseeable, mutual damage fundamental in any allotment of the right to enclosed air. The assumption of a smoking-permitted policy negatively affects non-smokers, but the adoption of a non-smoking policy negatively affects smokers. Accepting this inescapable harm, it is posited that social wellbeing would be maximized if smoking policies were established to give preference to the group whose total satisfaction would be most improved by fulfillment of its preferred course of action. Therefore, we concur with Lambert that, if smoking stakeholders value the right to smoke in a particular place more than non-smoking stakeholders value the right to be free from such smoke, the establishment should allow smoking. Ultimately, this could be strictly an economic decision. Conversely, if non-smoking patrons value an establishment's clean air more than smoking patrons value the right to smoke, the establishment should eliminate smoking. Of course, this decision should include an investigation of the economic consequence based on customer characteristics relative to the subject business. We assert that it should be clear why a laissez-faire approach of sanctioning establishment owners to set their own smoking policies would create more economic efficiency than an outright ban on smoking in public places.

As discussed earlier, Lambert (2006) posited that business owners should be allowed to take a laissez-faire approach, and seek to maximize his or her profits by establishing a smoking policy to indulge the stakeholders who most value their preferred course of action. We agree with this approach, and suggest that economic efficiency will not be reached by mandating a smoking ban in entire markets. It is suggested that business owners should execute due diligence and make this decision based on customer preferences. In this case, we assert that the market will naturally segregate based on this issue alone. Therefore, some casino operators will position their properties in the marketplace with a differentiation strategy based on the rights to air, while others will focus on alternative tangible or intangible offerings.

Overall, as expected, it is clear that there is a substantial difference between smokers and non-smokers in attitudes, perceptions, and behavioral intentions regarding the elimination of smoking at their favorite casino or another casino in the market. It is notable that respondent answers were also influenced by whether or not their spouse or significant other smoked on a regular basis. Specifically, non-smokers whose spouse or significant other smoked were less likely to indicate they would migrate to another casino if that casino were to convert to a 100% smoke-free environment. Moreover, air quality was much more important to non-smokers whose spouse or significant other did not smoke.

Based on the literature and the findings herein, it is apparent that the expected outcomes of an unforced smoke-free environment versus a smoking ban are considerably different and multidimensional in nature. Generally, the findings indicate that a voluntary smoke-free environment could enhance revenues in a market where there is no regulatory ban on smoking. Fundamentally, it is suggested that, while there will most certainly be some out migration of smokers, and some of these smokers will be customers with a high gaming worth, the loss of these customers will be mitigated and revenue enhanced by the in migration of non-smokers.

Moreover, it is posited that revenues will be marginally highest when only one property in a competitive set offers this condition, and will decline proportionally with additional casinos joining this group. Once a smoking ban is established, if smokers have alternatives, they tend to visit less and gamble for shorter lengths of time in the market in which the ban is in effect.

If all contiguous regional casino markets instituted a smoking ban, it is asserted that smokers would continue to gamble in their current market. However, it is believed that length of stay would be significantly shortened and average daily theoretical expenditures appreciably reduced for this customer segment. Moreover, it is suggested that the reduction in gaming revenue could be disproportional to the number of smoking customers due to the aforementioned relationship between smoking behavior and gambling intensity.

For casino operators, the decision to institute a voluntary smoking ban could be a difficult one. Pragmatically, the decision should be founded in a careful examination of customer characteristics at the property. It is argued that a locals-type casino with the vast majority of frequent visitors who smoke and limited non-gaming amenities would likely be harmed by a voluntary smoking ban, even with exclusivity. However, based on the findings herein, a casino resort with fewer loyal customers who smoke would likely incur significant in-migration of non-smoking market visitors, with the out-migration of smokers providing a lesser impact. If the decision is made to institute a smoking ban in the entire market, the advantages would lessen for the non-smoking casino property, but it could be argued that the non-smoking visitor would have time to become loyal to the early adopter and be less likely to change visitation habits again. Hence, the evidence is clear that the decision to institute a voluntary smoking ban in a competitive casino market could have a positive impact, depending upon the existing customer base and type of casino property.

### **Limitations and Directions for Future Research**

It is recognized that a potential limitation in this study surrounds the issue of unqualified generalizability. The sampling area was purposive, while the data extraction method within the selected areas was stratified and random. Moreover, participants were selected based on whether they had gambled in the subject casino market. In this inquiry, frequency of visitation or estimated gaming budget was not weighted based on volume. Hence, customers with a low lifetime gaming worth were equally as influential in the study as visitors with a high lifetime gaming worth. When deciding whether to adopt a voluntary smoking ban, the smoking habits of customers with both low and high lifetime gaming value should be considered, and their attitudes and intentions should be weighted accordingly.

Directions for future research are closely linked to the study's limitations. It would be valuable for practitioners to be able assimilate any potential subpopulation differences of economic consequence. For example, as mentioned above, it would be useful to assess the behavioral intentions of gaming customer groups based on projected lifetime gaming worth, which is a function of attitudinal loyalty, visitation frequency, and average spend per visit. Another direction for future research is to increase the generalizability of the outcomes by surveying different markets. While the evidence was clear within this market, the results should not be generalized beyond the population of interest.

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## **ENHANCING DRUGS ACCESS IN NORMAL AND CRITICAL CIRCUMSTANCES**

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### **ABSTRACT**

*The drug supply and delivery play a very important role in developing a quality health care system. In spite of recent improvement in supply process, drug stores still face a difficulty in providing effective drug delivery and flexible access methods to patients during critical times. Access to drugs during such periods is usually plagued by several constraints which demand more preventive and real-time delivery systems. This research project investigates methods and constraints of drug supply and delivery in the greater New Orleans area. The analysis of collected data collected from sixty-seven drug stores provide significant information on how these drug stores operate and respond to disaster and critical times. The result used to design a demand driven enhanced and adaptive drug supply and delivery system operating on a real-time basis.*

### **INTRODUCTION**

Health care management has always been and still remains one of today's top issues of concern worldwide. Researchers and scholars have studied different aspects of this issue including drug distribution management (Nilay, 2004), critical care (Hick, 2007; Lewis, 2005), and strategies (Tokman, 2007; NACDS, 2007). In 2005, national health care expenditures in the United States totaled \$2 trillion, a 7% increase from 2004. With an ever increasing upward surge in technology, there has also been the evolution of medical equipment and resources from remote to more sophisticated and more efficient resources (U.S. Department of Health and Human Services, 2007). The experts in the World Health Organization (WHO) at the United Nations had developed health guidelines and standards to help countries to address public health issues. WHO also supports and promotes health research and through this organization, governments can jointly take on global health problems and improve people's well-being (Thomson, 2007).

The world pharmaceutical industry grew by 8% annually to \$541.0 billion in 2002 driven primarily by the demographic shifts (i.e. increasing elderly population), changing epidemiological patterns, increase in healthcare awareness and the ability of the industry to

provide innovative cures for various ailments. The world's per-capita spending on pharmaceuticals has increased steadily from \$72 in 2000 to \$87.1 in 2002 (Mark, 2004).

There have been several efforts in managing the supply chain of drug stores. In this light, Associations in the U.S.A. such as NACDS (National Association of Chain Drug Stores) have developed an emergency preparedness checklist for community pharmacy operators in order to assist them plan for business continuity during and after emergency. Also, the Rx response program is an information-sharing forum of Pharmaceutical manufacturers, distributors, pharmacies, hospitals, Federal Government agencies that engage during pandemics and other disasters that disrupt the normal supply of medicines (Rx Response; Medicines to patients in times of emergency, 2007).

### **STATEMENT OF THE PROBLEM**

Emergency preparedness is critical for all businesses especially to drugstores that deal with the dispensation of drugs, an important aspect of healthcare. Most businesses do fairly well in the management of their supply chains during normal seasons, but it becomes difficult to handle during peak seasons or critical periods such as disasters, seasonal illness, and other emergency situations(Cecil C& Robert B, 2006).

Also, the shortage of manufacturers of certain drugs poses a problem of insufficiency of such medications during seasonal ailments. An example was the shortage of Flu vaccines experienced in USA in October 2004 as the supply of this vaccine was cut nearly to half as Britain shut down the world's second-leading supplier, the Chiron Corp (Gathany, 2004). Furthermore, periodical changes in the strains of some seasonal ailments like the influenza and the Flu viruses are a critical issue that usually leads to emergencies. The result of a shift leads to a new strains to which there is little or no prior immunity. The yearly wave of seasonal influenza is responsible for approximately 36,000 deaths and 200,000 hospitals a year in the United States (NACDs, 2007).

Drug distribution chains are vulnerable to disruption during disasters, so additional supplies and equipment may not be readily obtainable as such, effectively managing the drug supply chain has always been a problem during peak and critical periods (Critical Care: Disaster Management, June 2007). Charlie Kantz, Vice president of logistics and warehousing for specialty retailer bakers Foot ware Group remarked that, a delay in supplies of goods will mean the absence of the goods at that point in time which plays negatively on its timely delivery (Logistics Magazine, Nov 2007).

### **RESEARCH OBJECTIVE**

The objective of this research was to investigate drug supply, delivery, and access in greater New Orleans area during normal and critical periods. The objective was formulated in



terms of eight questions concerning the pharmaceutical supply chain. The questions are divided into two categories; quantitatively and qualitatively as listed below.

*Major Quantitative Research Questions*

- RQ1: Does the Population to Drug Store ratio affect the supply process of drugs?*
- RQ2: How many Drug Stores offer drug delivery services?*
- RQ3: What is the percentage of Drug Stores that have a laid down emergency plan for disaster periods?*
- RQ4: How many drug stores use wireless communications to enhance the drug delivery process?*

*Major Qualitative Research Questions*

- RQ1: Do drug stores prepare well ahead of time for seasonal ailments?*
- RQ2: Are there enough Manufacturers and Vaccine Certified Pharmacists to handle periods of seasonal ailments?*
- RQ3: Is the drive thru facility necessary in drug delivery in pharmacies?*
- RQ4: Do Drug Stores Use Modern Technology to ensure quality services?*

## **METHODOLOGY**

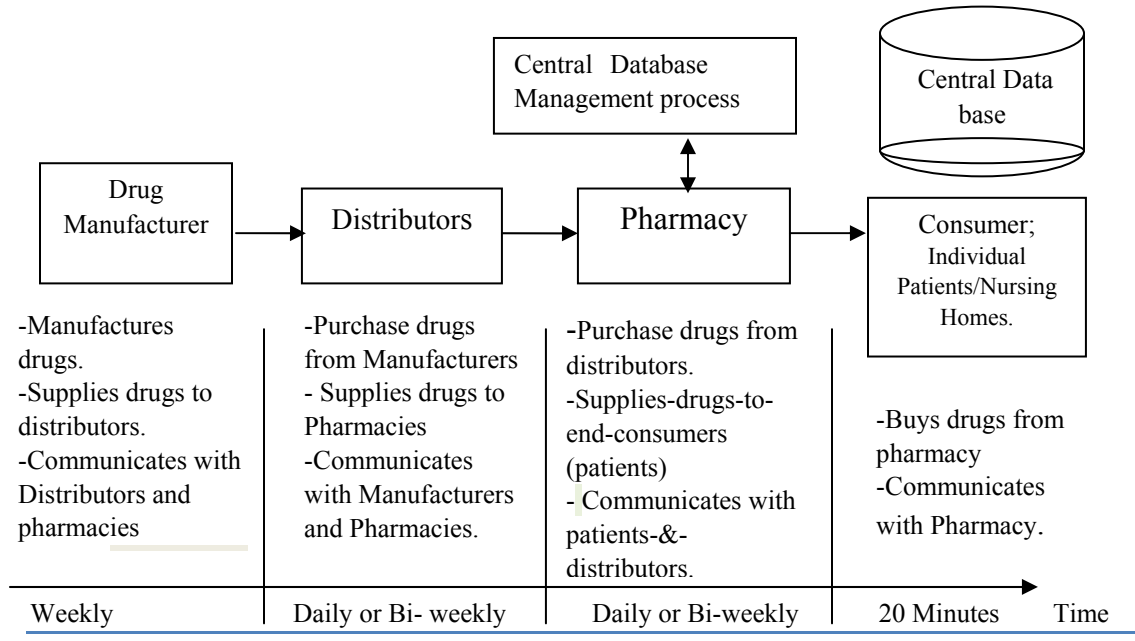
The focus of this research is based on designing a Supply Chain Model that can serve as a framework for ensuring a continuous flow of drugs during critical and emergency periods. This requires great collaboration between pharmacists, patients, suppliers, manufacturers and the Government and the society at large. To capture the essence of operations under different circumstances, three different models have been developed that representing the following situations:

- Normal business operations (daily basis)
- Disaster and emergency operations (Natural and men made events)
- Critical operations (Flu seasons)

Figure-1 shows a typical drug supply chain in a normal condition.

## **DATA COLLECTION PROCEDURE**

Before the process of data collection, a sample questionnaire was designed, evaluated and modified so as to obtain valid data for analysis. Both quantitative and qualitative data were collected. This was done by the use of structured questionnaires and face-to-face interviews with sixty seven drug stores in four areas of New Orleans and its environs.



**Figure 1: Drug Supply Model in a Normal Condition**

### ANALYSIS OF QUANTITATIVE DATA

The primary form of data collection used during this research was a questionnaire. The questions were answered by pharmacists and pharmacy managers, for they are more knowledgeable on the day to day operations of the pharmacy. The questionnaires were distributed to sixty seven community pharmacies in New Orleans central, Metairie/Kenner and West bank regions. The data collection process took between 15 and 20 minutes for each pharmacist interviewed. Time constraints were evident as pharmacists hardly have time to themselves while on duty.

*Focus Areas:* The area of focus in this research is the greater New Orleans, segmented into New Orleans East, New Orleans Uptown, Veterans Memorial Boulevard and West Esplanade of Metairie, Kenner, Terrytown, and Harahan in Jefferson.

*Sample Size:* Data was collected from 67 Drug Stores located in the areas named above.

*Period of Study:* The study was conducted from October 2008 to January 2009.

A questionnaire was used and distributed to pharmacists while, in the qualitative, we carried out brief interviews with pharmacists. Table-I presents data obtained from the questionnaires answered by the pharmacists in five different regions of the greater New Orleans.

<b>Q's</b>	<b>Description</b>	<b>New Orleans East</b>	<b>New Orleans Uptown</b>	<b>Metairie</b>	<b>Kenner</b>	<b>West Bank: Terrytown, Harvey, Harahan</b>	<b>Total</b>
1	Population	114,568	214,104	146,136	75,516	57,372	
2	Number of drugstores	12	24	52	12	14	114
3	Number of drug stores surveyed	10	14	28	7	8	67
4	Drugstores with database for client records	10	14	28	7	8	67
5	Drugs stores with delivery services	1	2	4	1	1	9
6	Drug stores with 2 or more suppliers	10	14	28	7	8	67
7	Drug stores with daily and weekly restock	10	13	28	7	8	67
8	# with wireless communication with insurance	10	13	28	7	8	67
9	# With wireless communication With doctors	5	7	12	3	5	37
10	# with wireless communication With Suppliers	10	12	22	5	6	55
11	Do operations increase during seasonal ailments?	8	12	22	4	5	51
12	# of Drug Stores with an Emergency plan	2	4	8	3	3	20

### **DRUG STORE TO POPULATION RATIO (RQ1)**

Analyzing table I above, we can obtain several useful information about drugstores operations, regional distribution and emergency preparedness. This analysis gives us an answer to the first research question. Table 2 shows drug store to population ratio.

This is a clear indication that, Metairie has more pharmacies followed by the west bank region, then Kenner, New Orleans Uptown and New Orleans East. This also reduces the cycle time for customer service in this region. The larger the ratio, the more pharmacies there are and the faster the access to drugs. The figure below presents this data diagrammatically.

## **DELIVERY SERVICES (RQ2)**

An analyses of Delivery Services will give an answer to our second research question of the number of drug stores offering delivery services, an analysis from Table I shows that, most of the drugstores that serve the population are chain drugstores. However, it is worth noting that, chain drug stores are not involved in drug delivery services to Nursing homes, individuals and organizations. Private drugstores are those that carry out such services. From the table we can see that out of the 67 pharmacies surveyed, in this research, only 9 indicated that they carry out delivery services. This gives a 13.4% of the pharmacies surveyed. This percentage is still very low with respect to the growing aged population, the Handicapped and other patients all over the USA that need drug delivery services to their homes.

Region	Ratio
New Orleans East	1:9547
New Orleans Up Town	1:8921
Kenner	1:6293
West Bank	1:4098
Metairie	1:3558

## **EMERGENCY PREPAREDNESS (RQ3)**

Twenty of the drugstores we visited responded with confidence to having an emergency plan to ensure continuous drug supply for periods like hurricanes or fire, making a total of 30%. Many pharmacists of chain drug stores do not know of an emergency plan because all directions come from the head office. Also, special communications like emails or phone calls and posters are not done during such periods.

## **WIRELESS COMMUNICATION TO ENHANCE DRUG DELIVERY (RQ4)**

This question concerns with wireless communications between pharmacy and insurance companies, with suppliers, and with doctors as described below.

### **Insurance Companies**

Furthermore, all drug stores (100%) have wireless connections with insurance companies that cover the cost of client medication. This Wireless connection ensures quick communication

between drugstores and insurance companies which ensures rapid services to clients. This also saves time in the supply chain.

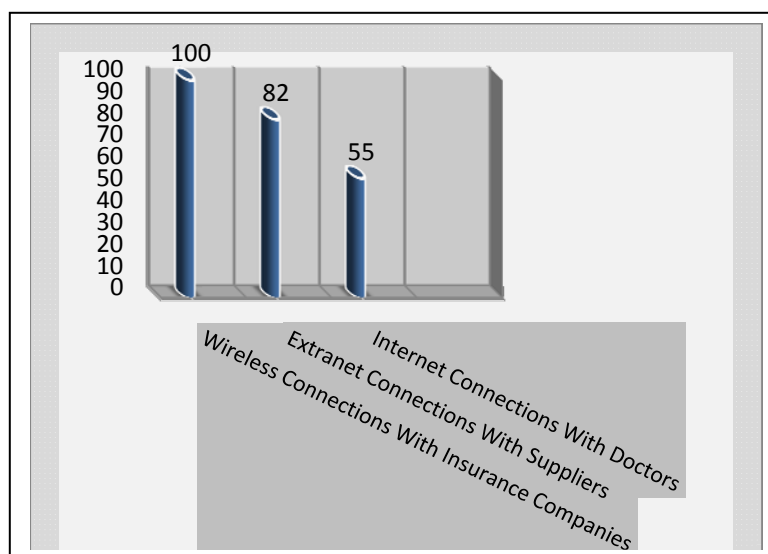
### Communication Method with Suppliers

Table I also tells us of how many drug stores use wireless communication systems which gives us an answer to the fourth question in this research. Almost all pharmacies are connected through an extranet with suppliers. As the Table-1 indicates, 82% of drug stores use extranets in communicating with their daily suppliers. Also, most drugstores have a direct wireless communication with their head offices (main supplier) that can access their level of inventory for drug supplies that is done once or twice a week.

### Communication with Medical Doctors

Drug stores with wireless communication with doctors gave a 55%. Some drugstores use the E-Scribe program to communicate with Doctors for certain verifications. Many drug stores still communicate with doctors by fax or by phone. An online method of communication with Doctors authenticates the process of prescription verifications because it involves exchange of important information that needs to be written. The figure below illustrates this analysis.

**Figure 2: Drug Stores with Internet Connectivity**



## ANALYSIS OF QUALITATIVE DATA

The following shows the results of interviews conducted with pharmacists. The *focus area*, *sample size*, and *the study period* are the same as the Quantitative method.

Questions	Answer (s)	New Orleans East	New Orleans Up Town	Metairie	Kenner	West Bank	Total
q1: How do you plan and manage peak seasons?	A1: Order more drugs & well ahead of time	7	9	22	5	8	51
	A2: Interns, increase hours of operation	4	4	14	2	4	28
	A3: Communicate with clients.	5	7	18	3	4	37
q2: What difficulties do you face in managing such periods?	A1: Few Manufacturers & changes in strain.	9	9	22	2	3	43
	A2: Few certified Nurses & pharmacists	8	7	14	5	4	38
q3: What suggestions can you make towards peak periods?	A1: Train more staff for flu shots	6	6	21	3	4	40
q4: Can you access client records of another branch?	A1: Yes	8	11	21	4	5	49
	A2: .No	2	3	8	3	2	18
q5: Does the drive thru facility help in quick access?	A1: Helps positively	3	4	10	3	3	23
	A2: Slows down the supply of drugs.	6	10	17	4	5	42

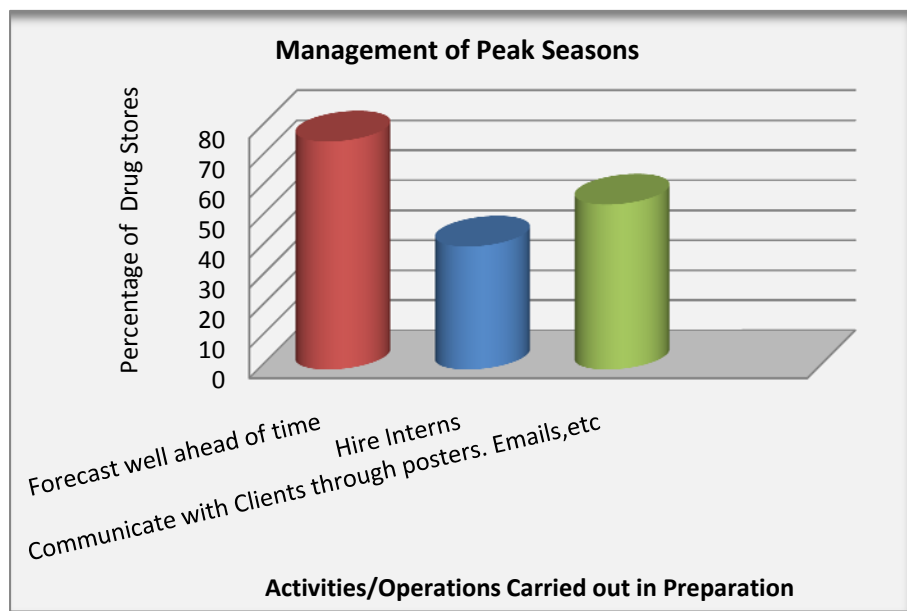
As the Table 3 show for a number of questions, the interviewee provided more than one answers to some of the questions. Following is the analysis of those answers for Qualitative questions.

### MANAGEMENT OF PEAK SEASONS (RQ1)

As Table 3 shows, 76% of the samples drug stores prepare to make orders well ahead of time towards the flu season and during other seasonal ailments. However, 41% of the drug stores admit to hire interns during such periods to assist in ensuring fast supply of drugs during such busy periods with high customer surge. Some drugstores mainly adjust to staff working smarter during such periods. However, this also indicates that there is a need for more pharmacy staff. 55% of drug stores do immediate communication with clients during critical periods of seasonal ailments, such as through the internet on their website, emails, and posters or on TV. However, intense communication are not and done well ahead of time before seasonal ailments. Also, it

indicates that drugstores do not communicate with clients promptly or enough during emergency periods when an evacuation has been declared.

**Figure 3: Managing Peak Seasons**



### **DIFFICULTIES AND SUGGESTIONS DURING PEAK SEASONS (RQ2 AND RQ3)**

The data shows that 62% of drug stores admit that shortages or delays in flu vaccines come as a result of delays from suppliers and manufacturers which slow down the supply chain. The numbers of Manufacturers that handle this task are few to meet up with the huge demands at a time. Also, 56% of drugstores respond that the numbers of pharmacists that are certified for administering certain vaccines like the flu shots are less. This shows that, more pharmacists need to get certified so that many pharmacists will be eligible for administering flu shots and others during such periods rather than waiting on Nurses who are not present every day, thus limiting access to such vaccines to particular days which can lead to congestion of customers.

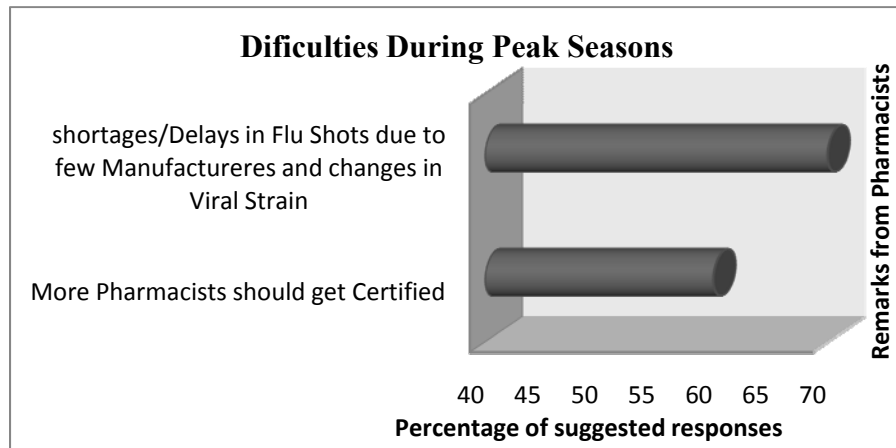
### **ACCESSING CLIENT RECORDS IN OTHER BRACHES (RQ4)**

The data collected indicates that, all pharmacies have a database for client records. This record is kept for reference purposes for a period of five years, as such clients who return after a few years can still have their information retrieved from the system.

## Drive-thru Facilities

The drive-thru facility was voted out by most pharmacists. They believe that the drive thru operations could increase the customer average waiting time.

Figure 4 : Difficulties and Suggestions



## CONCLUSIONS

This research presented a framework that can be used to manage drug supply during normal and critical periods. The main focus here is during critical periods and emergencies. Analysis of the collected data indicates that:

Some regions are richer in pharmacies than others. Metairie/Kenner region comes first, followed by the West Bank region and lastly New Orleans. Patients in such regions have easy access to drug stores.

All drug stores have modern equipment and methods with which they operate, ensuring quality and quick services in the supply of drugs to customers.

Communication with suppliers and the insurance is good but that with Doctors need to be enhanced.

Most pharmacists complained of stringent laws of Louisiana State in the procedures of acquiring and administering the Flu vaccine as well as few manufacturers that slow down the supply chain during seasonal ailments.

Only private drug stores do delivery services and they make up a few percent of the entire Drug Stores.



The use of mobile pharmacies is still a growing practice which still has to be intensified by drug stores. Also, there is no central database system for patient records on drugs which can be used during emergency periods like hurricanes seasons when people get into shelters.

Recent events such as hurricanes Katrina and Gustav, Bird Flu, and Influenza demand a more flexible and comprehensive drug supply and delivery system. This system must respond to different conditions and incase on critical situation it should operate on hard real-time basis. The result of this research provides insights to some of the required conditions in design of drug supply and delivery system.

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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; Ettl, 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; Kottmann 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; Kottmann 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, & Wclinical 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.

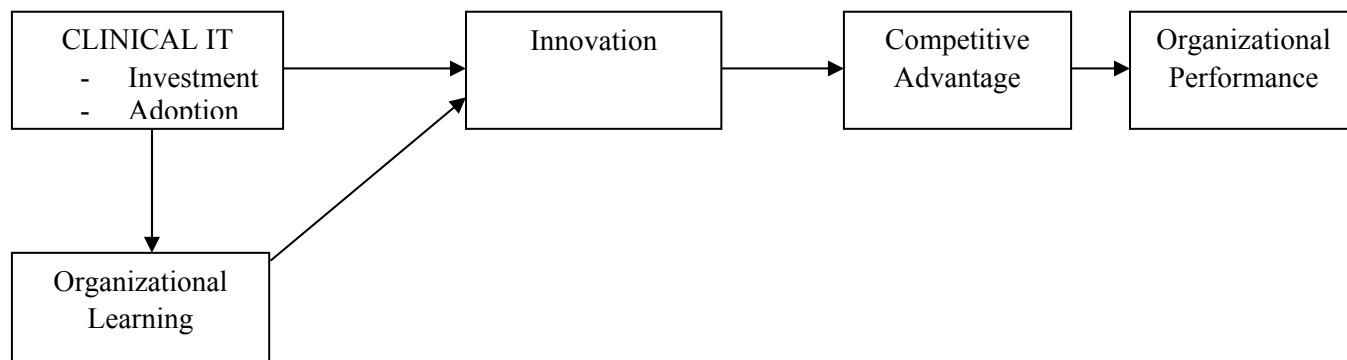
## PROPOSITIONS

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.*

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

This 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.

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## 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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# **“TRUTH” LIES IN THE EYES OF THE BEHOLDER: EVALUATING SMOKERS AND NONSMOKERS RECEPTIVITY OF THE TRUTH CAMPAIGN**

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## **ABSTRACT**

*Anti-industry tobacco ads attack the manipulative strategies of tobacco industry that encourage the young to smoke. Current research shows that there is much controversy about the effectiveness of the truth ads. This paper uses structural equation modeling techniques to build on this existing literature; the paper draws on social inoculation theory to understand how truth advertisements might influence an adolescent's smoking and tobacco industry attitudes and whether one's smoking status influences the nature of these relationships. A construct of aversion to tobacco industry branded products is predicted to mediate the influence of truth ad awareness to attitudes towards tobacco industry. Multiple group analysis suggests that even though the direction of relationships among variables does not vary across the two groups, the strength of relationships does. Results suggest that truth ads for both smokers and nonsmokers are successful in generating anti-industry and anti-smoking attitudes. Aversion to tobacco industry products partially mediates the relation between truth ads and anti-tobacco attitudes for both smokers and non-smokers. Surprisingly for the two groups, exposure to pro-smoking ads increases aversion to tobacco industry branded products. Future research could further investigate this counter-intuitive finding.*

## **INTRODUCTION**

Cigarette smoking is highly prevalent among adolescents in the United States. 435,000 individuals die each year due to smoking (Center for Disease Prevention and Control, 2008). Several other cigarette smoking adolescents are reportedly afflicted with diseases lung cancer and emphysema (e.g., Wiseman et al. 1987). Not only is smoking bad for health but to add insult to injury, researchers have also found evidence that aggressive behavior amongst youth is more likely after consumption of alcohol, and cigarette smoking (e.g., Griffin et al. 2002). In fact, the issue of adolescent smoking is considered of immediate importance and is regarded as a “pediatric disease” (e.g. Tesser, 1993).

Studies have shown that those who start to smoke when they are younger than 18 years of age are seldom able to quit smoking. This means that those cigarette smoking adolescents who were fortunate enough not to die or to be afflicted with disease because of their smoking behavior are likely to find it harder to quit smoking as they grow older. In short, the sooner in life people start to smoke, the more addicted they become (Weissman et al. 1987) and the greater these costs – economic, social and familial - for society are likely to be.

The trend of rising numbers of young smoker reflects, in part, the successful marketing strategies of tobacco firms of years past and demands more creative anti-smoking messages to counter such success. The tobacco giants gain youth attention by using innovative marketing strategies that encourage association of likeable cartoon characters with the act of smoking. For example, the tobacco giant, RJ Reynolds Tobacco's uses the cartoon character popularly known as Joe Camel; Joe Camel is easily recognized by school-age children as “cool”( e.g., Pechmann and Ratneshwar, 1994). These characters

create an image of smoking in the minds of young children. In fact, tobacco company records show that tobacco industry spends several times more on pro-smoking advertisements than do state and federal agencies on anti-tobacco efforts.

The truth campaign, launched by the American Legacy Foundation, is a nationwide anti-smoking campaign designed specifically to expose youth to manipulative marketing strategies of tobacco giants. These advertisements hope to alter youth's smoking-related attitudes and behaviors by cautioning them against tobacco industry's ostensibly friendly behavior (e.g., sponsoring concerts, positioning smoking as a means to be popular). At present, research is not clear whether such anti-tobacco industry ads (truth ads) have been successful in deterring the young from smoking.

This paper attempts to study effectiveness of the truth ads by considering the smoking status of an individual. For this purpose, this paper used structural equation modeling and draws on the theory of social inoculation and the theory of psychological reactance.

### **THE TRUTH CAMPAIGN**

The truth campaign makes salient manipulative tactics of tobacco firms that could persuade an individual to smoke. The ads further emphasize that the act of smoking is likely to produce adverse consequences such as death. In short, these ads deliver a two-part message to its viewers : (i) smoking is an unhealthy behavior, and (ii) tobacco firms are responsible for inducing such behavior in young people. The latter message is emphasized more than the former. In one truth ad, for example, "body bags" are piled in front of a major tobacco company's head quarters. This ad highlights that consumption of tobacco is unhealthy because smoking takes peoples lives each day. The piling bodies in front of a tobacco firm's building makes salient the responsibility of tobacco firms in causing death of those who smoke.

At present, there is much controversy in research about the effectiveness of the truth campaign in generating negative attitudes of smoking and in deterring people from smoking. On the one hand a group of researchers (e.g., Sly et al. (2001), Farrelly et al. (2002), Hershey et al. (2005)) report significant reduction in smoking rates during the period the campaign was launched. Another group (e.g. Pechmann and Ratneshwar, 2003), however, claims that such ads, emphasizing manipulative tactics of tobacco companies, are unsuccessful in altering smoking-related beliefs, attitudes and intentions. These mixed results on effectiveness of truth campaign have also encouraged researchers to explore and examine factors that could explain conditions under which such ads are successful.

The mixed results on effectiveness of truth campaign can be explained by one of two sources – (i) use of different methodological techniques and (ii) definition of the sample population. Pechmann et al. (2003), for example, use experimental manipulation to study the influence of these anti-tobacco industry ads. Sly et al. (2001) and Farrelly et al. (2002), in contrast, employ statistical techniques of two-stage least squares and evaluate nation-wide survey data recorded by the American Legacy Foundation. Hershey et al. (2005) employ structural equation modeling technique to study how pro-tobacco receptivity - willingness to purchase/use tobacco companies products such as pens, shirts - might determine smoking status. While experimental manipulation allows teasing apart influences of extraneous variables, such studies are unable to capture the real-life conditions under which people receive and process information. Survey data, on the other hand, allows collection of large information under a more real-life circumstance (for example, without forced exposure to ads unlike the case in experiments). In addition, structural equation modeling unlike regression or analysis of variance allows studying interrelationships among various constructs at a point in time.

Secondly, most researchers define their sample which is homogeneous in terms of respondent's smoking status. In other words, most researchers assume that smokers and nonsmokers are likely to receive and process anti-tobacco industry message in the same manner. More recently, some researchers



have started identifying variables that might explain differences in effectiveness of the truth ads. For example, Thrasher et al. (2006) use multivariate logistic regression and multiple linear regression to study effectiveness of truth campaign among adolescents and report that although truth ads have been largely successful in discouraging smoking, the effectiveness is a function of strength of adolescents personal relationships (defined in terms of a social bonding index) and inclination of adolescents to engage in risky behavior (defined in terms of sensation-seeking behavior). Adolescents low on the social-bonding index are less influenced by anti-tobacco industry ads. This effect is moderated by adolescents' level of sensation-seeking. Those high (vs. low) on sensation-seeking are less likely to be influenced by such advertisements.

Specifically, this paper examines how adolescents' current smoking status could influence their processing of ads. For this purpose the paper attempts to attend to the above-mentioned limitations of prior literature by using structural equation modeling to investigate the nature of relationships among variables of interest separately for smokers and non-smokers.

## **THEORETICAL BACKGROUND**

Inoculation theory (McGuire 1961) asserts that when people are presented with weak versions of a message, they tend to activate their psychological defense against any future versions of the message. Researchers have used this finding to plant desirable attitudes among people. Inoculation against an attitude works in the following fashion: individuals are presented with weak version an undesirable message. This message is likely to induce thoughts and feelings against the undesirable message. Over time then, when the individual faces a strong version of undesirable message, s/he has a well-developed collection of thoughts which resist acceptance of the undesirable message, even though, strong arguments are now provided. In short, inoculation is referred to as the process of resisting strong persuasive arguments by resisting weaker versions of the same arguments. The weak version must be presented before the message with strong argument is presented.

In today's saturated media, therefore, assessing effectiveness of any message suggests need of inoculating influences of other messages. That is, pro-smoking ad might be considered as a weak version of a message that discourages smoking. In a similar vein, an anti-smoking ad might be considered as a weak version of a message that encourages smoking.

## **HYPOTHESES**

### **Attitudes towards Smoking**

Attitudes towards an object form and develop over a period of time and are influenced by various sources. In context of smoking, adolescents' attitudes towards smoking/tobacco industry is likely to represent influence from various sources such as prior exposure to smoking-related advertisements (e.g., anti-tobacco ads, pro-smoking ads), personal experiences, and historical influences. While simultaneously examining influence all of each of these factors may not be feasible, researchers have independently studied one or more of these factors. For example, environmental factors (age, gender, parental support, friends' smoking status) have been documented to influence adolescents smoking behavior. Barber et al. (2005) report that as adolescents grow older, they are more likely to experiment with smoking. Studies have shown that male and female adolescents are equally likely to smoke. In addition, parental and friends smoking status is reported to positively influence adolescents smoking status. That is, adolescents are more likely to smoke if one of their parents smokes or if their friends smoke.

The current paper focuses on how exposure to two categories of advertisements - pro-smoking and anti-tobacco industry - that present conflicting messages can influence individual's attitudes towards smoking and the tobacco industry. While the pro-smoking advertisement, portray smoking as a 'cool' act which reflects a smoker's independence, the anti-tobacco industry advertisements present smoking as an unfavorable activity that can cause serious health consequences.

Hershey et al. (2005) draw on theory of social inoculation and assert that anti-tobacco messages weaken/ inoculate effects of pro-smoking ads which portray smoking as a likeable behavior. While truth ads make salient tobacco giants acts in "spreading" disease, death and deceit, pro-smoking ads portray how tobacco giants serve as agents that promote adolescents' popularity and social life. Therefore, pro-smoking ads can inoculate adolescents' against likely effects of truth of tobacco industry ads. And, anti-tobacco industry ads can inoculate adolescents' against likely effects of pro-smoking ads. Therefore, the overall attitudes towards tobacco companies is expected to be a confluence of exposure to both forms of messages: pro-smoking (that portray tobacco giants in a good light) and anti-industry ads (that portray tobacco giants in a bad light). Then, effectiveness of any ad, say the truth ads, should be considered after considering inoculating influence of other ads that deliver a message which contradicts the message contained in the truth ads. I hypothesize:

*H1: Exposure to truth ads is likely to produce negative attitudes towards smoking behavior after controlling for exposure to pro-smoking advertisements.*

### **Attitudes towards Tobacco Companies**

Academic evaluation of the tobacco companies, once-secret documents, has further established that tobacco companies have had well-planned strategies that target the youth (e.g., Cummings et al. 2002), and for identifying new ways to reach them while they are still young and impressionable. Tobacco companies continuously try to reach the young by selling branded products such as balls, sweat shirts (referred to as "power walls") so that children learn to recognize and associate these items with other tobacco company products (namely cigarettes) in the future. As adolescents grow they learn to associate themselves with these tobacco industry products (balls, sweat shirts) and with other products of the same company (cigarettes). It might therefore be said that the tobacco industry branded products serve as a stepping stone to an adolescents opinions towards smoking and tobacco firms.

Hershey et al. (2005) introduce the concept of pro-tobacco receptivity as a measure of one's receptivity (or aversion) towards the tobacco industry. The construct pro-tobacco receptivity as an individual's current ownership of tobacco industry branded products (namely, sweat shirts, balls) is used to capture individual's sentiment towards the tobacco firms. The authors believe that ownership of tobacco products reflects an individual's past behavioral patterns which in-turn is indicative of attitudes towards tobacco firms. In general, an individual's current ownership of merchandise of tobacco companies (such as shirts, pens) indirectly represents one's attitudes towards tobacco firms. Those reporting high use or ownership of tobacco firm products are likely to report a low impact of anti-industry ads after taking pro-smoking advertisements into consideration. Conversely, those reporting low use or ownership of tobacco firm products might be assumed to have a high impact of truth ads which defame the tobacco industry after taking pro-smoking activities into account.

In a similar vein, it might be said that pro-smoking ads which portray a positive image of the tobacco industry products are likely to reduce aversion towards the tobacco industry branded products after controlling for any inoculating influence against tobacco industry (such as truth ad information).

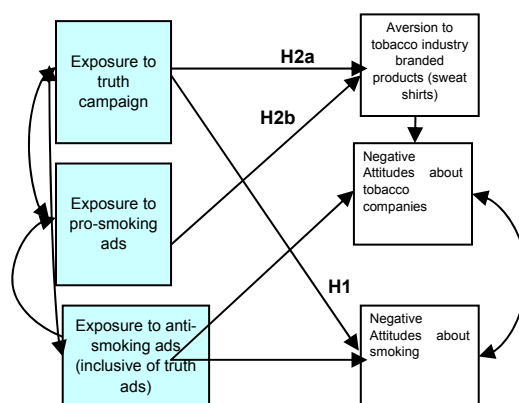
*H2a: Exposure to truth ads is likely to increase aversion to tobacco industry retail products after controlling for exposure to pro-smoking ads.*

*H2b: Exposure to pro-smoking ads is likely to reduce aversion to tobacco industry retail products after controlling for exposure to truth ads.*

*H3: The construct of aversion towards tobacco industry retail products likely to mediate the relationship between awareness of truth ads and attitudes towards tobacco companies.*

Further, this paper makes a case that relationships discussed above are likely to differ depending on adolescent's smoking status.

**Figure 1 presents a schematic representation of the hypotheses.**



### **Attitudes of Smokers vs. Nonsmokers**

Truth ads emphasize that tobacco companies can cause people to smoke and to consequently die because of smoking. Implicitly, therefore, truth ads could imply that individuals are vulnerable and powerless in deciding whether to smoke or not to smoke. That is, one could question whether those who smoke and die were weak and ignorant to such an extent that the tobacco industry made their smoking decisions.

In this background, I draw on reactance theory to understand how smokers and non-smokers might vary in the way they receive information contained in the truth messages. Reactance theory asserts that people react not only against acts/ events that control their freedom of choice (Brehm 1966) but are also motivated to reassert their threatened freedom by attempting to ward-off danger(s) to their freedom. This might be particularly true for the young because independence and freedom of choice are values especially treasured by the young and perceived to be present for a long period of time (Arrow 1970). For example, if an individual believes that behavior *x* can jeopardize one's freedom, then such an individual, according to Brehm's theory of reactance, is likely to take actions to avoid behavior *x*.

Following the above argument, truth ads are likely to induce reactance against the tobacco industry because these ads implicate tobacco industry is responsible for the ill-fate of smokers. When people view these ads they are likely to be motivated to prevent the tobacco industry from 'making' people smoke. However, whether one smokes or does not smoke might influence the level of reactance experienced. I propose that a smoker (vs. a non-smoker) is likely to face higher reactance, higher aversion

to tobacco industry branded products and consequently have more negative attitudes towards the tobacco industry.

Research shows that individuals who smoke tend to identify themselves with the entire tobacco industry and not just with a specific brand. Carter (2003) reports that tobacco firms frequently face a free-riding problem where increase in advertisement by one firm results in increase in sale of not only the heavily advertised brand but all other cigarette brands in the industry. In contrast, non-smokers have less strong associations with the tobacco industry because nonsmokers do not purchase any brand of cigarettes. Therefore, non-smokers, when exposed to anti-industry ads are likely to face lower reactance than smokers.

If truth advertisements are indeed effective in producing negative tobacco industry attitudes then those who identify with the tobacco industry (vs. those who do not identify) are likely to face higher reactance against the tobacco industry. Consequently, greater reactance against the tobacco industry is likely to produce more negative attitudes towards tobacco companies and more negative smoking attitudes. In sum, if truth ads are effective then one would expect that smokers (vs. non-smokers) experience greater reactance and consequently, more negative attitudes against tobacco industry/smoking behavior.

## METHOD

### Data

The American Legacy Foundation conducts several research and evaluation projects to ensure understand knowledge gaps in the field of tobacco control. One of their many projects, includes the National Youth Tobacco Survey (NYTS) which is an annual survey conducted in collaboration with the Centers for Disease Control. The NYTS dataset surveys periodically young people aged between 12-24 years to understand youth exposure to truth campaign and other anti-smoking ads, pro-smoking ads, and attitudes towards cigarette smoking. NYTS is anonymous and self-administered once every year and after consent from student's parents or local guardians.

This current paper used data from 2009 NYTS which was administered to 22,679 middle and high school students across the country. Data for those students in the age group of 13 to 17 years of age is first selected. Next, data for respondents with missing variables is deleted and a sample of 3349 respondents is arrived at. Of these 50.82 % had reportedly smoked one or more puffs of cigarettes 30-days prior to the day the questionnaire was administered. These respondents have been defined as smokers as per the definition of CDC. The correlation matrix for the pooled smokers and nonsmokers, and correlation matrices separately for smokers and nonsmokers are presented in table 1. Table 1(a) presents covariance between variables for both smokers and nonsmokers together. Table 1(b) and table 1(c) present covariance's among variables separately for current smokers and nonsmokers.

### Measures

All measures for testing the paper's hypotheses are based on data collected at a point in time of the year. The measures are drawn from the NYTS questionnaire which is administered. Table 2 presents the measures for each of the variable of interest and presents the descriptive statistics for these variables. All items for a variable are averaged and used to represent the value for the variable.

	Aversion to branded products	Exposure to Truth Ads	Negative Industry Attitudes	Exposure to Pro-smoking Ads	Exposure to Anti-smoking Ads	Negative Smoking Attitudes
Aversion to branded products	3.37					
Exposure to Truth Ads	0.22	3.94				
Negative Industry Attitudes	1.22	0.45	2.92			
Exposure to Pro-smoking Ads	0.67	1.22	0.55	2.52		
Exposure to Anti-smoking Ads	1.09	0.67	1.29	1.05	2.91	
Negative Smoking Attitudes	0.88	0.65	1.73	0.41	0.99	2.85

	Aversion to branded products	Exposure to Truth Ads	Negative Industry Attitudes	Exposure to Pro-smoking Ads	Exposure to Anti-smoking Ads	Negative Smoking Attitudes
Aversion to branded products	2.66					
Exposure to Truth Ads	0.19	2.97				
Negative Industry Attitudes	0.49	0.84	2.01			
Exposure to Pro-smoking Ads	0.94	0.51	0.68	2.17		
Exposure to Anti-smoking Ads	0.87	-0.11	0.17	0.44	1.98	
Negative Smoking Attitudes	0.52	0.04	0.06	0.44	0.86	1.39

	Aversion to branded products	Exposure to Truth Ads	Negative Industry Attitudes	Exposure to Pro-smoking Ads	Exposure to Anti-smoking Ads	Negative Smoking Attitudes
Aversion to branded products	3.83					
Exposure to Truth Ads	0.25	4.36				
Negative Industry Attitudes	0.78	1.27	2.62			
Exposure to Pro-smoking Ads	1.18	0.70	1.21	3.36		
Exposure to Anti-smoking Ads	1.46	0.83	0.81	1.87	3.58	
Negative Smoking Attitudes	1.11	0.98	0.59	1.34	2.36	3.79

### Data analyses

This paper hopes to understand how differences in exposure to anti-industry ads can influence adolescents (smokers and nonsmokers) attitudes towards tobacco industry and making behavior after controlling for exposure to other anti-tobacco advertisements and pro-smoking ads.

The data for the proposed model and hypotheses (as depicted in figure 1) were tested using the maximum likelihood procedures in LISREL v. 7.12. At first, the analysis was conducted by pooling data

for both smokers and nonsmokers. The analyses was then followed by testing the fit of the proposed model for smokers and nonsmokers separately. The fit of the observed data with that of the conceptual model was first compared using the chi-square values and other goodness-of-fit statistics (e.g., goodness-of-Fit , Adjusted goodness of fit, Root Means Square Error of Approximation (RMSEA)). Chi-square difference tests were used to identify the better-fitting model. In addition, models with a significant  $\chi^2$  was considered as a superior model. All local level analyses of the models were based on the significance tests (t-values)

Construct/Variable	Items drawn from NYTS	Mean/(SD)
Exposure to truth ads	Are you aware of any advertising or campaign against cigarette companies that is now taking place? In the past 30 days to what extent have you seen or heard about messages against cigarette companies?	3.855 (1.98)
Exposure to anti-smoking ads	Are you aware of any advertising or campaign against smoking or about or against cigarette companies that is now taking place? In the past 30 days to what extent have you seen or heard about messages against smoking?	3.1622 (1.71)
Exposure to pro-smoking ads	Are you aware of any advertising or campaign that promotes smoking ? In the past 30 days to what extent have you seen or heard about messages that promote smoking?	3.57 (1.59)
Aversion to tobacco industry products	Would you ever use or wear something that has a cigarette company logo on it?	3.35 (1.36)
Attitudes towards tobacco companies	I would like to see cigarette firms to go out of business No other companies act as badly as cigarette companies Cigarette companies lie	3.2696 (1.71)
Attitudes about smoking	Not smoking is a way to express your independence? Smoking cigarettes makes people your age look cool or fit in? People of your age who smoke have more friends than people who don't?	3.63 (1.69)

Post hoc analysis is performed when a model with an ideal fit was not identified. Insignificant paths not central to the research question were removed. Modification indices (MIs) are used identify potential paths that could significantly improve the data fit. Post hoc analyses is conducted for all the data runs: (i) pooled data, (ii) smokers only and (iii) non-smokers only. The final base line models identified when data is run separately for smokers and non-smokers are then run simultaneously as multiple groups. The multiple group models are run with increasing levels of constraints (equality constraints of gammas, equality constraints on variances and covariance's) to identify a model with the best fit.

### **Preliminary analysis and results**

To test the hypotheses of the paper, data for both smokers and nonsmokers were first pooled together and analyzed. Chi-square value  $\chi_{(2)}^2=291.71$  for the model indicates that data is not an appropriate fit for the model. Parameter statistics support H1 and H3 although no support is provided for H2a and H2b.

As predicted in H1, the path from awareness of truth ads to negative attitudes towards smoking was found to be positive ( $\gamma_{31}= 0.10$ ,  $t=7.50$ ) after controlling for exposure to pro-smoking advertisements ( $\Psi_{12}=1.00$ ,  $t=17.49$  and  $\Psi_{13}=0.67$ ,  $t=11.23$ ). That is, results show that higher the exposure to truth advertisements, the more negative are the attitudes towards smoking after controlling for inoculating effects of pro-smoking advertisements. H2 proposes that for exposure to truth advertisements increases the aversion to tobacco industry branded products. The base model results indicate that contrary to the

predictions of H2, exposure to truth ads reduces aversion to tobacco branded products ( $\gamma_{11} = -0.01$ ,  $t = -0.073$ ). Yet another interesting observation is made: greater the exposure to pro-smoking ads, higher is the aversion to tobacco industry products. The exposure to other anti-tobacco ads and the truth ads was not significant. That is, the path between exposure to pro-smoking ads and aversion to tobacco industry retail products is positive and significant ( $\gamma_{12} = -0.27$ ,  $t = -13.17$ ).

Other results are in line with the general expectations: (i) exposure to antismoking ads (including truth ads) increases negative attitudes towards smoking ( $\gamma_{23} = 0.35$ ,  $t = 21.63$ ); (ii) exposure to antismoking ads increases negative attitudes towards smoking behavior ( $\gamma_{33} = 0.26$ ,  $t = 15.57$ ). In other words, higher the reported aversion towards tobacco industry, the more negative are the reported attitudes towards smoking ( $\beta = 0.26$ ,  $t = 4.04$ ).

### Post hoc analysis

A revised version of the base line model (base model 2) is now run as a part of the post hoc analyses. One of the two insignificant paths - path from pro-smoking ad exposure to smoking attitudes was removed ( $\gamma_{32} = 0.01$ ,  $t = 0.69$ ). However, the insignificant path ( $t = -0.73$ ) - from exposure to truth ads to attitudes towards aversion towards tobacco industry branded products - is not removed because this path is central to the research question of this paper. A sub-analysis was conducted to justify retaining this insignificant path by running a revised model (base model 3) in which the insignificant path from awareness of truth to aversion is removed. Chi-square statistics and goodness-of-fit statistics are compared with the base model 2. The difference in  $\chi^2$  between base model 2 and base model 3 is insignificant at  $p = 0.01$  (table 3). Therefore, at a statistical level one can justify not deleting the significant path.

An analysis of the MIs indicates that adding a path from exposure to anti-smoking ads to aversion towards tobacco industry products might help improve the model fit. Theoretically, it seems appropriate to do so because respondents can be expected to draw associations between anti-smoking ads and tobacco companies. Even though anti-smoking ads do not specifically defame tobacco companies, respondents are likely to associate the unhealthy behavior of cigarette smoking with the tobacco firms. This association could generate respondent's aversion towards branded products of tobacco industry.

Base model 2 has the following different paths from the base model 1 (figure 1): (i) a causal path from exposure to anti-smoking ads to aversion tobacco industry branded products is added and (ii) insignificant path from exposure to pro-smoking ads to negative attitudes towards smoking is removed. Base model 2 shows a tremendous improvement over base model with a  $\chi_{(2)}^2 = 11.14$  therefore this model is considered as the model for conducting separate analyses of data for smokers and non-smokers. Base model 2 provides of support for hypotheses. The results for H2a and H2b are opposite to the predictions.

It is expected that running the model separately for smokers and non-smoker data will help better understand how interrelationships among these variables might differ. The following sections test the fit of base model 2 for smokers and non-smokers only data:

### Smokers Only Model

Base model 2 is run now for smokers alone to better understand the fit of conceptual model (base model 2) to one's smoking status. The smokers' covariance matrix for key variables is presented in table 1b. The chi-square statistics  $\chi_{(2)}^2 = 31.50$  ( $p = 0.00$ ) show that the data fit is not ideal. A post hoc analysis is conducted for smoker's data.

An analysis of the modification indices suggests that adding direct paths from awareness to truth ads to company attitudes and a path from awareness of pro-smoking ads to attitudes towards tobacco companies can improve the fit for the model considerably. Adding these paths also calls for freeing-up the errors of predictions between aversion to tobacco industry branded products and attitudes towards tobacco companies ( $\psi_{12}$ ), and (ii) aversion to tobacco industry branded products and attitudes towards tobacco companies ( $\psi_{13}$ ) because additional causal paths are used to explain residual variance of dependent variables instead of explaining variance by correlation among the dependent variables. The degrees of freedom thus freed-up are used to estimate the newly-defined paths. The base model when run for smokers data with the above-mentioned changes presents a good fit with a  $\chi^2_{(3)} = 8.46$  ( $p=0.059$ ) with an RMSEA of 0.0015.

## Discussion

Analyzing the smokers data separately from nonsmokers data helps understand at least one of the two 'interesting' results obtained while testing the model with pooled data. Pooled data analysis presented unexpected finding that exposure to truth ads reduced respondent's aversion to tobacco industry branded products. However, separate analysis for smokers and non-smokers data helps explain the counter-intuitive results; pooling data together averages the effects of different groups. Analysis of data provides support for H2a to the expectations that exposure to truth ads increases aversion to tobacco industry products ( $\gamma_{11} = 0.05$ ,  $t=3.36$ ). In sum, pooling data suggests that truth ads have been ineffective in altering people's aversion towards branded products; however, group-wise data analysis suggests that truth ads have been successful in making smokers averse to branded products of tobacco industry.

As expected in H1, exposure to truth ads increases negative attitudes towards smoking behaviors ( $\gamma_{13} = 0.10$ ,  $t=5.91$ ). However, contrary to predictions of H2c, exposure to pro-smoking ads increase the aversion towards tobacco industry retail products ( $\gamma_{21} = 0.18$ ,  $t=6.38$ ). This result is similar to the finding when data for smokers and non-smokers are simultaneously studied. Furthermore, results indicate support for H3 which predicts that the construct of aversion to tobacco industry branded products mediates the causal relation between awareness of truth ads and negative attitudes towards tobacco industry. Adding the direct path exposure to truth ads and negative attitudes to tobacco industry reduces the significant path from ( $\gamma_{11} = 0.05$ ,  $t=3.36$ ) to ( $\gamma_{11} = -0.03$ ,  $t=-1.58$ ). Thus, aversion to tobacco industry products might be said to partially mediate the relationship from awareness of truth ads to attitudes towards tobacco companies.

Other results are as per expectations: (i) exposure to anti-tobacco ads in general (inclusive of anti-industry ads) significantly enhances aversion towards tobacco industry retails products ( $\gamma_{13} = 0.32$ ,  $t=11.95$ ); (ii) exposure to truth ads increases negative attitudes towards tobacco companies ( $\gamma_{21} = 0.24$ ,  $t=4.82$ ); (iii) exposure to pro-smoking ads also increases negative attitudes towards tobacco companies ( $\gamma_{22} = 0.27$ ,  $t=14.01$ ); (iv) exposure to all anti-tobacco ads (inclusive of anti-industry ads) increases the negative attitudes towards smoking ( $\gamma_{33} = 0.63$ ,  $t=32.09$ ); and (iv) expected greater the aversion to tobacco industry branded products, the more negative are the attitudes towards tobacco industry ( $\gamma_{21} = 0.24$ ,  $t=14.82$ ). In sum, the smokers only model provides support for H1, H2a, H2c and H3.

## Nonsmokers Only Model

As in the smokers model case, the base model 2 is run now for non-smokers data to better understand the fit of the model for individuals that vary on the basis of an individual's smoking status. The chi-square statistics show that the fit of the model is not ideal with a  $\chi^2_{(2)} = 82.05$  ( $p=0.00$ ). As a part



of the post hoc analysis, insignificant paths are removed from the model. Modification indices suggest that direct paths between (i) awareness of truth ads to company attitudes and a (ii) awareness of pro-smoking ads to company attitudes might improve model fit.

The significant increase in the degrees of freedom arises because the phi matrix is made a diagonal matrix from being a symmetric matrix. Inclusion of paths between the exogenous and endogenous variables suggests deleting correlations among exogenous variables in order to avoid multicollinearity issues. Making those changes improves the model fit considerably ( $\chi^2_{(5)}=9.26$ ,  $p=0.099$ ). The  $\Delta \chi^2 = 72.85$  indicates that the initial model and the revised models are significantly different at  $p=0.05$ . The revised model with  $\chi^2 = 9.26$  is considered to be a better model fit for the observed non-smokers data.

## Discussion

Separate analyses of the non-smokers data provides support for H1. That is, increase negative attitudes towards smoking behavior ( $\gamma_{31}=0.04$ ,  $t=2.15$ ) for nonsmokers. In other words, nonsmokers model provides support for H1. H2a predicts that awareness of truth ads increases aversion to tobacco industry branded products while H2b predicts that awareness of pro-smoking ads reduces aversion to tobacco industry branded products. The model results show support for the H2a where  $\gamma_{11}=0.13$  ( $t=8.04$ ) indicates that higher the exposure of truth ads to a non-smoker the more likely is s/he to report aversion tobacco industry products. A test for mediation for the path of awareness to truth ads to attitudes towards tobacco companies suggests that adding a direct path makes the path from truth ad awareness to aversion to branded products insignificant ( $\gamma_{11}=0.02$ ,  $t=0.83$ ), thus providing support for partial mediation (Baron and Kenny, 1986) as predicted in H3. Like in the smokers data only, the non-smokers model does not provide any support for H2b ( $\gamma_{12}=0.36$ ,  $t=12.77$ ). That is, non-smokers data suggests that the more a non-smoking adolescent is exposed to pro-smoking ad, the more likely s/he is to be averse to tobacco industry branded product ( $\gamma_{22}= 0.22$ ,  $t=8.91$ ).

Other results are as per expectations: (i) exposure to anti-tobacco ads in general (inclusive of anti-industry ads) significantly enhances aversion towards tobacco industry retails products ( $\gamma_{13}= 0.36$ ,  $t=12.66$ ); (ii) exposure to truth ads increases negative attitudes towards tobacco companies ( $\gamma_{21}= 0.24$ ,  $t=11.50$ ); (iv) exposure to all anti-tobacco ads (inclusive of anti-industry ads) increases the negative attitudes towards smoking ( $\gamma_{33}= 0.41$ ,  $t=20.40$ ); and (iv) expected greater the aversion to tobacco industry branded products, the more negative are the attitudes towards tobacco industry ( $\beta_{21}= 0.09$ ,  $t=3.81$ ). In sum, the non-smokers only, model provides support for H1, H2a, and H3 with no support for H2b.

## Multiple Group Analysis: Simultaneous Data Analysis

Multiple group analysis analyses group-specific simultaneously for each group (Byrne, 1998, 1995). The best-fitting model (base model 2) for the pooled data is first run separately for each group. This is important because the two groups might operate in different fashion, and therefore different conceptual models for each group (Byrne 1998) is warranted. Once models fitting each group have been identified, stringent constraints are imposed.

The multiple models with separate smoker and non-smoker models is first run simultaneously without imposing any parameter constraints. Chi-square value suggests that the data is an ideal fit ( $\chi^2_{(9)}=406.97$  ( $p=0.0013$ )). Next, a model with phi matrix constrained to have the same starting values for the same starting values is run. Constraining equality of starting values, frees-up eight degrees of freedom and also provides a considerably improved data fit with a  $\chi^2_{(15)}=77.85$  (or  $\chi^2/df = 5.23$ ,  $p=0.069$ ) and RMSEA=0.071. Next, another model with higher restriction of equality across gamma parameters (causal

paths from independent to dependent variables) defined as fixed in both smoker and non-smoker model are constrained to be equal. However, this data run suggests that the model fit significantly worsens with a  $\chi^2_{(20)}=398.93$  ( $p=0.00$ ) and RMSEA=0.11. Therefore, the model with equality of phi starting values and no constraints on gamma equality is considered as the best-fit for smoking and non-smoking adolescents.

In sum, single and multiple data analyses suggests that smokers and non-smokers receive and process truth ad information differently.

**Table 3: Model Revisions**

	$\chi^2$	df	$\chi^2/df$	$\Delta\chi^2$	Adjusted GFI	RMSEA
Base Model	291.17	2	140.6	-	0.70	0.210
Base Model 2 -> removed path from anti-smoking ads to attitudes towards tobacco industry ->adding path from exposure to anti-tobacco ads to aversion to purchase/ownership of tobacco industry products	11.15	2	5.57	-	0.99	0.015
Base Model 3: Base Model 2 without the truth path	16.23	3	5.07	5.08	0.99	0.036

**Table 4a: Comparative Table For Support Of Hypotheses**

	Smokers and Non-Smokers Data	Smokers Only	Non-Smokers Only
Hypothesis 1	Accepted	Accepted	Accepted
Hypothesis 2a	Rejected	Accepted	Accepted
Hypothesis 2b	Rejected	Rejected	Rejected
Hypothesis 3	Rejected	Accepted	Accepted

**Table 4b: Comparative Tables For Strength Of Relationship In Smokers And Nonsmokers**

Parameter Values	Smokers Only	Non-Smokers Only
Truth→ Aversion to tobacco branded products ( <i>After adding direct path for mediation</i> )	-0.03(-1.58)	0.02 (0.83)
Prosmoking ads→ Aversion to tobacco branded products	0.18(6.38)	0.36 (12.77)
Anti-smoking ads→ Aversion to tobacco branded products	0.32 (11.95)	0.36 (12.66)
Truth→ Tobacco industry attitudes	0.24 (14.82)	0.24 (11.50)
Prosmoking ads → Tobacco industry attitudes	0.27 (14.01)	0.22 (8.19)
Truth→ Anti-smoking attitudes	0.10 (5.91)	----
Anti-smoking smoking ads → Anti-smoking attitudes	0.63 (32.90)	0.41 (20.41)
Prosmoking ads →Anti-smoking Attitudes	---	0.12 (6.37)

## DISCUSSION

The multiple group analysis in which the models for both smokers and nonsmokers are simultaneously determined indicates that the two models are different between smokers and nonsmokers. That is, there is no support for equality of gamma values (paths from exogenous to endogenous variables) across the two groups.

Results for the two groups are in the same direction, albeit at varying levels of strength: (i) Greater the exposure to truth ads, the more likely respondents are to be averse towards tobacco industry branded products. The effect appears to be stronger in case of nonsmokers than for smokers. (ii) Surprisingly, for both the smokers and nonsmokers model, exposure to pro-smoking ads appear to increase the aversion towards tobacco industry products. Future research could investigate factors contribute to this effect. (iii) Pro-smoking ads, however, increase negative attitudes towards smoking. This result might be explained by the fact that adolescents, smokers or non-smokers, are aware of the unhealthy behavior of smoking, even though they might smoke or might be considering smoking in the

future. Also, the result might be explained by the low reliability of the measure of one-item for receptivity which reports past behavioral pattern in terms of use of or ownership of tobacco industry products (such as pens, shirts). (iv) As in the nonsmokers models, for both pro-smoking and anti-tobacco ads greater exposure produces reduced receptivity to the tobacco industry products. (v) truth ads awareness produce negative attitudes towards tobacco industry in both smokers and nonsmokers. (vi) Interestingly, pro-smoking ads increase negative attitudes towards tobacco industry ( $t=14.01$ ). As expected anti tobacco ads are successful in generating negative attitudes towards smoking behavior even for smokers. In fact, this effect seems to be stronger for smokers than nonsmokers.

Table 4 and b provide a comparative view of the results for separately running the smokers and the non-smokers data. A few observations are with mentioning: At a very general level, a comparison of the smokers and the non-smokers data provides support that for both smokers and non-smokers pro-smoking ads produce an aversion to tobacco industry branded products. This effect appears to be stronger for non-smokers (0.36) than for smokers (0.18). Further, antismoking attitudes appear to have a greater impact on smokers (vs. non smokers) in generating anti-smoking attitudes. This is in line with expectations of the psychological theory of reactance. The gamma value for this path is 0.63 for smokers and 0.41 for non-smokers. Finally, truth ads appear to influence anti-smoking attitudes among smokers while this path is not found to be significant for non-smokers. Pro-smoking ads are more effective in generating anti-smoking attitudes amongst non-smokers. This path is not significant for smokers.

### LIMITATIONS

While this paper identifies the differences in the effect of anti-tobacco industry ads on smoking, data constraints restrict examination of the psychological process by which the impact of smokers and nonsmokers vary. For example, I expect that reactance of smokers towards truth advertisements to be significantly higher than for nonsmokers. However, the survey data does not have any data to test the hypotheses. Future research could examine the psychological processes that guide the predicted results.

The findings of this paper might not be generalizable to over a longer period of time. Smokers and nonsmokers have been defined as per the CDC definition of a smoker which considered anyone who has smoked (one puff or more) in the prior 30 days is defined to be a smoker. Furthermore, the results of this study might be skewed because all respondents have received part of school education. That is, respondents to the NYTS were enrolled in school at the time the survey was administered. Therefore, the findings of this paper might not be applicable to adolescent with no school education.

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# CHANGE AND INNOVATION IN HEALTH SERVICES DELIVERY

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## ABSTRACT

*The Health Care and Education Affordability Reconciliation Act was signed into law by the President on March 30, 2010. This legislation will have a significant impact on the U.S. health care delivery system. Specifically, the legislation will challenge the current operating models of health care organizations that have relied on fee-for-service revenue structures to prosper.*

*This changing environment will produce tremendous opportunities for those health care institutions that are prepared to positively respond to the demands of the health care consumer. Two factors will gain additional traction going forward: 1) The focus will continue to shift toward prevention and wellness and away from health restoration. 2) The focus will move toward performance outcomes in health care delivery and away from the number and type of activities being performed. Consumer education is critical to this transition. Using concepts from disruptive innovation research, this paper explores ways to develop and deliver effective health education programs to the public, particularly in the area of chronic diseases and their complications.*

## INTRODUCTION

The medical costs for individuals with chronic diseases account for seventy-five percent of the total health care costs in the country. In order to contain the cost of health care going forward, as well as address the access problems of many Americans, dealing with chronic diseases is critical. Health education programs designed to prevent high-risk health behaviors in individuals and communities is one way to address this daunting challenge. The answer to preventing these high-risk health behaviors lies in behavioral interventions, the focus of behavioral medicine. This type of medicine involves preventing or changing high-risk health behaviors so that chronic diseases do not develop.

Why don't these programs exist already? The current health care business model is built around restoring people to health and not preventing illness. Health care providers are paid well for restorative activities and little for preventative ones. In order to drive change in the U.S. health care system, potent forces must be used to disrupt current behavior. Research in

‘disruptive innovation’ conducted in other industries suggests that these concepts can be used in developing and expanding health education programs.

## **DISRUPTIVE INNOVATION IN HEALTH CARE DELIVERY**

Clayton M. Christensen, author of the *Innovator’s Dilemma*, has studied innovation and management for decades. Christensen (2009) argues that the disruptive innovation theory can work in the exploitation of change in health services delivery. The three key elements of this innovation include: a technology enabler, a business model innovation and the development of a value network. Health education programs must consider each of these elements in order to have the greatest likelihood of impacting medical care.

Technology as an enabler is central to innovation in the field already, but has not resulted in the cost declines needed for a healthy and sustainable health care system. However, in education, considerable variation as to offerings is more evident and gaining wider acceptance. Adapting this delivery capability into the health care system seems plausible and necessary. Digitizing health records and telemedicine provide evidence of technology’s role in extending access and potential cost containment.

The second element of the innovation ‘triad’ relates to the business model of the health care system of the future. The emphasis on wellness and prevention, and performance outcomes, will call for new ways of thinking as to how organizations are paid. The current fee-for-service model rewards the wrong behaviors, both from the health care provider and the consumer. When it is broke, then you fix it. While the argument for prevention has been in the health care conversation a long time, the money has yet to follow.

Increasing patient knowledge of disease, especially chronic diseases, can go a long way in changing behaviors. In order to prevent the long term complications from these diseases, the patient must understand the serious complications resulting from their practice of high-risk behaviors. They must assume a more active role in the long-term prevention and treatment process, and then they will begin to influence the value networks used to meet those needs.

This third innovation element, developing a value network that is sustainable, will likely require a catalyst from outside the current networks. One source that seems intriguing is the engaging of the public health apparatus to lead the way in the reform of our current health delivery system.

Public health departments are well-experienced in population-based community education and intervention efforts. They also have a culture that is more consistent with a wellness-prevention value proposition. Finally, there is an existing organizational structure that generally has a positive standing within the communities they operate. This investment in health education and testing will likely need to be mandatory for any reform of our health care system to be successful and could be made part of the participation requirement of a program.

Unleashing these transformational forces has worked well at lowering cost and increasing the availability of a product or service in the business world (Christensen, Grossman & Hwang, 2009). The catalyst for this type of disruption in health care could very well be public health and the preventive strategies they have developed. In order to respond to the opportunities presented by the disruption, leadership and empowered workers in public health departments are needed, as well as resources. The underlying logic is rather simple: If disease does not occur there is no need to allocate large sums of money to treatment.

Disruptive innovation allows the combining of resources in the production process in new and innovative ways that usually allows greater value to be produced by the process. This is exactly what is required for our health care system to survive and deliver better quality services at a lower price. The health care system and public health are both faced with limited resources and increasing demands from everyone for improved value of health care services. Public health departments and our medical care system have had tremendous successes in improving the health and life expectancy of most Americans. The country faces its greatest health challenge in the expanding epidemic of chronic diseases.

### **THE USE OF TECHNOLOGY TO PREVENT DISEASE**

As introduced earlier, technology can help in the battle against the growing epidemic of chronic diseases. Technology is available to improve the communication of the prevention of risky behaviors to large portions of our population. Public health departments have the information that can help individuals prevent chronic diseases from developing. The challenge has been that the money received for public health departments has never been sufficient to develop, implement and evaluate the massive dissemination of chronic disease information to the entire population. This is not to say that there have not been chronic disease education efforts by health departments. There have been many successful programs developed and implemented in schools, workplaces and the community designed to prevent chronic diseases and their complications. These educational efforts need to be expanded to larger and more diverse population segments.

According to Turnock (2009) computers and electronic communications have improved the ability to gather, analyze and disseminate health information. This technology has to be expanded to deal with the chronic disease epidemic through the provision of a continuous stream of information about these diseases to the entire population. There are already examples of success stories concerning the innovative use of technology by public health departments and the Centers for Disease Control and Prevention (CDC) that includes Epi-X and ECards. On a local level, low cost activities such as voice-narrated power point slides to educate large numbers of people about colorectal cancer and H1N1 influenza have been used successfully.

One of the best examples of a public health surveillance and information systems is Epi-X. This system offers web-based communications for public health professionals. State and local health departments and poison control centers to access and share preliminary health surveillance information with large numbers of health care professionals. This system supports postings of up-to-date medical information and discussions about disease outbreaks and other public health events that involve many parts of the nation and the world.

The CDC currently has available over 100 free Health-e-Cards (electronic greeting cards). These cards contain a colorful greeting that encourages healthy living, promotes safety and can even celebrate a health and safety-related event. This concept could also be expanded to include chronic diseases along with ways of preventing the complications that can develop later in life as a result of practicing the unhealthy behaviors that lead to chronic diseases.

### **EXAMPLE OF AN INNOVATIVE PREVENTION PROGRAM**

Last year, a colorectal cancer task force in Luzerne County, Pennsylvania developed a colorectal education program. The program utilized a marketing approach to increase the awareness of the need for screening for colorectal cancer in the county. Two businesses were chosen to participate in this program which began in May 2009. The program was made available to all employees of these businesses.

This educational program was developed on a SharePoint software site at a local College. It consisted of a pre-test, a colorectal cancer educational program and a post-test of knowledge gained from the education program. The educational program consisted of a series of voice-narrated power point slides about the risk factors for developing colorectal cancer, the various tests available for this disease and recommendations for those at high-risk for developing this disease.

The results from this program offer support for this approach. A significantly higher percentage of participants stated they were more likely to ask their doctor to be screened for colorectal cancer on the post-test than on the pre-test. All participants indicated that they were likely to share what they learned from the program with friends and family members. And as a side note, this program resulted in the discovery of colorectal cancer at an early stage in two participants resulting in life saving surgery for both individuals.

This colorectal education program is an excellent example of the use of disruptive innovation in order to develop a health education effort designed to reduce the incidence of colorectal cancer in a large population. This program was very inexpensive to develop and implement on a community basis. It is now being duplicated in other counties in Pennsylvania. The health care delivery system in the United States is consumed with the cure of illness and disease as the only way to deliver medical services to patients.



## DISCUSSION

The concept of preventing medical problems before they occur has never been an accepted practice of modern medicine. Since the benefits of prevention and public health departments are found in the future, there has never been any real interest in providing adequate funding to public health departments. This is no little challenge.

Therefore, health education programs need to be looked at as a long-term investment that is capable of producing large payoffs in terms of improved health for the population over time. Although these educational innovations will require resources and costs in the present, they offer the best solution for containing health care costs tomorrow.

The need for creativity and innovation in the delivery of health care services has never been greater. Consumers are expecting more emphasis on prevention of illness and disease. These changes offer opportunities for the medical care system and public health agencies to form partnerships in the prevention and treatment of chronic diseases. Public health departments must find ways to share the science of prevention with larger segments of the population in order to reduce the chronic diseases epidemic impacting the health care system. The concept of disruptive innovation outlines the ingredients for a successful transformation.

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# **ANIMAL PROGRAMS AND ANIMAL ASSISTED THERAPY IN ILLINOIS LONG-TERM CARE FACILITIES TWENTY YEARS LATER (1990-2010)**

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## **ABSTRACT**

*Many researchers have reported that animal programs are beneficial to the institutionalized elderly. This study is a follow-up of a 1990 exploratory and descriptive study of animal programs and animal assisted therapy in Illinois long-term care facilities. Data was collected using a self-administered questionnaire. The vast majority of facilities are favorable about animal programs requested by residents, friends and family of residents, staff, and organizations that provide such programs. Non-scheduled animal visits, scheduled animal visits, resident animals, and animal assisted therapy are occurring in approximately the same percentage of facilities in 2010 as in 1990. There was a significant increase in the number of requests from staff for animal programs. Animal programs continue to be perceived as having significant psychological and physical benefits for residents. There was a significant increase in the number of facilities that have formal policies and procedures for animal programs.*

## **INTRODUCTION**

Animal programs and animal assisted therapy has been reported in various types of health care settings. The literature contains a significant number of reports of animal assisted therapy programs in long-term care facilities. The purpose of this study is to investigate the use of animals and animal assisted therapy in long term care facilities in Illinois. This research project grew out of a curiosity on how the field has changed over the past twenty years. Like the 1990 study, this study is primarily exploratory and descriptive (Behling, 1990, 1991). There continue to be reports and studies of animal programs in long-term care facilities (Park, 1999; Tetz, 2007; Giaquinto & Valentini, 2009; Kramer, Friedmann, & Bernstein, 2009).

## **REVIEW OF THE LITERATURE**

Levinson (1969) reports that animals have been used in therapy for over 200 years. The York Retreat in England has been using animals since the eighteenth century. This is the first

known instance of institutionally based therapy using animals. Bethel, in Germany, began using animals in 1867 as an integral component of treatment programs (Bustad, 1980). The first reported program in the United States was in 1942 at the Pawling Army Air Force Convalescent Hospital in Pawling, New York. Patients at Pawling, recovering from fatigue and physical injuries, were encouraged to work and interact with farm and companion animals (Bustad, 1979). From 1942 until the early 1970s there were no documented institutionally based animal programs for adults (Bustad, 1980). Since the 1970s there has been a continuous growth in animal programs in healthcare facilities (Beck, 2000).

McCulloch (1981) reports that animal programs in institutions usually fall into one of four categories:

- (1) The resident may have an individual companion or owned pet.
- (2) The resident may have a part-time companion or regularly visiting pet.
- (3) The institution may have a resident pet or mascot.
- (4) The final category is animals that form a living environment.

Olsen and colleagues (1983) conducted a study of 762 long-term care facilities in Minnesota and found that 56 percent of the nursing homes and 52 percent of the supervised living facilities had animal programs. Manor (1988) conducted a study of animal assisted therapy programs in the metropolitan Milwaukee area and found that visitation of companion animals to nursing homes was the most common animal program. Some healthcare facilities are reluctant to offer animal programs due to concerns about infection, injury, and cleanliness (Beck, 2000).

Corson and Corson (1981) brought trained dogs into a nursing home and found that the animals seemed to improve the overall morale within the facility. This improved morale included both residents and staff. The dogs seemed to provide a form of reality therapy for the residents resulting in positive changes in attitudes and behavior.

Brickel (1979) conducted a two year study to assess the therapeutic effect of a cat mascot in a long-term care facility with total-care elderly residents. The presence of the cat did stimulate responsiveness, provide pleasure and act as a form of reality therapy (Brickel, 1979, 1980). Animals have been used in various health care settings to reach patients that have a reduced capacity to interact with others (Fine, 2000). Animal assisted therapy reduces loneliness of residents of long-term care facilities (Banks and Banks, 2002).

Hogarth-Scott, Salmon and Lavelle (1983) studied the effect of a resident dog on residents and staff in a long term care facility in Australia. The results showed significant improvements in the desire to live, alertness, happiness, enjoyment and interest in others. Residents showed improved relationship with other residents and with the staff of the facility. They also documented that the morale of staff was improved. Carmack (1989) reports that the most common perceived benefit of the presence of animals is the reduction of stress levels.

## METHODS

The researchers obtained a current list of Illinois long-term care facilities from the Illinois Department of Public Health. The plan was to contact facilities by email but they were not included in the list. A letter was sent to Illinois Long-Term Care Facilities explaining the study and requesting their participation. The current questionnaire was a modification of the questionnaire used by Olsen and colleagues in their 1981 study of health care facilities in Minnesota (Olsen, Anderson, Quigley & Beahl, 1983; G. Olsen, personal communication, 1989). The researchers created a revised electronic questionnaire using Survey Monkey. The participants received instructions in a letter on how to access the electronic survey.

## RESULTS

A total of 61 facilities completed the questionnaire for the 2010 sample while for the 1990 sample 233 facilities completed the questionnaire. The majority of long-term care facilities in Illinois are proprietary followed by non-profit corporations. The respondents to the questionnaire are consistent with this with 50% of the respondents from proprietary organizations and 38.3% from non-profit corporations. This is a similar response pattern to the 1990 study where 45.1% were proprietary and 31.3% non-profit facilities. (See Table 1)

<b>Characteristic</b>	<b>2010 Sample (n=61)</b>	<b>1990 Sample (n=233)</b>
Type of Ownership:		
Proprietary	50%	45.1%
Non-profit	38.3%	31.3%
Other	11.7%	23.6%
Location:		
Urban	16.7%	24.0%
Suburban	31.7%	34.3%
Rural	51.7%	40.8%
Facility Joint Commission Accredited:		
Yes	12.3%	10.0%
No	87.7%	77.1%
Number of Beds:		
All Respondents	101 (mean)	Not available
Skilled	81 (mean)	
Intermediate	28 (mean)	
ICF-DD	25 (mean)	
Average Age of Resident	75 years (mean)	84 years (mean)

Both in 1990 and 2010 the vast majority of facilities are favorable about the utilization of animals in their health care facilities. For 1990, the percentage was 84.7% while for 2010 it was 95%.

It is clear from the results that residents of long-term care facilities express desires to interact with animals. Almost 77% of the facilities report that animal programs have been requested by residents. The results are similar to the 1990 study where 72.4% reported resident requests. Almost 78% report that animal programs have been requested by friends or relatives of the residents compared to only 51.2% in 1990. This was a significant increase from 1990. This may be a result of the increased reports of animal programs in long-term care facilities in the media and popular literature and the perceived benefits of such programs.

Forty eight facilities (82.8%) report that animal programs have been requested by staff compared to 65.9% in 1990. Again this was a significant increase from 1990. It appears that the opinion that there is staff resistance to animal programs is not supported by this research. Humane societies that provide animal visitation programs or place resident animals actively seek to work with long-term care facilities. 31.3% of the facilities report that they have been contacted by humane societies to provide animal programs. Results are similar to the 1990 results where 28.2% of the facilities reported such contact. (See Table 2)

<b>Question</b>	<b>2010 Sample</b>	<b>1990 Sample</b>
Favorable About Utilization of Animals	95%	84.7%
Animal Programs Requested by:		
Residents	76.7%	72.4%
Relatives or Friends <sup>1</sup>	77.2%	51.2%
Staff <sup>1</sup>	82.8%	65.9%
Humane Societies	31.3%	28.2%
Note. <sup>1</sup> There are statistical differences ( $p \leq .05$ ) between the 2010 and 1990 samples.		

Non-scheduled animal visits are those situations in which a friend or family member brings an animal to visit a resident. These visits are not part of any formal program. 86.7% of the facilities allow non-scheduled animal visits. 91.4% of the respondents reported allowing non-scheduled visits in 1990. Only 6.7% (6% in 1990) have never allowed such visits. Non-scheduled animal visits are the most common way of integrating animals into the long-term care environment. (See Table 3)

Scheduled animal visitation programs are where animals are brought into the facility on a regularly scheduled basis. These visits may be done in a group setting or involve individual resident contact with the animals. 50.8% of facilities currently have animal visitation programs. This is only slightly less than the 57.1% in 1990. 35.6% of the facilities report that they currently do not have animal visitation programs but have had them in the past. This accounted for 24.5% of the facilities in 1990. The major reason for visitation programs being discontinued in 1990

was the lack of volunteers or organizations to conduct the programs. The same reason applied in 2010. 13.6% of the facilities report never having had a regularly scheduled animal visitation program (17.2% in 1990). In 1990 47.4% of the animal visitation programs were conducted by humane societies, 12.8% by dog clubs, and 39.8% by a wide variety of other individuals or groups. In 2010, 38.6% are conducted by humane societies, 19.3% by dog clubs, and 42.1% by others. (See Table 4) A development between 1990 and 2010 is the emergence of organizations whose primary purpose is delivery of animal visitation or animal assisted therapy programs. In 2010, this type of organization accounted for 15% of the scheduled animal visitation programs. (See Table 4)

<b>Item</b>	<b>2010 Sample</b>	<b>1990 Sample</b>
Non-Scheduled:		
Currently Allow Non-Scheduled Visits	86.7%	91.4%
Never Allow Non-Scheduled Visits	6.7%	6.0%
Scheduled Animal Visitation:		
Currently Have Animal Visits	50.8%	57.1%
Currently Do Not Have But Have Had in Past <sup>1</sup>	35.6%	24.5%
Never Had Scheduled Animal Visits	13.6%	17.2%
Note. <sup>1</sup> There is a statistical difference ( $p \leq .05$ ) between the 2010 and 1990 samples.		

<b>Organization</b>	<b>2010 Sample</b>	<b>1990 Sample</b>
Humane Society	38.6%	47.4%
Dog Clubs	19.3%	12.8%
Other (Staff, volunteers, family members, private businesses, local park district, Paw to Paw Programs, zoo, therapy programs)	42.1%	39.8%
Note. There are no statistical differences between the two samples for any of the percentages.		

Visiting animals are restricted from certain areas of the facility. In 1990 50% of the facilities had these restrictions. In 2010 57.4% had restrictions in place. Most of the restrictions are from food preparation and service areas. A much smaller number of facilities restrict animals from resident rooms.

Resident animals are those animals maintained in the facility on a full-time basis. In 1990, 46.4% of the facilities report having a resident animal and by 2010 this had grown to 62.3% of the facilities. There was a statistical difference between the two percentages,  $p \leq .05$ .

The top two types of resident animals in both 1990 and 2010 were fish and birds. In 1990 fish were the most common at 40.1% with birds at 37.6%. In 2010, 49.2% reported having birds

and 31.1% fish. Most aquaria are maintained by outside contractors. The increase in the number of facilities keeping birds is explained by the increasing number of organizations that provide aviary and ongoing maintenance of the aviary. Birds provide more stimulation for residents than fish and are more appreciated by residents. In 1990, dogs were the third most common resident animals at 30% with cats fourth at 14.8%. In 2010, cats were the third most common at 36.1% and dogs fourth at 27.8%. The statistically significant increase in the usage of cats is consistent with the increasing popularity of cats as pets within the general population (American Veterinary Medical Association, 2007). Cats are also easier to maintain as resident animals. In 66.1% of the organizations, resident animals are cared for by staff as an additional duty. This was a statistically significant decline from 1990. The majority of the remainder is cared for by outside persons or organizations. (See Table 5)

Question	2010 Sample	1990 Sample
Have Resident Animal Program <sup>1</sup>	62.3%	46.4%
Types of Animal in Program:		
Birds	49.2%	40.1%
Fish	31.1%	37.6%
Dogs	27.8%	30.0%
Cats <sup>1</sup>	36.1%	14.8%
Animals Cared for by Staff*	66.1	79.6%
Note. <sup>1</sup> There are statistical differences ( $p \leq .05$ ) between the 2010 and 1990 samples.		

Animal assisted therapy is the utilization of animals as part of a structured form of goal-directed therapy and not just the random interaction with animals which may or may not be therapeutic. In 1990, 13.7% of the respondents reported having animal assisted therapy programs. In 2010, 15.3% reported having such a program. It is clear that over the past 20 years there has been little movement on the integration of animals into goal directed therapy in long term care.

Attitudes toward animal programs in health care facilities are very positive. In 1990, 60% rated the program as very favorable while in 2010 that rating increased to 76.7%, a statistically significant difference. In 1990, 24.7% rated the program as moderately favorable while for 2010 the percentage was 18.3%. For both the ratings of very favorable and moderately favorable, the positive percentage increases were statistically significant. Only 1.8% in 1990 and 1.7% in 2010 were moderately unfavorable toward animal programs.

In 1990, 45.3% reported the staff was very positive and 24.1% moderately positive about animal programs while in 2010 48.3% reported that staff was very positive and 39.7% were moderately positive about animal programs. There was a significant improvement in the moderately positive ratings from 1990 to 2010. In 1990 only 5.3% reported staff were moderately to very negative about such programs. In 2010, no respondents reported negative



attitudes of staff. The level of uncertainty about the programs decreased significantly from 1990. (See Table 6)

Attitude	2010 Sample	1990 Sample
Respondent Feelings Toward Animal Programs:		
Very Favorable <sup>1</sup>	76.7%	60%
Moderately Favorable	18.3%	24.7%
Moderately Unfavorable	1.7%	1.8%
Attitudes of Staff:		
Very Positive	48.3%	45.3%
Moderately Positive <sup>1</sup>	39.7%	24.1%
Not Sure <sup>1</sup>	12.1%	25.3%
Moderate to Very Negative	---	5.3%

Note. Percentages may not add to 100% due to rounding errors. <sup>1</sup> There are statistical differences ( $p \leq .05$ ) between the 2010 and 1990 samples.

Animal programs in long term care facilities are perceived to have psychological benefits to the residents. Almost 85% of the respondents in 1990 and 88.1% in 2010 report that the programs are moderately to very beneficial. The physical benefits are perceived to be less strong but still significant with 65.9% of the 1990 respondents and 70% of the 2010 respondents reporting physical benefits. The most often cited benefit is increased social interaction and communication among the residents. The results clearly support the hypothesis that animals improve the environment of long term care facilities. (See Table 7)

Ratings	2010 Sample	1990 Sample
Rating Toward Psychological Needs Of Residents:		
Moderately to Very Beneficial	88.1%	84.7%
Rating Toward Physical Needs of Residents:		
Moderate to Very Beneficial	70%	65.9%

Note. There are no statistical differences between the 2010 and 1990 sample.

Animal programs are not without their administrative considerations. In 1990 only 17% of the respondents reported having written policies and procedures regarding animals and animal programs. In 2010 63.2% of the respondents report having policies and procedures. There was a statistical difference  $p \leq .05$  between the two samples.

Almost 22% of the facilities have plans to initiate or expand animal programs. The majority of these organizations (20.3% of respondents) indicate that technical assistance would be beneficial in implementing the plans.

## CONCLUSIONS

This study documents the changes that have occurred in animal programs in long term care facilities in Illinois between 1990 and 2010. Animal programs continue to be perceived as having significant psychological and physical benefits for the residents. Animal programs are being more fully recognized as a function within long term care facilities. This is supported by the significant increase in the number of facilities that have implemented formal policies and procedures for animal programs. Also slightly over 20% of the facilities have plans to initiate or expand existing animal programs. Animal programs are an effective means to improve the quality of life of residents of long term care facilities.

All animal programs (non-scheduled animal visits, scheduled animal visits, resident animals, and animal assisted therapy) are occurring in approximately the same percentage of facilities in 2010 as in 1990. A significant increase in use of animals in goal directed therapy was expected but not observed in the results. A very small percentage of facilities provide goal directed therapy using animals as adjuncts.

Animal programs continue to be requested by residents, family, and staff. The only significant increase in requested is from staff suggesting that they are seeing a benefit to the residents by the programs. This is also supported by the extremely positive attitudes of respondents about animal programs.

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