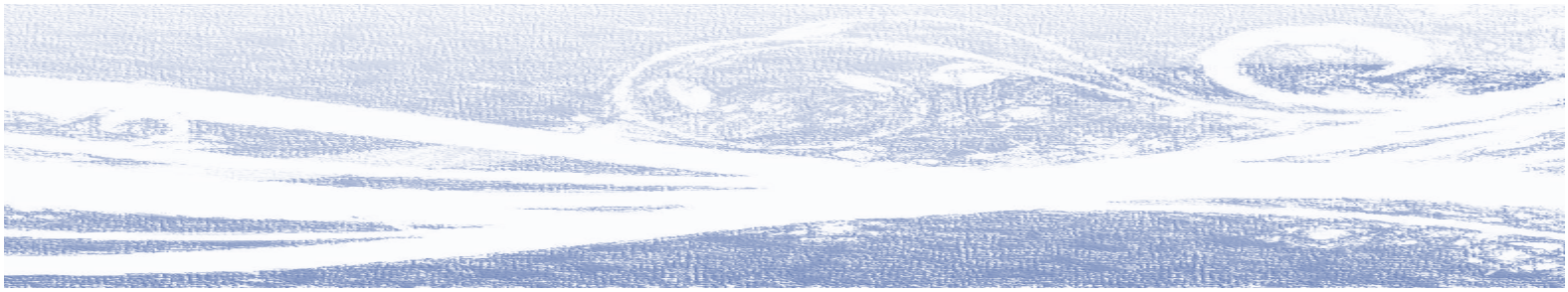
QRBD

QUARTERLY REVIEW OF BUSINESS DISCIPLINES

February 2016

Volume 2
Number 4



A JOURNAL OF INTERNATIONAL ACADEMY OF BUSINESS DISCIPLINES
SPONSORED BY UNIVERSITY OF NORTH FLORIDA
ISSN 2334-0169 (print)
ISSN 2329-5163 (online)

QRBD - QUARTERLY REVIEW OF BUSINESS DISCIPLINES

A JOURNAL OF INTERNATIONAL ACADEMY OF BUSINESS DISCIPLINES

FROM THE EDITORS

In this issue of *Quarterly Review of Business Disciplines,* Didarul Islam Manik and Charles Lubbers explore the use of ICT and some of the traditional agriculture information sources utilized by Bangladeshi farmers. Vijay Vemuri and Nelson Alino investigate whether there is a structural change in demand for accounting and auditing services due to rapid advances in computer hardware, software, networks, automation, artificial intelligence and/or an increase in robotics. Cindi Smatt, Renee Pratt, and Paul Fadil examine the interactive relationship between perceived technology difficulties and political efficacy on employee job satisfaction.

Shakil Rahman, JoAnna Burley Shore, and Carin Lightner-Laws take us in a different direction. Their paper explores African-American women and leadership positions, the inequity among different groups of women, and the views of young adults who are going to be entering the workforce. Ibrahim Aly compares student performance in blended, traditional, and online managerial accounting courses and reinforces the fact that course instruction and pedagogy are more important for student learning than the type of media used for delivery.

Margaret A. Goralski, *Quinnipiac University,* Editor-in Chief
Kaye McKinzie, *University of Central Arkansas*, Associate Editor

QRBD - QUARTERLY REVIEW OF BUSINESS DISCIPLINES

A JOURNAL OF INTERNATIONAL ACADEMY OF BUSINESS DISCIPLINES

The *Quarterly Review of Business Disciplines (QRBD)* is published by the International Academy of Business Disciplines quarterly in February, May, August, and November.

Manuscript Guidelines/Comments. *QRBD* is a blind peer-reviewed journal that provides publication of articles in all areas of business and the social sciences that affect business. The Journal welcomes the submission of manuscripts that meet the general criteria of significance and business excellence. Manuscripts should address real-world phenomena that highlight research that is interesting and different – innovative papers that begin or continue a line of inquiry that integrate across disciplines, as well as, those that are disciplinary. The Journal is interested in papers that are constructive in nature and suggest how established theories or understandings of issues in business can be positively revised, adapted, or extended through new perspectives and insights. Manuscripts that do not make a theoretical contribution to business studies or that have no relevance to the domain of business should not be sent to *QRBD*. Submissions to *QRBD* must follow the journal's Style Guide for Authors, including length, formatting, and references. Poorly structured or written papers will be returned to the authors promptly. Manuscript length is approximately 16 – 20 single-spaced pages. Acceptance rate is 25-28%.

Description. The *Quarterly Review of Business Disciplines* is a quarterly publication of the International Academy of Business Disciplines (IABD); a worldwide, non-profit organization established to foster and promote education in all of the functional and support disciplines of business. The objectives of *QRBD* and IABD are to stimulate learning and understanding and to exchange information, ideas, and research studies from around the world. The Academy provides a unique global forum for professionals and faculty in business, communications, and other social science fields to discuss and publish papers of common interest that overlap career, political, and national boundaries. *QRBD* and IABD create an environment to advance learning, teaching, and research, and the practice of all functional areas of business. *Quarterly Review of Business Disciplines* is published to promote cutting edge research in all of the functional areas of business.

Submission Procedure. An electronic version of the manuscript must be submitted in MS Word to the Editor-in-Chief, Dr. Margaret A. Goralski at Margaret.Goralski@Quinnipiac.edu. Upon completion of a review by expert scholars who serve on the *QRBD* Editorial Review Board, the first author will be informed of acceptance or rejection of the paper within a one to two month timeframe from the submission date. If the paper is accepted, the first author will receive a formal letter of acceptance along with the *QRBD* Style Guide for Authors. IABD members and authors who participate in the IABD annual conference are given first priority as a matter of courtesy. For additional information, please visit www.iabd.org.

Subscription. The annual subscription price for QRBD is US$100 plus postage and handling. Single issue price is $35 per issue plus postage and handling.

QRBD - QUARTERLY REVIEW OF BUSINESS DISCIPLINES

A JOURNAL OF INTERNATIONAL ACADEMY OF BUSINESS DISCIPLINES

INTERNATIONAL ACADEMY OF BUSINESS DISCIPLINES

MISSION STATEMENT

The organization designated as the International Academy of Business Disciplines is a worldwide, non-profit organization, established to foster and promote education in all of the functional and support disciplines of business.

WWW.IABD.ORG

The Quarterly Review of Business Disciplines (QRBD) is listed in
Cabell's Directory of Publishing Opportunities.

QRBD - QUARTERLY REVIEW OF BUSINESS DISCIPLINES

A JOURNAL OF INTERNATIONAL ACADEMY OF BUSINESS DISCIPLINES

VOLUME 2 NUMBER 4 FEBRUARY 2016

ISSN 2329-5163 (online)
ISSN 2334-0169 (print)

CONTENTS

ARTICLES

This page has been intentionally left blank.

USE OF ICT AND TRADITIONAL AGRICULTURE INFORMATION SOURCES BY BANGLADESHI FARMERS

Didarul Islam Manik, University of South Dakota
manikmcj@yahoo.com

Charles A. Lubbers, University of South Dakota
chuck.lubbers@usd.edu

ABSTRACT

This study investigated the use of online information resources by the farmers in Bangladesh. The research was conducted in two districts—Tangail and Munshiganj. To explore the access and use of information by the farmers, this study has taken Roger's "Diffusion of innovation" model as a theoretical framework. Both quantitative and qualitative data collection methods were used in the research. For quantitative data, a survey questionnaire was used to gather information from the respondents. For qualitative data, interviews were carried out among the farmers. Some agriculture extension officers (service providers) were also interviewed to assess the patterns of their service to farmers. This study found that most of the farmers are not familiar with the online agricultural information sources due to lack of technological facilities, such as a computer and Internet connection. Farmers are not concerned about using ICTs or online information sources, rather, they are worried about the low prices of their products and high prices of seeds, fertilizers, pesticides, fuel and transportation. Their primary sources of information are television, radio, newspaper, fellow farmers and agriculture extension service providers.

Keywords: E-agriculture, ICT adaption, Digital Bangladesh, Web portals, Diffusion of innovation.

INTRODUCTION

Agriculture is an important sector in most developing countries and the majority of the rural population of the world depends on it (Stienen, Bruinsma, & Neuman, 2007). The contribution of agriculture to rural development is highly dependent on the generation and delivery of new agricultural technologies and most of these new technologies can be described as information intensive (Tripp, 2001). Information has become a critical factor of the agricultural production (Rao, 2006). Information and communication technologies (ICT) have touched almost every field of human activity, and agriculture is not an exception to that (Winrock, 2003).

Since Bangladesh is a developing country, agriculture is an important sector and nearly 80% of the total population are involved in agriculture and related activities (Rahman, 2009). This sector is currently under everyone's attention to meet the growing demand for food as the country's population continues to increase. However, agricultural production of Bangladesh is very low because the lands are cultivated in traditional ways, farmers' practices are unscientific, and thereis insufficient knowledge and use of ICT in the agricultural activities (Zaman, 1987).

Farms in Bangladesh are extremely small and land capable of cultivation is divided into smaller plots, due to the rapid increase in population. Cultivation is dependent on the uncertainties of variable rainfall and average output is generally low. Value addition in agriculture requires technological, institutional and price incentive changes designed to raise the productivity of the small farms (Todaro, 2000).

Previous research has shown that most of the time Bangladeshi farmers do not get correct and timely information on seeds, fertilizers, insecticides and weather. Every year a major portion of small and middle class farmers face losses due to low prices for their products. The conditions of Bangladeshi farmers are degrading gradually and a large number of farmers are losing interest in cultivating the land.

A major problem for farmers in Bangladesh is a lack of necessary information. Kizilaslan (2006) argues that proper dissemination of information for agricultural and rural communities is a crucial tool in the fight against poverty. Information helps the poor to take advantage of opportunities and also reduces their vulnerability. Kiplangat (1999) claims that dissemination of relevant information to farming communities can facilitate the effective adoption of agricultural inputs, decision making on markets and adoption of scientific methods. Lack of dissemination of information across the agricultural supply chain is a major concern in the developing world as well as in Bangladesh.

The use of ICT in agriculture among rural farmers of Bangladesh is limited because of lack of proper education, poor social and economic conditions and a scarcity of information and technological infrastructure. The government of Bangladesh has stepped into a new era of a digital world with a spectacular vision for making a Digital Bangladesh as outlined by its current Prime Minister Sheikh Hasina.

The term "Digital Bangladesh" was first used by Bangladesh Awami League political group immediately before the 2008 national election. It was used at that time as a nice-sounding political slogan. Making Digital Bangladesh means all the government's activities, such as commerce, education and agriculture, will be powered by computers and the Internet (Sarma, 2009). As a part of digitalizing agricultural information many online-based information portals have been launched in the country. The online based sources include different types of portals.

One of the biggest Web trends is the portal (O'Leory, 2000). Online web portals are a central system which disseminates information via the Internet. A portal aggregates information and they are designed to be a one stop shop (Browning, 2003). A network service brings together content from diverse, distributed resources using technologies, such as cross searching, harvesting, and alerting. The information is then collated into an amalgamated form for presentation to the user. This presentation is usually via a web browser, though other means are also possible. For users, a portal is a single point of access where searching can be carried out across one or more than one resource and the amalgamated results viewed (Asensio, 2003). There are different types of portals, such as vertical, horizontal, enterprise, knowledge, corporate and markets space portals (Eid, 2008).

At present, the Internet is playing important role in bringing positive changes for many individuals. Additionally, poor and developing countries can change their fate by allowing their citizens to use the Internet in their everyday lives. Bhuiyan (2004) stated that a developing country should consider providing access to some enhanced services such as the Internet. Providing access to the Internet not only will check the gap between the information haves and have-nots in terms of new media access but also will facilitate the achievement of universal access goals.

How people benefit from information and communication technology depends on the information dissemination processes that are used. Thus, how farmers receive information and implement it in their fields hinges on the method that agriculture extension officers, who serve as information disseminators, use in sending the messages. The aim and objectives the communication will never be fulfilled unless the senders receive feedback from the receivers (Singh, 1999).

At the time of information dissemination, agriculture extension officers play the role of senders and farmers play role as receivers. How

E-agriculture in Bangladesh

E-agriculture involves the initiatives of agricultural informatics, agricultural development and entrepreneurship towards building a hunger-free, efficient and resourceful Bangladesh. These e-agricultural initiatives are part of Digital Bangladesh that the government hopes to achieve by 2021 (Islam, 2009). The Government of Bangladesh recognizes ICT as an indispensable tool in the fight against poverty. It is also understood that ICT can enhance the contributions of agriculture to rural development tremendously. E-agriculture or e.Krishi promotes a multi-stakeholder, people-centric, cross-sectoral platform that will bring together all stakeholders, especially farmers. It will enable them to access timely and relevant information, exchange opinions, experiences, good practices and resources related to agriculture.

E.Krishi focuses on leveraging easy access of ICTs including cell phones, radio, television, etc., for information dissemination. With the aim of improving communication and learning processes between various actors, e.Krishi promotes the integration of technology with multimedia, knowledge and culture. (e-Krishi vision 2025, Bangaldesh). The information disseminated by e-Agriculture initiatives includes weather information, price information, information on production and cultivation techniques, plant nutrients, water usage, education and health information, information of government and non-government facilities, demands and current stock information, plant diseases, and insect information.

Objectives of the Study

The main aim of this study is to investigate the usage of online agricultural information sources by farmers in Bangladesh. To judge the use of the information portals by the farmers a survey was conducted among 110 farmers in the Tangail and Munshiganj districts of Bangladesh. Additional objectives included investigating and describing the uses of different online portals by

farmers. As well as identifying factors affecting the use of information portals by farmers in agriculture.

Research Questions

This research, with an aim to understand the use of online agricultural information sources by farmers, explored the following research questions:

1. To what extent do farmers use the online information sources?
2. For what purposes do they use them?
3. What are the other sources used by the farmers for agricultural information?
4. To what extent do the farmers rely on different information sources?

LITERATURE REVIEW

ICT in Agriculture

New information and communication technologies are increasingly important for the extension of agriculture (Shabanali, Falaki, Iravani, & Mohammadi, 2009). Research conducted by Lio and Liu (2006) investigated whether there is a strong correlation between the use of ICT and farmers' productivity. They found that a microwave-radio telephone system installed in the remote region of Tumaca, Columbia, along with community access points resulted in better trade and market opportunities for the farmers. However, rural populations still face problems accessing necessary information that could help them in making timely and accurate decisions (Anandaraja, Rathakrishnan, & Philip, 2006).

ICT use in some developed countries started well before the advent of the Internet in the 1990s but they are now spreading to developing countries. Some of the key benefits of ICT applications in agriculture include reduction of transaction costs, online input procurement, electronic data interchange (EDI), better inventor control systems, improved supply chain coordination and market access, and transparency among others (Rao, 2006).

Allahyari and Chizari (2010) identified the potential of new information and communications technologies (ICTs) in agricultural and rural sector. They also found some drawbacks in getting information, such as the delivery of irrelevant information, a lack of coverage, a lack of avenues to improve performance, and a lack of accountability. Among farmers in developing countries there is a great dissatisfaction with prices and market information. For example, Islam and Gronlund (2007) found that 80 percent of farmers would go to some other market to sell their products if prices were better there.

ICT Adaption

Adoption of ICT is strongly associated with the education level of the farmer, farm size and negative effect of age of the farmers. Additionally, past research indicates that there is disparity in adoption between different sizes and types of farms (Warren, 2002). It is important to understand farmers' reasons for non-adoption first and then try to help the farmers address their questions to make them more confident adopting the technologies.

Gelb, et el, (2008) identified some reasons which hinder the process of adoption. They include, "lack of leadership and/or agents of change, the need to support effective and successful traditions concurrent with adoption of innovations, lack of end user and community involvement, lack of political will, conflicting interests, fragmented coordination among donors and failure to adopt participatory measures, uncoordinated strategy and policies, lack of funding, resources and start-up support and more (p-8)".

However, Gelb, Maru, Brodgen, Dodsworth, Samii, and Pesce (2008) argued that sometimes too much innovation can be an obstacle by blocking the use of older technologies that can often be more effective. Gelb and Bonati (1998) revealed that access to the Internet is very useful for present day agriculture. However, farmers are skeptical about the Internet and e-marketplaces (Cloete & Doens, 2008).

Diffusion Model and Bangladeshi Farmers

Farmers in Bangladesh live in the countryside where dissemination of agricultural information has been a major challenge due to lack of proper channels and means. To understand the access and use of information by the farmers this study has taken Roger's Diffusion of innovation (DoI) model as a theoretical framework. Diffusion of innovation is a field of research that investigates how new ideas spread within a population. It is the process by which an innovation is communicated through certain channels over time among members of a social system (Rogers, 1995).

The theory has been used to study instructional technology (Surry & Farquhar, 1997), information technology (Clarke, 1997) and diffusion of agricultural innovations (Rogers, 1995). The theory emerged in the mid-20th century from studies in several disciplines, including foundation studies on the adoption of agricultural production (Ryan & Gross, 1943).

The theory has been widely used to investigate diffusion of agricultural innovations (for example, Rogers, 1995; Kiplang'at, 2005). Thus the application of the theory to information and communication technology, and agriculture made it the most appropriate theoretical framework for this study. The theory tells us about the nature of the innovation, the communication channels, the characteristics of the social group, institutions and organizations (Lewis, 1997; Kiplang'at, 2005).

The process of information delivery and reception needs media literacy or education among the farmers. Infrastructure developments, such as reliable electricity, media access, better road and transportation systems, and links with the urban business district, are all primary underpinnings of information dissemination.

Diffusion research is focused on how the major elements of dissemination or dispersion relate to, facilitate, or hinder embracing of new products or practices among a social system of adopters. It provides a framework that may help information professionals and development experts understand the variation in the acceptance and use of agriculture related information and

innovations. It also provides opportunities to predict and account for factors that affect the dissemination of innovations.
In terms of applying this model to Bangladeshi farmers, it is important to remember that the country's economy is based mainly on agriculture. About 62 percent of the population is engaged in agriculture (BBS, 2006). Since agriculture is the top priority, the government has taken many initiatives to promote this sector. To reach the agricultural information in a feasible way the government created many online web portals. This study investigates how the diffusion of innovation theory or model is applicable for the farmers of Bangladesh.

The Bangladesh government, non-governmental organizations (NGOs) and many international organizations are partners in promoting the agriculture sector of the country. For that reason many agricultural implements are made for farmers and updated information is provided via a variety of online web portals. In spite of these efforts the condition of Bangladeshi farmers is yet to be changed. From the discussion of the diffusion of innovation model it is possible that a failure to adopt Internet based information sources may be the reason that the condition of Bangladeshi farmers has not improved. Thus, the current investigation attempts to determine where the farmers get their information, and the impact of e-information.

METHODS

Survey and in-depth interview data collection methods were used in this research. For quantitative data, a survey questionnaire was used to gather information from the respondents (farmers). An interview was carried out with some of the farmers and some agriculture extension officers (service providers) were also interviewed to assess their service patterns to the farmers. The survey was conducted to ascertain the farmers' present condition, especially their demographics and media usage, whereas interviews were conducted to assess the use of online information portals among Bangladeshi farmers.

Survey Questionnaire

The survey questionnaire attempted to determine the farmers' demographic and media usage. It was administered face to-face and was conducted in the Bangladesh districts of Munsiganj and Tangail. A total of 110 respondents participated in the surveys, 55 in each of the districts. The study used purposive sampling, where the researcher went to two districts and requested that farmers participate in the interview. The study purposely chose farmers of high, medium and low income, as well as high, medium and low education levels. All the respondents were male farmers.

The survey instrument asked farmers what type of mass media they use, the programs they watch on television, the way they find information about seeds, fertilizers, insecticide and market prices, and which medium they depend on for agricultural information. They were also asked questions concerning their use of online information portals.

Survey setting. The survey data was collected from different locations in the Bangladesh districts of Tangail and Munshiganj. Tangail is 100 kilometers away from Dhaka city and Munshiganj is 30 kilometers away from Dhaka. As the purpose of this study is to assess the

usage of online information portals by the famers of Bangladesh, this research attempted to collect data from different areas of the districts. Farmers were selected from the two Tangail district thanas of Sadar upaziala and Nagarpur upazila as well as the Sreenagar thana from Munshiganj district.

Survey sample/participants. The respondents of the survey were all male, since the culture is such that questioning females would have been deemed inappropriate. The respondents' age, educational qualifications and economic conditions varied. Participant ages ranged between 20 and 60. The respondents were divided into the educational categories of educated, literate and illiterate. At the same time they were categorized into the age categories of young, adult and old. Additionally, their personal wealth was categorized as rich, middle class and poor.

As the majority of the respondents in the rural areas were lower educated or illiterate, the researcher needed to probe and verbally explain the questions. Of the 110 respondents 55 were from Tangail and 55 were from Munshiganj. Also, in each district 18 were educated, 18 were literate and 19 were illiterate. The questionnaires were printed, allowing literate respondents to check their answer. For illiterate respondents the researcher read the questionnaire aloud and recorded the respondent's answer.

When approaching the respondents the researcher explained the importance of the survey and requested that they spend around ten minutes to cooperate with the work. If they agreed, a questionnaire was given to the respondent, who responded immediately. Colleagues of the researcher who lived in the two districts assisted in recruiting and administering the survey. No incentives were given to the farmers to encourage their participation.

In-depth Interviews

The study used in-depth interviewing as one of the main methods of data collection. The central concern of the qualitative research is to understand human experiences at a holistic level. This method of research can produce very precise and specific answers about an individual's experiences, opinions and motives, which quantitative methods have a more difficult time assessing.

For in-depth interview 25 farmers were purposely chosen, with 10 from Munshiganj and 15 from Tangail. The interviewees included farmers who were educated, literate and illiterate. As the survey questionnaire failed to get in-depth information regarding use of digital information sources, the researcher decided to conduct in-depth interviews with selected farmers. Upazila agriculture officers helped to locate farmers to represent the different categories, especially some who have made use of the Internet. For the in-depth interviews the researcher stayed seven days in Tangail and five days Munshiganj.

Farmers were asked how and from where they derive updated agricultural information, the way of cultivating their lands, and if their information sources were traditional or modern information technology? This study inquired whether the farmers have access to the Internet and what are the possible barriers for adopting Internet information sources. This research also investigated farmers' views about digital Bangladesh and e-agriculture, as well as the types of services

provided by the agriculture service providers. They were also asked about the sufficiency of the services. The farmers were also asked about their basic problems and what they actually need. The interviewer took notes and the interviews were recorded with audio tape for additional analysis.

RESULTS

This section discusses the first part of the findings of the research: the farmers' information sources. The section also examines the media farmers use to derive their desired information, the role of the agriculture service providers in disseminating information among the farmers, and barriers to dissemination they face.

E-information Service Center

In line with the government's plan to build digital Bangladesh as charted out in the vision 2021 progam, Prime Minister Sheikh Hasina launched Union Information Service Center (UISC) in November 2010. The USICs were developed in all 4,501 unions across the country under UNDP-funded A2I Program designed to give Internet connectivity access to rural Bangladeshis.

UISCs services include over 50 government forms, circulars, gazettes, birth registration, voter ID registration, agricultural information, social safety net information, public examination results, employment information, among others. Sirajul Islam, secretary of Atpara Union Parishad (UP) in Sreenagar, Munshiganj, who oversees the newly added 'E-information Service Center' in the UP office premises, said "November 17, 2010 Prime Minister Sheikh Hasina inaugurated the 'E-information Service Center at a time across the country." However, the Center did not get a computer and Internet modem for six months. Then they were instructed to hire two employees for the Center, but because the Center did not receive the funds to pay them regularly, the two left.

Though the service has been re-started, the use of the service has been very low. Some people come for birth certificates, inheritance certificates, visa related tasks and some for agricultural information. When asked why people do not come in for the services, he said, "People are yet to be informed about the service, it is just started and more campaigns need to carry on to make aware the village people including farmers about the matter."

Rashedul Hasan Badhon, computer operator of the Atpara Union Parishad (UP) E-information Service Center, said that he joined Center three months earlier. He also noted that few people come to the Center for service and most of the ones that do are farmers. They want to know about the good seeds, weather, and other agricultural information.

Types of Services Provided by Agricultural Officers

Agriculture extension officers provide different agriculture related information to the farmers. They practically show the farmers how to make an ideal seed bed, destroy insects, make compost fertilizers, recognize adulterate seeds, and how to derive modern information and technology in agricultural activities. Agriculture service providers reported providing all the updated

information on modern technologies to the farmers. Their prime task is to motivate the farmers for agricultural activities providing accurate information as well as possible technological support.

Agriculture Officer of Nagarpur upazila, Tangail, Anowar Hossain, said that they arrange visual training programs for the farmers. "We invite farmers to take part in our monthly or bi-monthly program, but all farmers do not respond our call. The farmers who come to our training program we teach them how to use ICT for agricultural information such as high yielding crops, how to cultivate land in proper way, making ideal seedbeds, how to control pest attack and use of technology in agriculture."

"In last 2 years we trained at least 5000 farmers in different programs in Nagarpur. Through our different workshops and meetings we motivated and inspired farmers to use new information and technology. Thus we brought a positive change in agriculture," he added. Services are the same across the villages both in Tangail and Munshiganaj. In Sreenagar Upazila of Munshiganaj district an agriculture officer Makbul Hossain said, "We are working for the betterment of farmers. I myself regularly go to the fields, talk with the farmers, observe their activities and give necessary directives to them."

Awareness about E-information Service Center at Union Level

The E-Information Service Center (Tottho Seba Kendro) has started information dissemination among farmers at Union level. All 12 Unions in the Nagorpur Upazila in Tangail have E-Information Service Centers and a few unions of Sreenagar in Munshiganj opened their Centers. The Center's co-coordinator said that due to lack of logistical support the process is yet to start in full swing. In Tangail, it was found that some people go to the Center to talk to their expatriate husbands, sons, fathers or other relatives with Skype or Yahoo messenger with cheaper call rates. But the objective of the Center is to provide agricultural information to the farmers.

Awareness and Knowledge about Agricultural Portal and Digital Bangladesh

The service providers reported that the use of the national portal is yet to be started in the district and Upazilla level. Using the website of Agriculture Information Service (AIS), Agriculture Ministry (MOU), and Department of Agriculture Extension (DIA) they provide agriculture related information to farmers. As the process of digitizing agriculture has only recently begun, e-agriculture is still at the conceptual level. As one official mentioned "Frankly speaking, I, myself, did not know anything about the National Web Portal. Besides, we are not being told anything about the portal from the Agriculture Department or Ministry."

Training Related to ICT and Internet and its Impacts

Shaikat Hassan, a Sub-Assistant Agriculture Officer (AASO) in Sreenagar Upazila of Munshiganj has been working as an AASO in Valpara area in the Upazila for five years. Among a total of 30 AASOs in the Upazila, Shaikat is one of the three who know how to provide Internet based information to farmers. He took part in a 21-day 'Computer Literacy and English

Language Course' organized by RPATC (Regular Public Administration Training Centers) in 2011.
Shaikat said he learned many things about modern agriculture from the training program, such as how to derive online information, how to disseminate that information to farmers, use of modern technology, and how to get optimum output from the fields. "Before taking part in the RPATC's training I merely know about e-agriculture and use of ICT in agriculture. But now, I know more than the past. I know the name of various websites which provide updated agricultural information to the farmers like Agriculture Information Service (AIS), Department of Agriculture Extension (DAE) and Ministry of Agriculture (MOA)."

Access to and use of Information

This study revealed that most of the farmers who participated in the study did not know about the online agricultural web portals due to lack of technological facilities, such as a computer and internet access, still they use other information sources.

Media Exposure

The survey found that 80 percent of farmers use mass media for agricultural information and entertainment. Among them 65 percent use television to get agricultural and other necessary information, 15 percent read newspapers, 12 percent listen to radio, 2 percent use the Internet and 6 percent use other media. Educated farmers use newspapers as well as television and radio as their sources of agricultural information, while illiterate farmers depend on television and radio for agricultural information.

The survey also found that farmers use television as a prime medium of gathering information, such as current market prices of various crops, seeds, fertilizers, insecticides and new innovations in agriculture. Farmers reported that they use radio, especially for weather updates and market prices.

In the in-depth interviews of the 25 respondents, 18 farmers said that they watch the agricultural program of Shykh Seraj (a popular agricultural program producer and presenter) on television. Additionally, the survey results found his program Mati-O-Manush was said to be very popular among the farmers. Farmers said that they can learn many new things from the Shykh Seraj program on BTV and Channel i. They said they learned the practical use of agricultural technology from those programs. Farmers from Sreenagar said a few months back Shykh Seraj came here and practically showed them the proper way of making seedbeds, planting seedlings, the way of harvesting and preserving seeds. This information helped the local farmers to be more attentive in their agricultural activities. Farmers reported that Shykh Seraj program inspired them to use ICT in their agricultural activities.

Farmers said that they get information about the market condition from their fellow farmers, (educated and experienced farmers) dealers, agriculture service providers, and local opinion leaders. Sometimes they visit the local market to know the market price.

Knowledge of ICT

This study found that the majority of the farmers do not have adequate knowledge about modern technology in agriculture. In most of the cases, the farmers perform all their agricultural activities in traditional ways. Some of the farmers want to apply new technology in their fields, but due to a lack of financial support they cannot afford to do so.

Harun-or-Rashid, 48, a middle class farmer possessing two acres of land of Khoiyagaon village under Sreenagar Upazila of Munshiganj, has been cultivating land for the last 15 years. He said, "I feel the necessity of information technology. But it is not available for us. As for example, if I wish to get a computer it is not possible for me. How can it be possible for me to buy a computer spending 20,00tk ($270)?"

This research found that some farmers of Munshiganj do not think that ICT is necessary for agriculture. Farmers reported that it does not bring extra production for them. However, in some villages of Tangail they have set up ICM and IPM clubs where farmers collect updated information using the Internet. But the farmers don't have direct access to the Internet. In this case local educated youths help them to acquire the information.

Arun Kumar Saha, 50, native of Shologhar of Sreenagar, said, "In the past cultivating my 10 acres of lands in traditional way I produced utmost 300 maunds of IRRI paddy but now using ICT I can produce more than 1200 maunds of paddy in the same amount of lands. In previous time I was not aware about how to properly cultivate the land and do not pay heed the suggestions given by the service providers."

Use of Internet

Most of the farmers do not have any idea about the Internet. Recently with the support of Agriculture service providers, Internet based information dissemination processes have been started among a very limited number of farmers in Tangail. But farmers are yet to get the facility with direct access to Internet, as most of the rural farmers do not have institutional education and technical knowledge.

Most of the farmers mentioned they have no concept or idea about the Internet. Recently, they have been informed by the agriculture service providers about the Internet. Farmers reported that extension workers told them about the Internet. They said that using Internet would enable them to get all kinds of updated agricultural information. A few of the educated farmers are familiar with the Internet, but they have no direct access to it.

A sexagenarian farmer of Tangail mentioned, "Earlier we got agri-information from the service providers. At present we get it from the Internet. Though I do not know how to browse the Internet but one of my sons helps me to get it. When I get any new information I disseminate it to my fellow farmers by the multimedia. At the end of the month we arrange a meeting of ICM (Intensive Crops Management) club members." Farmers reported they do not get service providers when they are needed. If farmers learn to use the Internet then the dependency on service providers will be reduced.

Problems of the Farmers

The price of paddy and other agricultural products are very low but there is a high cost for seeds, fertilizer, insecticides and oil. To buy a sack of fertilizer farmers have to sell two maunds of paddy. Those problems and lack of capital are some of the problems that farmers face regularly. Most farmers cannot cultivate their land on time due to lack of capital. They do not get loans when they need them and when farmers do receive loans they have to pay high interest rates. Additionally, agricultural loans are not available for poor and middle class farmers. Bank loans are only available for the farmers with the largest amount of land.

Tarapoda Das, a farmer of Shologhar in Sreenagar, said, "In our land, we can produce crops only one time in a year. But many parts of the country produce three crops in a year. Agriculture department should have eyes on this matter. We do not need information. We want to know the tactics of cultivating our land at least two times in a year"

Khalilur Rahman, a farmer of Nagarpur said "I am not being benefited by cultivating or producing crops because I have to count losses every year. I cultivate my land just from the passion."

Demands of the Farmers

Farmers demanded rapid dissemination of agricultural information. They reported that service providers should be more skilled. Some agricultural service providers do not have updated information and technology. They cannot provide information when it is needed. Abdul Hakim, a farmer of Shologhar in Sreenagar, said in some cases their anticipation and suggestions are aborted as a result. He argued that if farmers can turn to the Internet for information, their many problems would be solved. However, most of the farmers cannot afford to buy a computer. They demanded that the government provide them a free computer and Internet connection so that they could benefit from the digital agricultural information.

A disappointed farmer, Harun-or-Rashid, 40, of Khaiyagong of Sreenagar, said, "We do not need the information or technology. We need available fertilizer in cheap rate, insecticide and fair price of crops, especially paddy. This is the time to rein the monopoly fertilizer business of dealers and abolition of middlemen."

Internet Changes their Lives:

While Internet service is not available in some of the villages, some educated and trained farmers are starting to use the Internet and have changed their agricultural activities. Shahidul Islam, 36, a farmer of the village of Kathuri under Nagarpur Upazila, said that from the Internet they come to know about the various diseases of paddy, their prevention and remedy. As a result, the production of crops has been increased and became financially beneficial. He has no direct access to the Internet but with the support of local educated youth he tries to access updated agricultural news, such as market condition, price of seeds and any new crop innovations.

Abdur Rahuman, 66, of Kathuri village, said, "Earlier I got the agricultural information from the service providers. At present I get it from the Internet. One of my sons helps me to get it. When I get any new information I disseminate it to my fellow farmers."

Saiful Islam, 62, a share cropper said, earlier he derived agricultural information from the service providers. But for the last four months he is getting information from the Internet. Though the government of Bangladesh has created many online portals for the farmers, they still have no direct access on those portals. They use other information sources, such as television, radio, newspaper, fellow farmers, and agriculture service providers.

CONCLUSION

Formal education and training are important for the farmers to adopt ICT in agriculture (Ballantyne, Maru, & Porcari, 2010). The uses of online information sources depend on farmers' education, financial condition and size of land. The farmers who are rich and produce a large amount of crops are more conscious about applying ICTs in their agricultural activities. Age and education are also major factors of using online information in agricultural activities. This study found that comparatively young and educated farmers are interested in using new information and technology in their fields for agricultural production. Also, most older farmers are nonchalant about using ICT in agricultural activities. They feel more comfortable cultivating their land, planting saplings, harvesting crops and preserving crops in their traditional way.

An important finding of this study is that farmers are not concerned about using ICT or online information sources. Instead, they are worried about the high price of seeds, fertilizers, insecticides, fuel and transportation. Farmers said they do not need information. They need availability and fair prices of seeds, fertilizers as well as on time irrigation. Farmers are anxious about the incessant increase of fertilizer and fuel prices. There appears to be little understanding that information may help to reduce costs and increase production.

Farmers are not getting a fair price for their products. Selling two sacks of paddy will not allow the farmer to buy one sack of fertilizer. They are disgruntled about the monopoly of seed and fertilizer markets, as these markets are manipulated to keep prices high. As markets are monopolized by a few people, farmers don't have any bargaining power. Farmers have to buy the agricultural products at prices fixed by the traders. The price of fuel is increasing sharply, and that is throwing farmers into darkness. Without financial solvency, farmers have to till their land by hiring a tractor and if the price of oil increased then tractor costs are also increased.

Farming in Bangladesh is at the mercy of nature. Every year various natural calamities hit across the country causing farmers lose their crops and capital. The situation is worse for rural Bangladesh, where illiteracy and lack of access to communications are a big problem that hinders farmers. Additionally, villagers are yet to receive consistent electrical service and the literacy rate is not high. With these logistical problems, the use of modern information and technology is simple rhetoric for most Bangladeshi farmers.

The use of ICT among Bangladeshi farmers is yet to be expanded, though the government and many NGOs have been trying to provide ICT support to farmers for promoting their agricultural

activities. However, because of the many problems mentioned earlier, the use of ICT in agriculture has yet to be adopted. The diffusion of innovation model helped this study to investigate why innovation did not properly diffuse to the farmers in spite of government and different stakeholders' efforts. Poor farmers usually do not have access to new information and technology.

Rural populations still face problems accessing necessary information that could help them in making timely and accurate decisions (Anandaraja, Rathakrishnan, & Philip, 2006). To access online information farmers need computers and Internet connections, but most of the farmers cannot afford to buy a computer. Moreover, broadband Internet connection in rural Bangladesh is limited. Buying a computer along with Internet modem and paying the associated charges is beyond the means of most farmers. As a result, in spite of the desire to use ICT in agriculture, farmers cannot afford it.

Farmers reported that main sources of their agricultural information are radio, television, agricultural extension officers, local markets, local opinion leaders and their fellow farmers. Among 25 respondents of in-depth interview of the two districts nobody was found who has direct access to the Internet. In Tangail, some farmers set up ICM (Incentive Crops Management) and IPM (Incentive Pest Management) clubs where farmers get updated agricultural information via the Internet accessed by some local, educated youths.

The research found that the farmers cannot use agricultural messages given to them by the agriculture service providers due to a lack of education, which hinders the development of agricultural practices. The farmers are reluctant to adopt any new technology or information until they are able to determine its benefit. This is one of the major barriers to adoption of innovation by the farmers.

RECOMMENDATIONS

To insure the use of information sources by the farmers some rigorous initiatives should be taken, such as helping them to analyze their problems and identify opportunities, illustrating the significance of using online information, and supporting group formation and facilitating collective action. As a large number of farmers are illiterate, the government should develop a large-scale program of education for them should be undertaken to provide them with reading skills that would enable them to access agricultural information on the Internet.

The basic equipment needed for gathering online information are a computer and Internet connection. To operate the computer reliable electricity service is necessary. But most of the villages are yet to receive electricity facilities. Besides, a major portion of farmers are poor and are unable to afford a computer and Internet modem with a broadband connection. Thus, the government should undertake initiatives to provide computers with Internet access in all villages.

The main problem of the village farmers is getting a fair price for their products and reasonable costs for seeds, fertilizers, insecticides and oil. Farmers will be more likely to adopt new ICT in farming practices if costs and prices are favorable. Additionally, it is important for farmers to see

how adopting this new information can help them to reduce costs, increase profits and increase crop production rates.

REFERENCES

Ali, A. H. (2002). *Development: communication perspective, media and society,* Dhaka: Srabon Publication, p. 243.

Allahyari, M.S., & Chizari, M. (2010). Potentials of New Information and Communication Technologies (ICTS) in Agriculture Sector. *Journal of Agricultural Science and Technology, 4*(4), 115-120.

Anandaraja, N., Rathakrishnan, T., & Philip, H. (2006). *Dissemination of agricultural technologies through interactive multimedia compact disc (IMCD): An innovative approach.* Paper presented in Computers in Agriculture and Natural Resources, 4th World Congress Conference. Orlando, Florida USA. 24-26 July.

Asensio, M (2003). *JISC user requirement study for moving pictures and sound portal.* Center for Studies in Advanced Learning Technology, Lancaster University.

Ballantyne, P., Maru, A., & Porcari, E.M. (2010). Information and communication technologies opportunities to mobilize agricultural science for development. *Crop Science, 50*, 63-69.

BSS (2006). *Statistical Yearbook of Bangladesh*. Bangladesh Bureau of Statistical. p. 111.

Bhuiyan, A. J. M (2004). Universal Access in Developing Countries: A Particular Focus on Bangladesh. *The Information Society, 20*(4), 269-278.

Browning, P. (2003). Avoiding portal wars. Retrieved from http://slideplayer.us/slide/777002/

Clarke, R. (1999). A Primer in Diffusion of Innovations Theory. Retrieved from http://rictime.com/cricket_live_streaming_free_7.htm.

Cloete, E., & Doens, M. (2008). B2B e-Marketplace adoption in South African agriculture. *Information Technology for Development*, *14*(3), 184–196.

Eid, N. (2008). What is web portal and what types of portals. Telecentre Foundation. Retrieved from http://community.telecentre.org/profiles/blogs/what-is-a-web-portal-and-what.

e-Krishi vision 2025. (2008). Access to Information Programme, Bangladesh. Retrieved from http://a2i.pmo.gov.bd/sites/default/files/resource_docs/e-Krishi%20Vision-2021.pdf

Gelb, E., Maru, A., Brodgen, J., Dodsworth, E., Samii, R., & Pesce, V (2008). Adoption of ICT enabled information systems for agricultural development and rural viability. *The Global forum on agricultural Research*. Pre-conference workshop summary.

Gelb, E. M., & Bonati, G. (1998). Evaluating Internet for extension in agriculture. *Journal of Agricultural Education and Extension*, *5*(3), 211-216.

International Telecommunication Union (2009). Measuring Information Society – The ICT Development Index, International Telecommunication Union, Geneva.

Islam, M. S. (2009). E-Agriculture in Bangladesh: A spatial skeleton demanding. Telecentre Foundation. Retrieved from http://community.telecentre.org/profiles/blogs/eagriculture-in-bangladesh-a.

Islam, M. S., & Gronlund, A. (2007). Agriculture market information e-service in Bangladesh: A stakeholder-oriented case analysis. Lecture Notes in Computer Science. 4656, 167-178.

Kiplang'at, J. (1999). An analysis of the opportunities for information technology in improving access, transfer and the use of agricultural information in the rural areas in Kenya. *Library Management, 20*(2), 115-127.

Kiplang'at, .K.(2005) Diffusion of information and communication technologies in communication of agricultural information among agricultural researchers and extension workers in Kenya. *South African Journal of Libraries and Information Science, 71*(3), 234-246.

Kizilaslan, N. (2006). Agricultural information systems: A national case study. *Library Review, 55*(8), 497-507.

Lewis, G.A. (1997*). Leadership products as innovations in context of Rogers' Diffusion Theory*. Ph.D. dissertation. Virginia Polytechnic Institute and State University Retrieved form http://scholar.lib.vt.edu/theses/available/etd-11997-1767/unrestricted/ETD.PDF

Lio, M. & Liu, M. (2006). ICT and agricultural productivity: Evidence from cross-country data. *Agricultural Economics, 34,* 221-228.

O'Leory, M. (2000). Grading the library portals. *Online.* Retrieved from http://www.infotoday.com/online/OL2000/oleary11.html

Rahman, M. Golam (1999), *Communication Issues in Bangladesh,* Har-Anand Publication Pvt. Ltd and Paragon Publisher, Dhaka, Bangladesh, p. 26.

Rao, N. H. (2006). A framework for implementing information and communication technologies in agricultural development in India. *Technological Forecasting & Social Change*, *74*, 491–518.

Rogers, Everett M. (1995). *Diffusion of Innovations*, (Fourth Edition). New York: The Free Press.

Ryan, B., & Gross, N. C. (1943). The diffusion of hybrid seed corn in two Iowa communities. *Rural Sociology, 8*, 15-24.

Shahbanali, F.M., Falaki, M., Iravani, H., & Mohammadi, M (2009). Principal area of applying information and communication technologies in agricultural extension system of Iran. *Journal of Agriculture & Food Information, 10*(3), 247-258.

Sarma, B. B. (2009). Thoughts on 'Digital Bangladesh' (materializing the program. Social Science Research Network. Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1426379.

Singh, R (1999). *Media and Agricultural Development Problems and Perspective'* Edited by-M.R Dua and V.S Gupta, Media and Development, India.

Stienen, J., Bruinsma, W. & Neuman, F. (2007). How ICT can make a difference in agricultural livelihoods. *The commonwealth ministers book-2007.* Netherlands: International Institute for Communication and Development.

Surry, D. W. & Farquhar, J. D. (1997). Diffusion theory and instructional technology. *Journal of Instructional Science and Technology*, *2*(1), 24-36.

Tekin, A. B. (2011). Information and communication technology: an assessment of Turkish agriculture. *Outlook on Agriculture, 40*(2), 147–156.

Todaro, M.P. (2000), *Economic Development (first edition)*. Addison Wesley Longman Inc., pp. 363-375.

Tripp, R. 2001. Agricultural technology policies for rural development. *Development Policy Review 19(4),* 479-489.

Warren, M.F. (2002). Adoption of ICT in agriculture management in the United Kingdom: the Intra-rural digital device. *Journal of Agricultural Economics, 48*(1), 1-8.

Winrock International. (2003). Future directions in agriculture and Information and Communication (ICT) at USAID.

Zaman, Z. (1987). *Educational research methods & technique*, Dhaka.

This page has been intentionally left blank.

REGULATION AND EMPLOYMENT: THE IMPACT OF SARBANES-OXLEY ACT ON DEMAND FOR ACCOUNTING AND AUDITING SERVICES

Vijay K. Vemuri, Quinnipiac University, CT, USA
vkvemuri@quinnipiac.edu

Nelson Alino, Quinnipiac University, CT, USA
nelson.alino@quinnipiac.edu

ABSTRACT

Prior studies have identified several interacting forces that are shaping the demand for accounting and auditing services. Chief among these forces are technology and regulation. One group of studies argue that technology driven by automation, artificial intelligence, and robotics has been a major force in the diminishing demand for humans in certain professional and service oriented jobs. Accounting and tax filing software are ubiquitous and appear to be replacing trained accountants and exerting downward pressure on the demand for accountants and tax preparers. The Sarbanes-Oxley (SOX) Act, especially section 404, requires increased disclosures and compliance by publicly and privately held companies. Several studies point to the increased hiring of accounting professionals as contributing to the high cost of compliance with SOX regulations. In light of this conflict in opinion, and relying on prior evidence of the demand reducing effect of technology, this study investigates if there is a structural change in demand for accounting and auditing services in the SOX regime proposing the year 2003 as a breakpoint. We use several breakpoint tests and forecast failure tests for this investigation. The most compelling evidence for upward shift in accounting and auditing employment due to SOX regime is provided by the Quandt-Andrews test. This test not only concluded that there is an upward structural shift during the SOX regime, but it also identified the year 2003 as the most likely breakpoint. We suggest several extensions of this study to include a test of the interacting effect of the two arguments.

Keywords: Sarbanes-Oxley Act, Section 404, demand for accounting services, structural changes, breakpoint tests, Chow test, Quandt-Andrews test, Forecast failure test.

INTRODUCTION

The demand for accounting services is not immune to technological progress. The forces that are transforming the workforce in the United States are exerting even stronger, and swifter influence, in reshaping the employment opportunities of the future. The rapid advances in computer hardware, software, networks, automation, artificial intelligence, and robotics are forever changing the labor market. In the late 20th century the effect of technological progress on employment was mainly on low-skilled office jobs and blue-collar workers in factories and other settings. Office automation, computers, and networks made it possible to replace low-skilled clerical staff, and factory automation and advanced manufacturing techniques displaced many blue-collar jobs. During the past two decades a major recommendation for displaced workers is to acquire more education and update their skills.

TECHNOLOGY AND DEMAND FOR ACCOUNTING SERVICES

In the past, unemployment created by technology is solved by the technology itself (Duernecker, 2014). Higher education and an upgrade of job skills enabled displaced employees to shift into new technology jobs. New fears of technology replacing human jobs have, however, once again taken the center stage. Brynjolfsson and MacAfee (2011) argue that despite increases in worker productivity in the U.S., employment has not increased. Until the year 2000, productivity and employment in the U.S. economy have increased in unison. Since then U.S. employment remained flat, but productivity remained on its upward trajectory. Brynjolfsson and McAfee (2011) interpret this disconnect as a new reality and project a gloomy future for U.S. employment. They offer advances in artificial intelligence, automation, and robotics as the main reason for their predictions and they expect stagnant earned incomes and growth in economic inequality. Their evidence includes Google's driverless cars, IBM's artificial intelligence machine Watson, and Rethink Robotics' industrial robot Baxter. Both office and factory jobs requiring tedious, repetitive, dangerous, and extraordinary physical or mental skills can be delegated to machines with artificial intelligence and robots. They predict that the decline in employment is not just limited to manufacturing jobs moving to China, but that even white-collar and professional and technical jobs are not immune to permanent job losses.

The recently published "Rise of the Robots and the Threat of a Jobless Future" by Martin Ford (2015) succinctly summarizes his conclusions in the title. The winner of several awards and a bestseller, the book has stark predictions for future employment prospects. Ford admits that past technological changes have greatly improved standards of living and increased employment, wages, and wealth almost universally. He argues that this time, with robots, it will be different. His dark predictions are based on 1) scientists' prediction that 47% of current jobs can be automated, 2) the current trends in labor market such as stagnant wages, increased wage disparity, falling labor share of national income, and rising unemployment are all due to increased automation, 3) falling prices of computers and increased processing power can make it more attractive to replace human workers with robots, and 4) the current technological progress in artificial intelligence as evidenced by Google's self-driving cars, IBM's Watson, cognitive computers, and flexible and adaptive Baxter robot. According to him, robotic technologies are different from previous technological innovations. The problem is that robots will be too intelligent, easily programmable, and can perform too many tasks and they will take all the jobs away from humans. Unlike the past, where technology is the solution, Ford suggests massive changes to the current economic system to cope with the job losses anticipated by the advancement of robotics and artificial intelligence. The current system of rewarding the returns of technological innovation exclusively to businesses and investors will result in a catastrophe. More education and skills upgrade will not solve problems faced by displaced workers. Ford sees that the only solution to this potential catastrophe is restructuring the economic system.

The fear that software will replace accountants has been a dominant theme for job market prognosticators for many years. The conventional wisdom is that tax preparation software will make human accountants preparing income tax filings a thing of the past. Caron (2011) in the *New York Times* suggests that accounting jobs will be replaced by software. A recent *Economist* article (Anonymous, 2015) lists the probability of job losses due to computerization in accounting and auditing occupations at 94%, a figure lower only to that of telemarketers. The statistics are in turn

based on the Frey and Osborne (2013) study listing this probability for the Bureau of Labor Statistics' occupation code 13-2011, the same occupation code analyzed in this study. They predict the probability of job losses for bookkeeping, accounting, and auditing clerks at 98%.

Despite these gloomy predictions, the latest study of enrollment and hiring by American Institute of Certified Public Accountants (2015) finds that hiring by public accounting firms increased by 7%, reaching record levels. Almost all respondents expect the trend to continue. Enrollments in accounting programs are also at record levels and most educational institutions are expecting a steady increase in undergraduate and master's programs.

How do we reconcile the gloomy predictions of future demand for the accounting profession and the current surveys that report a healthy demand and forecast for accounting services? A first explanation for the incongruency of these two predictions is that the prediction horizon is vastly different for these two forecasts. Brynjolfsson and McAfee (2011), Ford (2015), and Frye and Osbourne (2013) are making projections of labor markets several decades into the future, whereas the AICPA (2015) assessment of the current reality has a much shorter forecast horizon. The incongruency is resolved as both forecasts may be valid for their respective time horizons. Secondly, the bleak forecasts of employment probably commit the fallacy of composition arising from inferring about the whole (economy) based on what is observed for some part of the whole [one, or few business(s)]. This logical fallacy goes as follows: If I and everybody I know use tax software to file income taxes, everybody in the United States must also be using tax software to file their taxes. Hence no future need for human tax preparation. Finally, Van Reenen (1997) points out that ignoring the output expansion effect may lead to wrong predictions for future labor demand. That is, technology may reduce the labor inputs needed to generate a given level of output, but technological innovation is also expected to increase the level of output due to its effect on cost, quality, and customizability of products.

The recent work by Bessen (2015) offers hope that technology will not reduce employment, but rather will create opportunities for employment of new skills. In his view information technology is displacing workers not replacing them. Using U.S. Bureau of Labor statistics, he dispels the notion that technology replaces jobs. Despite a large growth in automatic teller machines (ATM), employment for bank tellers increased by 123,440 jobs during the years between 1999 to 2009. Contrary to conventional wisdom, an increase of 300,000 ATMs during that period did not reduce the demand for human tellers. In fact, there was an increase in the number of human tellers. Armchair theorizing would have suggested a drastic decline in employed bookkeepers and accounting and auditing clerks due to the widespread use of accounting and tax filing software. On the contrary, during the 11-year period between 1999 and 2009, the demand for these occupations increased by 138,000.

SARBANES-OXLEY ACT AND DEMAND FOR ACCOUNTING SERVICES

Financial scandals, corporate excesses, and executive greed led to the collapse of several multibillion-dollar companies in the early 2000s. The implosion of Enron, WoldCom, and Tyco during that time rattled investor confidence in the accounting and auditing profession. Without investor confidence in the financial reporting process, the capital markets may not function efficiently. The bankruptcy of Enron, once valued at U.S. $70 billion, had a major impact on the

credibility of the accounting profession. Criticism of U.S. disclosure practices and the competence and integrity of independent auditors intensified (Thomas, 2002).

Congress enacted the Sarbanes-Oxley (SOX) Act of 2002 in response to these corporate scandals and in order to rebuild the public's trust in corporations. President George W. Bush signed the SOX Act, officially named the Public Company Accounting Reform and Investor Protection Act of 2002, into law on July 30, 2002. SOX has had a far-reaching impact on the accounting profession. The SOX regulations require increased disclosures and compliance by publicly and privately held companies. Foreign companies that listed on U.S. stock exchanges must also comply with the regulations. Even not-for-profit organizations have to comply with two provisions that prohibit retaliation against whistleblowers and destruction, alteration or concealment of certain documents or the impediment of investigations.

Some of the important provisions of SOX are listed below. Coates (2007) provides more details.

- Establishes the Public Company Accounting Oversight Board.
- Prohibits auditing firms from performing specified non-audit services to audited companies.
- Requires senior management to certify the accuracy of annual and quarterly financial reports. Requires the SEC to review every public company's financial statements at least once every three years. Mandates "real time" disclosures of material changes in the financial condition or operations of an issuer.
- Requires disclosure of off-balance sheet transactions.
- Establishes protection for whistleblowers.
- Requires management to assess the effectiveness of internal controls over financial reporting and auditors to attest to management's representations.

The last provision, refereed to as Section 404 of SOX, has important impact on the demand for accounting services and accounting employment. Section 404 requires issuers financial statements to publish information in their annual reports about the scope and adequacy of the internal control structure and procedures for financial reporting. This statement should also assess the effectiveness of such internal controls and procedures. In addition, the audit firm, in the same report, should attest to and report on the assessment on the effectiveness of the internal control structure and procedures for financial reporting.

The Public Company Accounting Oversight Board (PCAOB), which was created by SOX act to oversee the auditing profession, has adopted standards requiring audit firms to disclose 1) internal control test methodology and results; 2) material weaknesses not disclosed by a firm's officers; and 3) whether a system is effectively providing the required reasonable assurances. Coates and Srinivasan (2015) conduct a meta-research of costs and benefits of SOX legislation. They review over 120 research studies and summarize that the quality of corporate financial reporting has improved. Although the costs of compliance due to SOX are substantial, on the positive side, they are declining. Coates and Srinivasan did not find convincing evidence for expected negative consequences of SOX legislation. In particular, their research did not find evidence of reduced initial public offerings, reduction of foreign listings, and reduction in risk-taking by American businesses.

Cost of complying with SOX. A very important provision of SOX is Section 404, which requires management to report on internal control structure and procedure and the auditor's to attest the report. The cost of compliance with SOX legislation is often its main criticism (Coates and Srinivasan, 2015). Section 404 compliance costs are grouped as 1) Section 404 audit costs; 2) outside vendor costs; 3) internal labor costs; and 4) non-labor costs (Krishnan, Rama, and Zhang, 2008). A 2009 SEC survey (SEC, 2009) reports the average SOX Section 404 annual compliance costs for the year 2007 as follows (rounded to the nearest '000s): 1) audit costs US$650,000; 2) outside vendor costs $311,000; 3) Internal labor costs $1,347,000; and 4) non-labor costs 138,000,; resulting in a total cost of U.S. $2,330,000. These costs are for section 404 compliance only and do not include non-section 404 audit fees. These numbers are averages and they depend on the size of the reporting firm. The total section 404 compliance costs for the companies with float less than $75 million, between $75 million to $700million, and over $700 million are $690,000, $1,011,000, and $3,986,000, respectively. Many other studies report costs similar to that of the SEC study. The Financial Executives International study (FEI (2005)) reports incremental annual audit fee for large companies at $1.3 million and annual internal and external labor costs of section 404 compliance at $ 3.1million. Other surveys report compliance costs similar to the figures provided here (Coates and Srinivasan, 2015).

The additional expenses and additional demand for accounting services are not limited to section 404 requirements. The annual budget of the PCAOB for the year 2014 is over $235 million and the broker-dealer auditor inspection program and other inspection-related activities account for a significant portion of the budget. Nearly 60% of the budget is for registration and inspections, and enforcement. A major component of PCAOB's activities requires accounting and auditing services. Nearly 80% of the PCAOB annual budget is for personnel costs (PCAOB, 2014). SOX also has had an impact on the SEC budget and the hiring of accounting professionals. The fiscal year 2003 appropriations were $278 million higher than for year 2002 (the year of the SOX act enactment).

The additional funding was used to hire 842 new staff to 1) review financial statements of each registrant once every three years; 2) provide enhanced enforcement programs; 3) review investment advices; and 4) conduct broker-dealer and branch-office examinations (Donaldson, 2003). Coates and Srinivasan (2015) provide details of the levels and trends of the PCAOB and SEC budgets as a consequence of SOX. SOX has generated additional demand for accounting and auditing services from many sources: domestic and foreign business enterprises trading in the U.S. capital markets and subject to SOX regulations; auditing firms with clients subject to SOX regulations; and regulators, including the PCAOB and SEC. Based on the cost estimates provided in this section, the impact on additional accounting and auditing services is significant.

RESEARCH QUESTIONS

Previous sections provided detailed arguments for new forces shaping the demand for accounting and auditing services. Technology driven by automation, artificial intelligence, and robotics diminish the need for humans providing these services. Prognosticators provide widespread use of tax filing software and accounting software, and the general agreement that accounting and auditing services are among the services most affected by the technology. As argued in the previous section, the SOX regulation is creating significant demand for SOX-related compliance work.

These two shifts – technology and regulation – are exerting opposing forces on accounting employment. What is the net effect? Will they be offsetting or which affect will prevail? There is little evidence, beyond enrollments in accounting programs and hiring by public accounting firms (AICPA, 2015), available to show how these forces are shaping the demand for accounting services. In this study we analyze data from the U.S. Bureau of Labor Statistics and U.S. Bureau of Economic Analysis to investigate whether SOX has a significant affect on the demand for accounting services. The focus of this research is the investigation of possible structural change in the SOX regime starting in the year 2003. A problem we need to resolve is what the effective date of implementation of SOX is. This simple question has very complicated answers. A very broad answer is that the SOX filings apply to the semi-annual or annual financial statements due after August 14, 2003. However, the first filing day is affected by many factors including 1) whether the filer is of domestic or foreign origin; 2) whether the filer is classified as an "accelerated filer;" 3) whether the filer is a registered investment company; 4) the market capitalization of the company; and 5) the disclosure requirements of Section 404 of the SOX act. For a certain large class of filers, the first SOX compliance begins at the fiscal year ending after August 14, 2003. Even more complications arise in determining the effective date because of the SEC's changes to the first compliance date of SOX filings. Iliev (2010) provides further details on the complexities of determining the dates of the first SOX compliance filings. In our study we consider years up to 2002 as the pre-SOX regime and 2003 and later as the post-SOX regime. There are several reasons for this choice. First, many companies filed SOX Section 404 complaint disclosures in 2003. Second, almost all companies started reacting to the disclosure requirements of Section 404 by revamping their internal control and accounting reporting systems in the year 2003. Another overwhelming evidence is that the SEC's budget appropriations increased by nearly 45% in the year 2003, mainly to handle increased investigation and enforcement actions due to SOX. To summarize, this study investigates if there is a structural change in the demand for accounting and auditing services in the SOX regime starting in the year 2003.

METHODOLOGY

To understand the effect of the SOX act on the demand for accounting services, we test for structural changes in the regression function explaining the employment of accountants and auditors in the pre- and post-SOX regimes. The effective date of SOX varies according to the the sections of the SOX act. Important provisions of SOX are Section 404(a), which require an internal control report by management discussing the effectiveness of the company's internal control structure and procedures for financial reporting, and Section 404(b), which requires that the auditor's report on the effectiveness of the company's internal controls. For large publicly held corporations, Section 404 is effective for the fiscal years ending in late 2003. Based on these effective dates, we consider years 2002 and before as the pre SOX regime and 2003 and after as the SOX regime.

The methodology of the study consists of building a model for annual accounting and auditing employment levels and testing if there is a structural change in the model due to the SOX regime. The date of the structural change is considered the breakpoint in accounting for the structural change. At a very abstract level the study investigates if there is a breakpoint in the year 2003 in the regression function estimating the demand for accounting and auditing services. This question can be investigated at varying levels of sophistication. A simplistic approach uses a dummy

variable regression to account for the structural break. A dummy variable allows for a shift in the levels in the response variable, but the effect of explanatory variables on response remains the same in both regimes. A more general approach allows for both levels (intercept) and the effect of explanatory variables (slopes) to vary across the regimes. In effect, two separate regressions are run for each regime. If there is no structural change in the regression function, both intercept and slope should be the same in both regimes. This comparison is implemented as a Chow test. The idea of the Chow test is simple. Run separate regressions for each regime and compare the combined sum of squared errors with the sum of squared errors of single regression for the entire period. If the two separate regime regressions considerably reduce the error sum of squares, appropriately adjusted for degrees of freedom, the assumption of structural change is supported. The Chow test statistic has a standard F distribution and we can easily test for structural change.

The first complication arises if the time periods in either regime are not sufficient for a separate regression models. In these circumstances Chow's predictive failure test will help. In this test, the sum of squared regression errors for a regression covering the entire sample period is compared with the squared regression errors for the model fit only for the longer subperiod. Comparing this ratio, after making the degrees of freedom adjustments, standard F statistic, provides the appropriate test for detecting parameter instability. If the longer regime happens to be more recent, the test uses the more recent data to "backcast" to earlier data.

Another significant enhancement to Chow's breakpoint test is the Quandt-Andrews breakpoint test, where the date of breakpoint is not assumed. Instead, every period in the substantial middle portion of the sample period is tested for a possible breakpoint and log likelihood and Wald statistics are computed. That is, every period during the sample period of the data is a potential breakpoint and Chow's F-statistic is computed for every one of the potential breakpoints. Unlike in the case of Chow test, now we have a proliferation of test statistics. Quandt-Andrews test combines all these test statistics three different ways: 1) maximum of the individual F-statistics (called Max-F, or sup Wald Statistic); 2) sum of exponential transformations of individual F-statistics; and 3) simple average of these statistics. These three summary statistics do not have standard F-distribution. However, select econometric software provides asymptotic distributions based on published results. An important strength of the Quandt-Andrews test is its ability to detect potential breakpoints, test them for significance, and identify the most likely breakpoint. These three test results within the Quandt-Andrews test, combined with identifying 2003 as the most likely break date should give the strongest evidence that SOX act has significantly altered the demand for accounting services and that there is a structural changes in the demand for accounting services.

DATA AND DATA SOURCES

The data for the study is obtained from two sources, 1) the U.S. Bureau of Labor Statistics and U.S. Bureau of Economic Analysis. Occupational Employment Statistics (OES, 2015) for accountants and auditors were obtained for the years 1997 to 2014. These detailed statistics are not available for years prior to 1997. Several aggregate statistics for the U.S. economy were obtained from BEA, 2015. The following table summarizes the data items we have analyzed and their sources. Due to the high degree of collinearity between the variables, not all data were utilized in the models analyzed.

Table 1. Data Sources

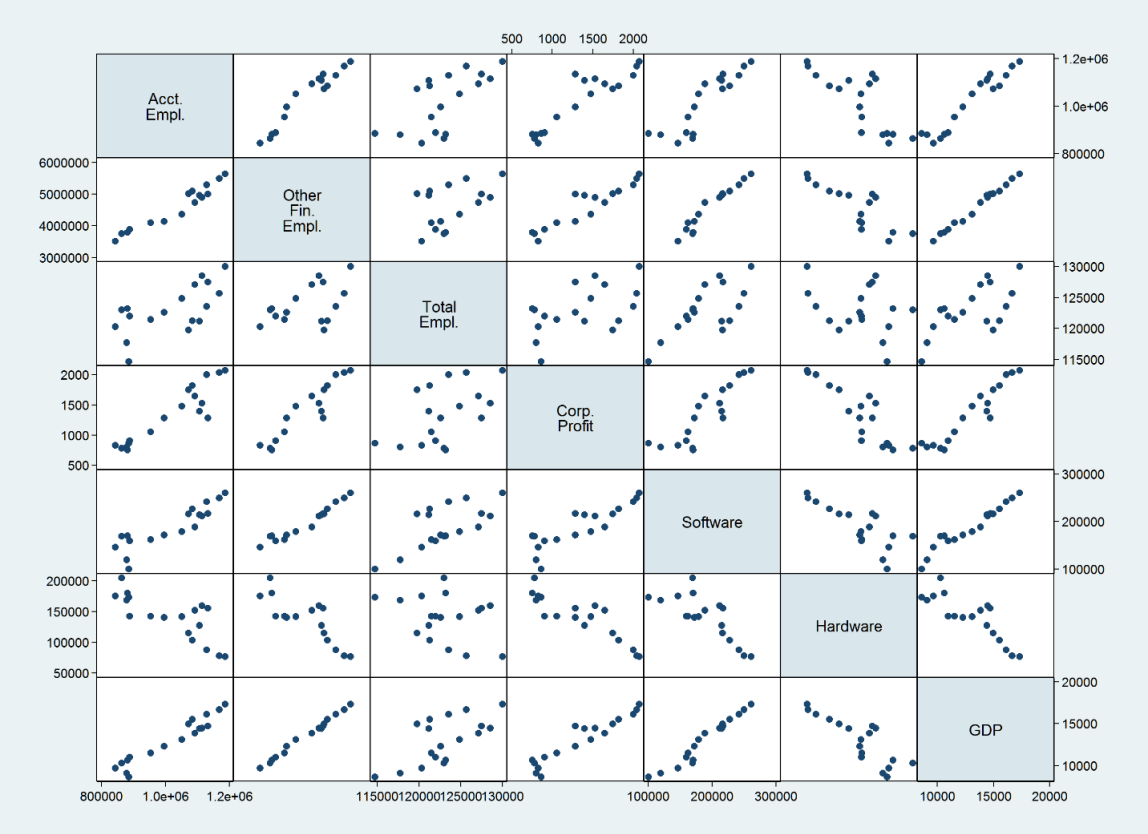
Variable	Description	Data Source
lacc	Log of employment accountants and auditors. Occupation code 13-2011	Bureau of Economic Statistics
loth	Log of employment of business and financial operations excluding accountants and auditors. Occupation code 13-000 less occupation code 13-2011	Bureau of Economic Statistics
ltot	Log of employment of all occupations. Occupation code 00-0000.	Bureau of Economic Statistics
lhard	Annual use of commodities. Input-output code 334. In millions of $	Input Output Tables. Bureau of Economic Analysis
lsoft	Annual use of commodities. Input-output code 5415. In millions of $	Input Output Tables. Bureau of Economic Analysis
lprofit	Table 6.16D. Corporate Profits by Industry: Annual corporate profits with inventory valuation and capital consumption adjustments in billions of dollars	Bureau of Economic Analysis
lcurGDP	Log of current annual GDP In billions of dollars. Table 1.1.5	National Economic Accounts, U.S. Department of Commerce, Bureau of Economic Analysis

Descriptive statistics are summarized in Table 2. Figure 1 shows a lattice graph of data analyzed in the study and provides justification for the exclusion of some variables in the static model we developed below.

Table 2. Descriptive Statistics

	Accounting and Auditing	Other Financial	Total Employment in Thousands	Corporate Profit in $Billions	Hardware Use in $Millions	Software Use in $ Billions	Current GDP in $ Billions
Mean	1018522	4604079	123020	1349.3	140383.2	189283.9	13013.4
Median	1061855	4816835	122797	1341.05	142818.5	183607.5	13474.8
Maximum	1187310	5641630	129971	2072	204613	261071	17348.1
Minimum	843160	3518820	114723	754	76593	100470	8608.5
Std. Dev.	118795.2	670404.5	3832.7	466.5	36390.0	44041.0	2722.0

Figure 1. Lattice Graph of Variables Analyzed



ANALYSIS AND RESULTS

Initial Models for Accounting Employment. First we construct two models, one static and one dynamic, to explain the levels of accounting and auditing employment. These models are not nested in that the explanatory variables of one model are not the subset of another model. If the clear choice of the preferred model is not obvious, Akaike Information Criteria (AIC) and MacKinnon's J test are used to select one model from these models. The selected model is further analyzed in the next section to test for structural shifts in the model.

The best fitting parsimonious static model is:

$$E(lacc|.) = \underset{(.985)}{.2384} + \underset{(.165)[0.0]}{1.1994} \times loth \; - \underset{(.139)[0.014]}{.3925} \times lsoft$$

Adjusted R^2 = .958 and AIC = -4.481, sample size = 19

The numbers below the coefficients in parentheses are standard errors of the coefficients and those in the square brackets are p-values. As expected software utilization has a significant negative effect on the employment for accounting and auditors. The elasticity of accounting and auditing employment is nearly 1.2; indicating that a 1% increase in other financial professional jobs is associated with a 1.2% increase in accounting and auditing jobs. The Ljung-Box Q statistic up to

10 lags shows no signs of residual autocorrelation. More details of this Q statistic and other tests we use throughout the paper are available in Davidson and MacKinnon (2003).

The best fitting dynamic model is:

$$E(lacc_t \mid .) = \underset{(.64)[.01]}{1.89} + \underset{(.20)[0.0]}{.91 \times lacc_{t-1}} - \underset{(.16)[0.0]}{.59 \times lacc_{t-2}} + \underset{(.12)[0.0]}{.50 \times loth}$$

Adjusted R^2 = .974 and AIC = -4.924, sample size = 19

In this dynamic model subscripts to *lacct* indicate that two lags of *lacct* are included as explanatory variable. The elasticity of nonfinancial employment has reduced, but still has significantly positive effect. Ljung-Box Q statistic for 10 lags shows no signs of residual autocorrelations and Durbin-Watson statistic of 1.83 confirms it.

The fit has improved over the static model and since these two models are non-nested, comparing the AICs indicates that the dynamic model is the preferred model. Davidson-MacKinnon (1981) J test confirms the selection of the dynamic model for further analysis. Augmenting the dynamic model with fitted response variables from the static model leads to p-value for testing the coefficient of fitted values of .12. The reverse procedure of testing for coefficient value of zero for dynamic fitted values in the static regression leads to a p-value of .021. The J-test also confirms that the dynamic model is superior.

Breakpoint Tests. Results of several breakpoint tests for structural changes are presented next.

Simple dummy variable regression. The first breakpoint test we perform is very simple dummy variable regression. We augment the model dynamic model chosen above with a simple dummy variable for the SOX regime. A significant coefficient of the dummy variable suggests that there is a shift in the employment level for accountants and auditors during the SOX regime. This test is rather simplistic, but often used in the literature to test consequences of regime shifts. This test is provided here to complement the following tests. The results of the model are given below.

$$E(lacc_t \mid .) = \underset{(.64)[.00]}{3.78} + \underset{(.14)[0.0]}{.69 \times lacc_{t-1}} - \underset{(.12)[0.0]}{.43 \times lacc_{t-2}} + \underset{(.08)[0.0]}{.42 \times loth} + \underset{(.01)[.00]}{.05 \times SOX}$$

As in the previous equations, the numbers in the parentheses are standard errors. The numbers in square brackets show the p-values of coefficients above them. The coefficient and p-value of SOX regime clearly suggest that there is an upward trend in accounting and auditing employment during the SOX regime.

Chow Test for known breakpoint. Table 3 shows the results of Chow's breakpoint test with the breakpoint in year 2003. All three tests reject the null hypothesis that there is no breakpoint in the year 2003. The last column shows that all three tests reject the null hypothesis at the conventional α value of .05.

Table 3: Chow Test

Statistic	Statistic Value	p-value
F-Statistic – F(4,8)	4.47	0.03
Log likelihood Ratio - $\chi^2(4)$	18.77	0.00
Wald Statistic - $\chi^2(4)$	17.86	0.00

Quandt-Andrews unknown breakpoint Test. The strongest confirmation of our result is this test pointing to the most likely breakpoint as the year 2003 – the first year of SOX act implementation. All three tests – maximum, exponential sum, and average of individual F-statistics – show the year 2003 as the most likely and significant breakpoint. It is common to allow for a 15% trimming of the data in this test. Because of the relatively small sample size, and trimming of data, the degrees of freedom are limited to test all coefficients together. We test the subsets of coefficients to the conserve degrees of freedom. The results of this test are summarized in Table 4.

Table 4: Quandt-Andrews Tests

Coefficients Tested	Statistic	Test Statistic	Year of Break Point	p-value
Const, $lact_{t-1}$	Max LR F-Stat	10.63	2003	0.00
Const, $lact_{t-1}$	Exp LR F-Stat	3.08		0.00
Const, $lact_{t-1}$	Average LR F-Stat	3.18		0.01
Const, loth	Max LR F-Stat	6.94	2003	0.018
Const, loth	Exp LR F-Stat	2.33		0.01
Const, loth	Average LR F-Stat	3.75		0.00
$lact_{t-1}$, loth	Max LR F-Stat	7.89	2003	0.00
$lact_{t-1}$, loth	Exp LR F-Stat	2.02		0.02
$lact_{t-1}$, loth	Average LR F-Stat	2.58		0.03

Along with the other tests, the Quandt-Andrews test provides the most compelling evidence of structural changes in the demand for accounting and auditing services. All three tests reject the null hypothesis of no breakpoint unequivocally at the conventional α level of .05. This test not only concluded that there is a structural shift during the SOX regime, but it also identified the year 2003 as the most likely breakpoint.

Chow's forecast failure test. Since the longer of the two regimes is the SOX regime consisting of the years 2003 to 2014, the dynamic model for these years is estimated and "backcasts" for the years 1997 to 2002 are predicted. Using Chow's predictive failure test we obtain a likelihood ratio test statistic of 24.534 with five degrees of freedom. The null hypothesis of no breakpoint is rejected with a p-value of .0002.

All the above tests unequivocally confirm that there is a structural shift in the demand for accounting services and that the break occurred in the year 2003, the beginning of SOX enforcement.

CONCLUSIONS

Considering evidence from prior research that the proliferation of technology and innovations in software development is likely to put downward pressure on the demand for accountants and auditors among other service jobs, we explored in this study the possible interaction of the structural positive change in demand for accountants realized as a result of changes in regulation, especially the effect of the SOX. SOX regulations require increased disclosures and compliance by publicly as well as privately held companies. Several studies also indicate that there has been an increase in the hiring of accounting professionals due to the need for compliance with SOX regulations.

We analyzed the demand for accounting and auditing services during the SOX regime starting in the year 2003. Several breakpoint tests and forecast failure tests are used in this investigation. We selected the dynamic model with two lags of employed accounting professionals and other (non-accounting) financial professions as explanatory variables. This model provided an excellent fit for the data. The Chow test with the known breakpoint in the year 2003 strongly suggested that demand for accounting has greatly increased in the SOX era. The most compelling evidence for structural change due to the SOX regime is provided by the Quandt-Andrews test. This test not only concluded that there is a structural shift during the SOX regime, but it also identified the year 2003 as the most likely breakpoint. The dummy variable test and Chow's predictive failure test also strongly confirm a structural break in the demand for accounting services in year 2003 – the first year of SOX enforcement. A limitation of our model is the availability of employment statistics by occupation for the years 1996 and before. A potential extension of the study is to find reliable occupational data for the years 1996 and before and replicate the study. Another extension of our study could involve exploring the likely interaction effect of the opposing forces of technology and regulatory changes on the demand and supply of accountants and auditors.

REFERENCES

AICPA (2015). Trends in the supply of accounting graduates and the demand for public accounting recruits. AICPA study. Retrieved from https://www.aicpa.org/InterestAreas/AccountingEducation/NewsAndPublications/DownloadableDocuments/2015-TrendsReport.pdf

Brynjolfsson, E., & McAfee, A. (2011). *Race against the machine: how the digital revolution is accelerating innovation, driving productivity, and irreversibly transforming employment and the economy*. Digital Frontier Press.

Bessen, J. (2015). Learning by Doing: *The real connection between innovation, wages, and wealth*. New Haven, CT: Yale University Press.

Caron, P. (2011, March 5). Software is replacing lawyers, accountants. *New York Times*.

Coates, J. C. (2007). The goals and promise of the Sarbanes–Oxley act. *Journal of Economic Perspectives*, *21*(1), 91–116.

Coates, J. C., & Srinivasan, S. (2015). SOX after ten years: a multidisciplinary review. Accounting Horizons, *28*(3), 627-671.

Donaldson, W. H. (2003). "Testimony concerning implementation of the Sarbanes-Oxley act of 2002." Testimony before the senate committee on banking, housing and urban affairs, September 9, 2003.

Davidson, R., & J. MacKinnon (1981). Several tests for model specification in the presence of alternative hypotheses. *Econometrica*, *49*(3), 781-793.

Davidson, R., & J. MacKinnon (2003). *Econometric theory and methods*. London, UK: Oxford University Press.

Duernecker, G. (2014, June). Technology adoption, turbulence, and the dynamics of unemployment. *Journal of the European Economic Association*, *12*(3), 724-754.

FEI. (2005). Sarbanes–Oxley compliance costs exceed estimates, financial executives international report. Retrieved from http://fei.mediaroom.com/

Ford, M. (2015). *Rise of the robots technology and the threat of a jobless future*. New York, NY: Basic Books.

Frey, C.A., & Osborne, M.A. (2013). The future of employment: how susceptible are jobs to computerisation. Unpublished working paper retrieved from http://www.oxfordmartin.ox.ac.uk/downloads/academic/The_Future_of_Employment.pdf

Iliev, P. (2010). The effect of SOX section 404: costs, earnings quality, and stock prices, *Journal of Finance 45*, 1163-1196.

Krishnan, J., Rama, D., & Zhang, Y. (2008). Costs to comply with SOX section 404. *Auditing: A Journal of Practice and Theory*. *27*(1), 169-186.

PCAOB (2014). Public Company Accounting Oversight Board – Annual report 2014. Retrieved from http://www.pcaob.org

SEC. (2009). Study of the Sarbanes-Oxley Act of 2002 section 404 internal control over financial reporting requirements. Retrieved from https://www.sec.gov/news/studies/2009/sox-404_study.pdf

Thomas, C. W. (2002). The rise and fall of Enron when a company looks too good to be true, it usually is. Journal of Accountancy, *193*(4), 41-47.

Van Reenen, J. (1997). Employment and technological innovation: evidence from U.K. manufacturing firms, *Journal of Labor Economics*, *15*(2), 255-284.

EXAMINING THE INTERACTIVE RELATIONSHIP OF TECHNOLOGY DIFFICULTIES AND POLITICAL EFFICACY ON JOB SATISFACTION

Cindi T. Smatt, University of North Georgia
ctsmatt@ung.edu

Renée M. E. Pratt, University of Massachusetts - Amherst
rpratt@isenberg.umass.edu

Paul A. Fadil, University of North Florida
pfadil@unf.edu

ABSTRACT

We examined the interactive relationship between perceived technology difficulties and political efficacy on employees' job satisfaction. Technology difficulties refer to the inabilities to maximize usage of the technology. The sample consisted of 325 individuals employed in a wide range of work environments. We hypothesized that political efficacy, which we define as success at achieving outcomes by influencing others, would minimize the harmful effects of technology difficulties on employees' job satisfaction. Results strongly support our hypothesis. Specifically, individuals with low levels of political efficacy reported lower levels of job satisfaction as technology difficulties increased. Further, job satisfaction increased for high political efficacy individuals as technology difficulties increased. Implications of these results, strengths and limitations of this research, and directions for future research are offered.

Keywords: Innovation, Political Efficacy, Information Technology (IT) Usage, Technology Difficulties, Satisfaction

INTRODUCTION

Organizations spend considerable amounts of time, effort, and money adopting and implementing technologies. Although there are successes, many systems fail, or are under-utilized, and implementers and users alike tend not to fully understand the social reasons that distinguish the failures from the successes (Kraut, Rice, Cool, & Fish, 1998; Wang, Meister, & Gray, 2013). A central concern for the field of Management Information Systems (MIS) is to understand the factors that contribute to the use of information systems. Though, there are numerous studies published about the use of technology, many overlook the activities that lead to adoption and subsequent continued usage of a technology (Karahanna, Straub, & Chervany, 1999; Venkatesh, Thong, & Xu, 2012).

The dramatic growth of new technologies in today's organizations have forced organizational members to confront their perceptions of the social aspects of their organization, such as the attitudes, beliefs and underlying assumptions of technology that may not have been considered (Schein, 2010). For example, the introduction of electronic mail in one organization made

managers realize that they depended on face-to-face contact, and that electronic mail would not be appropriate for the majority of their communications (Schein, 2010). The use of technology is contingent on individuals' attitudes and beliefs, social roles, and experiences (Baker, 2012; Tornatzky & Fleischer, 1990). Research suggests that reasoned behaviors are preceded by a deliberate process that culminates in the decision or intention to act, but, even after an individual decides to act, barriers can prevent individuals from completing the behavior (Fishbein & Ajzen, 1975). Therefore, researchers need to explore and investigate antecedents of IT usage.

The determinants of IT usage continues to be a significant area of investigation in research literature (Agarwal, 2000; Bhattacherjee & Lin, 2014; Lewis, Agarwal, & Sambamurthy, 2003). In particular, the impact of political perceptions such as political efficacy is based on the fact that perceptions represent a subjective evaluation of organizational phenomena (Ferris, Russ, & Fandt, 1989; Hochwarter & Treadway, 2003). Hence, individuals respond on the basis of their own constructed reality, in other words their perceptions. Thus, the intent of this paper is to examine the interactive relationship between perceived technological difficulties and political efficacy on employees' job satisfaction. The central question in this paper is: How do political factors influence the success of technology usage? We will begin with the literature framework, then discuss the research model, future research opportunities, and finally provide concluding remarks.

THEORETICAL FOUNDATION

User beliefs and attitudes are key determinants of IT usage (Bhattacherjee & Premkumar, 2004). These beliefs and attitudes continually change and are impacted by social influences. The social influences, i.e. political efficacy, that either support or inhibit IT usage are important factors to research literature. Over the years, several streams of research have contributed to IT acceptance (Compeau & Higgins, 1995; Davis, Bagozzi, & Warshaw, 1989), implementation success at the organizational level (Leonard-Barton & Deschamps, 1988), and task-technology fit (Goodhue, 1995; Goodhue & Thompson, 1995). We intend to look at the literature that focuses on the intention and/or usage of technology, such as Venkatesh, Morris, Davis, and Davis (2003), to understand the social influences and norms that impact IT usage.

Innovation Diffusion Theory

Diffusion and innovation of information systems is an area of sizeable and significant research that is continually linked over time (Ashry & Taylor 2000; Wonglimpiyarat & Yuberk, 2005). Fichman (1999, p. 1) defines diffusion as the "process by which a technology spreads across a population of organizations." Kwon and Zmud (1987, p. 231) define implementation as "an organizational effort to diffuse an appropriate information technology within a user community." Nan, Zmud, and Yetgin (2014, p. 1) define innovation diffusion as "the dissemination of innovations (i.e., ideas, products, or practices that are new to potential adopters." Based on these definitions, researchers continue to identify more links, such as the five characteristics of innovation (Rogers, 2003) and the six-phase model of implementation (Kwon & Zmud, 1987).

Rogers (2003) derived five characteristics of innovations to discuss perceptions of adopting and diffusing technology. These five characteristics (i.e., relative advantage, compatibility, complexibility, observability, and trialability) are instrumental and assisted in developing the

innovation-decision process (Rogers, 2003). This process is viewed as a temporal sequence of steps where an individual passes through an initial awareness of the innovation (knowledge), to a formation of favorable or unfavorable attitude (persuasion), development of a decision to reject or accept (decision) the innovation, make use of the innovation (implementation), and finally seek reinforcement (confirmation) (Rogers, 2003). According to Karahanna, Straub, and Chervany (1999, p. 185) the key constructs in this process are "the innovation's perceived attributes, the individual's attitude and beliefs, and communications received by the individual from his/her social environment about the innovation." Based on the key construct of perceived attributes, we intend to examine the effects of an interaction between technology difficulties and perceived political efficacy on job satisfaction.

IT Usage

Research progress has been made in understanding individual usage of IT innovations. Particularly, a research stream has emerged that uses intention-based theories such as theory of reasoned action (TRA) (Fishbein & Ajzen, 1975), theory of planned behavior (TPB) (Ajzen, 1991), and technology acceptance model (TAM) (Davis et al., 1989) to predict user acceptance of IT (e.g., Hartwick & Barki, 1994; Taylor & Todd, 1995). According to these theories, IT usage is influenced by beliefs about IT, such as perceived usefulness, perceived ease of use, and subjective norms.

The final stage of IT implementation is viewed as infusion or increased breadth and depth of IT usage (Cooper & Zmud, 1990; Grover & Goslar, 1993; Winston & Dologite, 1999). Breadth refers to the number of integrated IT applications and users. Depth represents the extent of individual IT use and satisfaction (Winston & Dologite, 1999). Further, according to Saga and Zmud (1994, p. 67), "infusion occurs as IT applications become more deeply embedded within the organization's system." Some factors that influence infusion include organizational: social network, organizational norms, structure and IT experience; and individual: education, experience, personality, training, and involvement. In this paper, we define IT usage as the adoption and continual use of innovation/technology in organizational and individual work processes. Therefore, we define technology difficulties as the inabilities to maximize usage of the technology.

Social Processes

The importance of social influences in relation to IT usage has been demonstrated by Venkatesh and Morris (2000), who extended TAM by illustrating the role of gender and politics. Social influence is defined as "the perception that most people who are important to him think he should or should not perform the behavior in question (Fishbein & Ajzen, 1975, p. 302)." Research on the role of social influence in the context of the technology acceptance model continues to develop as updated models of TAM are validated (Venkatesh & Morris 2000; Venkatesh, MOrris, Davis, & Davis, 2003; Venkatesh et al., 2012). Social influence comes in a variety of sources. Individuals may experience social pressures from friends, co-workers, and supervisors. Also, studies have examined the role played by an influential individual—the technology champion (Orlikowski, Yates, Okamura, & Fujimoto, 1995)—and have found that IT is more likely to be adopted and used when the influential individual is promoting adoption or use (Agarwal, 2000; Hendy & Barlow, 2012). One example of a social influence is political efficacy, which is a direct determinant

of behavioral intention and defined as "the degree to which an individual perceives that important others believe he or she should use the new system (Venkatesh et al. 2003, p. 451)."

TECHNOLOGY DIFFICULTIES AND POLITICAL EFFICACY

Organizational politics is prevalent throughout work environments and continues to thrive in organizations (Chang, Rosen, & Levy, 2009; Hochwarter & Treadway, 2003). This commonness has implemented an "acceptance of politics as a significant aspect of organizational life led (Mintzberg, 1985) to classify work settings as 'political arenas'" (Hochwarter & Treadway, 2003, p. 553). Organizational politics can be viewed as an influence process that is exercised within work settings. In this view, politics includes a very general set of social behaviors (Bowling, Eschleman, & Wang, 2010; Cropanzano, Howes, & Grandey, 1997). In the more specific definition, "the term politics is limited to behavior that is strategically designed to maximize short-term or long-term self-interest" (Cropanzano et al., 1997, p. 161). Further, Pfeffer (1981, p. 7) defined organizational politics as "the study of power in action." By adopting this definition, we are able to examine the effects of political efficacy on the relationship between technology difficulties and job satisfaction.

Affect Dispositions in Organizational Settings

Substantial research has examined the relationships of attitudes and behaviors (Fulk, 1993; Karahanna et al., 1999), perceived usefulness and subjective norms (Davis et al., 1989; Jin, Yoon, & Ji, 2013), self-efficacy (Compeau & Higgins, 1995; Jin et al. 2013), and other related variables in reference to technology. Evidence has shown personality dimensions as an ingredient to the employees' acceptance of an innovation. Specifically, negative affect (NA) and positive affect (PA) are important predictors of several work outcome variables (George, 1992; Harvey, Stoner, Hochwarter, & Kacmar, 2007). It is also important to note that NA and PA are independent personality dimensions, indicating that an individual can score high or low on both or any combination of the two (George, 1992; Scott & Barnes, 2011).

According to Watson, Clark, and Tellegen (1988), individuals high on NA are generally perceived as having a negative orientation towards themselves and the world. Individuals with low NA are more likely to be stressed and in unfavorable conditions, but are less likely to see the world in a negative state such as high NA. Individuals high on PA have an overall positive outlook and view themselves as active, self-efficacious, and pleasurable to be around (Perrewé & Spector, 2002; Scott & Barnes, 2011; Watson et al., 1988). On the contrary, an individual low on PA is less-active and has a lower well-being and low self-efficacy. In addition, low PA levels indicate possible depression due to the inability to think in supportive positive affective states (George, 1992; Harvey et al., 2007).

Research has associated NA (inversely) and PA (directly) with job satisfaction since majority of jobs encompass a range of positive and negative elements (Arvey, Bouchard, Segal, & Abraham, 1989; Staw, Bell, & Clausen, 1986). Emotions are common in the workplace and they generate both positive and negative work outcomes. An employee's affect can be responsive to specific stimuli and environments. Hochwarter and Treadway (2003) found that affect dispositions interact with political perceptions to predict job satisfaction. Specifically, they found that individuals with high negative affect (NA) are more perceptive to political perceptions than low NA individuals

and individuals high in positive affect (PA) are also extremely susceptible to the effects of perceived politics on job satisfaction. Consequently, NA and PA interact with political perceptions to affect job satisfaction.

Relationship between Technology Difficulties and Political Efficacy

Over the years, we have spent a great deal of time discussing the adoption and diffusion of technology, but little has been discussed about the effects after implementation of an innovation (Chang et al., 2009; Karahanna et al., 1999). Many innovations are accepted and used overtime regardless of advantages or disadvantages to the performance and satisfaction of the employees. The usage of the technology by an employee impacts the job satisfaction. Hence, if the technology is well designed and implemented there is little reason for concern, but what if the technology is difficult.

Technological difficulties are negative aspects of adopted innovations which influence the employee's satisfaction. In general, when an employee encounters several problems with innovation (i.e., high technology difficulties), the individual is more likely to be dissatisfied. Conversely, low technology difficulties will have neutral or minimal influence on job satisfaction. The influence of a perceived behavior will modify the relationship between technological difficulties and job satisfaction. We argue that high political efficacy will positively influence the relationship between technology difficulties and job satisfaction. Equally, low political efficacy will negatively influence job satisfaction as technology difficulties increases.

> *Hypothesis 1:* Political Efficacy will moderate the relationship between technology difficulties and job satisfaction. Technology difficulties will be positively associated with job satisfaction when political efficacy is low. Conversely, technology difficulties will be negatively associated with job satisfaction when political efficacy is high.

METHODOLOGY

Participants and procedures

Students in two undergraduate courses at a university in the Southeastern United States were given surveys to be completed by employees working full-time. Course credit was given for completion of the assignment. A total of 385 questionnaires were initially distributed and 368 usable surveys were returned within a three-week period. The sample consisted of 210 women (i.e., 57%), while the average age was approximately 40 years. Respondents reported working in their organization for roughly 9 years while supervising an average of 8 employees. A wide range of occupations was included in the sample including human resources manager, salesperson, and nurse. All employees reported at least a moderately level of interaction with some form of technology at work.

Measures

Affective Disposition: We used Watson, Clark, and Tellegen's (PANAS, 1988) scale to measure negative (NA, $\alpha = .85$) and positive affect (PA, $\alpha = .87$). Respondents were asked to indicate the extent to which they experienced 10 positive (e.g., interested and determined) and 10 negative (e.g., distressed and hostile) emotions. A five-point response format was used (1 = *very little or not at all* to 5 = *extremely*).

Political Efficacy: We developed a four-item scale to measure political efficacy ($\alpha = .73$). Items included, "I am able to detect when others are acting politically at work", "When the situation requires politicking, I am good at it", "I am able to cut those off at the pass when they are acting in self-serving ways", and "I am good at playing politics at work when needed." A five-point response format was used (1 = *strongly disagree* to 5 = *strongly agree*).

Technology Difficulties: Perception of technology difficulties was measured using a four-item scale developed for this study ($\alpha = .89$). Items included, "The technology at work cannot be counted on to work", "Our equipment is so outdated, that I just don't know if it will work when I try to use it", "If the technology at work were more reliable, everyone would be more effective", and "The technology I must use at work is terrible". A five-point response format was used (1 = *strongly disagree* to 5 = *strongly agree*).

Job Satisfaction: Job satisfaction ($\alpha = .86$) was measures using a five-item subscale of Brayfield and Rothe's (1951) index (Judge et al. 1998). "Each day of work seems like it will never end (reversed coded)", and "Most days I am enthusiastic about my work" are two representative items. (1 = *strongly disagree* to 5 = *strongly agree*). A five-point response format was used (1 = *strongly disagree* to 5 = *strongly agree*).

Data Analysis

Moderated regression analyses were conducted to determine the influence of the political efficacy – technology difficulties interaction. In the first step, demographic variables (i.e., age, gender, and organization tenure), employees supervised and affective disposition (i.e., negative and positive affect) were entered. The predictor variables (i.e., political efficacy and technology difficulties) were entered in step 2, while the interaction term was included in the final step. An incremental change in criterion variance (i.e., ΔR^2) in the third step indicates a significant interaction term (Cohen & Cohen, 1983).

RESULTS

Means, standard deviations, and intercorrelations are presented in Table 1. Table 2 reports results of the moderated regression analyses. As expected, NA ($\beta = -.24$, $p < .01$) and PA ($\beta = .45$, $p < .01$) predicted job satisfaction, as did organizational tenure ($\beta = -.01$, $p < .05$). Technological difficulties predicted job satisfaction in Step 2 (e.g., higher levels of technology difficulty were associated with lower levels of job satisfaction). Finally, the technology difficulties – political efficacy interaction term was significant explaining incremental variance in job satisfaction ($\beta = .12$, $p < .05$, $\Delta R^2 = .03$). The amount of explained variance for the interaction term is within the

range expected (i.e., 1 – 3%) for moderator effects in field studies (Champoux & Peters, 1987; Chaplin, 1991).

Table 1. Means, Standard Deviations and Intercorrelations Among Study Variables

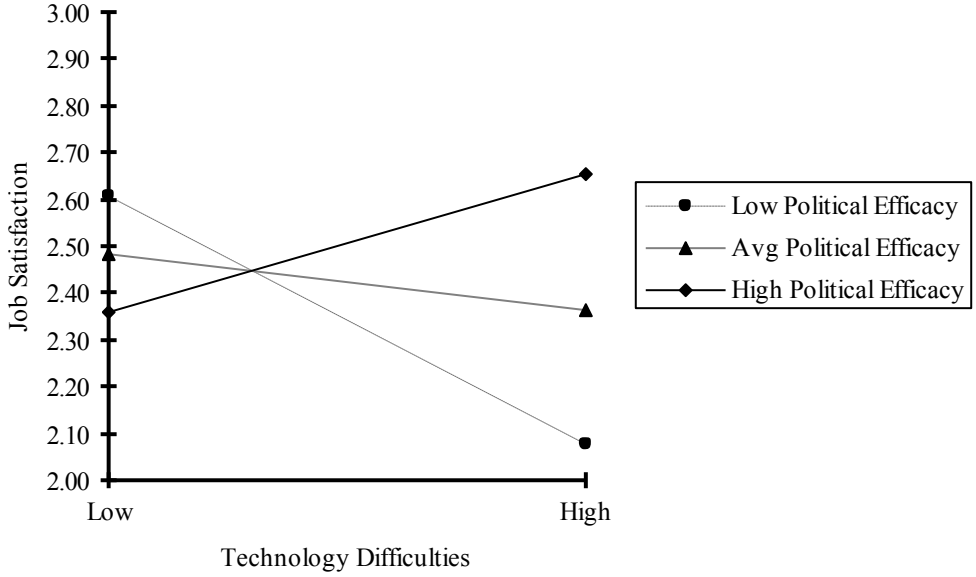
Variable	M	SD	1	2	3	4	5	6	7	8
1. Age	40.33	12.09								
2. Gender	--	--	-.03							
3. Organizational Tenure	8.67	9.59	.55*	-.07						
4. Employees Supervised	8.32	23.03	.04	-.04	.02					
5. Negative Affect	1.66	.54	-.17*	.01	-.04	.01				
6. Positive Affect	3.69	.63	.05	.07	.01	.14*	-.23*			
7. Political Efficacy	3.24	.63	.01	-.05	.08	.15*	-.03	.21*		
8. Technology Difficulties	2.36	.83	-.14*	-.06	-.12*	.04	.22*	-.21*	.01	
9. Job Satisfaction	3.75	.72	.14*	.01	-.02	.13*	-.31*	.44*	.12*	-.21*
N = 368 * $p < .05$										

Table 2. Moderated Regression Analyses Predicting Job Satisfaction

Step and Variable	Step 1 β	se	Step 2 β	se	Step 3 β	se
Step 1:						
Age	-.01	.01	-.01	.01	.01	.01
Gender	-.01	.06	-.01	.06	-.01	.01
Organization Tenure	-.01*	.01	-.01**	.01	-.01**	.01
Employees Supervised	.01	.01	.01	.01	.01	.01
Negative Affect	-.24**	.06	-.23**	.06	-.23**	.06
Positive Affect	.45**	.05	.42**	.04	.43**	.05
Step 2:						
Political Efficacy (A)			.05	.05	-.17	.14
Technology Difficulties (B)			-.08*	.02	-.39*	.06
Step 3:						
A x B					.12*	.04
ΔR^2	.27		.02*		.02*	
N = 368, * $p < .05$, ** $p < .01$						

A procedure outlined by Stone and Hollenbeck (1989) was used to graphically depict the significant interaction terms. Three levels of political efficacy were plotted: at one standard deviation below the mean, at the mean, and at one standard deviation above the mean. As shown in Figure 1, high levels of technology difficulty were coupled with lower job satisfaction scores for those reporting lower levels of political efficacy. Conversely, politically efficacious individuals reported higher levels of job satisfaction in environments with high levels of technology difficulty.

Figure 1. The Interactive Effects of Technology Difficulty and Political Efficacy on Job Satisfaction



DISCUSSION AND FUTURE RESEARCH

The present study provides an extension of the current diffusion literature. Due to space limitation, we will only highlight the most important findings without discussing other specific results. In general, the results suggest that political efficacy is a significant factor that affects job satisfaction in environments with high levels of technology difficulties. As a mechanism for the interaction of political perceptions and technology usage, this finding is consistent with the findings of Venkatesh et al. (2012), who suggest that social influences impact IT usage. Moreover, our understanding of the role of technology in the political perceptions-outcomes relationship is limited despite the volume of technology usage research. This study sought to address this oversight by evaluating the interactive effects of affective dispositions on the link between perceptions of politics and its most empirically supported consequence, job satisfaction (Hochwarter & Treadway, 2003). The results were supportive of the main hypotheses that an individual's perceptions of politics will interact with technological difficulties to determine the degree of job satisfaction experienced by the employee.

Following from previous extensions of technology diffusion literature, future research should focus on identifying constructs that can add to the prediction of intention and behavior above and beyond what is already known and understood. In the study of information technology usage in organizations, there has been a proliferation of competing explanatory models of individual acceptance of information technology. The present work advances individual acceptance research by empirically testing a facet of the social influence constructs impacting technology use. Future research should further explore the different facets of the social influence construct.

Limitations of this study

This study is not without limitations. First, students were used as a means to gather data. Students were instructed to have full-time employees, regardless of job type or title, complete surveys. In spite of this, we cannot rule out the possibility that some form of selection bias was present. Second, a survey methodology was employed to capture respondents' perceptions exclusively without the use of other data collection methods. Consequently, the potential for common method bias (CMB) exists.

PRACTICAL IMPLICATIONS

We believe our study has important theoretical and practical implications. It contributes to the IT innovation and the intention-based theories by providing empirical evidence that perception of politics is an important variable that influences the formation and change over time of user evaluation and use of IT innovation. Our results suggest that the strong documented association between social influence and technology acceptance can result in increased employee satisfaction. In addition to the scholarly interest of this study, our results suggest that managers need to understand that social influence, i.e. perceptions of politics, can have serious repercussions for technology use and overall job satisfaction.

REFERENCES

Agarwal, R. (2000). "Individual Acceptance of Information Technologies," in *Framing the Domains of It Management: Projecting the Future ... Through the Past.* R.W. Zmud (ed.). Cincinnati, OH: Pinnaflex Educational Resources, Inc., pp. 85-104.

Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational Behavior and Human Decision Processes*, *50*(2), pp. 179-211.

Arvey, R. D., Bouchard, T. J., Segal, N. L., & Abraham, L. M. (1989). Job Satisfaction: Environmental and Genetic Components. *Journal of Applied Psychology*, *74*, pp. 187-192.

Ashry, N. Y., & Taylor, W. A. (2000). "Requirements Analysis as Innovation Diffusion: A Proposed Requirements Analysis Strategy for the Development of an Integrated Hospital Information Support System," *Proceedings of the 33rd Hawaii International Conference on System Sciences*, Hawaii.

Baker, J. (2012). "The Technology–Organization–Environment Framework," in *Information Systems Theory*. Springer, pp. 231-245.

Bayfield, A., & Rothe, H. (1951). An Index of Job Satisfaction. *Journal of Applied Psychology*, *24*, pp. 307-311.

Bhattacherjee, A., & Lin, C.-P. (2014). A Unified Model of It Continuance: Three Complementary Perspectives and Crossover Effects. *European Journal of Information Systems*).

Bhattacherjee, A., & Premkumar, G. (2004). Understanding Changes in Belief and Attitude toward Information Technology Usage: A Theoretical Model and Longitudinal Test. *MIS Quarterly*, 28(2), pp. 229-254.

Bowling, N. A., Eschleman, K. J., & Wang, Q. (2010). A Meta-Analytic Examination of the Relationship between Job Satisfaction and Subjective Well-Being. *Journal of Occupational and Organizational Psychology*, *83*(4), pp. 915-934.

Champoux, J., & Peters, W. (1987). Form, Effect Size, and Power in Moderated Regression Analysis. *Journal of Occupational Psychology*, *60*, pp. 243-255.

Chang, C.-H., Rosen, C. C., & Levy, P. E. (2009). "The Relationship between Perceptions of Organizational Politics and Employee Attitudes, Strain, and Behavior: A Meta-Analytic Examination. *Academy of Management Journal*, *52*(4), pp. 779-801.

Chaplin, W. (1991). The Next Generation of Moderator Research in Personality Psychology. *Journal of Personality*, *59*, pp. 143-178.

Cohen, J., & Cohen, P. (1983). *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences*, (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum.

Compeau, D. R., & Higgins, C. A. (1995). Computer Self-Efficacy: Development of a Measure and Initial Test. *MIS Quarterly*, *19*(2), pp. 189-211.

Cooper, R. B., & Zmud, R. W. (1990). Information Technology Implementation Research: A Technological Diffusion Approach. *Management Science*, *36*, pp. 123-139.

Cropanzano, R., Howes, J. C., Grandey, A. A., & Toth, P. (1997). The Relationship of Organizational Politics and Support to Work Behaviors, Attitudes, and Stress. *Journal of Organizational Behavior*, *18*, pp. 159-180.

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User Acceptance of Computer Technology: A Comparison of Two Theoretical Models. *Management Science 35*(8), pp. 982-1003.

Ferris, G. R., Russ, G. S., & Fandt, P. M. (1989). "Politics in Organizations," in *Impression Management in the Organization,* R.A. Giacalone and P. Rosenfeld (eds.). Hillsdale, NJ: Lawrence Erlbaum, pp. 143-170.

Fichman, R. G. (1999). "The Diffusion and Assimilation of Information Technology Innovations," in *Framing the Domains of It Management: Projecting the Future through the Past,* R.W. Zmud (ed.). Cincinnati, OH: Pinnaflex Educational Resources, Inc.

Fishbein, M., & Ajzen, I. (1975). *Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research*. Reading, MA: Addison-Wesley.

Fulk, J. (1993). Social Construction of Communication Technology. *Academy of Management Review*, *36*(5), pp. 921-950.

George, J. (1992). The Role of Personality in Organizational Life: Issues and Evidence. *Journal of Management*, *18*, pp. 185-214.

Goodhue, D. L. (1995). Understanding User Evaluations of Information Systems. *Management Science*, *41*(12), pp. 1827-1844.

Goodhue, D. L., & Thompson, R. L. (1995). Task-Technology Fit and Individual Performance. *MIS Quarterly*, *19*(2), pp. 213-236.

Grover, V., & Goslar, M. D. (1993). The Initiation, Adoption, and Implementation of Telecommunications Technologies in U.S. Organizations. *Journal of Management Information Systems*, *10*(1), pp. 141-163.

Hartwick, J., & Barki, H. (1994). Explaining the Role of User Participation in Information System Use. *Management Science*, *40*(4), pp. 440-465.

Harvey, P., Stoner, J., Hochwarter, W., & Kacmar, C. (2007). Coping with Abusive Supervision: The Neutralizing Effects of Ingratiation and Positive Affect on Negative Employee Outcomes. *The Leadership Quarterly*, *18*(3), pp. 264-280.

Hendy, J., & Barlow, J. (2012). The Role of the Organizational Champion in Achieving Health System Change. *Social Science & Medicine*, *74*(3), pp. 348-355.

Hochwarter, W. A., & Treadway, D. C. (2003). The Interactive Effects of Negative and Positive Affect on the Politics Perceptions-Job Satisfaction Relationship. *Journal of Management 29*(4), pp. 551 - 567.

Jin, B. S., Yoon, S. H., & Ji, Y. G. (2013). Development of a Continuous Usage Model for the Adoption and Continuous Usage of a Smartphone. *International Journal of Human-Computer Interaction*, *29*(9), pp. 563-581.

Judge, T. A., Locke, E., Durham, C., & Kluger, A. (1998). Dispositional Effects on Job and Life Satisfaction: The Role of Core Evaluations. *Journal of Applied Psychology*, *83*, pp. 17-34.

Karahanna, E., Straub, D. W., & Chervany, N. L. (1999). Information Technology Adoption across Time: A Cross-Sectional Comparison of Pre-Adoption and Post Adoption Beliefs. *MIS Quarterly*, 23(2), pp. 183-214.

Kraut, R. E., Rice, R. E., Cool, C., & Fish, R. S. (1998). Varieties of Social Influence: The Role of Utility and Norms in the Success of a New Communication Medium. *Organization Science*, *9*(4), pp. 437-453.

Kwon, T. H., & Zmud, R. W. (1987). "Unifying the Fragmented Streams of Information Systems Implementation Research," in *Critical Issues in Information Systems Research,* R. Boland and R. Hirscheim (eds.). Chichester, England: John Wiley.

Leonard-Barton, D., & Deschamps, I. (1988). Managerial Influence in the Implementation of New Technology. *Management Science*, *34*(10), pp. 1252-1265.

Lewis, W., Agarwal, R., & Sambamurthy, V. (2003). Sources of Influence on Beliefs About Information Technology Use: An Empirical Study of Knowledge Workers. *MIS Quarterly*, *27*(4), pp. 657-678.

Mintzberg, H. (1985). The Organization as Political Arena. *The Journal of Management Studies, 22*(2), pp. 133-154.

Nan, N., Zmud, R., & Yetgin, E. (2014). A Complex Adaptive Systems Perspective of Innovation Diffusion: An Integrated Theory and Validated Virtual Laboratory. *Computational and Mathematical Organization Theory*, *20*(1), pp. 52-88.

Orlikowski, W. J., Yates, J., Okamura, K., & Fujimoto, M. (1995). Shaping Electronic Communication: The Metastructuring of Technology in the Context of Use. *Organization Science*, *6*(4), pp. 423-444.

Perrewé , P. L., & Spector, P. E. (2002). Personality Research in the Organizational Sciences. *Research in Personnel and Human Resources Management*, *21*, pp. 1-64.

Pfeffer, J. (1981). "Management as Symbolic Action: The Creation and Maintenance of Organizational Paradigms," in *Research in Organizational Behavior,* L.L. Cummings and B.M. Staw (eds.). Greenwich, CT: JAI Press.

Rogers, E. M. (2003). *Diffusion of Innovations*, (Fifth ed.). New York, NY: Free Press.

Saga, V., & Zmud, R. (1994). "The Nature and Determinants of It Acceptance, Routinization, and Infusion," in *Diffusion, Transfer and Implementation of Information Technology,* L. Levine (ed.). New York: North-Holland.

Schein, E. H. (2010). *Organizational Culture and Leadership*. San Francisco, CA: John Wiley & Sons.

Scott, B. A., & Barnes, C. M. (2011). A Multilevel Field Investigation of Emotional Labor, Affect, Work Withdrawal, and Gender. *Academy of management journal*, *54*(1), pp. 116-136.

Staw, B. M., Bell, N. E., & Clausen, J. A. (1986). The Dispositional Approach to Job Attitudes: A Lifetime Longitudinal Test. *Administrative Science Quarterly*, *31*, pp. 56-77.

Stone, E. F., & Hollenbeck, J. R. (1989). Clarifying Some Controversial Issues Surrounding Statistical Procedures for Detecting Moderator Variables: Empirical Evidence and Related Matters. *Journal of Applied Psychology*, *74*(1), pp. 3-10.

Taylor, S., & Todd, P. A. (1995). Understanding Information Technology Usage: A Test of Competing Models. *Information Systems Research*, *6*(2), pp. 144-176.

Tornatzky, L., & Fleischer, M. (1990). *The Process of Technological Innovation*. Lexington, MA: Lexington Books.

Venkatesh, V., & Morris, M. G. (2000). Why Don't Men Ever Stop to Ask for Directions? Gender, Social Influence, and Their Role in Technology Acceptance and Usage Behavior. *MIS Quarterly*, *24*(1), pp. 115-139.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User Acceptance of Information Technology: Toward a Unified View. *MIS quarterly*, pp. 425-478.

Venkatesh, V., Thong, J. Y., & Xu, X. (2012). Consumer Acceptance and Use of Information Technology: Extending the Unified Theory of Acceptance and Use of Technology. *MIS quarterly, 36*(1), pp. 157-178.

Wang, Y., Meister, D. B., & Gray, P. H. (2013). Social Influence and Knowledge Management Systems Use: Evidence from Panel Data. *MIS Quarterly*, *37*(1), pp. 299-313.

Watson, D., Clark, L., & Tellegen, A. (1988). Development and Validation of Brief Measures of Positive and Negative Affect: The Panas Scale. *Journal of Personality and Social Psychology* (54), pp. 1063-1070.

Winston, E., & Dologite, D. (1999). Achieving It Infusion: A Conceptual Model for Small Businesses. *Information Resources Management Journal 12*(1), pp. 26-38.

Wonglimpiyarat, J., & Yuberk, N. (2005). In Support of Innovation Management and Roger's Innovation Diffusion Theory. *Government Information Quarterly 22*(3), pp. 411-422.

This page has been intentionally left blank.

AFRICAN-AMERICAN WOMEN AND LEADERSHIP POSITIONS: AN ANALYSIS OF YOUNG ADULTS

Shakil Rahman, Frostburg State University
srahman@frostburg.edu

JoAnna Burley Shore, Frostburg State University
jbshore@frostburg.edu

Carin Lightner-Laws, Clayton State University
carinlightner-laws@clayton.edu

ABSTRACT

Historically, women in leadership roles have faced a multitude of challenges in businesses, politics and non-profit organizations. In 2013, females accounted for only 4.2 percent of the Fortune 500 CEOs and 4.5 percent of Fortune 1000 CEOs (Knowledge Center, 2013). Research reveals that female managers tend to receive greater scrutiny and criticism than males, and are commonly evaluated less favorably, even when performing exactly the same leadership roles as men (Eagly, Makhijani, & Klonsky, 1995). While females in general have less representation in leadership roles for both organizations and political offices, this research explores the "double-glass ceiling" that many African-American women encounter. The double glass ceiling is described as two invisible barriers, for being a female and an African-American, which can hinder a person from climbing the corporate ladder.

In order to gain a comprehensive understanding of the race/gender disparities in many organizations, it is important to recognize both the historical patterns of inequity among different groups and inherent views of students that plan to enter the workforce; understanding both of these issues would provide insight about mitigating these differences. The primary research goals were to 1.) Highlight disparities between various race/gender groups in leadership roles of organizations, 2.) Explore differences in how African-American male and female college students use self-identification labels and view life priorities, and 3.) Use the historical disparities in the workplace among various race/gender groups and different viewpoints among African-American college students as an impetus for future research directions to better understand why these in congruencies exist.

In this research, the viewpoint of African-American female students about life events, leadership roles and climbing the corporate ladder is explored. African-American students, 47 female and 53 male, enrolled in senior level undergraduate management courses at a four-year university were randomly surveyed to compare how male and female viewpoints differ. After tallying the survey, the ten graduate students' participant was discovered who were enrolled in 400 level courses. Students were asked about positive and negative labels used to describe themselves and to rank life events in order of importance/priority; these life events included getting married, starting a career, raising children, climbing the corporate ladder, contributing to society, and seeking

personal fulfillment. Descriptive statistics and t-tests were used to analyze how males vs. females responded to the survey questions. The results reveal interesting differences between African-American female and male students' views about self-identification labels and life priorities.

Keywords: African-American female, leadership, double-glass ceiling, student, future

INTRODUCTION AND PURPOSE

Female representation in leadership roles in industry, politics and non-profit organizations throughout US history has been relatively low and heavily scrutinized. Even though there have been many great female leaders in the world, their qualifications are often viewed as inadequate to govern a country or state. From a societal prospective, the word "leader" has a masculine connotation. When a male is in a leadership role, they are simply referred to as a leader; however, "when a person is recognized as a woman in a nation-state context, she is often labeled a 'woman or female leader' (Lockhart & Mollick, 2015, p. 17)."

Research from Eagly *et al.* (1995) indicate that women managers tend to receive greater scrutiny and criticism than men, and tend to be evaluated less favorably, even when performing exactly the same leadership roles as men (Eagly, Makhijani, & Klonsky, Gender and the Evaluation of Leaders: A Meta-Analysis, 1995). Women are often poorly represented in the upper echelon and top decision making positions. Women leaders typically face a lose-lose dilemma. If their behavior confirms the gender stereotype, then they are deemed as being an ill-equipped leader. On the other hand, if their behavior is consistent with the leader stereotype, then they are called unladylike or too aggressive. Violating either of these stereotypes can then lead to negative evaluations of job their performance (Eagly & Karau, Role Congruity Theory of Prejudice Towards Female Leaders, 2002). The incongruence between qualities attributed to women and qualities thought necessary for leadership, places female leaders in a precarious position in which they are subjected to a double standard. "Women in positions of authority are thought of as being too aggressive or not aggressive enough, and what appears assertive, self-confident, or entrepreneurial in a man often looks abrasive, arrogant, or self-promoting in a woman" (Day, 2014, p. 293).

African-American women are faced with more daunting challenges, in leadership positions as compared with other racial groups. "African-American women are especially vulnerable to stereotypes and risk being seen as overly aggressive and confrontational" (Edmondson Bell & Nkomo, 2003, p. 385). African-American women are often impacted by a "double glass ceiling" that presents invisible barriers related to both their sex and race. Oftentimes this glass ceiling "…can be costly to an organization, not only in terms of lost productivity among women of color who feel stymied in the careers, but also in terms of turnover costs and annual salaries" (Ragins & Sundstrom, 1990).

This research will highlight apparent dichotomies of how women in general (and specifically, African-American women) in leadership positions are perceived, treated and represented historically across a variety of organizations when compared with their male colleagues. It is also telling how career paths, self-identification labels and life priorities differ between the genders. As the treatment of different race/gender groups is explored in businesses, politics and non-profit

organizations, this research should serve as a catalyst for discussions about mitigating the apparent disparities.

LITERATURE REVIEW

Are the capabilities and potential of female leaders underestimated?

According to Lockhart and Mollick (2015), women are not considered the right candidate for leadership positions because they are often viewed as soft, inhibited, or over emotional. Lockhart and Mollick (2015) also state that, "As a voter and rhetorician, I found it fascinating to observe the ways in which candidates performed their identity-based political *ethos*, especially with Clinton using the internet to announce her candidacy in a living room-like setting (Lockhart & Mollick, 2015)." Clinton's decision to use a cyber-living room was analyzed, criticized, debated, and lauded. Likewise, throughout these women's campaigns, the media relentlessly focused on their gendered performance—most visibly focusing on the acceptability or the readiness of Caucasian-American female leaders, Hilary Clinton and Sarah Palin. Their ethical appeals were also routinely scrutinized, which was no surprise for a political candidate.

The increased involvement of women of different racial backgrounds in leadership positions is a positive step toward achieving gender equality in our society. Leadership views vary in different parts of the world. For instance, President Ellen Johnson Sirleaf became the first elected female president in Africa in 2006, (Bio.com, n.d.). She was nicknamed the "Iron Lady." In an interview with CNN news, President Ellen Johnson Sirleaf states, "It was not easy but I knew I could do it (Otas, 2011, p.1)." Her bravery and persistence to accomplish her goals has helped her set the standard for all women throughout the world.

What characteristics should women possess to be qualified for leadership positions?

Leadership is the ability to guide and direct a group of people to achieve a goal or arrive at a destination. A good leader should possess qualities such as honesty, a positive attitude, and the ability to inspire his or her followers. Society's view on female leadership qualities is something that has not been extensively explored. "By contrast, women are thought to be communal – friendly, unselfish, caretaking and thus lacking in the qualities required for success in leadership roles (Fletcher, 2004, p. 3)." In some cultures, "… , the meaning of leadership is masculine, making the prototypical leader a quintessentially masculine man: decisive, assertive, and independent (Day, 2014, p. 292)."A country like the United States of America has had male presidents throughout its history and most of America's large companies are led by males who are deemed as the best for that position. Even though there are some female leaders in these large American companies, their representation is minimal. The reason behind this minimal representation of females in large multinational companies may be because there is both a domestic and global component to their business; so, if foreign companies/countries have a cultural bias toward women in high profile leadership roles, this may negatively impact communications and business dealings with US companies led by women.

The Meaning of African-American Women in Leadership

Some leadership positions are designed for a certain race and/or gender because of its high paying salary, good working conditions, and the job specifications (Byrd, 2008). Traditionally, "…, the meaning of leaders and leadership within organizations are generally associated with privilege, status and the experiences of white, middle-class men (Day, 2014, p. 49)." As Bierema and Cseh point out in 2003, "unless we begin to challenge the theoretical frameworks that define the field, they will become embedded and serve to simply reinforce the status quo" (p. 12). Perceptions about African-American females in leadership positions are consistent with the way female leaders are viewed in general. They are not seen as the right candidates for "certain" types of positions (Byrd, 2008). Corporations often think African-American women must possess some sort of extraordinary qualities and characteristics to be able to attain these kinds of positions (Edmondson Bell & Nkomo, 2003). Moreover, African-American women are stereotyped to be less productive as compared to other races and genders. African-American women are especially vulnerable to stereotypes in which they are viewed as overly aggressive and confrontational (Edmondson Bell & Nkomo, 2003). When we think about African-American women in positions of power, it opens up a bigger discussion about how they are perceived and how leadership roles for women are evolving (Day, 2014). Unless a solution is found to improve this view of African-American females and their leadership abilities, the growing number of African-American leaders will continue at a slow pace.

African-American Women in Leadership in Proportion to the Population

The proportion of African-American women in leadership positions in the United States is very small. "Women of color comprise nearly 23 percent of the U.S. female workforce, but only 15 percent of the women in managerial-level positions in the private sector (Giscombe & Sims, 1998, p. 26)." In Giscombe's report, she states, " …African-American women appear to be the most underrepresented subgroup in the private-sector management (Giscombe & Sims, 1998, p. 12)." Some African-American women tend to see themselves as under-valued because of the racial discrimination they face in their respective companies (Ragins & Sundstrom, 1990; Giscombe & Sims, 1998). In Giscombe's report published by the Catalyst, she argues, "The lack of progress for women of color can be attributed to the glass ceiling and racial discrimination. The glass ceiling and racial discrimination are costly in terms of lost productivity among workers who feel devalued and discouraged from making meaningful contributions to their companies, but also in terms of turnovers costs, which are estimated to be approximately $1 million for every 10 professional and managerial employees who leave their companies, according to the California-based Saratoga Institute" (Giscombe & Sims, 1998, p. 14). The Catalyst did a national study on African-American executives at the senior level -1,700 of which were female. The main motive of the research was to find the barriers that prevent African-American women from advancing to managerial positions at their jobs. The findings were fascinating and revealed the following about African-American executives: 72.1% have high visibility projects, 70.6% have company role models of the same race/ethnic group, 61.2% have informal networking opportunities with influential colleagues, and 53.2% have an influential mentor or sponsor. Additionally, African-American women receive only 58% of the salary of their male counterparts –the second lowest of the race/gender categories (Giscombe & Sims, 1998). The table below shows the findings of the Catalyst:

Race/Gender	Percentage Earnings vs. White Men
Hispanic women	48%
Hispanic men	65%
African-American women	58%
African-American men	65%
Asia/other women	67%
Asia men	91%
White women	59%

Racial Discrimination of African-Americans women in Leadership Positions

Racial discrimination is a social "disease" which has been pervasive from the founding of this great nation to the present. Racial discrimination is a situation where a group of people or race are seen as inferior to other groups or races. The slow-paced emergence of African-American females in leadership positions in the United States represents their struggle for liberation from oppression to "lift" the African-American community out of racial, economic, and educational subjugation (Hanson, 2003; Rogers, 2005; Rosser-Mims, 2005). The lack of prominent female leaders in the world (as compared with their male counterparts), may explain the societal perception that women are ill-equipped to be leaders; essentially, many are assuming that a lack of visible high profile female leaders implies that there are few qualified female candidates instead of there simply being inherent barriers that are preventing women from being hired for these leadership positions (Ragins & Sundstrom, 1990). African-American women are often viewed in an even more unfavorable light because of racism, discrimination, sexism, media images, and the entertainment industry. Eagly *et al.* (1995) indicates that women are effective and efficient in any leadership role provided it is explained well to them; their research about African-American female leaders reveals that women are oftentimes more effective in leadership roles and make an impact in their jobs and community. "The researchers purported that women in general are more effective in leadership roles that are stereotypically feminine and for men; stereotypically masculine roles increase their effectiveness (Eagly & Carli, 2003, p. 2)."

Gender Discrimination Within the African-American Community

Many people may think African-American women only face racial discrimination from other race and gender groups. Amazingly, within the African-American community, gender discrimination plays a pivotal role in the obstacles African-American women encounter. In "The Struggle within the Struggle" Constance Baker, a civil-rights attorney, shares her story about gender inequality in the NAACP. In the NAACP, it took 13 years for a female attorney, Constance Baker, to represent the oldest civil-rights organization in court because it was deemed as a masculine job (Turque &

Samuels, 1994). African-American women are given lower ranking jobs and are denied some key positions at the executive level (Turque & Samuels, 1994). At the grass-roots level, African-American women outnumber men 2 to 1 among the group's estimated 675,000 members (Turque & Samuels, 1994); yet men hold 10 of the 12 top national leadership posts and three quarters of the 65 seats on the board of directors. How does the NAACP actively promote equality, freedom, and justice in terms of racial relations but fail to mitigate gender disparities in leadership positions within the organization? One would surmise that an organization that promotes racial equality and justice would be more sensitive to the importance of gender equity as well. Even though some women have made it to top level leadership positions, they are typically faced with unequal and biased treatment when compared with their male counterparts. Dukes, the NAACP president from 1990 to 1992, stated that she was excluded from informal meetings where men made policy (Turque & Samuels, 1994). From a historical perspective, adequate female representation in leadership has been a challenge for the NAACP since its inception. Even female cofounders of the NAACP such as Rosa Park, Fannie Lou, and Ida B. Wells were excluded from positions of influence (Turque & Samuels, 1994). Although the NAACP's mission is to improve political, educational, social, and economic disparities for all people of color, there has been a consistent divide within the organization, in the number of female vs. male leaders of color on a local, regional, and national level (Rawlings, 2013).

Specific Gender Barriers for African-American Women in Leadership Positions

One obstacle women face in the workplace is sexism or gender-related barriers. In "Overcoming Gender Difference" as women of color continue to make strides in the workforce the rate at which they are advancing into senior leadership (C-suite) positions remains a challenge (Hutson, 2010). An article, "Our Separate Ways: Black and White Women and the struggle for Professional Identity," highlights research about successful African-American women and white American workers in corporate America (Edmondson Bell & Nkomo, 2003). The authors stress the struggles of women regardless of race at their various workplaces. The authors also discuss different approaches these women take to reach their goals in their workplace (Edmondson Bell & Nkomo, 2003). According to Edmondson Bell and Nkomo (2003), African-American women are often deemed as ill equipped for leadership positions because of managerial perception of low productivity. The obstacles for advancement perceived by African-American female managers were different both in degree and in kind from the obstacles perceived by Caucasian female managers (Edmondson Bell & Nkomo, 2003). Sexism and racism play a pivotal role in challenges that influence African-American female leaders and their advancement in the workforce. African-American women are subjected to a particular form of sexism shaped by racism and racial stereotyping. The theoretical concept of radicalized sexism also captures the idea that the experience of gender discrimination in the workplace depends on a woman's race (Edmondson Bell & Nkomo, 2003). This obstacle is the key that opens the gate to the problem of salary differences. Caucasian women tend to receive higher pay than African-American women at the managerial level for the same job. Twenty-seven percent the Caucasian women were earning $100,000 or more, compared to ten percent of the African-American women (Edmondson Bell & Nkomo, 2003). Gender barriers hinder African-American women from advancing to executive positions and leadership roles in corporate America. Since research shows that these disparities in salary among different gender and ethnic groups exist, the obvious question that arises is what can

or is being done on a local, state or federal level to enforce non-discriminatory practices in corporate America?

METHODOLOGY

In order to gain a comprehensive understanding of the race/gender disparities in many organizations, it is important to recognize both the historical patterns of inequity among different groups and inherent views of students that plan to enter the workforce; understanding both of these issues would provide insight about mitigating this dichotomy. The review of the literature in the previous section, revealed many systemic differences in how women in general (and specifically, African-American women) in leadership positions are perceived, treated and represented in corporate environments, political arenas and non-profit organizations. The next research phase, involves understanding how female students view themselves from a holistic perspective.

Baer & Hartman (2014) surveyed students and asked them where they see themselves after college. Amazingly, 50 % of male students, who were political science majors said they wanted to be Senators or local representatives. Although most female students said they wanted to be social workers, two female students wanted to become lawyers. Baer and Hartman (2014) went on to ask the female students why they did not want to run for political office. Interestingly, most of them said, they do not see themselves as politicians (Baer & Hartmann, 2014).

In this research, 100 African-American students, 47 female and 53 male, enrolled in undergraduate management courses at a public four-year university were randomly surveyed. None of the students had prior knowledge of the research study being conducted. Students were asked to complete a twelve question survey. In this survey the students were asked to develop a preferential order of life events, which included getting married, starting a career, raising children, climbing the corporate ladder, contributing to society, and seeking personal fulfillment. The order of life events was derived from *Lean in: Women, work, and the will to lead,* a book written by Chief Operating Officer of Facebook Sheryl Sandberg in 2013. They were also asked to give both positive and negative labels to describe themselves. The results were analyzed using descriptive statistics and a t-test.

ANALYSIS AND DISCUSSION

Forty seven percent of the participants were African-American females and 53% were African-American males. The table-1 shows the distribution of the participants' current college classification.

Table 1. College Classification

Freshmen	0%
Sophomore	7%
Junior	37%
Senior	56%

The table-2 shows a breakdown of their college major.

Table 2. College Major

Accounting	27.92%
Economics	4.65%
Finance	2.32%
Marketing	13.95%
Management	48.84%
Non Business	2.32%

The participants' self-reported GPA distribution is shown in Table 3 below.

Table 3. GPA Distribution

3.5 to 4.0	4.65%
3.0 to 3.49	30.23%
2.5 to 2.99	51.16%
2.0 to 2.49	11.63%
1.0 to 1.99	2.33%

The participants were asked to rank the six life events in the order that they are likely to occur in their future. The life events included: getting married, starting a career, raising children, climbing the corporate ladder, contributing to society, and seeking personal fulfillment. The sample was stratified based on gender. An average ranking for each life event for each gender was calculated. For females, the average ranking in order of most to least important was starting their careers, personal fulfillment, contributing to society, climbing the corporate ladder, getting married and raising children. For males the average ranking was starting their careers, climbing the corporate ladder, personal fulfillment, contributing to society, getting married and raising children. The rankings for the males and females are shown in Table-4. For each life event an unpaired *t*-test was run. The average ranking and standard deviation for each life event for both genders is given in the table below. The results of each of the unpaired *t*-tests are also shown in the table in Table 5 below.

Table 4. Gender View of Life Events by Priority

Life Events in Order for Males	
Starting my career	1.46
Corporate ladder	2.90
Personal fulfillment	3.17
Contributing to society	4.04
Getting married	4.09
Raising children	5.17

Life Events in Order for Females	
Starting my career	1.63
Personal fulfillment	2.11
Contributing to society	3.68
Corporate ladder	4.00
Getting Married	4.37
Raising children	5.16

Table 5. Gender Ranking of Life Events

Gender to Life Event	Average Ranking		*P*- Value	Unpaired *t*-test (α=0.05)	Standard Deviation	
	Female	Male			Female	Male
Getting married	4.37	4.09	0.3823	No significant difference in means	1.07	0.99
Starting my career	1.63	1.46	0.5586	No significant difference in means	0.68	1.22
Raising children	5.16	5.17	0.9625	No significant difference in means	0.83	1.27
Corporate ladder	4.00	2.90	0.0037	***Significant difference in means***	1.10	1.20
Contributing to society	3.68	4.04	0.4869	No significant difference in means	1.57	1.72
Personal fulfillment	2.11	3.17	0.0231	***Significant difference in means***	1.70	1.23

In summary, there were no significant differences between the average ranking for males and females in terms of getting married, starting a career, raising children, or contributing to society. However, there was a significant difference between the average ranking by females and males in terms of climbing the corporate ladder (*P-Value* < 0.05). Females ranked the corporate ladder fourth, which was significantly lower than their male counterparts that ranked it second. Also, there was a significant difference between the average ranking of females and males in terms of personal fulfillment *(P-Value* < 0.05). Females ranked personal fulfillment to be second, while their male counterparts ranked it third.

The participants were asked during the survey to circle five positive qualities that best described their personality. This list contained seventy-nine positive personality traits. Table 6 shows the top five positive traits chosen by the 47 female participants. The table also includes the number of participants picking that trait and the percentage that chose that trait.

Table 6. Top 5 Positive Terms

Top 5 Positive Terms	Number of Males	Percent of Males	Number of Females	Percent of Females
Easy Going	12	50.00%%	7	36.84%
Competitive	8	33.33%	3	15.79%
Ambitious	5	20.83%	7	36.84%
Achiever	7	29.17%	4	21.05%
Adaptive	6	25.00%	5	26.32%

The percent of males that chose "Easy Going" was 50%, which is greater than the percent of females, which was only 36.84%. Males were also more likely to consider themselves "Competitive" than females with a respective percentages of 33.33% for males and only 15.79% for females. The males were also more likely to choose "Achiever" with 29.17%, while the females chose "Achiever" at a rate of 21.05%. The females were more likely to choose "Ambitious" at 36.84%, while males only had a rate of 20.83%. Both males and females chose "Adaptive" at nearly the same rate, with males at 25% and females at 26.32%.

The participants were asked to circle five negative traits that best described their personality. This list contained ninety-four negative personality traits. Table-7 shows the top five negative traits chosen by the 47 female participants. The table also includes the number of participants picking that trait and the percentage that chose that trait.

Table 7. Top 5 Negative Terms

Top 5 Negative Terms	Number of Males	Percent of Males	Number of Females	Percent of Females
Impatient	6	25.00%	11	57.89%
Lazy	9	37.50%	8	42.11%
Moody	6	25.00%	3	15.79%
Indecisive	3	12.50%	6	31.58%
Nervous	6	25.00%	3	15.79%

The percent of females that chose "Impatient" was greater than males with females selecting it at 59.89% and males at only 25%. Females were also more likely to choose "Indecisive" with a rate of 31.58% compared to males at 12.5%. Males were slightly less likely to consider themselves "Lazy" with a rate of 37.5%, while females were at 42.11%. Males were more likely to consider themselves both "Moody" and "Nervous" at a rate of 25%, while females were less likely at a rate of 15.79% for both.

CONCLUSION

Women in leadership positions have historically struggled to be viewed as equals to their male counterparts. While many corporations claim to have equitable work environments, research shows that racial discrimination and sexism is still pervasive when differences in salary, promotions, perception and overall treatment are examined. The primary research goals were to 1.) Highlight disparities between race/gender groups in leadership roles, 2.) Explore differences in how African-American male and female college students use self-identification labels and view life priorities and, 3.) Use the historical disparities in leadership roles and different viewpoints among African-American college students as an impetus for future research directions that could help us better understand why inconguencies exist within organizations. In the future, we would like to explore how common perceptions students have about their workplace environment, self-identification labels and overall life view may affect their desire to have leadership roles. We surmise that the race/gender equality gap in leadership positions reflect both a systemic problem

(due to both gender and racial biases) and differences in how various groups perceive themselves and their life priorities.

The research indicates that there are significant differences in how important climbing the corporate ladder and personal fulfillment is for males vs. females. Furthermore, this research sheds light on both positive and negative personal traits that men and women identify with. In general, the United States has made marginal strides toward improving the gender disparities in leadership roles; however, there is still a great deal of work that needs to be done to truly mitigate gender bias in the workplace. African-American women should have the same opportunities as men in leadership positions and any work environment. It is important for government officials on a local, state, and federal level to explore and enforce policies that would minimize discriminatory practices against women and other under-represented populations in the workplace.

REFERENCES

Baer. D., & Hartmann, H. (2014). Building Women's Political Careers: Strengthening the Pipeline to Higher Office. Institute for Women's Policy Research, 12-13.

Bierema, L. L., & Cseh, M. (2003). Evaluating AHRD research using a feminist research framework. Human Resource Development Quarterly, *14*, 5-26.

Bio.com (n.d.). Ellen Johnson Sirleaf Biography. Retrieved from http://www.biography.com/people/ellen-johnson-sirleaf-201269#president-of-liberia

Byrd, M. (2009). Theorizing African-American Women's Leadership Experiences: Socio-Cultural Theoretical Alternatives. Advancing Women in Leadership Journal, *29*(1), 2-19.

Byrd, M. (2008, February). African American Women in Positions of Leadership.

Day, D. (2014). *The Oxford Handbook of Leadership and Organizations*, Oxford University Press.

Eagly, A., & Carli, L., (2003). The Female Leadership Advantages: An Evaluation of the Evidence. *The Leadership Quarterly*, 807 - 834.

Eagly, A., & Karau, S. (2002). Role Congruity Theory of Prejudice Towards Female Leaders. *Psychological Review*, 573-598.

Eagly, A., Makhijani, M., & Klonsky, B. (1995). Gender and the Evaluation of Leaders: A Meta-Analysis. *Psychological Bulletin*, 3-22.

Edmondson Bell, E. L., & Nkomo, S. M. (2003). *Our Separate Ways.* Cambridge: Harvard Business Review Press.

Fletcher, J. K. (2004). The Paradox of Post Heroic Leadership: An Essay on Gender, Power, and Transformational Change. *Leadership Quarterly*, 647-661.

Giscombe, K., & Sims, A. (1998). Breaking the Color Barrier. *HR Focus*, S9.

Hanson, J. A. (2003). Mary McLeod Bethune & Black women's political activism. Columbia, Mo.: Univ. of Missouri Press.

Hutson, B. (2010, March 1). *Overcoming Gender Differences*. Retrieved from Black Enterprise: http://www.blackenterprise.com/small-business/overcoming-gender-differences/

Knowledge Center. (2013). Women CEOs of the Fortune 1000. Retrieved from http://www.catalyst.org/knowledge/women-ceos-fortune-1000

Lockhart, M., & Mollick, K. (2015). *Political Women Language and Leadership.* Lanham: Lexington Books.

Otas, B. (2011, March 8). To Empower African Women, Turn Words into Action, *Special Report Interview on CNN,* Retrieved from http://www.cnn.com/2011/OPINION/03/08/otas.africa.gender.inequality/index.html?section=cnn_latest

Ragins, B. R. & Sundstrom, E. (1990). Gender and perceived power in manager-subordinate relations. Occupational Psychology, 63(4), 273-287.

Rawlings, J. E. (2013, March). The Meaning of Apartheid. *Statues Report Urban Apartheid,* Retrieved from http://www.naacpnewhaven.org/wp-content/uploads/NAACP_UrbanApartheid_print_final.pdf

Rogers. E. (2005). Afritics from margin to center: Theorizing the politics of African American women as political leaders. Journal of Black Studies, 35(6), 701-714.

Rosser-Mims, D. (2005). An exploration of Black women's political leadership development (Doctoral dissertation, The University of Georgia, 2005).

Sandberg, S. (2013). *Lean in: Women, work, and the will to lead* (First edition.). New York: Alfred A. Knopf.

Turque, B., & Samuels, A. (1994, September 5). The Struggle within the Struggle. *Newsweek*, p. 35.

COMPARISON OF STUDENTS' PERFORMANCE IN A MANAGERIAL ACCOUNTING COURSE TAUGHT IN BLENDED LEARNING, TRADITIONAL CLASSROOM, AND ONLINE SETTING

Ibrahim Aly, Concordia University

ABSTRACT

This study takes an empirical look at the three-way comparison of different learning environments (blended, face-to-face, and online) for an introductory Managerial Accounting course. The research compares student's midterm exam, final exam and total final grade results in this course that was taught by the same instructor using blended learning, face-to-face, and online media delivery. An Analysis of Variance test was used on students' performance outcome in this course to determine if a significant difference existed. This research demonstrates that there is no significant difference in the three different learning environments. It concluded that course instruction and pedagogy are more important for student learning than the type of media delivery and instructors should focus their efforts on the quality of designing and developing course' content.

Keywords: online learning, blended learning, students' performance

INTRODUCTION

Online learning is attaining acceptance and being approved by higher education institutions around the globe. Many schools have long experimented with separate learning environments to accommodate the needs of their students. Along with the traditional face to face classroom (F2F), we have seen the use of distance education (e.g., correspondence courses, televised courses, online courses and, lately, blended learning (BL). In the last decade, online learning has grown up to be a leading growth sector in higher education. According to the Sloan Survey of Online Learning (2013), 32% of all registered students enrolled in at least one online course, resulting in an overall rise in online learning to 6.7 million students during the fall 2011 term, an increase of 570,000 students over the previous year (Allen & Seaman, 2013).

Online learning activists have stated that online learning provides extra flexible access to content and instruction and is cost-efficient by enabling instructors to handle more students while maintaining learning quality that is equivalent or comparable to face-to-face instruction (F2F). Other researchers advocate that online education has generated a shift in the way higher education institutions offer their programs (Bassoppo-Moyo, 2006). However, educators continue to call into question the quality of student performance and learning in an online environment compared to classroom environments, (Parsons-Pollard, Diehl Lacks, & Hylton Grant, 2008). In addition, online learning has some barriers from students' point of view as reported that students are often discouraged due to problems with the technology, lack of communication and feelings of isolation, lack of prompt or clear feedback from the instructor, and from confusing instructions on the course website (Crow, Cheek, & Hartman, 2003; Sikora

& Carroll 2002). Marino (2000) also stated that some students had difficulty adjusting to the structure of online courses, managing their time in such environments, and maintaining self-motivation. This creates a distinct necessity to motivate the less independent student (Salmon, 2002). These problems put forward some programs experience high attrition rates as a result (Bennett, 2000). Therefore, the need for a finding the middle ground between the traditional face to face classroom (F2F) setting and online learning leads us towards a new approach to teaching and learning, which known as blended learning (BL) or hybrid (Rogers, 2001). BL has advanced rapidly, with expectations that it will become the "new normal" in course delivery (Norberg, Dziuban, & Moskal, 2011, p. 207). BL combines the most desirable elements of traditional face-to-face and online learning in order to find enhanced ways of supporting students in reaching the learning objectives and providing them with the best potential learning and teaching experiences (Bonk & Graham, 2006). However, operational definitions and taxonomies developed for BL environments currently lack the general consent that researchers need (Graham, 2013). The North American Council for Online Learning (NACOL, 2008) defines the blended learning setting as the combination of online delivery of content with the best features of classroom interaction and live instruction to personalize learning, permit thoughtful reflection, and differentiate instruction from student to student across a diverse group of learners. BL has many advantages as acknowledged by several research studies such as Osguthorpe and Graham (2003) acknowledged six benefits of blended learning as (a) pedagogical richness, (b) access to knowledge, (c) social interaction, (d) personal agency, (e) cost effectiveness, and (f) ease of revision. Blended learning delivers immediate feedback for students, face-to-face interaction with the teacher during learning, the flexibility of handling different content, and improves students' learning experience in developing their abilities and inspires students to take responsibility for their own learning (Abraham, 2007; Brown, Sivabalan, McKenzie, & Booth, 2002; Cooner, 2010; Garrison & Kanuka, 2004; Milheim, 2006).

This study first provides a literature review of students' performance in an online setting environment. Next, students' performance in an introductory managerial accounting course in a blended learning (BL) setting and in the online setting is compared with the traditional classroom setting using three different learning measures. Finally, discussion, conclusions, and limitations of the study are presented.

Prior Research in Online Education

An examination of over 200 studies comparing the differences between distance education (including online) and face-to-face classes shown mixed results, suggesting that further studies are desirable to determine the effectiveness of online instruction (Bernard, et al., 2004). Authors of the study concluded that "methodology and pedagogy are more important than media in predicting achievement" (p. 399), and they encouraged instructors of online classes to focus their efforts on quality course design rather than the environment in which it is presented. This argument is consistent with the findings of some studies, which have found no significant differences between online and face-to-face student achievement (Fortune, Shifflett, & Sibley, 2006; Herman & Banister, 2007; Koory, 2003; Tallent-Runnels, et al., 2006; Warren, & Holloman, 2005; Weber & Lennon, 2007).

A recent meta-analysis (Means, Toyama, Murphy, Bakia, & Jones, 2009) concluded that the success of online learning approaches appears quite broad across different content and learner types. However, most prior studies were conducted in non-technical settings, and the outcomes might not be applied to technical courses such as accounting (Arbaugh, 2005; Bryant, Kahle, & Schafer, 2005). Another problem with prior research is that the vast majority of studies used students' final grades to measure the effectiveness of student learning. Other measures are required to add insight into the ways in which student performance might vary across instructional methods (Arbaugh, et al., 2009; Kan & Cheung 2007).

Online learning studies in accounting as a specialized field are relatively few and have addressed topics such as instructors' descriptions of their experiences with online courses, comparison of student performance in different learning environments and students' satisfactions with online learning. Comparison of student performance in different learning environment studies yield mixed results. Some studies have concluded that online learning is as effective as classroom learning. For example, Gagne and Shepherd (2001) found that an online environment was as effective as a classroom in terms of student learning and that students' course evaluations were similar, although online students were less satisfied with instructor availability than face-to-face students. Basile and D'Aquila (2002) found no significant differences in a study of 128 students in four sections of principles in a financial accounting course taught by two different instructors after controlling for differences based on the course instructor. Chen and Jones (2007) compared a classroom MBA course and online MBA course and reported insignificant differences for final grades and overall evaluations of the course and instructors, but reported some student preferences for group work in the classroom course. Keller, Hassell, Webber, and Johnson (2009) reported no significant difference in final grade between students in a classroom and online introductory managerial accounting course.

Some research studies have concluded that students in a classroom or online environments tend to outperform their counterparts in face-to-face settings. Campbell, Floyd and Sheridan (2002) stated that students in online principles of accounting course performed significantly better on a comprehensive multiple-choice exam than those in a classroom course and were more satisfied with the course and the instruction. Abraham (2007) tested the participation and performance of graduate engineering students enrolled in two sections of a financial management course in two different semesters, with one section using a traditional classroom approach and the other section using a blended learning approach. Students in the classroom environment displayed increased participation in non-compulsory assignments and achieved higher marks in both in-session and final examinations. Stivason, Saunders, and Price (2008) found that students in an online introductory accounting course performed better on assessments than students in a classroom. Jones and Chen (2008) reported that MBA accounting students in blended learning sections had more positive group work experiences and more positive perceptions of instructor feedback compared to students in a face-to-face section.

In contrast, other studies have revealed that students in online tend to under-perform their face-to-face counterparts. Vamosi, Pierce and Slotkin (2004) reported that online students' satisfaction and perceptions of effectiveness in the delivery of course materials were lower than that of students in a classroom when class content rotated between live lectures and live lectures captured for viewing over the Internet during the second half of the course in a financial

accounting course. Similarly, Chen, Jones, and Moreland (2010) found that online students received lower mean scores than face-to-face students in three of four areas studied in an intermediate-level cost accounting course.

Most of these aforementioned studies utilized students' final grades when comparing the effectiveness of the online method to face to face classroom or blended delivery. In addition, these research studies frequently failed to control for differences in teaching and grading formats where two or more instructors delivered the course content or by the same instructor but over more than one semester. Thus, it is recommended that researchers should use well-designed strategies to ensure better evidence about student learning in online learning or BL environments (Means et al., 2009; Reeves, 2005; Tallent-Runnels et al., 2006). Thus, the main purpose of this study is to contribute to the current stream of online learning literature by (1) examining the student performance using three different measures of learning and (2) controlling for instruction and grading formats by having the same instructor teach BL, F2F, and online sections in the same semester using the same measurements of learning outcome between the three types of delivery. As a result, differences in factors such as institutional environments, grading standards, and instructional teaching style are minimized.

METHOD

Research Design

A quasi-experimental research design was implemented for students registered in three sections in the fall 2013 term of an introductory managerial accounting course taught by the same instructor. A student self-selected into each BL or F2F or online section is employed in this study. It assumes that students would enroll in a section offering the teaching mode that would best maximize their utilities such as grades, more cost-efficient, and more flexible access to content and instruction. This study has a high degree of internal validity and achieves as close a comparison as possible between F2F, BL and online sections of having the same instructor taught all sections and eliminating differences across sections in confounding factors such as institutional milieu, grading standards, and instructional teaching style. Furthermore, efforts were made to ensure that students in the three learning environments, participated in the same learning activities, assignments, and discussions in addition to having access to the same textbook and other learning aids such as assignment solutions, PowerPoint slides, and previous examinations and related solutions.

Measures of Student Learning

Students' performance was compared with three different measures of learning, consisting of midterm and final examinations (both held on campus) and total marks. Students in BL group were required to register at WileyPlus Course Management Systems to perform the twelve weekly online assignments. Students in online group were required also to register at WileyPlus Course Management Systems to perform the twelve weekly online assignments and the midterm exam.

The twelve weekly assignments corresponded to the twelve chapters required for the course and consisted of true/false statements, multiple choice questions, and problem-solving questions requiring calculations, analyzes, or short answers. Each assignment was graded as a pass or fails with two attempts at each question. These weekly assignments were critical to keep BL and online students active while providing learners with timely and meaningful feedback and assessment in the BL and the online environment. This created an element of motivation and an educational design that promotes a more active, collaborative, and participatory learners as those commonly found in the face-to-face environments.

A common midterm and final examinations were administered on campus to all students in both F2F and BL learning environments and at the same time through the internet for online section. Student performances on the midterm examination, the final examinations, and total marks were used to perform three-ways comparison among the three different learning environments for the fall 2013 term.

Statement of Hypotheses

The null hypotheses for this study are:

1. H_o: In the midterm exam, there is no statistically significant difference in students' performance among the F2F, BL and online sections.

2. H_o: In the final examination, there is no statistically significant difference in students' performance among the F2F, BL and online sections.

3. H_o: In the total marks, there is no statistically significant difference in students' performance among the F2F, BL and online sections.

Data Collection Procedures

The results presented below only include data from students who enrolled and completed all requirements for the course. There were 104 students in the blended learning section (BL), 59 students in face to face traditional classroom section (F2F) and 185 registered for the online section.

STATISTICAL ANALYSIS AND RESULTS

For each hypothesis, the Analysis of Variance test was used at 0.05 level of significance for comparing the respective variables of the three teaching modes. This method was applied by a majority of prior research studies in comparing the effectiveness of the online method with blended and face to face delivery. This test is appropriate because the independent or grouping variable is nominal (approach = BL, F2F, and online) and the dependent variable in each case is ratio scale. Summary performance measures for students in the three teaching modes and related tests in the fall 2013 are presented in table 1 through table 3.

Table 1- below demonstrates the results of Analysis of Variance test that was performed to test whether the students' performance on midterm exam mean scores differs among the F2F, BL, and online students. The results indicate that the average performance of students in the F2F section was not significantly different from that of students in the BL section or in the online section at F-Value 0.136 which indicated that variances between F2F, BL, and online sections were not different at the 0.873 significance level. The average score on midterm exam in the F2F section (79.29%) was not significantly different from the average score of the midterm exam of BL students (78.34%) or the online section (79.18%). We accept the first null hypothesis that there is no statistically significant difference in students' performance between F2F, BL classroom and online students in the midterm examination mean scores.

Table 1. ANOVA Test of Students' Performances in The Midterm Exam

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	51.050	2	25.525	.136	.873
Within Groups	64856.545	345	187.990		
Total	64907.595	347			

Table 2- below demonstrates the results of Analysis of Variance test that was performed to test whether the students' performance on final exam mean scores differs among the F2F, BL, and online students. The results indicate that the average performance of students in the F2F section was not significantly different from that of students in the BL section or in the online section at F-Value 0.626 which indicated that variances between F2F, BL, and online sections were not different at the 0.535 significance level. The average score on the final exam in the F2F section (58.34%) was not significantly different from the average score of the final exam of BL students (56.75%) or the online section (56.44%). We accept the second null hypothesis that there is no statistically significant difference in students' performance between F2F, BL classroom and online students in final examination mean scores.

Table 2. ANOVA Test of Students' Performances in The Final Exam

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	245.671	2	122.836	.626	.535
Within Groups	67650.062	345	196.087		
Total	67895.733	347			

Table 3- below demonstrates the results of Analysis of Variance test that was performed to test whether the students' performance on total marks mean scores differs among the F2F, BL, and online students. The results indicate that the average performance of students in the F2F section was not significantly different from that of students in the BL section or in the online section at F-Value 0.464 which indicated that variances between F2F, BL, and online sections were not different at the 0.629 significance level. The average score on total marks in the F2F section (65.38%) was not significantly different from the average score of the total marks of BL students (63.90%) or the online section (64.09%). We accept the third null hypothesis that there is no

statistically significant difference in students' performance between F2F, BL classroom and online students in total marks mean scores.

Table 3. ANOVA Test of Students' Performances in The Total Marks

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	131.305	2	65.652	.464	.629
Within Groups	48833.789	345	141.547		
Total	48965.094	347			

DISCUSSION

Online learning supporters state that online learning allows for further autonomy as it provides students with flexible access to course material and instruction at any time, from any place, while maintaining timely constructive feedback. To add to its benefits, it is cost-efficient and enables instructors to handle more students while upholding a learning quality that is equivalent or comparable to face-to-face instruction. Nevertheless, educators continue to call into question the quality of student performance and learning in an online environment compared to the performance of students who attend traditional face-to-face classroom classes (Parsons-Pollard et al., 2008). In addition, online learning has some shortcomings from students' point of view as reported that students are often discouraged due to problems with the technology, lack of communication and feelings of isolation, and lack of prompt or clear feedback from the instructor. This leads us towards a new approach to teaching and learning, which called blended learning (BL) or hybrid. Though numerous studies have been done on the effectiveness of online learning or BL, the majority of them addressed the effectiveness of distance education in non-technical studies. This being the case, the findings cannot be carried over to other technical areas of study such as accounting programs (Arbaugh, 2005; Bryant et al 2005). In addition, the vast majority of these studies used students' final grades when comparing the effectiveness of the online method or BL to the F2F setting, which may not be sufficient to produce meaningful results. The current study examined academic achievement between undergraduate students in an introductory managerial accounting course (technical field) in BL classroom setting and students taking the same course in an F2F classroom setting and online setting. Students' academic achievements were measured by the analysis of scores from three different outcomes, as oppose to only considering the final grade, in order to be able to have a more concrete overview of the students' performance.

The findings of this study support what has been reported in previous research; namely, in showing that BL learning or online setting can be as efficient as classroom learning in many respects regardless of the platform (BL, F2F, online) used. This fact reinforces the notion that the media of delivery is not as important as the instructional strategies applied (Bernard et al., 2004; Clark, 1983, 2001; Means et al., 2009). In view of these findings, not only should the development and use of online programs continues, but also several implications emerge pertaining to a future classroom or online program development. Nonetheless, to see the success of online learning or BL grow, it is vital that the quality and carefulness be put into the design and delivery of the course material. Online instructors should focus on encouraging online learners to interact with each other and with the instructor in order to develop a close relationship

in the virtual realm, opening the doors to active learning and free interchange of knowledge. It is also important for the instructor to facilitate higher level thinking skills, and promote problem - solving through interactive problem-based activities. This is especially critical in the online environment where an element of creativity is needed to identify and design educational experiences that can be as active, collaborative, and participatory as those commonly found in the face-to-face environments. Furthermore, to attain a high level of success as online educational instructors, one should be able to quickly adapt and shift their role from just teaching to coaching and facilitating the learning process. They should encourage student-faculty interactions and promote cooperation among students. They should persuade active learning, emphasize time management through assessment and provide prompt feedback.

CONCLUSION

In just over a decade, online learning and lately BL have become innovative forms of teaching in higher education worldwide. With innovation comes challenges, and educators face just that, as they strive to fully understand how to use this great learning technique. A primary focus for all educators involved in online instruction is the learning outcomes. The major focus of this study was to compare the learning outcomes of students' performance between those in a BL setting, a F2F classroom and those in an online setting. This was achieved using three different learning outcomes to better assess and demonstrate the effectiveness of the three types of media delivery in an introductory managerial accounting course. The results of this study revealed that students registered in the BL or online sections were as successful as students enrolled in the F2F classroom section. Students were able to learn the course material in these types of settings. The results from this study support the findings of prior research in that student' performances in BL or online courses are comparable to those of students in traditional classes. One may well also conclude that the teaching style and the pedagogy are far more imperative for student learning than the type of media delivery. Furthermore, instructors of BL or Online classes should dedicate their efforts in designing and developing a quality course outline which motivate and keep learners constantly involved.

LIMITATIONS OF THE STUDY

Despite the fact that this study has provided us with further insight into the realm of BL or Online learning, some limitations were observed. These limitations include the fact that the study was conducted at a single university and for a single course, managerial accounting, which was taught by one instructor. Furthermore, the assignment of students to each group was not random as the students had the choice of enrolling in any group, assuming students would enroll in the teaching mode that would best maximize their utility in terms of grades, cost-efficient, and more flexible access to content and instruction. This self-selection would not affect the robustness of the study because the students were all from the same school and taking a core course which is required for all undergraduate business major students. This allowed for the student's profile to be comparable in the three teaching modes. This being the case, the findings of this study cannot be generalized to other settings. Even though the study's results were informative, this study does not promote one medium of delivery (BL, F2F or Online) over another, nor does it attempt to measure the effect of teacher/student and student/student interaction on learning outcomes.

This study concentrated on the form of delivery as the main factor influencing students' performance in the course. Nevertheless, other factors could have influenced the results such as previous online course experience, proficiency with a particular classroom web page such as WileyPlus Management System, work experience and other student demographics. Although the results obtained are not a general representation of similar schooling environments, as depicted by the aforementioned limitations, this study benefited from internal validity that resulted from having one instructor teaching all learning environments (BL, F2F, and Online) sections. This directly eliminates the differentiation in factors such as institutional milieu, grading standards, and instructor teaching style. All the same, further research needs to be conducted in order to provide information to support the robustness and reliability of this study's findings. A central focus, which should be tackled in future research, is whether or not students can continue to produce acceptable achievement scores when classroom formats are applied to upper-level courses where the courses concentrate on a more defined and specialized subject matter in various degree programs.

REFERENCES

Abraham, A. (2007). Adopting a student-centered pedagogy in the teaching of accounting to engineering students: Comparing a blended learning approach with a traditional approach. In *ICT: Providing choices for learners and learning. Proceedings,* Singapore.

Allen, I. E., & Seaman, J. (2013). Class differences, online education in the United States, 2013, *The Sloan Consortium.*

Arbaugh, J. (2005). How much does "subject matter" matter? A study of disciplinary effects in online MBA courses. *Academy of Management Learning and Education*, *4*(1), 57-73.

Arbaugh, J., Godfrey, M., Johnson, M., Pollack, B., Niendorf, B., & Wresch, W. (2009). Research in online and classroom learning in the business disciplines: Key findings and possible future directions. *Internet and Higher Education*, *12*, 71-87.

Basile, A., & D'Aquila, J. M. (2002). An experimental analysis of computer-mediated instruction and student attitudes in principles of financial accounting course. *Journal of Education for Business*, *77*(3), 137–143.

Bassoppo-Moyo, T. C. (2006). Evaluating eLearning: A front-end, process and post hoc approach. *International Journal of Instructional Media*, *33*(1), 7-22.

Bennett, J. (2000, November 27). The best way to take classes. *The Wall Street Journal, p. R36.*

Bernard, R. M., Abrami, P.C., Lou, Y., Borokhovski, E., Wade, A., Wozney, L., Wallet, P.A., Fiest, M., & Huang, B. (2004). How does distance education compare with classroom instruction? A meta-analysis of the empirical literature. *Review of Educational Research, 74*(3), 379–439.

Bonk, C. J. & Graham, C. R. (2006). *The handbook of blended learning: Global perspectives,* local designs. San Francisco: Pfieffer.

Brown, D.A., Sivabalan, P., McKenzie, J. & Booth, P. (2002). An Action Research Approach to Improving Student Learning Outcomes Using Constructive Alignment: Some Teaching Evidence and Implications for Teaching Cost Accounting. Proceeding of the *AAANZ Annual Conference*.

Bryant, S., Kahle, J., & Schafer, B. (2005). Distance education: A review of the contemporary literature. *Issues in Accounting Education*, *20*(3), 255-272.

Campbell, M. C., Floyd, J., & Sheridan, J. B. (2002). Assessment of student performance and attitudes for courses taught online versus on-site. *Journal of Applied Business Research*, *18*(2), 45–51.

Chen, C. C., & Jones, K. T. (2007). Blended learning vs. traditional classroom settings: Assessing effectiveness and student perceptions in an MBA accounting course. *Journal of Educators Online*, *4*(1), 1–15.

Chen C., Jones, K. T., & Moreland, K. (2010). Distance education in a cost accounting course: instruction, interaction, and multiple measures of learning outcomes. *The Journal of Educators Online, 7*(2),1-20.

Clark, R. E. (1983). Reconsidering research on learning from media. *Review of Educational Research*, *53*(4), 445-459.

Clark, R. E. (2001). A summary of disagreements with the "mere vehicles" argument. In R. E. Clark (Ed.), *Learning from media: Arguments, analysis, and evidence* (pp. 125-136). Greenwich, CT: Information Age Publishing Inc.

Cooner T. (2010). Creating opportunities for students in large cohorts to reflect in and on practice: Lessons learnt from a formative students' experiences of a technology – enhanced blended learning design. *British Journal of Educational Technology, 41(2),* 271–286.

Crow, S. M., Cheek, R. G., & Hartman, S. J. (2003). Anatomy of a train wreck: A case study in the distance learning of strategic management. *International Journal of Management*, *20*(3), 335-341.

Fortune, M. F., Shifflett, B., & Sibley, R. E. (2006). A comparison of online (high tech) and traditional (high touch) learning in business communication courses in Silicon Valley. *Journal of Education for Business*, *81*(4), 210-214.

Gagne, M., & Shepherd, M. (2001). Distance learning in accounting. *T.H.E. Journal*, *28*(9), 58-65.

Garrison, D. R., & Kanuka, H. (2004). Blended Learning: Uncovering Transformative Potential in Higher Education. *The Internet and Higher Education*, *7*, 95-105.

Graham, C. R. (2013). *Emerging practice and research in blended learning*. In M. G. Moore (Ed.), Handbook of distance education (3rd ed., pp. 333–350). New York, NY: Routledge.

Herman, T., & Banister, S. (2007). Face-to-face versus online coursework: A comparison of costs and learning outcomes. *Contemporary Issues in Technology Education*, *7*(4), 318-326.

Jones, K. T., & Chen, C. C. (2008). Blended learning in a graduate accounting course: Student satisfaction and course design issues. *The Accounting Educator's Journal*, *18*, 15–28.

Kan, A., & Cheung, L. (2007). Relative effects of distance versus traditional course delivery on student performance in Hong Kong. *International Journal of Management*, *24*(4), 763-773.

Keller, J. H., Hassell, J. M., Webber, S. A., & Johnson, J. N. (2009). A comparison of academic performance in traditional and classroom sections of introductory managerial accounting. *Journal of Accounting Education*, *27*(3), 147–154.

Koory, M. A. (2003). Differences in learning outcomes for the online and F2F versions of "An introduction to Shakespeare". *Journal for Asynchronous Learning Networks*, *7*(2), 18-39.

Marino, T. A. (2000). Learning Online: A view from both sides. *The National Teaching & Learning Forum, 9*(4), 4 – 6.

Means, B., Toyama, Y., Murphy, R., Bakia, M., & Jones, K. (2009). Evaluation of evidence-based practices in online learning: A meta-analysis and review of online learning studies. U.S. Department of Education Office of Planning, Evaluation, and Policy Development, Policy and Program Studies Service Center for Technology in Learning.

Milheim, W. (2006). Strategies for the design and delivery of blended learning courses. *Educational Technology, 46*(6), 44 - 47

Norberg, A., Dziuban, C. D., & Moskal, P. D. (2011). A time-based blended learning model. *On the Horizon*, *19*(3), 207-216.

North American Council for Online Learning (NACOL). (2008). Fast facts about online learning (Issue report, 1-6). Vienna: North American Council for Online Learning.

Osguthorpe, R. T., & Graham, C. R. (2003). Blended learning systems: Definitions and directions. *Quarterly Review of Distance Education, 4*(3), 227–234.

Parsons-Pollard, N., Diehl Lacks, R., & Hylton Grant, P. (2008). A comparative assessment of student learning outcomes in large online and traditional campus-based introduction to criminal justice courses. *Criminal Justice Studies*, *21*(3), 239-251.

Reeves, T. C. (2005). No significant differences revisited: A historical perspective on the research informing contemporary online learning. In G. Kearsley (Ed.), *Online learning: Personal reflections on the transformation of education* (pp. 299-308) Englewood Cliffs, NJ: Educational Technology Publications.

Rogers, P. L., (2001) Traditions to Transformations: The Forced Evolution of Higher Education, in *Educational Technology Review, 9*(1).

Salmon, G., (2002) *E-Tivities: The key to active online learning.* Kogan Page Limited: London.

Sikora, A., & Carroll, C. (2002). *A profile of participation in distance education, 1999-2000.* Washington, DC: National Center for Educational Statistics

Stivason T., Saunders G., & Price J. (2008). A comparison of student performance in an online introductory accounting course with traditional classroom students, *College Teaching Methods & Styles Journal, 4*(5), 1-8.

Tallent-Runnels, K., Lan, W., Cooper, S., Ahern, C., Shaw, M., & Liu, X. (2006). Teaching courses online: A review of the research. *Review of Educational Research 76*(1), 93-135.

Vamosi, A., Pierce, B. G., & Slotkin, M. H. (2004). Distance learning in an accounting principles course-student satisfaction and perceptions of efficacy. *Journal of Education for Business*, *79*(6), 360-366.

Warren, L. L., & Holloman, H. L. (2005). On-line instruction: Are the outcomes the same? *Journal of Instructional Psychology*, *32*(2), 148-150.

Weber, J. M., & Lennon, R. (2007). Multi-course comparison of traditional versus web-based course delivery systems. *The Journal of Educators Online*, *4*(2), 1-19.

QUARTERLY REVIEW OF BUSINESS DISCIPLINES

VOLUME 2 NUMBER 4 FEBRUARY 2016

This issue is now available online at www.iabd.org.

A JOURNAL OF INTERNATIONAL ACADEMY OF BUSINESS DISCIPLINES
SPONSORED BY UNIVERSITY OF NORTH FLORIDA
ISSN 2334-0169 (print)
ISSN 2329-5163 (online)