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A COMPARISON OF THE INFLUENCING FACTORS OF USING A MOBILE PHONE: ATLANTIC CANADA VS. CAMEROON AFRICA

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ABSTRACT

Individual adoption of technology has been studied extensively in the workplace (Brown & Venkatesh, 2005). But far less attention has been paid to adoption of technology in the household (Brown & Venkatesh, 2005). Obviously, mobile phone is now integrated into our daily life. Indeed, according to the latest research from Strategy Analytics, global mobile phone shipments grew from about 1% annually to reach 362 million units in the second quarter of 2012 (Business Wire, 2012), that is, more than 1.5 billion units were sold in 2012. The International Telecommunication Union (ITU) inventoried 4.6 billion subscriptions in 2010, from which 57% come from the developing countries. In addition, according to Cisco, one of the greatest global networking companies, there will be 5.2 billion mobile phone users in the world by 2017 while the population will be reaching 7.6 billion people (Ferland, 2013). So the purpose of this paper is then to pursue the investigation on what make such people around the world are so using the mobile phone. In fact, on the basis of two recent studies already conducted on the influencing factors of using a mobile phone, a first study made in Atlantic Canada involving 327 respondents (Fillion & Booto Ekionea, 2010) and a second study performed in Cameroon Africa involving 505 respondents (Fillion et al., in press), this paper establishes a comparison of the different factors influencing mobile phone usage in these two countries located at about 10 000 miles of distance. In the two studies, the same moderator-type research model developed by Brown and Venkatesh (2005) to verify the determining factors in intention to adopt a computer in household by American people has been used to identify the determining factors in the use of mobile phone by people in household. And the data analysis was performed using the structural equation modeling software Partial Least Squares (PLS).

INTRODUCTION

Since numerous years, mobile phone is used for different professional purposes, particularly by senior managers in the workplace. And this technology is more and more used in the workplace since mobile applications have been integrated to actual enterprise business strategies. Individual adoption of technology has been studied extensively in the workplace (Brown & Venkatesh, 2005). But far less attention has been paid to adoption of technology in the household (Brown & Venkatesh, 2005). Obviously, mobile phone is now integrated into our

daily life. Indeed, according to the latest research from Strategy Analytics, global mobile phone shipments grew from about 1% annually to reach 362 million units in the second quarter of 2012 (Business Wire, 2012), that is, more than 1.5 billion units were sold in 2012. The International Telecommunication Union (ITU) inventoried 4.6 billion subscriptions in 2010, from which 57% come from the developing countries. In addition, according to Cisco, one of the greatest global networking companies, there will be 5.2 billion mobile phone users in the world by 2017 while the population will be reaching 7.6 billion people (Ferland, 2013). So the purpose of this paper is then to pursue the investigation on what make such people around the world are so using the mobile phone. In fact, on the basis of two recent studies already conducted on the influencing factors of using a mobile phone, a first study made in Atlantic Canada involving 327 respondents (Fillion & Booto Ekionea, 2010) and a second study performed in Cameroon Africa involving 505 respondents (Fillion et al., in press), this paper establishes a comparison of the different factors influencing mobile phone usage in these two countries located at about 10 000 miles of distance one from the other.

Few studies until now examined the determining factors in the use of mobile phone by people in household. And, at our knowledge, no study until now tried to establish a comparison of the determining factors of using a mobile phone between people of different countries around the world. Thus, the present paper brings an important contribution to fill this gap as it allows a better understanding of the impacts of mobile phone usage into people's daily life as well as the different usage of the mobile phone by people of different cultures and nationalities. It focuses on the following research question: What are the differences in the determining factors in the use of mobile phone by people in household in different countries around the world?

The paper builds on a framework suggested by Fillion (2004) in the conduct of hypothetico-deductive scientific research in organizational sciences, and it is structured as follows: first, the theoretical approach which guided the two studies is presented; second, the methodologies followed to conduct the two studies are described; finally, the results got from the comparison of the two studies are reported and discussed.

THEORETICAL APPROACH

The two studies compared in this paper were based on the theoretical foundations developed by Venkatesh and Brown (2001) to investigate the factors driving personal computer adoption in American homes as well as those developed by Brown and Venkatesh (2005) to verify the determining factors in intention to adopt a personal computer in household by American people. In fact, Brown and Venkatesh (2005) performed the first quantitative test of the recently developed model of adoption of technology in households (MATH) and they proposed and tested a theoretical extension of MATH integrating some demographic characteristics varying across different life cycle stages as moderating variables. With the exception of behavioral intention (we included user satisfaction instead given people investigated in these studies own a mobile phone), all the variables proposed and tested by Brown and Venkatesh (2005) were used in these studies. And we added two new variables in order to verify whether people were using mobile phone for security and mobility. The resulting theoretical research model is depicted in Figure 1.

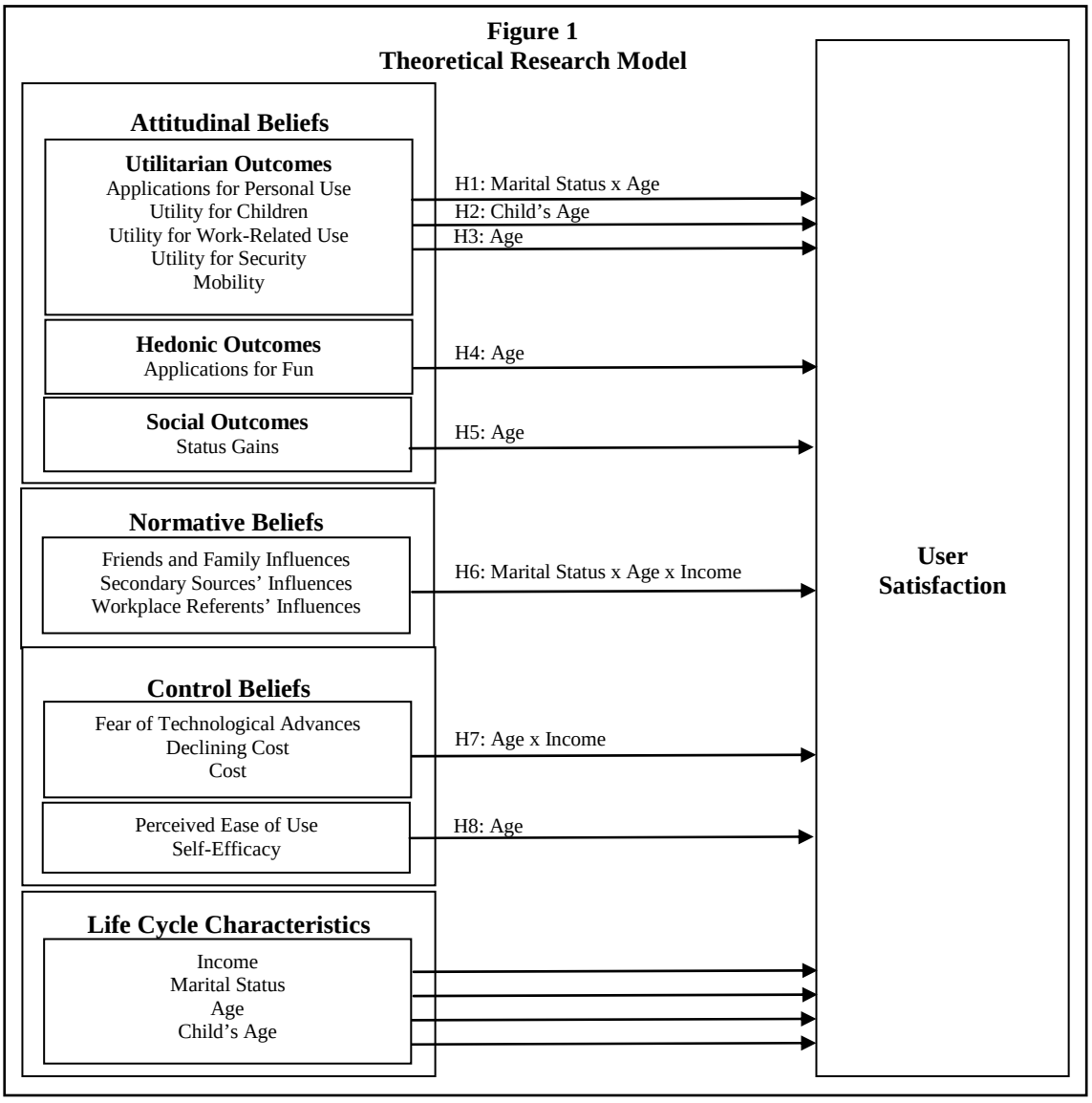

Figure 1 shows that Brown and Venkatesh (2005) integrated MATH and Household Life Cycle in the following way. MATH presents five attitudinal beliefs grouped into three sets of outcomes: *utilitarian*, *hedonic*, and *social*. Utilitarian beliefs are most consistent with those found in the workplace and can be divided into beliefs related to *personal use*, *children*, and *work* (we added beliefs related to *security* and *mobility*). The extension of MATH suggested and tested by Brown and Venkatesh (2005) presents three normative beliefs: *influence of friends and family*, *secondary sources*, and *workplace referents*. As for control beliefs, they are represented in MATH by five factors: *fear of technological advances*, *declining cost*, *cost*, *perceived ease of use*, and *self-efficacy*. And, according to Brown and Venkatesh (2005), integrating MATH with a life cycle characteristics (LCC), including *income*, *age*, *child's age*, and *marital status*, allows to provide a richer explanation of household personal computer adoption (household mobile phone usage in these studies) than those provided by MATH alone. Finally, as shown in Figure 1, the dependant variable of the theoretical research model developed is related to *user satisfaction*

(satisfaction in the use of mobile phone by people in household). All the variables integrated into the theoretical research model depicted in Figure 1 are defined in the full paper and the hypotheses are formulated.

In the next section of the paper, we describe the methodology followed to conduct the study.

METHODOLOGY

The two studies compared in this paper were designed to gather information on mobile phone adoption decisions in Atlantic Canada and Cameroon Africa households. Indeed, the focus of the two studies was on individuals who own a mobile phone. In the first study, that is, those in Atlantic Canada, we conducted a telephone survey research with individuals from Moncton, Riverview, Shediac, Magnetic Hill, St-John and Halifax. In the second study, that is, those in Cameroon Africa, we conducted an in-person survey research with individuals from the two more important cities in Cameroon, Yaounde and Douala. In this section, we describe the instrument development and validation, the sample and data collection, as well as the data analysis process.

Instrument Development and Validation

To conduct the two studies, we used the survey instrument developed and validated by Brown and Venkatesh (2005) to which we added three new scales, the first two measuring other dimensions in satisfaction in the use of mobile phone by people in household, that is, utility for security and mobility, and the last one measuring user satisfaction as such. The survey instrument was then translated in French (a large part of the population in Atlantic and Cameroon are speaking French) and both the French and English versions were evaluated by peers. This review assessed face and content validity (see Straub, 1989). As a result, changes were made to reword items and, in some cases, to drop items that were possibly ambiguous, consistent with Moore and Benbasat's (1991) and DeVellis's (2003) recommendations for scale development. Subsequent to this, we distributed the survey instrument to a group of 25 MBA students for evaluation. Once again, minor wording changes were made. Finally, we performed some adjustments to the format and appearance of the instrument, as suggested by both peers and MBA students. As the instrument was already validated by Brown and Venkatesh (2005) and showed to be of a great reliability, that we used the scale developed by Hobbs and Osburn (1989) and validated in their study as well as in several other studies to measure user satisfaction, and that we added only few items to measure the new variables utility for security and mobility, then we have not performed a pilot-test with a small sample. The evaluations by both peers and MBA students were giving us some confidence that we could proceed with a large-scale data collection.

Sample and Data Collection

Atlantic Canada's Study

First, in this study, we chose to survey people in household over 18 years taken from a large area in Atlantic Canada who own a mobile phone. To do this, undergraduate and graduate students studying at our faculty were hired to collect data using the telephone. A telephone was then installed in an office of the faculty, and students, one at a time over a 3 to 4-hour period, were asking people over the telephone to answer our survey. And in order to get a diversified sample (e.g., students, retired people, people not working, people working at home, and people working in enterprises), data were collected from 9 a.m. to 9 p.m. Monday through Friday over a 5-week period. Using the telephone directory of the large area in Atlantic Canada chosen for the study, students were randomly selecting people and asking them over the telephone to answer our survey. The sample in this study is therefore a randomized sample, which is largely valued in the scientific world given the high level of generalization of the results got from such a sample. Once an individual had the necessary characteristics to answer the survey and was accepting to answer it, the student was there to guide him/her to rate each item of the survey on a seven points Likert-type scale (1: strongly disagree … 7: strongly agree). In addition, the respondent was asked to answer some demographic questions. Finally, to further increase the response rate of the study, each respondent completing the survey had the possibility to win one of the 30 Tim Hortons $10 gift certificates which were drawn at the end of the data collection. To that end, the phone number of each respondent was put in a box for the drawing. Following this data collection process, 327 people in household answered our survey over a 5-week period.

Cameroon Africa's Study

First, in this study, we chose surveying people in household over 18 years taken from the two more important cities in Cameroon Africa (Yaounde and Douala) who own a mobile phone. To do this, a graduate student studying at the Faculty of administration of the University of Moncton, one of our colleagues from the University of Yaounde I, and a friend of our colleague in Yaounde were collecting data in-person. One at a time over a 3- to 4-hour period, the three responsible to collect data were soliciting people in-person to answer our survey. And, in order to get a diversified sample (e.g., students, retired people, people not working, people working at home, people working in enterprises, and so on), data were collected from 9 a.m. to 9 p.m. Monday through Friday over a 6-week period. People answering our survey were randomly selected in the streets, in the stores, and in the houses of the two Cameroonian cities chosen for the study by the three responsible to collect data. The sample in this study is then a randomized sample, which is largely valued in the scientific world given the high level of generalization of the results got from such a sample. Once an individual had the necessary characteristics to answer the survey and was agreeing to answer it, a responsible was there to guide him/her to rate each item of the survey on a seven points Likert-type scale (1: strongly disagree … 7: strongly agree). In addition, the respondent was asked to answer some demographic questions. Finally, it is important to mention here that no

incentive has been used in order to try increasing the response rate of the study. So, following this data collection process, 505 people in household answered our survey over a 6-week period.

The data analysis process and the results are presented in the full paper.

References are available upon request.

ETHICS AND CUSTOMER SERVICE DIFFERENCES BETWEEN INDIA AND THE USA

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ABSTRACT

In the current paper we examine variations in ethics and customer service differences between business people and expatriates in India and the USA. We find that the customer service constructs are quite different between India and the USA. We also found large differences in the dominant customer service styles between the two countries and across cultures. We also found differences in terms of whether assessments are done in rural, suburbs, or urban areas – with larger variations within the countries than between the countries. In India price was typically viewed as more important than customer service levels.

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ABSTRACT

Since the introduction of Web 2.0 technologies, users of the technologies have increasingly participated in online activities, including creating contents, disseminating information, discussing current issues, and etc. However, the gap between those who fully utilize the technology and those who do not has become a serious social issue. Lack of access or inability to utilize technology may cause social isolation. Online participation can help citizens overcome traditional obstacles stemming from such factors as race, ethnicity, and socio-economic status to provide increased opportunity. In a democracy, properly created websites can deliver information regarding legislation, policy, and political candidates in all levels of governments or communities and allow citizens to voice their opinions. Recent events in Africa and Middle-East countries provide good examples of citizens' use of technology to expose government policies and corruption and to unite those who need to voice their opinions. However, literature in digital citizenship and digital divide indicate that simple access to technology is not enough to improve online participation. Socio-economic status is known to be one of the major factors related to online participation. People with low socio-economic status tend to have less access to technology and show low level of online participation, even if they have access. Thus, African American students enrolled in HBCUs in a metropolitan area provide a unique opportunity to understand online participation in communities with low socio-economic status. This study investigates factors that affect online participation of HBCU students. Results this study will serve to guide educators in more effectively promoting online participation in communities with low socio-economic status, and more specifically, in educating HBCU students to become more active citizens in society.

FORECASTING STOCK INDICES USING TWO DIFFERENT SIGNAL PROCESSING TECHNIQUES WITH BACK PROPAGATION NEURAL NETWORK

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ABSTRACT

Back Propagation Artificial Neural Network (PBANN) has been used for stock market forecasting. However, predictions exhibit more variations when security markets are more volatile. We believe that by integrating a signal processing based filtering technique can improve predictability when data is noisy due to unexpected volatility in the market. We propose to integrate two different pre-processing techniques: Gaussian Zero-Phase (GZP) filter and Fast Fourier Transform (FFT) with PBANN to demonstrate improvement in forecasting trends in the security market. We have tested the proposed models using past 12 years data for two stock market indices, DOW30 and NASDAQ100.

INTRODUCTION

Active portfolio management requires an ongoing monitoring of financial and economic variables to understand the market dynamics and make improved investment decisions. One of the critical tasks is forecasting stock market trends in a timely fashion. Since forecasting of the stock market is crucial, researchers have attempted to develop models with the latest techniques to achieve satisfactory levels of prediction accuracy. Especially, during uncertain economic financial conditions domestically and globally, stock market indices go astray from the forecasted results due to emotional trading of participants. During the economic downturns, investors become conservative where they comprise with less returns but are more concerned for risk or financial security. According to the Modern Portfolio Theory (MPT), non-systemic risk or company specific risk can be reduced or eliminated by investments in mutual funds and index funds, whereas, the systematic risk or market risk due to the unstable economic and financial situations cannot be eliminated. Technical trading techniques have been helpful in sending buying and selling signals on a regular basis so that investors can make better investment decisions even in a volatile market conditions. This research paper is an attempt to support the claim of technical trading techniques and design a technical trading model that can reliably predict stock market indices by capturing dynamics of the economic and financial conditions effectively.

One of most popular models which has been investigated and used by many researchers in this area of research is Artificial Neural Networks (ANNs). ANNs are mathematical models that attempt to emulate the human brain neural network and its reasoning process to recognize

patterns. The power of ANNs is represented in their learning ability from training on incomplete, imprecise and partially incorrect examples (Haykin, 1994). Its unique advantage makes it well suited to deal with unstructured problems, inconsistent information and real-time output (Trippi and Turban, 1996). ANNs have many useful and reliable purposes including clustering, classification and recognition in many fields of research. They are applied to forecast stock forecasting, bond ratings, T-bills, foreign exchange rates, inflation, etc. (Aiken, 1999; Krishnaswamy et al., 2000; Sharma & Alade, 1999; Motiwalla & Wahab, 2000; Lam, 2004; Kim, 2006; Atsalakis & Valavanis, 2009; Manjula et al., 2011).

Noisy data is a typical problem for data processing models especially for models that need to be trained before being tested. Training a data processing model on noisy data is often challenging and will result in a less reliable model. Stock index data is known for its high content of noise due to many factors including financial, social, natural, political, etc. [ref]. In this paper, our proposed technique to reduce the effects of noise on the reliability of the BPANN prediction model is a FFT signal de-noising model. Our motivation to explore FFT and integrate to BPANN was from a previous work of ours in (Sharma & Rababaah, 2012). In our previous work, we proposed GZP de-noising technique and compared its performance with BPANN with no data preprocessing. This paper will compare the performance of the GZP and FFT and see if we can make any improvements on the previous work.

THEORY AND TECHNICAL APPROACH

This section will present the theoretical background of the proposed techniques of digital signal processing (DSP) focusing on Fast Fourier Transform (FFT) and Back Propagation Artificial Neural Networks (BPANN) and will discuss the technical approach followed to implement the proposed integration of DSP and BPANN in a proposed solution for Stock Index Prediction Problems. In our discussions, we will follow the proposed process diagram illustrated in Figure 1. The input data used to train and test the proposed methods was two stock indices of NASDAQ100 and DOW30. The data was collected from the Yahoo Finance (http://finance.yahoo.com/), and it covers twelve years of daily records of open, close, high and low indices.

As an initial investigation, we used both GZP and FFT to de-noise the DOW30 signal. The result of this investigation is depicted in Figure 2 (Left). To inspect closely the differences, we zoomed in and took a snapshot of a small block of the signal that is shown in Figure 2 (Right). The two techniques appear to have similar de-noising effects but one observation we have is that GZP matches the peeks closely, whereas FFT has forward shifting effects. We will see the consequences of these observations in the final testing of this work.

Figure 1
Flow Diagram of the Proposed Data Processing Models

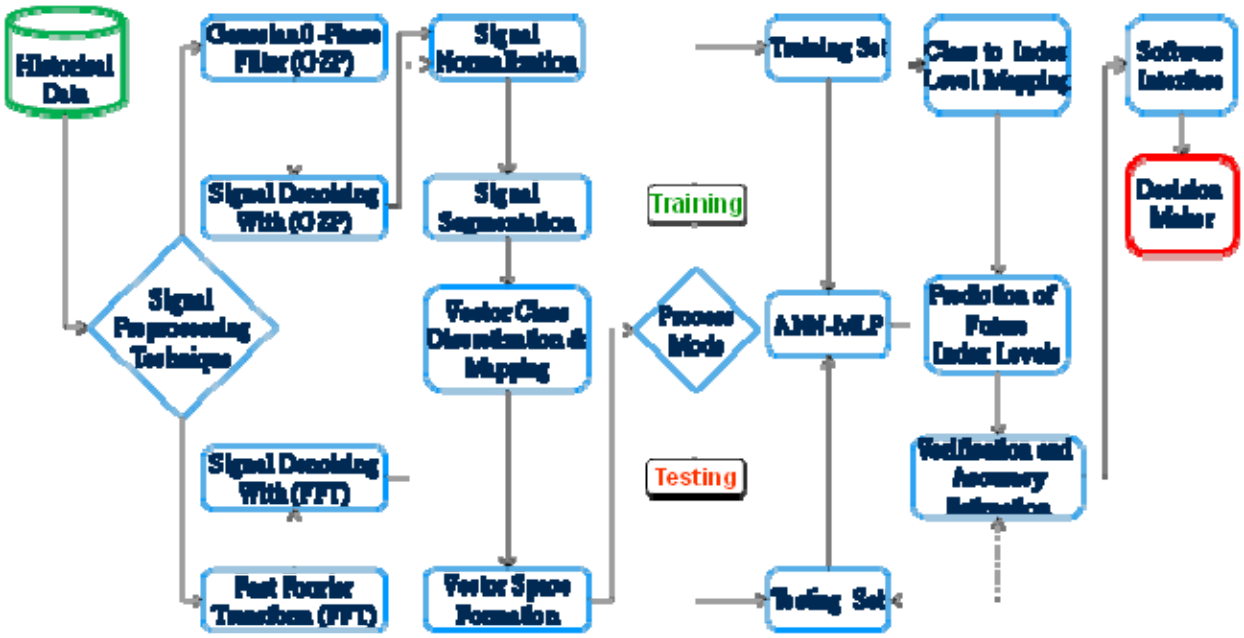
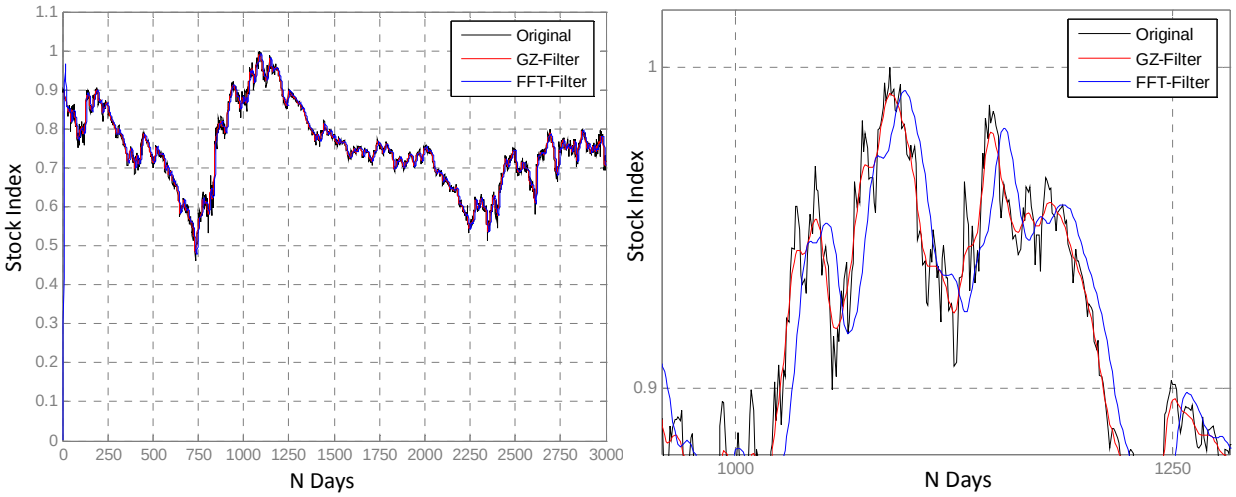


Figure 2
Initial Investigation between GZP and FFT de-noising Techniques



EXPERIMENTAL WORK AND RESULTS ANALYSIS

In this section, we will present the conducted experiments with three different settings: no preprocessing we will label it as (NPP); Gaussian Zero-Phase Filter (GZP); and Fast Fourier Transform (FFT). After this optimization process, we tested the two models, GZP and FFT, again for final results. The final testing results are summarized in Table 3 and plotted in Figure 3. As it can be observed, the average prediction accuracy of FFT is not superior to that of the GZP.

Figure 3
Summary of Results after FFT Optimization

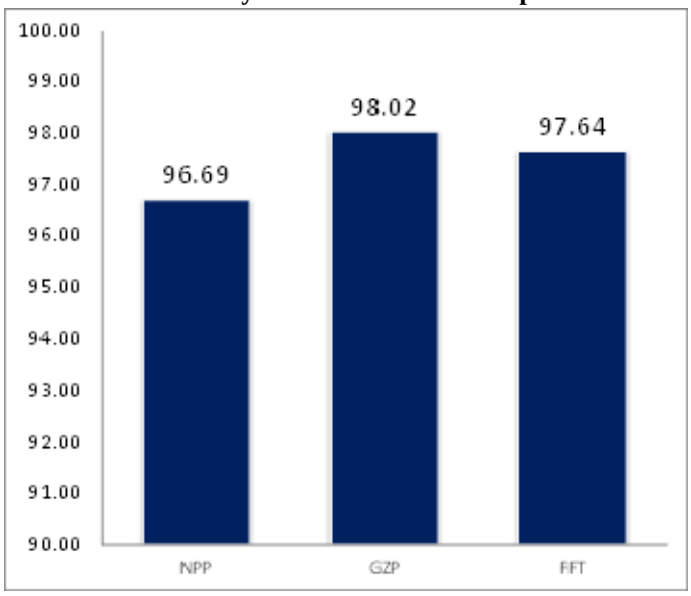
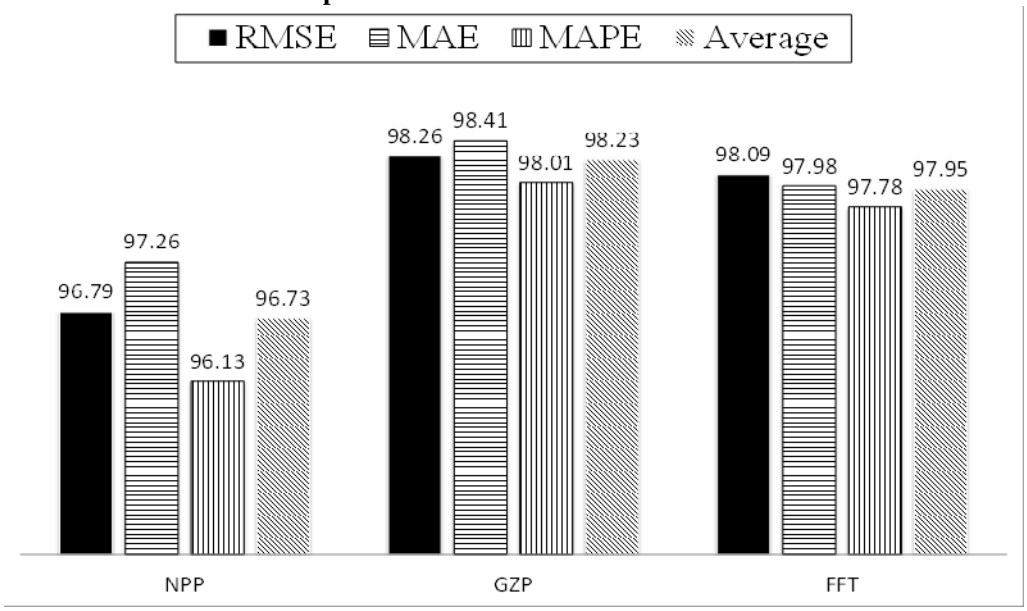


Figure 4
Comparison of Three Performance Metrics



To see if this result is consistent with other accuracy metrics, we used the three accuracy metrics of Root Mean Square Error (RMSE), Mean Absolute Error (MAE), Mean Absolute Percentage Error (MAPE) to verify the results. Table 4 summarizes these testing results, and they are illustrated in Figure 4. We can clearly confirm that the overall average of these three metrics supported our previous results that GZP accuracy is superior to the FFT model.

CONCLUSIONS

We have presented a comparative study of financial signals forecasting applied to stock indices as a case of interest. The study relied on a previous work of ours that proposed the integration of digital signal processing (DSP) techniques to typical predictive models such as Artificial Neural Networks (ANNs). Our previous work was successful in providing evidence that DSP techniques, namely, Gaussian Zero-Phase (GZP) filter, improved the prediction accuracy of ANN predictive model. This result inspired and motivated us to explore more techniques to investigate their capability compared against already established performance of the GZP. In this study, three cases were considered for comparison: no preprocessing of signal before ANN, integrating GZP with ANN and integrating Fast Fourier Transform (FFT) with ANN. The experimental results of our study provided evidence that the best performance of all three cases was the GZP, the second was FFT, and the third was the ANN with no preprocessing. The respected prediction accuracies of the three techniques taken as the average of RMSE, MAE and MAPE were: 96.73%, 97.95%, and 98.23%. As a future work, we intend to explore the capability of Discrete Wavelet Transform compared with all DSP techniques we have explored so far.

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ENHANCING INFORMATION SYSTEMS EDUCATION WITH SOCIAL MEDIA SKILLS

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ABSTRACT

The fast moving internet based e-economy demands an equally fast-moving skill set from the IT workforce. Like technology itself, the skills that current IT personnel have are subject to rapid obsolescence unless the skills are updated to reflect the current state of technology. Social media technology skills are increasingly becoming important as organizations attempt to adapt to meet the needs of customers. Social media, such as Facebook, Twitter, YouTube and LinkedIn allows people to engage in virtual communication. Businesses are beginning to use social media to engage people who may be interested in their goods and services. These technology tools allow the business and interested consumers opportunities to connect, follow, and engage socially. Thus, businesses are scrambling to hire individuals who understand how to use social media to engage current and prospective customers. This is evident by the increasing demand in the job market for people who have social media skills. A recent report (Lombardi 2012) states that employment postings with the need for social media skills grew 87 percent between 2011 and 2012.

Top business schools are starting to recognize the importance of teaching students social media skills. For example, social media related courses are being offered from schools such as Columbia Business School, Harvard Business School, and Stanford Graduate School of Business with a specific focus on how to use social media within an organization. Each course aims to build a community of learners who understand real-world business applications of social media (Holmes, 2012). A report from the Harvard Business Review confirms the need for student preparation to use social media (Burham, 2013). Twenty-one hundred Fortune 500 organizations participated in a survey to share their attitudes towards social media. The survey indicates that 79% of the organizations surveyed are planning to or have implemented social media in their organization strategy, but 67% of organizations lack confidence in the ability to leverage social media adequately.

The purpose of this article is to examine the need for social media skills, and suggest methods in which Information Systems curriculums in colleges can be enhanced and made more relevant with social media skills. Specifically, we illustrate how the use of social media tools such as Facebook, Twitter, and YouTube can be included in college curricula to make students more marketable in the job market. This paper will be beneficial to IT educators and academic

researchers as it will provide a solid basis for reviewing and updating university IT curricula, conducting relevant business research in the social media arena. Business managers in organizations will also greatly benefit from the paper, as it would make them aware of the latest social media techniques and IT education trends that they can use to hire the best employees to leverage social media in their own organizations.

A MODIFIED PRESCRIPTIVE MODEL TO MITIGATE BEHAVIORAL ISSUES IN PROJECT MANAGEMENT

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ABSTRACT

In the last decade, a new tool, the Critical Chain, which incorporates Goldratt's Theory of Constraints has gained popularity among the project managers. This tool can easily generate false alarms when a project is actually doing fine leading to unnecessary interventions by practitioners while managing multiple projects. This paper proposes a modified prescriptive Critical Chain model that not only mitigates the false alerts but also the behavioral effects inherent in the current model. Additionally, our modification allows the project manager to incorporate a risk component. Data from an actual case is also used to test our model.

Key Words: Critical Chain, Multiple project management, Buffer burn index, risk

INTRODUCTION

Given today's highly competitive economy, on-time project completion is becoming increasingly important for a company to stay successful. Historically, being able to manage a single project by completing it on time and within budget has proven to be difficult. According to Steyn [2001], 90% of all projects are conducted under a multi-project environment. Managing multiple projects, then, becomes even more difficult knowing that each one of the individual projects has a high likelihood of failing. The manager must pay close attention to each project to ensure success. In a multi-project environment it becomes difficult and onerous for a manager to keep track of each project. According to Herroelen and Leus [2005], even though a plethora of project management software tools exist to assist the project manager, yet most projects fail to come to a successful completion. Fricke and Shenhar [2000] state that one of the primary reasons for these failures is project management's inability to effectively manage uncertainties associated with resource dependencies and its effective prioritization.

In recent years, Goldratt's [1977] Critical Chain Project Management (CCPM) methodology, which has been codified in popular software applications, has emerged as a possible solution to the problems of managing projects. A major difference between CCPM methodology and other methodologies is that instead of adding small buffers to each activity, it focuses on a project buffer. Typically this buffer is divided into color coded three parallel zones that represent three different levels of buffer penetration. Unfortunately the use of these color coded parallel zones often easily leads to false alarms on the actual progress of a project.

Presently, there is little in the literature that addresses the behavioral issues related to CCPM methodology. There exist significant behavioral implications while using the CCPM

methodology, specifically, in the interpretation or misinterpretation of the buffer penetration zones. We see a need to help project managers improve their ability to manage projects effectively by concentrating their focus on the ones that actually need attention. Agarwal et al. [2010] attempted to address this by developing a 2-dimensional model (henceforth called the current model) that used the standard three parallel buffer penetration zones but, introduced an additional element being the slope of the progress line for each project. Unfortunately, this model did not solve the issue of improper behavioral responses related to the projects appearing in the red zone that were actually not problematic and those appearing in the green zone that were in jeopardy.

This paper presents a modification to the current model to accurately reflect the relationship between project completion and buffer penetration. Instead of using three parallel horizontal lines to delineate the green, yellow and red zones, the new model proposes to introduce the use of diagonal lines representing the boundaries for the green, yellow and red zones. We believe that the use of these diagonal lines would more accurately reflect the relationship between the work completed and the buffer used by providing appropriate alert signals and encouraging only warranted behavioral responses.

THE MODIFIED MODEL

Figure 2: Project Management Using Modified Model

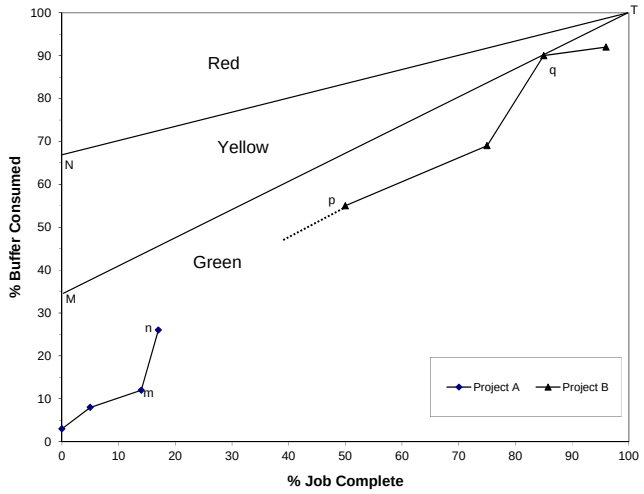


Figure 2 shows our proposed modified model for managing multiple projects more effectively. It considers the same 2-dimensions (% buffer consumed and % job completed) as in the current model by Agarwal et al. [2010]. However, the modified model differs from the current one on how the green/yellow/red bands are defined in the chart. Instead of creating three equal sized horizontal bands, the modified model positions the green/yellow/red bands based on the risk tolerance of each company for buffer consumption.

To begin developing the modified model, each company must answer the question: what are the maximum acceptable levels of buffer consumption at zero percent project completion that

generates a sense of "no concern" and "high concern" respectively. Those points are represented as M (33%) and N (67%) respectively in Figure 2. Note that point T in Figure 2 represents the project progress level where the project is 100% complete and buffer is also 100% consumed. Now the three bands are created by joining points M and N to point T. The region to the right of line MT represents the green band of "no concern" for project completion progress. The region between the lines MT and NT represents the yellow band of "moderate concern" requiring recovery plans to be formulated. The region to the left of line NT represents the red band of "high concern" recovery plan implementations to recover lost buffer.

It is to be noted that points M and N are merely parameter values representing a company's threshold cut-off between "no/some" concern levels and "some/high" concern levels for buffer consumption at 0% project completion level. Instead of these thresholds being 33% and 67%, another company may choose these levels to be 25% and 60% respectively. In that case, the relative positioning of the three bands would change.

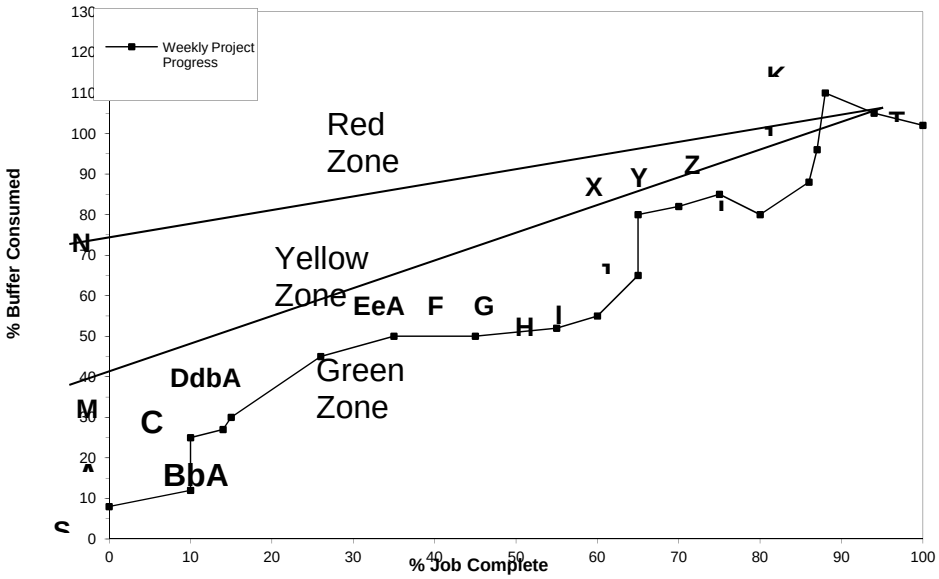
APPLICATION OF THE MODIFIED MODEL AT COMPANY ABC

Figure 3 shows the corresponding weekly project progress tracking graph. Ideally, any project progress tracking graph should show each point to the right of the diagonal line separating the green and yellow zones. In reality, however, a typical project's progress towards completion would show a mix of slopes and occurrences as shown in Figure 3.

In Figure 3, Point A and segment BC show buffer penetration without any job progress during the previous week. Even though the current status of the project at these instances is in the green zone, a project manager should still try to find the associated bottlenecks and assignable causes. There is no need to trigger any alarm. Segment EF and GH represent very efficient task completion where job completion rate is higher than the buffer consumption rate with nothing to worry.

A cursory look at points X, Y, Z in the yellow zone should signal caution. There is no need for alarm but the project should now be monitored carefully to avoid its entry into the red zone in future.

Figure 3: Actual Project Tracking Using Modified Model at ABC



The project team should begin to formulate buffer recovery plans which can be put into action if the project enters the red zone in future. Segment JK illustrates how uncertainty can hit towards the end of a project when it can be most devastating, thus calling for immediate corrective action. As shown, it results in the project shipping almost on time even though just 2 weeks prior it was at the risk of failing to meet its due date. Thus, unlike the current model, the modified model is in a better position to accurately reflect the project status and alert signals by considering a company's risk tolerance for buffer consumption. As a result, the model guarantees only the warranted behavioral outcomes based on a practitioner's psychological associations with the green-yellow-red color schemes. Thus, this modified model is a significant improvement over the current model since it eliminates the risks associated with false alarms which may prove costly and damaging to a project's progress to completion.

(References Available Upon Request)