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Marketing Factors Influencing On The Use Of KTB Netbank Application Of The Thai Officers

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Daoroong Aiyadech, Kasetsart University, Thailand
Surang Hensawang, Kasetsart University, Thailand

ABSTRACT

The purposes of this research were 1) to study Marketing factors and decision making of the Thai officer affecting on the making a decision for the use of PromptPay features of the KTB Netbank application. 2) to explore the Thai officers in deciding to sue the PromptPay feature of the KTB Netbank 3) to analyze the contribution of marketing factors impact on the Thai Officers’ behaviors in deciding on the use the KTB Netbank’s PromptPay. This study has done by using questionnaire from RTAF officers in 14 units then analyzed frequency percentage mean using standard deviation t-test (Independent-test) One-Way ANOVA in case that differences are found the deferent pair will be examined by using mean of LSD and analyze the demographic characteristics. For marketing mix has analyzed by using Pearson correlation coefficient and also used Multiple Linear Regression to see the relationship of variable

The result of this study showed demographic characteristics has no effect on influencing of the use of Promptpay services on TMB Touch application except in department marketing mix: Price People Process are also have no effect on influencing of the use of Promptpay services on TMB Touch application. However marketing mixs : Product Place Promotion and Physical evidence have effecting and influencing the use of Promptpay services on TMB Touch application.

Keywords: Netbanks, KTB, Royal Thai Officers
Promoting Preservice Teachers’ Computational Thinking Through Educational Game Design

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ABSTRACT

This study attempted to promote preservice teachers’ computational thinking through the activity of educational game design using the visual programming language, Scratch. A total of 66 preservice teachers from a teacher education program at Taiwan’s university were selected as the participants in this study. Each preservice teacher was asked to design an educational game for primary school students after learning the Scratch programming language. Pre- and posttests on computational thinking and computer programming attitudes were administered to the participants for exploring whether their knowledge and attitudes had improved after the experiment. The research findings indicated that different types of educational games were developed by the preservice teachers after the game design activity. It also revealed that this activity improved preservice teachers’ computational thinking and their programming attitudes. Moreover, this study found that the preservice teachers with programming experience had significantly better performance on the enhancement of computational thinking than those without programming experience.

Keywords: game design, educational game, computational thinking, teacher education
Needs And Satisfaction Towards The Battle Dress Uniforms Of Army In Thailand

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ABSTRACT

The purpose of this research was to study needs and satisfaction of army towards the battle dress uniforms. The population in the study were armed forces in the First Army Region of Thailand. Quantitative research consisting of 400 samples was employed. Data were collected through purposive sampling method and analyzed by descriptive statistics at the statistical significance level of 0.05. The results revealed that most of the respondents were below 30 years old, graduated from military institutes, earned an income less than 10,000 baht per month, had a working experience less than 10 years with normal Body Mass Index. According to Maslow’s Hierarchy of needs, all of the needs for battle dress uniforms were in the highest level, from physical needs, safety need, to social needs, except self-esteem needs, which were in a high level. For the physical needs, results had shown the distinguished needs from anti-musty smell in clothes and long lasting colour. For the safety needs, respondents replied that the design and colour should be according to the natural environments. As for the social needs, the battle dress uniforms must be tailor-made to the armed forces disciplines, thus making the army be identified in the military conducts. Finally, the self-esteem needs, the proper battle dress uniforms, could make the armed forces feel honorable in their professions. Besides, researcher had studied the satisfactions towards product components of the battle dress uniforms. The product components of the battle dress uniforms were analyzed in three levels, that were, core product, generic product, and expected product. It was found that most of the respondents satisfied with all of the product components in the highest level. The hypothesis testing results showed that different education factors led to difference in overall needs and satisfactions towards the battle dress uniforms. It was recommended that the army forces should select the uniform cloth and design to make it comfortable, long lasting for use and strict to pattern noted in the armed force disciplines.

Keywords: Need, Satisfaction, Army’s Battle Dress Uniform, Thailand.
The Role Of Financial Reporting Quality In Selecting New Audit Committee Member

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ABSTRACT

In this paper, we examine how the Boards of Directors affect their firm’s financial reporting quality through the appointment of new Audit Committee Members (ACM). Using the appointee firm’s financial report quality as a proxy for new ACMs’ financial reporting attributes, we find that appointer firms are more likely to appoint new ACMs with financial reporting attributes similar to firms’ financial reporting culture. We also show that firms appointing ACMs with relatively weak (strong) financial reporting attributes are more likely to have decreased (increased) subsequent financial reporting quality. Further, we find that firms appointing ACMs with relatively weak financial reporting attributes suffer more deterioration on their subsequent financial reporting quality when their financial reporting culture are more different from the ACMs’ financial reporting attributes. For the appointment of Board members not on the Audit Committee, we find no similarities in financial reports quality.

Acknowledgment: I acknowledge that this paper is my dissertation paper for my graduation from City University of New York.
Auditor-Client Disagreements, Auditor Resignations, And Audit Fees Charged By Successor Auditors

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ABSTRACT

This paper investigates the effects of auditor-client disagreements on auditor resignations and audit fee. Audit risk is higher for disagreement firms because they are more likely to manipulate earnings and their risk of material misstatement is higher. Using audit fee as a proxy for audit risk, we confirm that disagreement firms have high audit risk. Because the occurrence of disagreements might suggest heightened audit risk for the incumbent auditors, and considering that auditors already charge high audit fees, they have limited option to offset the increased audit risk but to resign from the engagements. Consistent with the expectations, we find that auditor resignations are more likely following disagreements. The likelihood of resignation is even higher when disagreements involved Big4 auditors. Further, We document that successor auditors are more likely to charge higher audit fees for disagreement firms and the audit fees charged by Big 4 successor auditors are even higher.
Fashion Design Classrooms & Technology: Disruptive Innovation In The Curriculum

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ABSTRACT

The purpose of the article is to investigate what are the different ways that fashion design students use learning technology and social media to enhance their learning. The research focused on an independent Fabric Science course (CTF 300/500) in Clothing, Textile & Fashion program for undergraduate and graduate fashion design students. It is offered at a southwestern university in the United States in fall 2017. The research design is a qualitative case study method and data was collected through interviews, observation, focus group, pre-survey, and analysis of the documents and artifacts. Based on the findings, instructors are still using technology or devices with students. Although some fashion students use technology tools more than instructors, they need curriculum designers or instructors for guiding and teaching fashion with technology.

Keywords: technology; social media; fashion design; higher education; curriculum.

Introduction

Technology has become an integral part of the lives of many around the world. Ocampo & Martin (2003) argue that education promotes the use of technology and thus impacts the lifestyle and behavior patterns of individuals. For many, the use of technology makes humans' lives more comfortable and faster not only for daily living but also in education. Also, communication becomes easier between teachers and their students outside the classroom because they can communicate online anytime and anywhere. Anderson (2008) mentions that online learning is an accumulation of works by professionals, researchers, and scholars made by effectively working in the field of distance education. The content has been composed during a period when distance education is experiencing change.

The development of technology requires knowledge of skills and techniques that have been explored in research and can be used in teaching and learning. Technological advancements have given rise to a new age of computer science, education, and fashion design. The purpose of the literature review in this study is to introduce the theories and primary research studies of using the technology tools for teaching fashion design students.

Unfortunately, many fashion design students lack access to computer tools and the skills needed to use technology tools. Curricula designers have to upgrade teaching standards and the system of education in Art and Design by designing a curriculum that requires new educational technologies in their discipline. This new curriculum planning with technology will help teachers transform university standards and will also facilitate learning on an international level. Such an improvement will also render better opportunities for students and will help them conduct their research in an advanced manner.

Background literature

Curriculum development in fashion design

The world we live in has developed tremendously in the past century. Education has promoted innovation that has resulted in technological growth directly related to the lifestyle and behavior patterns of individuals (Ocampo & Martin, 2003). Anderson (2008) mentions that online learning is an accumulation of works by professionals and researchers or practitioners and scholars made by effectively working in the field of distance education. The professional work, in this case, that which pertains to fashion design, has been composed during a period when the field has been experiencing change. It is important to note that the little research that has been done in the area of
teaching fashion design focuses only on the fashion industry and business. Wright, Cushman, and Nicholson (2002) recommended that an extensive study utilize a more extensive range of design professionals and academicians be needed. The authors point out:

Colleges and universities might be better able to tailor their curricula to include the development of those attributes that are held most profoundly by the apparel design industry. With the need to add new curricular offerings tempered with the need to remove old or less useful study from coursework, a more comprehensive study might serve to give direction (p. 127).

Development of educational learning technologies will open prospects for both Fashion Design teachers and students. It also lets them identify and implement the emerging trends in educational technologies. In other words, introducing new methods of teaching and learning requires an institutional approach to professional development that caters to the different levels and requirements of the staff. It is essential for fashion students to investigate technology tools to understand the content in teaching, to improve their research skills, and to develop scaffold-teaching strategies. Today, the design room consists of a designer who might be from Belgium, designing and marketing for a German brand, presenting work bi-annually in Milan, and selling to stores in Asia. This was the case for designer Raf Simmons, who designed for the label Jill Sander. Thus, it becomes essential for the designers to be educated in the nuances of technologies, the expanding global markets, available resources, and sub-cultures. This has resulted in university curricula being influenced by technology, ethical issues, innovation, environmental issues and different cultures (Marshall, 2009). Today, the programs aim to prepare design students by infusing the curriculum with relevant information that can help them succeed in the evolving global industry.

Uses of technology in teaching about fashion design

Teaching with technology is quite complex as there are challenges associated with new technology for educators. While the pedagogical technologies traditionally include specificity, stability, and transparency, such technologies achieve perception transparency and become commonplace with the passage of time (Guardiola, Dagli & Corrs, 2013). The authors added that digital technology such as software application, handheld devices and computers have multiple usages and undergo rapid change. Students can learn and improve their skills through the use of technology. Access to technology brings versatility to fashion such as websites, blogs, videos and fashion applications.

Baytar and Ashdown (2014) carried out extensive research and found that contemporary fast changes in the fashion of textile product have led to unsustainable practices in the clothing industry. Essentially, restoring normalcy and enhancing sustainability in the apparel industry requires educating the future investors and leaders in this industry about the challenges of such wasteful practices. Consequently, this article comprehensively reviews ways of enhancing attitudes and improving apparel production as well as consumption by use of short resourceful video clips based on powerful stories other than instructional resources. The researchers found that the information from short video clips forms part of sufficient interventions that would increase knowledge in ways of enhancing and promoting environmentally sustainable practices (Baytar & Ashdown, 2014).

Teaching can get complicated if aided by technology since technologies are biased and not neutral. Particular technologies have their propensities, affordance, constraints, and potentials that make them appropriate for specific tasks. Contextual and social factors too often complicate the relation that exists between technology and teaching (Pospisil, 2013). The efforts put forth by the educators often are not met with support from institutional and social contexts for integrating technology. Armstrong and LeHew (2011) added that students who enroll in courses that comprise professional and technical communication are required to analyze critically and address the issues of production and process in diverse media environments. Such an observation put forth the fact that pedagogy that is document-centric is no longer considered the only goal of such courses and is required to serve alongside pedagogy.
for digital media.

The experience of educators in the use of digital technology is often inadequate for both learnings as well as teaching. Kim (2014) explains that many teachers have their degrees from a time when technology was not advanced in education. Hence, often it is found that the educators are not prepared sufficiently to apply technology in their teaching and fail to appreciate its value in the realm of practical learning and teaching. Some students have issues that arise from using technology via online community learning and group work. One such issue is that they struggle to find time to meet with their group and communicate well. However, students must work with each other because each member has a different background and different experiences. They can even learn how to work with those who disagree with them. Any space can be adjusted to students unique learning styles can collaborate on projects (Johnson, Suriya, Yoon, Berrett & La Fleur, 2002).

According to Burke (2006), a computer is a powerful tool and an aim to your creativity and visualization. Technology requires knowledge of skills and techniques that have been explored in research and can use in teaching and learning. However, technological advancements have given rise to a new age of computer science, education, fashion design, and new lifestyles. Fashion design students need to be knowledgeable and trained in the networked information and using technology tools in the course. The benefits of using the technology tools not only to be successful in the classroom but also to be professional in their career and own business after graduation.

Research methods

The research uses a qualitative case study method and the data collection to includes pre-survey, a focus group, interviews, and analysis of the documents and artifacts. The researcher will interview 6 participants in the class in Fall 2017.

Case study

The research design was a qualitative case study approach in order to provide an in-depth description of a case, which was limited in time and space. I selected one particular classroom of learners who had taken a fashion design course. The course to be studied was Textile Science in Clothing, Textile & Fashion (300/500 CTF) program given in Fall 2017. This particular course is for undergraduate (B.A) and graduate (M.A) at one of the southwestern universities in the United States. The qualitative case study searched for meaning and understanding of using learning technology and social media in a fashion design class. As the investigator, I used in-depth data collection involving multiple sources of information, which were pre-survey, observation, a focus group, in-depth interviews, and documents and artifacts.

Research questions

1. In what ways do fashion design students use social media and learning technology to enhance their learning?
2. What do the students say about using online learning technology in their learning of fashion design when interviewed?

Participants’ demographics

In Fall 2017, the fashion design professor who teaches the Fabric Science course in Clothing, Textile, and Fashion program introduced me to her face-to-face class. Ten students signed the consent form and agreed to participate. The ages of the students were 55% between 25-34, 33% between 18-24, and 11% 35-44 years old. There were ten participants in the study, and all were females. The participants' ethnic origins were 55% Hispanic or Latino and 44% Non-Hispanic or Latino. They all spoke the English language, but some participants were bilingual with different native languages. There were 44% Spanish language, 44% English language, and 11% other languages.
Data collection

Pre-survey

SurveyMonkey is an online survey software, which is accessible by going to https://www.surveymonkey.com. It is easy to use and free online resource for researchers who interested to survey in their study. The pre-survey was used to collect demographics of information from the participants by using a survey tool in SurveyMonkey. The survey assisted me in including demographics questions such as gender, age, race, language, email, cell phone number, and focus group time.

Observation

Observation is the act of noting a phenomenon in the fashion design field. According to Creswell (2016), states that the researcher can have more information from observation than discussion or in written documents. The observer can note the physical setting, participants, activities, interactions, and conversations. I used an observational protocol for recording information during the observation in the classroom; a protocol is defined as “the means for recording the qualitative data and for asking questions” (Creswell, 2016, p. 114). Hadzilacos, Mavroudi, Georgiou, Otero, and Müller (2016) design a suitable observation protocol that enables observers to collect more detailed information for any lesson they observe. I used this protocol which is eSIT4SIP tool (Empowering the School IT infrastructures for the implementation of Sustainable Instructional Patterns) to observe the Textile Science classroom.

Focus group

The focus group was a research method for collecting information from the participants by using face-to-face interviewing and dissection. The focus group included ten students who were divided into two smaller focus groups; each focus group included five students. Focus Group (1) and (2) were undergraduate and graduate fashion design students. The meetings tape-recordings were transcribed and went through several phases of analysis. Focus group (1) was held on August 13, 2017, at the library in a study room at a southwestern university. Focus group (2) was held on September 21, 2017, at the library in a study room at a southwestern university. I used an open-ended questions protocol to guide the discussion. The time of the discussion is an hour. I used open-ended questions and interviewed two different focus groups.

In-depth individual interviews

In this study, the interviews were semi-structured which included fashion students as participants. I purposefully selected six individual interviewees from the focus group discussions. There were two reasons for purposefully selected individual interviewees. The first reason was to find the students who had more experience in using technology tools in their life and school. The other reason was to help me answer my research questions. The duration of interviews was 30 minutes for each participant. The quality of the interview was per Merriam & Tisdell (2015), who states that all questions should be flexible and open-ended in the semi-structured interview. That way, researchers can look for specific data.

Documents and artifacts

The documents and artifacts are other primary sources of the qualitative data. The documents cover an assortment of written records, visual data, artifacts, and even archival data (Bloomberg & Volpe, 2016). The data from documents and artifacts include the visual documents such as letters, video, drawing, web-based media, and photography. I sent letters to participants before, during, and after the focus groups and completed individual interviews by email. Also, I kept a journal during the study by using Google Docs.

Data analysis

After recording the interviews for both two focus groups and individual interviews, I transcribed that data to text. Then, I uploaded them to the NVIVO software program in order to prepare for coding and analyzing the data. Lastly,
I identify themes by analysis of responses in categories. The pattern of themes was organized and categorized by identified three majors sections which include in the findings.

Findings

Instructors are still using traditional lecture style rather than using technology or devices with students in the classroom.

The technology resource present was only one computer with a projector for the professor to use in the class for lecture presentations. Students had not had any technological devices, and the lecturer did not allow any use of electronic devices, such as cellular phones, iPods, or laptops during the lessons as written in the syllabus. The professor used only PowerPoint slides and YouTube in her lectures. Her presentations included many pictures, and in one session, students watched a video as they took notes.

Lack of interactions between the teacher and students or among students

The teachers lack the training needed to use technology. In the lecture sessions, the lecturer interacted with the students by giving a traditional lecture while students listened and took notes. In the laboratory session, the interaction between lecturer and students consisted of activities with the textiles sketch kit. Students had not had an opportunity to interact with one another because each student was working on their kits.

Some students use technology with fashion more than instructors. Each student has used one technology tool as a self-learner. However, some students have an issue of how to use technology tools in fashion design. They ask for professional instructors in teach them how to use technology tools in the classroom.

Social media plays an important role in students’ learning fashion and personal lifestyles.

To demonstrate students’ use of social media, fashion design students were asked how they use social media to enhance their learning and why they use them. It was discovered that fashion design students use different social media tools to enhance their learning which includes:

Pinterest as a visual learning tool

Students used this tool because it gives a detailed and quick view of fashion design images and information. Students found the experience of using Pinterest beneficial because it is used here in a learning environment. Pinterest helps students to find visual resources and learning fashion illustration steps by steps when they review images. All students described this technology tool as an inspirational tool because it helped them to brainstorm new ideas for designs.

Facebook as a communication learning tool

Students were using Facebook for online learning and communicating with other classmates. Students followed fashion pages on Facebook because they used it to read, share fashion articles, and watch videos or live fashion shows.

Instagram as a highly accessible tool for learning fashion

It is used to show affection, follow fashion, and for sociability. In the focus group discussion, fashion design students used the Instagram tool because it helps in learning about the latest fashion designs. Students hold the view that Instagram is mostly suitable for and they use it for new designs or as a social media influencer.

Google as an online technology resource

Students described Google as the online technology resource for them because it is a faster way to find an image or information about the designs. It is helpful as it makes learning more accessible than before because Google has different resources for education. For students, finding things on Google can be faster than reading books. They do not have to carry the books all the time, whenever and wherever they go. Sometimes things described in the book are
difficult to understand, however, searching them on Google helps the students in understanding the meaning of the text written in the book as well as concepts can be easier to understand when students search them on the Internet.

*Snapchat as an up-to-date tool for fashion week shows*

It is a social media tool that students used in learning fashion design. Students like using Snapchat to watch fashion shows and news about fashion. Students described Snapchat as a social media platform and that she had been increasing her usage because she wanted to become involved in fashion week shows.

*YouTube as a self-learning video tool for students*

Fashion design students described YouTube as a self-learning video tool because it aids in learning and understanding concepts in a short time. YouTube is a popular site for fashion design students for many reasons. First, students interact with each other in technology and the role that YouTube video content plays in community formation supports informal peer learning. The study also explored the students' digital literacy, uncovering the strategies used first to engage, analyze and assess materials that they may find on YouTube. For example, students used YouTube in learning because they felt it is easier and faster to search for videos about any subject. Also, they explained how hard it was to sew at the beginning of the fashion program. She used YouTube to watch videos about sewing, fabric, and fashion in YouTube channels and learned step-by-step.

*The difference between technology tools used by fashion design students*

- The iPad Pro and digital pencil as a new technology device used for fashion designers
- Adobe Creative Suite 6 Design Standard (CS6) and OneNote are two software that some fashion design students used in their drawing and sketching.
- Websites and Apps as technology tools for fashion designers. Some technology tools that used by fashion design students are: (1) the Polyvore website, (2) Boutique Hub, (3) drawing apps such as Sketch Pad- My Drawing Board, FashionDesign, Concepts, Colorfy, Adobe Photoshop Sketch, Sketch Guru, Autodesk, SketchBook, Lake, and Procreate, (4) digital portfolios on Windows 10, (5) PoshMark, (6) the VOGUE and InStyle websites, and (7) Quizible and Quizlet as online learning game tools.

*Discussion and recommendations*

**Recommendation 1: include technology use in fashion design curriculum in higher education**

Fashion design instructors need to improve the curriculum in teaching and to learn fashion design by using technological devices for teaching drawing and designs. Education became formal, and the curriculum could be planned, progressive, systematic, and purposeful. Content today revolves around theory and methodology. Curriculum ‘could simultaneously refer to the content (the race itself), the program (the course being run), and the process or methods used (the vehicles) during a given race’ (McClusky III & Smith, 2008, p. 171).

Other improvements would include using programming software in the fashion classroom and teaching students how to create their design websites and digital portfolio of their collection or line and sketching of their designs. Fashion students want professional instructors for teaching fashion with technology. The fashion professors guide and interact with students and give them more of their experience in life. When their career experience is added, instruction and career and personal advice from a professor is something that you cannot get solely with technology. However, both fashion design professors and students need the training to use technology. Professors can attend a workshop for professional development in using technology to teach fashion. They should update their curriculum with using technology as a part in their lesson by learning how to use devices in the fashion classroom, how to use software programming to teach students, and how to integrate social media and games in fashion curriculum.

**Recommendation 2: include fashion faculty members and student in training for using technology**

The benefits of using the technology tools can help students to be successful in the classroom and also to be
professional in their careers and own businesses after graduation. In the article, ‘Promoting the Professional Development of Saudi Female Students in the Apparel and Textile Discipline,’ Alzahrani and Kozar (2017) seek to identify fundamental skills and knowledge that Saudi female students require excelling in apparel and textile retail industry. Alzahrani and Kozar (2017) raise critical issues regarding the status of Saudi female graduates especially on matters regarding unemployment and the position of women in the Saudi society. According to the author, the graduate unemployment rate stands at 54% and is thus one of the highest rates in the region. While measures are underway to replace foreign sales associates in apparel stores with women from Saudi, women have not been successfully prepared to venture into the industry. Comprehensive research has been carried out through interviewing store managers and human resource managers then presented in the form of qualitative data. According to the outcome of the research, there is an urgent need to develop students' soft and hard skills to equip them with the necessary skills and knowledge to handle responsibilities in apparel stores. Correspondingly, the author found that there is the need for adequate social support as well as female empowerment for Saudi female students to enable them to face the societal intrigues and pessimism. Accordingly, this resource is one the most significant in this research (Alzahrani & Kozar, 2017).

Chida and Brown, authors of the article ‘Evaluating the Gap between Industry Assessment of Job Readiness and Graduation Standards in Higher Education Institutions: The Case of Fashion Studies,’ point out that there is the need for the United States to train adequate labor force that is in line with the requirements of the contemporary knowledge-based economy. Fundamentally, the article examines modern methods of employed by institutions of higher learning to find out the readiness of graduates to tackle the existing opportunities in the fashion industry (Chida & Brown, 2011). The authors identify various gaps during the process and evaluating academic preparation and matching the skills to industry expectations. Accordingly, the organization for economic development and cooperation calls for instant action to align educational objectives with global opportunities and challenges. The resource is undeniably significant in this study (Chida & Brown, 2011). The researchers plan to help fashion students to build on the idea that multimedia encourages users to include pictures, quotes, audio clips, and video clips along with their text. Students can share the inspiration behind their collections in the class by using the personal networks such as Twitter, Pinterest, Instagram, Facebook, YouTube, and Tumblr. It is essential for fashion design students to make connections between their ideas and personal networks because they will get ideas for their sketches and collections. How does an image inspire students? Perhaps they can try to decompose the image to see all of its elements.

Development in educational learning technologies will open prospects for universities and will let teachers identify and implement emerging trends in educational technologies. Doing this requires a curriculum that focuses on polishing critical thinking and problem-solving skills among students, and integrating online learning technology in instruction. In the article, ‘The Fashion Internship Experience: Identifying Learning Outcomes in Preparing Students for the ‘Real World’, Kozar and Connell K (2015) seek to identify the consequences of exposure after successful completion of the internship experience. The data for the research was obtained from the statistics of forty-four students who completed an internship in 2013. From the analysis of the outcomes, the internship enhanced professional understanding and development of essential competencies unique to fashion discipline. The experiment equipped the students with vital skills and improved confidence which will enable them to fulfill their professional aspirations. Besides, it was found that students felt having been fully integrated into the company. They also reported having acquired the necessary values and responsibilities to complement their careers. As a result, the journal is a significant resource that not only reviews students link to actual practice but enhance their attitude to apparel and textile discipline.

Recommendation 3: build community among students and faculty in learning fashion design

It is recommended that through the use of technology, faculty and students have the opportunity to create online spaces that build community and partnerships beyond the classroom. Technology also has the potential to create communities of practice where fashion design teachers and students around the world can come together to share ideas and best practices which can help reduce a sense of isolation among learners. There are unlimited technology tools for the fashion community such as social media, blogs, websites, and digital games. I believe that when instructors build a community for fashion, they will learn from students and students learn from both their peers and instructors.

Social media sites such as Facebook, Twitter, Google, Instagram, YouTube, Snapchat, and Pinterest are being used as online learning tools. These sites and many other online social practices like articles and blogging are means of timely communication with other students. These practices also enhance communication and understanding when the
students learn the same subjects from the same experts. Many commercial activities on these social media sites are striking as they have the attributes that most of the times are better than inside firewalled milieus. Social media have revamped communication and interaction in education. In the book, ‘Social media for fashion marketing: Storytelling in a digital world,’ Bendoni (2017) provides fundamental insights on the use of social media among other inherent technologies to market and create demand for fashion products. The authors thus demonstrate the importance of technologies in teaching fashion by enabling students to understand prevailing market trends. Keengwe, Mbae & Ngigi (2015) discuss the strategic ways of infusing technologies in teaching to improve the literacy skills. Fashion design utilizes technologies with social media expanding the level of creativity and ability to share ideas among students. In the book, ‘Best Practices for Teaching with Emerging Technologies,’ Pacansky-Brock (2012) describes how Web 2.0 and social media have transformed teaching and learning. The author analyses the application of the technologies in improving education.

With the rise of the digital world, the younger generation has become more interested in studying the fashion because of the boom of social media over the last decade. This boom has unveiled the impermeable fashion education and industry. As a result, there is improved access to the fashion design institutes, and this has happened only because of the online learning changing the education sector throughout the world. Using technology and social media in interactive ways is changing the prospects of the higher education environments. Technology and social media have provided fashion design students with the opportunity to communicate with the broader community as well as the ability to get information about the fashion world.

Additionally, the use of technology and social media has helped students in the better understanding of the concepts and designs and to know their needs with changing scenarios. Learning through social media sites creates an interactive environment for fashion design students. However, students who took part in the discussion about their way of using social media for learning revealed that they look for the information mostly by following fashion pages that work as media influencers, and by reading and sharing articles they like.

The use of digital games such as to improve students’ learning networks, fashion design skills, and information retention in fashion design courses. The education that is prevalent today is in need of major revamping as well as upgrades to the levels of teaching. In the article, ‘Multiplayer online games as educational tools: Facing new challenges in learning,’ Paraskeva, Mysirlaki and Papagianni (2010) point out the development of educational multiplayer online games based on the activity theory and how students collaborate with each other in multiplayer gaming. The researchers examine the online games by considering multiple factors regarding gameplay such as gender differences, identification with the characters, the frequency of game use, and game preferences. They also observe how other factors like computer self-efficacy, self-esteem, and academic performance affect learning. Van Eck (2006) suggests aligning the game with the curriculum and the contact. ‘Educators can use these teachable moments to create cognitive disequilibrium (through instructional strategies and activities) by presenting or designing activities by which students discover information that conflicts with the game and the student's knowledge’ (Van Eck, 2006, p.10). Klassen & Willoughby (2003) explain how educational games help students to understand the concepts faster and remember them more than lectures. Also, they evaluate how the games stimulate students to learn. Two methods were used to evaluate students’ learning: (1) Before- and- after questionnaire (2) Playing the game twice. The results from these two experiments were increasing the students’ knowledge, enjoying playing the game, gaining the decision making, and increasing the students’ experience.

Conclusions

Technology has become an integral part of our lives, and when applied in the stream of education, technology can boost the traditional methods of learning and teaching. The visual aids and other technological tools coupled with teaching help the students to comprehend the subject better and create a higher rate of retention. Educators can use social media, digital games, and software to improve students' learning networks, fashion design skills, and information retention in fashion design courses. In my study, there were many tools students used to experience online interaction and learning. Some fashion design students viewed technology positively as they received information about the latest trends in fashion designs through technology and can use it in the future for running an online business. However, it has been shown in this study that fashion design students preferred using technology tools with learning fashion design. Students need professional instructors who are trained for teaching fashion design with technology in
the classroom with tools such as websites for digital portfolios, software programming for designs, and devices for drawing.

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Cloud Computing And Cloud Accounting: Deployment Models, Advantages, And Challenges
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ABSTRACT

The cloud computing has been emerged in 2000 due to the development of information technology, which is the most recent developments in information technology, which allows users to access software, applications, and documents from anywhere and at any time. In addition, it provides computing services on demand and depends on pay as you go, these services are software as a service (Saas), platform as a service (Paas), and infrastructure as a service (Iaas). This development in information technology and the emerging of cloud computing had a major impact on the accounting, so the effective accounting technology in cloud computing is cloud accounting or online accounting, which provides a real-time and up-to-date financial data over the World Wide Web. This research includes the definition of cloud computing, its characteristics, and advantages. In addition, we addressed the cloud computing deployment models, which are public cloud, private cloud, community cloud, and hybrid cloud. Moreover, we identified the challenges arising from the implementation of cloud computing. Furthermore, we conducted an investigation of the impact of cloud computing on accounting.

Keywords: Cloud computing, Cloud Accounting, deployment models, advantages, challenges.

1. Introduction

Cloud computing refers to the cloud symbol used to represent the World Wide Web in the form of maps and graphs (Farooq 2017). It also used to represent the data transfer from its center to its final position on the other side of the cloud (Farooq 2017). The main idea of cloud computing back to the 1960s when "John McCarthy", a professor at Stanford University in California, expressed that the computing may be organized to become a general idea one day. He thought that the time-sharing leads to a future in which a computing power, infrastructure, applications, and software are presented as a service (Mangla and Goyal 2017). However, the application of computing stats in the 2000s, when Microsoft enterprise expanded the concept of using the software through the World Wide Web, as well as Google enterprise, which provided the cloud-based services, and comprehensive operating system through the cloud computing in 2009 (Kaul et al. 2017).

Cloud computing is a web service that provides the infrastructure, software, and applications through the World Wide Web (Schmidt et al. 2016). It also provides the computing services through the World Wide Web on-demand and based on pay as you go (Mohammad et al. 2017). In addition, it includes a set of IT resources and a range of services like software as a service, infrastructure as a service, and platform as a service (Kumar and Goudar 2012). Therefore, it is an advanced technology that transfers the processing and storage to the cloud, and allows users to easily access the data stored in the cloud, update them, make an adjustment and restored them, thus the IT programs transfer from products to services (Mohammad et al. 2017).

It also supports companies in achieving their competitive advantages by improving their ability to sense and response to the market changes timely and meets the customers' needs immediately (Schmidt et al. 2016). In addition, it is a tool to increase or decrease cloud services according to the company's needs. Furthermore, it is a model to provide all services on demand without the limitations of resources such as storage space, processing power, and memory size. Thus, the key advantage of cloud computing is to create new opportunities to align between IT strategy and the company's strategy (Nandgaonkar and Raut 2014). Therefore, it is a tool to help companies maximize their resources.
and improve their performance (Mangla and Goyal, 2017).

Therefore, cloud computing became popular across companies that can depend on cloud computing software and applications, or infrastructure and develop the software and applications according to their activities. Thus, Google-IBM-Amazon EC2 Sales Force-Google App Engine-web mail is one of the most important cloud providers (Sood et al. 2017). Nevertheless, the increased reliance on cloud computing increased the risks of security, and privacy of the information available on the World Wide Web, which represents the challenges of cloud computing (Mohammad et al. 2017).

Moreover, the emerging of cloud computing allows companies to be as efficient as possible in using cloud accounting, which is called online accounting, web accounting, or virtual accounting system. Instead of installing and running the accounting software on the companies' computer, they can access software and their financial data through the world wide web. (Đorđević et al. 2018). Recently the cloud accounting become very important because it is very cheap, allows companies to invest more in time and budget by renting the software and application instead of buying them and hire technicians to deal with these software and applications, so the cloud does not waste the companies valuable time and allows them to focus more on growing their business (Zhang 2014; Đorđević et al. 2018). Cloud accounting is a virtual accounting information system that provides accounting services for companies over the world wide web (Zhang 2014).

The rest of this research is organized as follows: in section II, we discuss cloud computing and cloud accounting definition and components. In section III, we define cloud-computing characteristics. In section IV, we discuss cloud-computing services. We also define the cloud computing deployment models in section V. In addition, we investigate cloud-computing advantages in section VI. In section VII, we explore the challenges of cloud computing. Finally, we define the effects of cloud computing on accounting in section VIII and conclusion in section IX.

2. Cloud Computing and Cloud Accounting Definition

There are many definitions of cloud computing due to its multi-characteristics. Based on what the National Institute of Standards and Technology (NIST) stated in the research, cloud computing is defined as a model for allowing companies or users access to different computing resources, which include networks, servers, storage, applications, and software that can be easily selected and accessed without any additional interaction from the cloud provider (Singh and Chandel 2014; Schmidt et al. 2016).

Nandgaonkar and Raut (2014) define cloud computing as an advanced technology that transfers the processing and storage units to the cloud and develops the operating system, software, and applications. Sood et al. (2017) state that cloud computing is a technology for operating system design, creating software and application, includes storage units, processing, and servers that are provided as a user infrastructure, and its cost depends on the usage level, so the software has transferred from products to services. Therefore, it is a set of cloud services that provide the infrastructure, platforms, software, and applications with low cost (Kaul et al. 2017).

Moreover, cloud computing contains many components such as (Schmidt et al. 2016):

1- Cloud Service Users (CSU): the company that leases cloud services (networks, servers, storage, software, applications) from cloud service providers.

2- Cloud Service Providers (CSP): the company that provides cloud services such as infrastructure as a service, platform-as-a-service, and software as a service for other companies or users.

3- Cloud Service Partner (CSN): the company that supports cloud service users with developing the software and applications using programming languages, data encryption, and identity management system. In addition, it supports cloud service providers with integrating software or implementing security applications for data in the cloud.

For accounting, the cloud can mean securely storing and accessing accounting data and software online, because they stored on the cloud provider's server and delivered over the world wide web (Wyslocka and Jelonek 2014). The most popular accounting technology in cloud computing is Cloud accounting, which is really best described as Online
Accounting. So the companies data files and software are available on the internet and can be accessed by a large number of users and the same time from anywhere and at any time, which increase the collaboration between employees. This means that the companies as a user of cloud accounting are able to access their data and software over the internet from any device that connected to the internet (Wyslocka and Jelonek 2014).

3. **Cloud Computing Characteristics**

The National Institute of Standards and Technology (NIST) identified the main characteristics of cloud computing in five features as follows (Singh and Chandel 2014; Mangla and Goyal 2017; Sood et al. 2017):

1. **On-demand self-service:** refers to the cloud services provided by the cloud providers through the World Wide Web such as (storage-networks-servers-processing-software-applications), which, can be accessed and used by the user at any time, and from anywhere.

2. **Broad network access:** refers to the user's access to the cloud services from any devices, whether personal computer, laptop or tablets.

3. **Resource pooling:** depends on the idea that the users do not use their own services continuously, so in case of the services do not use by their owners, they can transfer to other users during that period, which helps the service provider to serve a large number of users. In addition, the user can get the resources they need from a multi-tenant model, by pooling cloud-computing resources like (storage-networks-servers-...) to serve multiple users in different locations.

4. **Rapid elasticity:** refers to the unlimited cloud computing services that provided and allocated quickly and flexibly according to the user requests. In addition, the cloud providers can increase the cloud capacity when needed, in order to ensure that resources did not waste in the absence of its need.

5. **Measured Service:** Cloud computing systems control the usage of resources, and depend on measurements to determine its cost, effectiveness, and user satisfaction. The usage can be measured quantitatively depending on the time taken, the network bandwidth and the data used. Thus, the cost is determined according to the level of use, so if there is a service that the users do not use during any period, they will not pay anything during that period. Moreover, cloud computing systems can report the usage ratio of each service for both users and providers.

4. **Cloud Computing Services**

Cloud computing offers different services based on three delivery models, they follow the order of Saas, Paas, and IaaS.

1. **Software as a service (SaaS):** is the top part of the cloud, which includes the software such as, word processing, spreadsheet, image editing, social network, and email address (Bendovschi and Ionescu 2015). It is based on the idea that users can access to the software and applications through the World Wide Web (Alali and Yeh 2012; Singh and Chandel 2014). In addition, it allows cloud providers to develop software and applications (Kaul et al. 2017). However, the users use this software and applications according to the features developed by the providers (Nandgaonkar and Raut 2014).

Furthermore, the users do not need to install any software or application, but they can use them directly through the World Wide Web (Kumar and Goudar 2012; Sood et al. 2017; Farooq 2017). In addition, the users do not have any control on cloud computing infrastructure such as servers, networks, storage, operating systems, software and applications (Singh and Chandel 2014; Mangla and Goyal 2017). Therefore, the companies that provide software as a service are Google that provides google mail, google docs, and Gmail, Microsoft office 365 and customer relationship sales management.

2. **Platform as a service (PaaS):** supports the software and application lifecycle that can be designed and delivered through the World Wide Web (Alali and Yeh 2012). In addition, it includes databases, software, and application development tools, web servers, and operating systems (Sing and Chandel 2014). Moreover, it depends on the idea that the users have the infrastructure, and they develop the software and applications according to their activities by using programming languages like Java-python (Mohammad et al. 2017; Farooq 2017; Kaul et al. 2017).
Additionally, it depends on information encryption methods, identification management systems to prevent unauthorized access by outsiders (Sood et al. 2017). Furthermore, it supports the users' management and control on the developed software and applications, while the cloud infrastructure such as servers, operating systems, storage units, and networks are managed and controlled by the cloud computing providers (Singh and Chandel 2014; Bendovschi and Ionescu 2015; Mangla and Goyal 2017). Thus, an example of companies that provide (PaaS) are Microsoft, Salesforce, and Google Apps.

3- Infrastructure as a service (IaaS): it also called Hardware as a service, or the lower part of the cloud computing that provide basic physical parts such as (networks-servers-storage-processing-memory) that are available on-demand, suitable for all operating systems, software, and applications, and managed by the cloud providers (Farooq 2017; Kaul et al. 2017). Moreover, it reduces the cost of hardware parts by leasing them from the cloud providers (Kumar and Goudar 2012). In addition, the cost of cloud services is measured in gigabytes, while the storage is usually measured by the average amount of stored data, and the data transfer rate is measured by the amount of data shared over the network (Nandgaonkar and Raut 2014).

Furthermore, the user relies on the cloud infrastructure to develop and design their own software and applications (Alali and Yeh 2012). Nevertheless, they do not have any control on the cloud infrastructure, but they have a control on the developed operating systems, storage units, software and applications (Singh and Chandel 2014; Bendovschi and Ionescu 2015; Mangla and Goyal 2017). An example of a company that provides (IaaS) is Amazon, which provides services like Amazon EC2, and Amazon S3.

5. **Deployment Model of Cloud Computing**

Customers generally choose one of four options for cloud deployment models either public, private, hybrid or community cloud.

1- Private cloud: also called internal cloud because it built to meet the company's needs, so it controlled, managed by the company, and not available to other companies (Mangla and Goyal 2017). Moreover, it closed on the company's employee and customers (Bendovschi and Ionescu 2015), thus, it developed according to the company's activities, and has limited access by the company's management and authorized persons (Kaul et al. 2017; Sood et al. 2017). In addition, the infrastructure, operating systems, software, and applications are exclusively used by the company (Mohammad et al. 2017). This cloud can be managed by the company's IT department to achieve the highest control on the cloud services (Alali and Yeh 2012; Nandgaonkar and Raut 2014; Farooq 2017).

2- Public cloud: also called the external cloud, which is available for all users at any time through the World Wide Web. Moreover, all cloud services such as (email service-electronic storage-social sites) are available for the public use through the World Wide Web (Farooq 2017; Kaul et al. 2017; Sood et al. 2017). Thus, it depends on a pay as you go, so users do not need a license to use the software and applications, but they can use them directly through the World Wide Web (Nandgaonkar and Raut 2014). Moreover, some cloud services are free and some must be paid for them, and all operating systems, software and applications are provided by the cloud providers, who are responsible for managing the cloud services (Alali and Yeh 2012; Bendovschi and Ionescu 2015; Mohammad et al. 2017).

3- Community cloud: also called the common cloud, which is used only by a group of companies that have the same goals, strategy, policies, and commitments (Alali and Yeh 2012; Bendovschi and Ionescu 2015; Kaul et al. 2017; Sood et al. 2017). In addition, these companies do not use the public cloud to avoid the lack of privacy, so they share a private cloud rather than build a private cloud for each of them. Moreover, this type of cloud is managed and controlled by these companies or by cloud service providers (Nandgaonkar and Raut 2014; Mohammad et al. 2017; Farooq 2017).

4- Hybrid cloud: allows users to access both public and private cloud, so it combines between two or more clouds, so it can be a combination of public and private cloud or public and community cloud (Alali and Yeh 2012; Bendovschi and Ionescu 2015; Farooq 2017; Mangla and Goyal 2017; Kaul et al. 2017). Therefore, the companies that have a private cloud can benefit from the public cloud to obtain some services to meet their temporary needs (Mohammad et al. 2017). Moreover, the companies that own a community cloud can
benefit from the public cloud, so some cloud services are controlled and managed by the companies (community cloud services) and some services are controlled and managed by the cloud provider (public cloud services) (Nandgaonkar and Raut 2014; Sood et al. 2017).

6. **Cloud Computing Advantages**

There are many advantages of cloud computing, which are as follows:

1- **Flexibility**: cloud computing helps users to access the information, software, and applications from any device and at any time. In addition, users can depend on a large number of cloud services (Nandgaonkar and Raut 2014; Kaul et al. 2017). Furthermore, it enables users to access the service when needed, and have the possibility to increase and decrease the number of cloud services according to their needs (Mangla and Goyal 2017).

2- **Easily accessible**: cloud computing allows users to access the cloud services from any device and at any time (Nandgaonkar and Raut 2014; Singh and Chandel 2014).

3- **Updating software and applications**: while the main advantage of cloud computing is that the cloud provider is responsible to update software and applications, maintain hardware, and repair network failure, which helps companies to focus on their main activities and improve their performance (Mangla and Goyal 2017).

4- **High control of documents**: through the cloud computing all documents are saved in one central location, so all employees can access to them and perform their work and make any adjustments at the same time (Mangla and Goyal 2017).

5- **Data security**: the cloud systems maintain the data from any modifications by an unauthorized person. In addition, they keep the companies’ documents in one central location, so all employees can work with each other while making adjustments (Kumar and Goudar 2012). Moreover, cloud computing improves the accessibility to documents, software and applications from any devices, so any failure in any device does not have any effect of sorted information, which can easily use it from another one (Mangla and Goyal 2017).

6- **Reduce capital expenditure**: cloud computing depends on pay as you go, so it reduces the hardware's costs such as (memory-storage-processing). In addition, the cloud provider providing servers, storage units, and processing capacity, which reduce the companies' need to purchase them (Mangla and Goyal 2017). Moreover, it reduces the cost of obtaining software and applications and their license (Singh and Chandel 2014; Kaul et al. 2017). Furthermore, it reduces the cost of maintaining and repairing hardware because the cloud provider is responsible for maintaining the hardware and update software and applications (Nandgaonkar and Raut 2014).

7- **Disaster recovery**: the cloud computing improves the companies' ability to recover data in its original form if lost, through backing up and storing them on many storage units that are geographically distributed, which make the ability of retrieving the original data is easy and fast (Nandgaonkar and Raut 2014; Singh and Chandel 2014; Kaul et al. 2017).

8- **Increase collaboration**: the cloud computing improves the collaboration among employees through enhancing the ability to share information from anywhere and at any time (Nandgaonkar and Raut 2014; Mangla and Goyal 2017).

9- **Improve competitiveness**: cloud computing enables all companies to use cloud services, regardless of company size, so the small and medium-sized companies can compete with large companies (Mangla and Goyal 2017).

10- **Eco-friendly**: cloud computing is an important factor for sustainability through reducing the hardware, air conditioners, and energy consumption (Singh and Chandel 2014; Mangla and Goyal 2017).

7. **Cloud Computing Challenges**

Most companies should determine the importance of cloud services to the company and align between its strategy and IT strategy (Schmidt et al. 2016). Thus, the challenges of cloud computing are as follows (Kumar and Goudar 2012; Nandgaonkar and Raut 2014; Kaul et al. 2017; Mohammad et al. 2017):
1- Security and privacy: security is one of the most important factors should be considered when deciding
to switch to cloud computing, thus, the security issues are (access to information - confidentiality -
privacy – recoverability - data protection). There are various solutions for security issues are security
applications, encryption, and identity management systems. Therefore, the cloud service providers
should create an account for each user in order to authenticate access individually through user name
and password. In addition, they should ensure the quality of the network, applications, and servers
through the penetration test, which checks the all devices and systems to identify security
vulnerabilities that any hacker can exploit to obtain information.

2- Reliability and accessibility: any failure in the cloud service providers’ server may interrupt the
company activities until it fixed. In addition, the cloud computing depends on the network connection,
so if there is any failure in the connection with the world wide web, the company cannot access to all
files, documents, programs, and applications. Thus, the cloud service providers should monitor the
services provided using internal tools such as, develop a plan to oversee usage, service level
agreements, performance, and quality.

3- Cloud computing performance: the intensive applications need a high level of network bandwidth,
which is reflected in the high cost of cloud services, while low network bandwidth does not match the
computing performance required for cloud applications.

4- Portability: it is easy to transfer applications from the cloud service provider to another, but the
difference in the language of the cloud providers' platforms, and the lack of a unified language, make
it difficult to transfer applications between them.

5- Interoperability: refers to a method that makes two or more systems work together as a composite
system, which may require human supervision to perform the necessary modifications and corrections.
In addition, the applications on a single platform should be able to integrate services that are available
on other platforms, which can be implemented through web services, but the development of these
services is very complex.

8. The Effects of Cloud Computing on Accounting

last decades the development in accounting information systems and the applied of accounting software led to improve
the efficiency of business reporting, which led to appearing the continuous reporting that provide users with real-time
and up-to-date information, which helps them in making accurate investment decisions (Đorđević et al. 2018). In
addition, accounting software has been enhanced and become more able to process a large amount of data (Đorđević
et al. 2018).

According to the cloud computing characteristics, cloud accounting allows users to select the accounting software,
access them at any time and upgrade them at any time. In addition, it allows users to increase and decrease the number
of accounting software according to their activities. Moreover, it enables users to access financial data from anywhere
and at any time and from any device because it stored on the cloud provider's server, thus the cloud provider is
responsible to install, maintain, and update the accounting software (Ionescu 2013; Đorđević et al. 2018).

Cloud technology application made changes to the function of accounting, these changes made a difference between
traditional accounting and cloud accounting (Đorđević et al. 2018). The main difference is that according to the
traditional accounting users have to buy software and installed on their computer system, while with cloud users can
purchase the right to use software via the Internet, so cloud computing converted the technology from products to
services such as, (Software as a Service, SaaS) (Ionescu 2013; Đorđević et al. 2018). In addition, the traditional
accounting allows a limited number of users to access platform, while through the cloud accounting the platform can
be accessed by multiple users (Ionescu 2013; Đorđević et al. 2018)

There are lots of advantages to cloud accounting, in comparison to traditional accounting. First, users can use the
accounting software as a service provided by the cloud provider over the internet instead of installing them on the
companies' desktop or laptop computer according to traditional accounting. Second, the hardware and software
maintenance and management is the service provider’s responsibility, which allows users focus on their activities and
reduces their hardware and software costs rather than hiring technicians to maintain and update software in the
traditional accounting. Third, it provides a high level of data security because cloud service providers have better
internal control on data because it stored in the cloud instead of companies' computer in traditional accounting. Fourth, it eliminates the risk of data loss if the user's device is lost or stolen or damaged, because the same data can be accessed from another device instead of store data on only one device in traditional accounting. Furthermore, it provides backup servers on two or more locations (Ionescu 2013; Đorđević et al. 2018).

9. Conclusion

The main purpose of cloud computing is to provide many services for companies such as infrastructure, software, applications, and storage. Cloud computing allows users to access their documents, and software from any devices at any time. In addition, it allows the sharing of information, programs, and applications across different devices. Moreover, it reduces the cost of updating software and applications, maintaining the hardware, and servers. Furthermore, accounting through the cloud means storing and accessing accounting data and software online easily and quickly because they stored on secure servers and delivered over the internet. Therefore, this research discussed cloud computing and cloud accounting definition, characteristics, and components. It also addressed the deployment models of cloud computing and its advantages. Moreover, it explored the challenges of cloud computing and its effect on accounting. This research is limited to examining the impact of cloud computing on auditing, and the new roles and responsibilities of auditors in the cloud computing environment. It also limited to examining the impact of cloud computing on users’ behavior. Moreover, this research is limited to studying the critical success factors of adopting cloud computing.

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360 Degrees Assisting Autistic Children Through Virtual Reality Systems
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ABSTRACT

This paper presents virtual reality (VR) and its impact on children with autism. It explores case studies which use virtual reality to teach children with autism. The project addresses challenges that children with autism face, as well as the means to which virtual reality can assist in accomplishing daily living skills. The paper highlights a VR game to create in the planning stage that can teach children safer ways to cross the street.

360 degrees

Statistics show that the prevalence of Autism Spectrum Disorder (ASD) in the united states is approximately one in every 68 children (CDC, 2016). This means that the percentage of children with autism is very high and educators must take their special needs into consideration. Since the world is becoming increasingly connected through information technology, we need to apply this technology to assist students with autism, so that they may better participate in this exciting global development. After searching the internet, I found that virtual reality is the best technology that we can use to teach students with Autism the skills that they need to participate fully. So, before we get deeper into the virtual reality function let’s define virtual reality. We will also look to Autistic children’s characteristics. Virtual reality means “… computer-generated simulation of a three-dimensional image or environment that can be interacted with in a seemingly real or physical way by a person using special electronic equipment, such as a helmet with a screen inside or gloves fitted with sensors” (Freina & Ott, 2015). Virtual reality was not originally developed for children with special needs in mind, but very rabidly VR was viewed by specialist and education field as a promising area of assistive technology. Studies show that the Virtual reality as assistive technology generally leads to positive results (Erdem,2017).

Students with Autism have many characteristics, and with no two children are alike, but there are set of common symptoms. One of them is having difficulties with the imagination, so we could assist them with the Virtual reality system to overcome this problem and many others like social skills deficits, fears, and phobias, and lack of fear of the danger. In this regard, I would like to share what a father published about “no fear of danger” and his experience with his child. Mr. Stuart Duncan said that children with autism have no fear and that could lead them to do whatever comes to their minds without concerning themselves about the correct way to cross. Also, he has observed his child nearly falling off a mountain, for instance, and following a ball into traffic. (Duncan,2010). So, after these real situations, we have to avoid putting our children in harm’s way. Rather, we must teach them the skills that they need through the appropriate methods. VR technology can help us reach this goal.

Research shows that the virtual reality and its relationship to autism have been studied for decades. Now we are in 2018 and the Virtual reality has been started from the 1960’s “After 360-degree art through panoramic murals began to appear”. Back in the 1960’s, a movie has published on 3D immersive which make the Spectator feel, hear, sense, and move with the movie actions. Since that time the VR technology became similar to the real world (Freina & Ott, 2015). Rather than focusing on the origins of the VR relationship to assisting children with autism, I am going to illustrate in my paper how VR can be applied to autistic children today. The purpose of this research is to show you how the VR technology is an effective tool with which to teach children with Autism. One of the major findings of this relationship between VR and Autistic children is how much the children are drawn to technological devices and enjoy computer-based activities. They seem to seek them out in ways of that a teacher without the assistive technology would be challenged (JEIBI,2004).

The title of my paper is “360-degrees” because that is how children on the spectrum experience their daily life: 360
Why virtual reality and 3D systems are useful for Autistic children?

VR technology is a simulation of the real world by using the 3D representation, which means represent the environment in three-dimensional (width, height, and depth). So, through the technology of the virtual reality, we can offer children with ASD the space and tools to simulate the real world through the gloves, screen, helmet, etc. VR technology practices can be an intervention that enables the child with ASD to better participate in their world. Such interventions can offer strategies to children so that they can avoid danger and stay safe (Newbutt, 2015). Moreover, VR technology is the best platform for enhancing social skills and social cognition of ASD children compared to other tools (Kandalaft, Didehbani, Krawczyk, Allen & Chapman, 2012). In addition, researchers at Michigan State University (MSU) found that VR games are not just games for autistic children, they provide a space that they can learn from and then generalize what they have learned through the game to the natural environment. The study at MSU showed that 87% of the participants reported positive feedback (MSU, 2015). Additionally, there are several researchers who focus on Minecraft games. Autistic children are drawn to these games and they dive with their imagination through them. Minecraft is all about creating boxes to build your own world with the 3D immersive. Minecraft games can help autistic children to build their own world, and it makes them feel as they are in the real world (7 reasons kids with autism love Minecraft, 2015).

As a result, the assistive tools of VR technology and 3D games teach autistic children skills through their favorite type of learning. No matter what skill is being taught, they will love developing it, since gaming is something that many autistic children enjoy.

Developing a game

After searching on the internet about VR games that have been created for autistic children, I found that such games are relatively rare. There are just a few people who created games for them with the VR technology. One of the organizations that created a game for them is Vanderbilt University. So, before talking about the game that I am planning to create, I would like to share the study about the game that has been created at Vanderbilt. The research is about how to teach teenagers how to drive, so that they can become independent adults. This VR game’s set up is an Automotive seat, a steering wheel, paddles for the brake and the gas, a screen on high-adjustable table, and a headset containing sensors to the brain, muscles, and heart. This headset records the electrical activity of the driver. The simulator is designed to have different scenarios, districts, and towns. These scenarios require the driver to change the speed, zone, and street. Also, these scenarios require the driver to obey the traffic signs such as the stop sign and the yield sign. In addition, the software is able to be changed depending on the level of the difficulty that have been selected from the start (Salisbury, 2016).

I am not a games developer or designer, but I do have plans for a game that I will create in the future. The game that I am planning to create for children with autism focuses on children who don’t fear of danger. I want to teach them how to cross the street at the right time in which they follow instructions and obey traffic laws. This game also will show them the consequences of not following instructions, in ways that children with this disability can understand. For example, the child wants to cross the street, but he does not understand the stop signs and the time that allows him
to cross the street. Also, the child does not fear of the fast cars, so he might go and cross the street at the wrong time, this raises the chances to be seriously injured or killed. Thus, a designed game with the support of the VR technology will enable the child to experience the feel of real traffic. I mean by using the VR equipment- gloves, helmet, screen, and the seat or the space that he occupies- the movement and vibrations will help him sense everything but without the threat of real injuries. All the progress, actions and waves will be decided depending on the situation and the accident. So, he is going to experience precisely the real condition, and that is going to make him understand the real world through this technology. Additionally, I want the consequence of any wrong in the game to be vivid enough that the child will view the training as training rather than as a game. To make sure this game is possible to be created and to make it flexible enough to make changes in the scenarios, colors, and movements, I am going to interview specialists from Sacred Heart University who have experience in gaming. This will ensure that the game will help students with autism to learn the important skill of crossing the street safely.

Interviews

In this regard, I interviewed parents of children with autism to ask them basic questions about their children and to identify whether their children are good candidates to learn skills through VR technology. After interviewing 4 families who have children under 10 years old, I found that the ages of the children ranged from 3 to 10. These children spend 2 to 4 hours a day with computers or another screen time with the parents limit so it doesn’t expand to more than 4 hours a day. As well as, parents said their children learn through computer simulation, so they learn through mimic what they see on screens more than through mimicking actual people. Although I interviewed a small set of families, we can generalize that many other children with autism are also more likely to imitate what they see on the screen more readily that what they see through face to face interaction.

Also, to complete this paper I interviewed a gaming specialist who has more expertise than I do in the VR games design. The expert I interviewed is Dr. Robert McCloud who specializes in game design at Sacred Heart University. Dr. McCloud said that he sometimes has students with autism in his class and they were young adults, and he did not use assistive technology with them. However, he believes that students with autism should be encouraged to work on their own, because in solo work they do not have to deal with classroom disruption and other background noises. Dr. McCloud believes that the most useful games for children with autism are once that have created a very compelling world. These are games that immerse the participants in realistic situations such as weather events or exploring new territories. As long as the game has well designed and immersive, it is going to work with students with autism. Dr. McCloud has tried VR games to students with autism and he saw that the key advantage to doing VR games is being in a safe space so none of the students get hurt. So, VR games are more affective for students with autism when the students play as individual rather than as multiplayer. He added that if the students with autism understood the rules of the game and the instructions very clearly, it is going to help them, and they will know how to play the game. On the other hand, if we used games that need the students to make the rules, they won’t know how to play, and it is going to be more burdensome on them than learning a skill. So, for teaching children or students with autism through VR technology, we need to make changes that depend on the students’ need. Dr. McCloud said changing settings are technologically relatively simple. It is just changing the code and the GPU instruction and allowing the instructor to make changes through the program. It is just take a little training for the teacher or the instructor to make these changes dependent on students’ needs. In this interview, I asked about the expense of designing a VR game excluding the hardware and it costs a minimum of 20,000 dollars.

The second interview is with Professor Pinto who was a chairperson of the Computer Science Department from 1987 to 2016 and he is now a Director of the School of Computing. He has taught 10 to 12 students with autism for the last 10 years who are of college age. Professor Pinto did not use assistive technology with students with autism, but he accommodates times for them and allows them to use their laptops if they are needed in the class, even if the others in the class are not allowed to use them. Professor Pinto thinks that visual stimulation is effective because the VR games enable the students to focus on the relevant tasks. Another advantage of VR gaming is that it enables the students to repeat tasks until they are understanding is achieved. He suggests that in creating a game to help autistic children negotiate traffic/cross the street, it is most important for the game to features changing colors and sounds. The game showed also features street signs so that autistic children can understand their meanings. The best VR game that teach the skill would also enable the student with autism to scan the street scape with their eyes. He added that it is absolutely possible for the programmer to train the instructor, so that the game may be quickly modified to match the students’
needs.

Videos

In what follows, I describe two videos that I find helpful in teaching with VR technology. I have recommendations on how to improve the VR games that are features in these videos. The first video is about teaching children with autism social interaction through VR games. First of all, one advantage to this game is that it is help children with autism understand other people emotions. It links emotions such as sadness, happiness to situations that match the emotion. For example, the avatar would smile and say I am happy and then suggest to the child that they play a fun game.

Through this technology, they will have someone to talk with who can explain to them the association of emotions, facial expression, and actions that match the emotion. Also, the game instructor is available to the student with autism if they need help. My concern about the VR game featured in this video is that may not be effective with children who do not like to interact with people at all and who are easily distracted by outside stimuli. For example, an instructor giving directions from outside of the game would break the consecration of the child. So, it would be better for the instructor to direct the student from inside of the game. In addition, I think that the game designer could improve the game even more by creating two avatars. One of the avatars is the instructor and the other is the one that helping the student match emoting to appropriate situation. Another suggestion is to provide the student with choices as the avatar that they select for example, a girl with autism might to select an avatar who is a girl.

The second video is about teaching children how to drive cars through VR games. I like how they set up the child with putting sensors on the boy to monitor his breathing, heart rate, directions of gaze and emotional states. I also impressed that the game provided several scenarios of changing weather patterns. To improve the game, the chair where the child se could be improved. The chair could be made to look like a real car. This would provide more realistic setting for the students. Another improvement is to record the student’s driving session. So, the student could play back the session independently. Or at other times the instructor could play back the session with the students. That would provide an additional learning opportunity. As well as I suggest that the game should have a variety of scenarios and several levels of difficulties because after all in real traffic it is not always perfect conditions as the game.

Conclusion

The world of virtual reality is global and cannot be limited to a single game or a program. In fact, the influence of virtual reality on education is just beginning. However, we have to utilize programs like this to our educational benefit. VR teaches children skills in a medium that they enjoy. VR games remove distractions that many children with autism face. Such distractions interfere with their learning. This is avoided in the VR world and it is something that motivates students with disabilities to learn life skills.

After reviewing the literature and interviewing gaming specialists, my next step is securing funding so that my outline of the VR driving instruction game can be implemented. In addition, I am planning for my future studies by enrolling courses in gaming design and special education with a focus in assistive technologies. My goal is to become more knowledgeable in designing games with VR technology for children with autism. To become an expert in my home country of Saudi Arabia is a career goal of mine that these further studies can fulfill. The field of VR is growing but relatively little of that growth is focused on children with special needs. Autism seems to be a disability that could specially benefit from virtual reality and I want to be part of that development.

References


Incorporating CSR Initiatives Into Marketing Strategies: A Descriptive Stakeholder Approach
Chonlada Sajjanit, , Kasetsart University, Thailand

ABSTRACT
Marketing should recognize society as the ultimate customers as it involves all stakeholders who affect or be affected by organization’s activities. Therefore, the marketing objective is now not to satisfy customers’ needs but to satisfy stakeholders’ needs. How can marketing managers satisfy stakeholders’ needs? To address this question, corporate social responsibility (CSR) initiatives such as stakeholder theory were taken into account. As a result, the current study proposes the conceptual framework of the interface between CSR and marketing in order to satisfy stakeholders’ needs. Drawing upon existing literature, two steps are suggested: selecting and targeting stakeholders and incorporating CSR concepts into marketing mix. This study is one of the first works to integrate marketing concepts with CSR initiatives. The proposed model could facilitate future studies in marketing and sustainability fields. For managerial implications, managers could formulate marketing strategies based on the study’s findings to gain support from their stakeholders.

Keywords: Corporate social responsibility, Marketing mix, Marketing strategy, Stakeholder theory, Sustainability
Supporting The Mind, Heart, Soul And Body Of Staff And Students

Jennifer Moore, Depaul University, USA

ABSTRACT

Well-being is integral to human function, and plays a vital role in the development of children as effective learners. But how do schools measure whether children are being provided with the necessary information and opportunities to encourage growth in this very important area? In order to develop and support well-being, we need to start from a strong foundation; we have a moral responsibility to ensure that the adults in every child’s life are well so they in turn can effectively support the well-being of the child. The well-being wheel is a tool that helps us, as educators, to focus, plan, implement, assess, and reflect, so that we can determine where we are and where we need to be to best support our communities in the healthy development of the whole child.

Introduction

“The whole child” is a term that is bandied around in education, but there is little clarity, aside from the framework provided by ASCD, to specify what is meant by the term. The framework includes tenets to understand the concept of the whole child, centered around health, safety, engagement, support, and challenge. Overall, this framework provides a wonderful resource to help educators begin the conversation about how to help schools focus on different areas, rather than solely academic standardized test scores. In essence, it is an extremely valuable starting point. For those who wish to continue this conversation in depth, however, additional resources are needed.

An integral aspect of the whole child approach that is frequently mentioned but seldom specifically evaluated is that of well-being. We know that well-being is necessary for human function and that attending to well-being will support students in becoming empathic, compassionate global citizens, people who are concerned about the world and the individuals who live in it. We know that caring for the well-being of both adults and children helps the whole community flourish. We know that adults need to be grounded themselves before they most effectively care for others and that this grounding will enable them to model for children. By building a sense of well-being in children and adults, we facilitate the growth of effective inquirers and achievers. In developing a sense of well-being, children themselves establish a strong foundation from which to learn.
However, although well-being is nearly always seen as an important part of the whole child, in practice, it is an aspect that is often forgotten or ignored. The integration of well-being into a school’s practice is the next step in truly addressing the needs of the whole child on a day-to-day basis. As the concept of well-being is prioritized and integrated into a school’s strategic plans, what becomes necessary are tools to provide schools with greater clarity and the ability to effectively evaluate strengths and weaknesses in regard to well-being. One such tool is the well-being wheel.

The well-being wheel allows schools to focus, plan, implement and assess practices, and reflect on how best to support the different dimensions of children, as well as the adults who serve children in their capacity as educators. The seven different aspects of the well-being wheel (physical, emotional, social, spiritual, environmental, cognitive, and financial) can be used by teachers, students, parents and administrators to reflect on their individual level of well-being and to take steps to put organizational structures in place to ensure well-being. Education can be grounded in the general concept of well-being because it transcends borders. Schools around the world exist for the betterment of societies, and the well-being wheel provides schools with a tool to customize well-being for every community.

The current focus on creating equity in schools is setting the bar too low. It is a step towards a more positive focus for all, but wouldn’t it be exciting to work towards creating schools in which people thrive, rather than simply receive equal access? What if schools focused on promoting the overall well-being of all community members? How might the conversation change about how we ‘do school’ if this happened? What if students couldn’t wait for the school doors to open each day? What if teachers were excited to come to work? What if families were cared for and nurtured, so in turn, they could support their children? Using the well-being wheel as a tool for school transformation could make these possibilities into realities.

The goal of the well-being wheel is for both children and adults, who are part of every school community, to feel strong and competent in these different areas of well-being in order to help make the world a better place for everyone, regardless of the language they speak, the country they live in, the amount of money they make, or the color of their skin.

**Rationale for the Well-Being Wheel**

The gains of focusing on well-being are numerous and overwhelmingly positive. When people feel well, there is space and opportunity for growth and innovation. When adults feel well, they can help children feel well and do amazing things. If adults do not feel well, it is harder for children to feel well, primarily because adults are models for children. When organizations promote well-being among adults, it is much easier for adults to promote--and model--well-being among children as there is a parallel process occurring. A school community that focuses on the dimensions of the well-being wheel gives members a sense of agency, allowing children and adults to see themselves as powerful agents of change in their own lives. A positive orientation to people’s well-being provides a comprehensive, holistic approach to school growth and development. If a teacher comes to school feeling frustrated and upset, children and colleagues will inevitably absorb those emotions. If teachers come to school knowing they are supported and cared for, children and colleagues will be positively affected.

There is a well-established body of research, as well as national and international policies, that make up the foundation of the well-being wheel as a tool for school change. Multiple theorists have conducted research into problems that can be addressed and minimized with the application of the well-being wheel.

**Adverse Childhood Experiences Study (ACEs)**

The well-being wheel is based on the idea that in schools, we have a social responsibility to help create nurturing environments in which children can thrive and be exposed to a minimal amount of Adverse Childhood Experiences (ACEs). Developed by Felitti et al. (1998), ACEs is the term given to the myriad of negative experiences children have that have long term negative impacts on their psychological, social, emotional and physical well-being, long into adulthood. According to the work of Felitti et al. (1998), almost two-thirds of study participants (n=17,337 participants) reported at least one ACE, and more than one in five reported three or more ACEs.
If schools were to focus on promoting the overall well-being of the members of their communities, this would go a long way in helping adults create the type of environments that support healthy development. This focus on well-being could decrease the frequency of ACEs that children currently face, creating long term benefits for individuals as well as our society. By focusing on the overall well-being of both children and adults in schools, the frequency and intensity of ACEs could potentially be reduced. Since the well-being wheel can be customized to address the needs of the school community, the resources, programs and policies put into place are specific to each community, ensuring that the needs of the people served are met.

Positive Psychology

Schools have begun incorporating elements of positive psychology into their work in order to help students flourish (2011). Dr. Seligman’s work on authentic happiness led him to focus even more deeply on identifying what skills or attitudes could help people flourish. He was able to identify 5 measurable elements of well-being, known as PERMA: 1) Positive emotion, 2) Engagement, 3) Relationships, 4) Meaning and 5) Accomplishment. There is a school in Australia that has been working to integrate these 5 elements into their school. The consequence of the implementation of these elements has been affirmative.

According to Seligman, well-being is ideally taught in schools. Researchers found that “well-being should be taught in school on three grounds: as an antidote to depression, as a vehicle for increasing life satisfaction, and as an aid to better learning and more creative thinking. Because most young people attend school, schools provide the opportunity to reach them and enhance their well-being on a wide scale” (p. 296 in M. E., Ernst, R. M., Gillham, J., Reivich, K. and Linkins, M., 2009).

Well-Being Theory

Halbert L. Dunn, M.D. was a biostatistician from the Mayo Clinic who developed the concept of wellness, introducing the idea in a series of lectures he did in the 1950’s. He made significant contributions to the field of vital health statistics. He was the first to raise the complexity of wellness to the general public, acknowledging the many layers and facets that make up one’s wellness.

John Travis, M.D., built on Dunn’s work in the 1970’s to create the first version of the wellness wheel, of which there are now many different versions, ranging from 5-12 areas of wellness.

In terms of researching people’s well-being, Diener, Sapyta, and Suh (1998) found that asking people to report on their own well-being was a valid tool for collecting data, allowing that people take multiple ways to get to a place of well-being.

Therefore, the well-being wheel proposed in this paper can be used to foster individual and organizational well-being of children, adults and organizations. It is a tool that takes the history of well-being into account by virtue of it delineating well-being into different dimensions. It is also a tool that is based on the self-reporting of individuals with regards to their well-being.

South Korea Educational Policies

The Republic of Korea has refocused their educational policy to attend to the whole child. This refocusing is a consequence of having the highest rate of children reporting being unhappy, while they are the highest performing country on PISA. The 2013 Education Policies from South Korea currently include:

- Emphasize curricula that foster students’ dreams and talents (exam-free semester, character-building education, textbook-oriented exams).
- Provide student-centered, customized academic and career counselling services.
- Increase physical education at school.
- Create favourable working environments for teachers to concentrate on teaching.
- Simplify college entrance examinations to reduce the financial and psychological burden of these
UNESCO has created The Happy Schools Project, where schools around Asia focus on becoming more child-centered places (Kim, 2016). Schools in Thailand, Republic of Korea, Japan, Bhutan, Viet Nam participated in a training program focused on the implementation of the ideas related to positive psychology. “The Happy Schools Framework, with its 22 criteria under the three categories of People, Process and Place, and examples of strategies to reach each to the criteria, aims to provide insight as to what school-level stakeholders identify as important for enhancing happiness and well-being in schools” (p. 16). Participating schools shared the practices they engage in that promote well-being and completed surveys regarding the impact of these practices. The purpose of the project was to gain clarity around the definition of a happy school.

UN Sustainable Development Goals

The United Nations has created 17 Sustainable Development Goals (SDG) focused on making the world better for all people, around the globe. The SDG are based on the premise that we all have a social responsibility to help people be well.

These goals are a strong starting point for the use of the well-being wheel as a tool for school change because the goals are applicable to all cultures. Specific well-being practices and strategies are unique to each school community, yet well-being is a positive, universal concept that can be shared by people around the world. The well-being wheel is a conceptual tool that people can use to develop and sustain school communities committed to supporting individual and organizational well-being in every community. The well-being wheel incorporates 7 dimensions of well-being that are found in the SDG: physical, social, emotional, spiritual, financial, cognitive and environmental.

A Glance at Practices Used in Some Schools to Support Well-Being Theories

- Naps happen in elementary schools during the day in China for children and staff (physical and cognitive well-being)
- Lessons are taught for 45 minutes and 15 minutes of free play in Finland (physical and cognitive well-being)
- Schools are serving vegetarian, organic meals for students and staff in the United States (physical, environmental and cognitive well-being)
- School gardens are cultivated in the United States, Tanzania and Thailand (physical and environmental well-being)
- Staff have unlimited personal days in the United States (physical, social, emotional well-being)
- Counseling is available during the school day for students, their families and staff in the United States (social and emotional well-being)
- Students take personal finance classes in the United States (financial well-being)
- Students have physical education classes 2 or more times per week in China (physical and cognitive well-being)
- When students or staff have conflicts, talking circles are used to address them in the United States (social and emotional well-being)
- Children don’t have to wear shoes to school in New Zealand and Australia (physical well-being)
- Teachers, students and administrators run democratic schools around the world (social well-being)
- School staff and students meditate and practice yoga during school hours in the United States and United Kingdom (cognitive, social and emotional well-being)

Description of the Well-Being Wheel

The well-being wheel operates on two planes - the individual level and the organizational level. Ideally, both planes are supported by the school community. The reason for applying the construct of well-being to both children and adults is for the because adults are role models for children and the focus on well-being needs to be consistent. Children are excellent at spotting inconsistencies, and are attuned to the hypocrisy of an adult telling students they should behave in a certain way while not following their own advice. Having adults hone their well-being while children are doing
the same provides a parallel process of development, making it that much easier for both groups to change their behaviors.

COGNITIVE WELL-BEING

- Individual Level: Students and adults are challenged with new ideas, concepts and processes that will help transform the school community; continuing education classes are provided for adults; students and adults are encouraged and supported in pursuing their interests.
- Organizational Level: Structures are in place to support innovation and intellectually demanding work — teacher exchanges, regular professional development time, staff led professional development (pd), offsite pd, ongoing graduate coursework, etc.

SOCIAL WELL-BEING

- Individual Level: Students and adults are able to build healthy, trusting relationships that form the foundation of their work together.
- Organizational Level: There are healthy social relationships throughout the school community, as evidenced by talking circles for effective mediation.

ENVIRONMENTAL WELL-BEING

- Individual Level: Students and adults practice responsible behaviors such as picking up trash, turning out lights, recycling, composting, taking public transportation, reducing consumption, planting trees, growing food.
- Organizational Level: Adults and children are mindful of the resources that are consumed by the organization; actions that leave a minimal carbon footprint; structures to ensure responsible, fair trade, green procurement.

EMOTIONAL WELL-BEING

- Individual Level: Students and adults are supported in developing their emotional health through identification of emotions, managing emotions and developing a strong sense of agency.
- Organizational Level: The school supports the healthy expression of emotions; there are structures in place to provide counseling (individual and group) onsite to help both children and adults manage the issues/challenges they face, as well as curricular resources.

PHYSICAL WELL-BEING

- Individual Level: Students and adults engage in significant amounts of daily physical activity, including stretching, walking, running, and deep breathing.
- Organizational Level: There are programs in place to support regular physical activity and the nutrition of the students and adults in the organization.

SPIRITUAL WELL-BEING

- Individual Level: Students and adults learn executive functioning skills and strategies and practice them regularly. They feel responsible for their own spiritual development and aware of the ethics of their decisions as well as the consequences of their actions.
- Organizational Level: Mindfulness, yoga and meditation are incorporated into work with children (in class) and adults (pd workshops); there are structures and programs to support spiritual development (i.e. meditation room, religious education, etc.).
FINANCIAL WELL-BEING

- Individual Level: Students’ families have access to information and programs to ensure financial security, such as governmental aid, language classes, educational opportunities, job training, and financial guidance and advising.
- Organizational Level: The school is fiscally strong for the long and short term and provides living wages for all its staff members; structures are in place for the community to understand the financial health of the school.

Process Schools Use with the Well-Being Wheel

This tool is given to members of the community to begin a conversation, to get a sense for which areas they are feeling passionate about and we decide to focus on a few of the areas.

A core, representative group of the community does an inquiry into the dimensions they are interested in. The process for the inquiry is:

- first define the areas of wellbeing they would like more of,
- collect stories from the community about optimal experiences related to well-being and find patterns,
- then collaborate with the community to imagine what they would like more of,
- then work with the school community to make those hopes into their reality.

The appreciative inquiry process is the general flow of school communities facilitate the planning of their work around well-being, using the well-being wheel as a guide.

Ideally, every few years the school community would go through this appreciative inquiry to select another area of the well-being wheel to develop.

- The community could do a check in at the end of each year to collect perspectives about their progress towards the areas of focus.
- The well-being wheel could be the basis of the student report card/progress report, or the staff feedback/evaluation system.
- All of the school activities could be tied to the well-being wheel, giving the community a conceptual anchor for their work to create cohesion and a sense of purpose.
- Districts/states could use the well-being wheel to help schools frame their work.
## Tools that Support the Well-Being Wheel

### Sample Indicators of a Flourishing School

<table>
<thead>
<tr>
<th>Dimensions of School Well-Being</th>
<th>Beginning Phase</th>
<th>Flourishing Phase</th>
<th>Indicators to Track Growth to Becoming a Flourishing School</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cognitive Well Being</strong></td>
<td>Individual Level</td>
<td>Individual Level</td>
<td>• Measures of student performance and growth</td>
</tr>
<tr>
<td></td>
<td>Low cognitive performance on a variety of student measures.</td>
<td>Students and adults are cognitively challenged and grow.</td>
<td>• Measures of staff performance and growth</td>
</tr>
<tr>
<td></td>
<td>Low professional performance on a variety of adult measures.</td>
<td>Students make steady progress over the course of their schooling, as documented by a variety of measures. Staff make progress as professionals, documented by a variety of measures.</td>
<td>• Measures of organizational, administrative and/or structural effectiveness throughout</td>
</tr>
<tr>
<td></td>
<td>Organizational Level</td>
<td>Organizational Level</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Haphazard curriculum. No assessment framework for students. Evaluation system in place for staff, instead of a feedback system. No learning opportunities for parents, administrators, or teachers.</td>
<td>Structures are in place to support innovation and intellectually demanding work from students and staff. Student-centered curriculum is in place, evolving each year. Comprehensive assessment framework is in place to track student growth.</td>
<td></td>
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<tr>
<td><strong>Physical Well Being</strong></td>
<td>Individual Level</td>
<td>Individual Level</td>
<td>• Student attendance and tardies</td>
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<td></td>
<td>High numbers of students and adults have unaddressed health issues that limit their engagement with life. People drink soda, eat chips, or skip meals. No one wants to eat the food served by the school.</td>
<td>Students and adults engage in significant amounts of daily physical activity. People are sleeping 8-10 hours/night. People are expected to spend a minimum of 30 minutes at each meal (breakfast, lunch, snack), focusing on eating.</td>
<td>• Staff attendance and tardies</td>
</tr>
<tr>
<td></td>
<td>Organizational Level</td>
<td>Organizational Level</td>
<td>• # of students/staff who are obese or overweight</td>
</tr>
<tr>
<td></td>
<td>PE classes occur less than 3 times a week. Unstructured aerobic play for children occurs for less than 30 minutes/day. Unappetizing meals are served. Lunch time is brief.</td>
<td>There are programs in place to support the physical activity and nutrition of the students and adults. There is a locker room for staff/students to shower and change after exercising. Healthy food options are regularly provided to families. Nap rooms and rest spaces are available for use.</td>
<td></td>
</tr>
<tr>
<td>Social Well Being</td>
<td>Individual Level</td>
<td>Organizational Level</td>
<td></td>
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<tr>
<td>-------------------</td>
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<tr>
<td>Physical altercations</td>
<td>Students and adults are able to build healthy, trusting relationships that form the foundation of their work together.</td>
<td></td>
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<tr>
<td>Bullying (among students and/or staff)</td>
<td>All members of the school community are able to engage in talking circles to build healthy relationships and resolve conflicts in a prosocial way. Members enjoy each other's company both in and out of school.</td>
<td></td>
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<tr>
<td>High staff turnover</td>
<td></td>
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<tr>
<td>High student turnover</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental Well Being</th>
<th>Individual Level</th>
<th>Organizational Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>No recycling. No composting. Significant food waste. Significant landfill waste in each room. Clutter in rooms. School feels dirty.</td>
<td>Students and all adults take care of the school (and the planet) - picking up trash, turning out lights, recycling, composting, taking public transportation, reducing consumption and waste, planting trees, growing food, etc.</td>
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</tr>
<tr>
<td></td>
<td>There are structures and processes to ensure responsible, fair trade, green procurement of goods and services, as well as a minimal carbon footprint. There are systems in place to ensure a clean, attractive learning environment.</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Emotional Well Being</th>
<th>Individual Level</th>
<th>Organizational Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequent emotional outbursts from students and/or staff. Tangible tension. High levels of anxiety. Disengagement/lack of motivation.</td>
<td>Students and adults are supported in developing their emotional health through the identification and management of their emotions, as well as a strong sense of agency. Executive function skills are explicitly fostered.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>There are curricular resources and counseling structures to help both students and adults (staff and students’ families) manage the issues/challenges they face.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Spiritual Well Being</th>
<th>Individual Level</th>
<th>Individual Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>The words ‘love’ and</td>
<td>Students and adults practice self</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Social events for students</th>
<th>Social events for families</th>
<th>Social events for staff</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Reduced costs for waste collection</td>
<td>Reduced material goods consumption costs</td>
<td>Reduced costs of energy consumption</td>
</tr>
<tr>
<td></td>
<td>Self-reporting surveys</td>
<td>Teacher observations</td>
<td>360 Feedback of adults</td>
</tr>
</tbody>
</table>

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‘kindness’ are used infrequently, if at all. People are motivated by self-interest. Self-reflection is not prioritized. reflection. There is a focus on being loving and kind to all.

<table>
<thead>
<tr>
<th>Organizational Level</th>
<th>Spiritualty is not discussed. Pockets of yoga or meditation may happen in a classroom.</th>
<th>Organizational Level</th>
<th>Self-reflection is given structure and physical space within the community. There are multiple pathways for self reflection - meditation and yoga.</th>
</tr>
</thead>
</table>

**Financial Well Being**

<table>
<thead>
<tr>
<th>Individual Level</th>
<th>High levels of poverty among students and staff. Students’ basic needs are not being met – food and clothing are often problematic.</th>
<th>Individual Level</th>
<th>Students’ families are provided with a range of resources they need to be able to provide financial security for their families. Staff are paid wages well above national poverty line.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizational Level</td>
<td>There are convoluted spending processes. The school budget remains stagnant, year to year.</td>
<td>Organizational Level</td>
<td>The school is fiscally strong for both the short and long term, providing living wages for all staff members and structures are in place to make this information public.</td>
</tr>
</tbody>
</table>

**Inspirational Practices for Well-Being**

<table>
<thead>
<tr>
<th>Facets of School Well-Being</th>
<th>Curriculum</th>
<th>Professional Development</th>
<th>Policies and Practices</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Reward smart failure and make sure to conduct “what did we learn?” post-mortem sessions.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Organizational Level</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Make all goals (objectives and key results) public.</td>
</tr>
<tr>
<td>Physical Well-being</td>
<td>• Physical Education:</td>
<td>• Yoga: Breathe for</td>
<td>Individual Level</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Organizational Level</strong></td>
</tr>
</tbody>
</table>
### Being

**How does work help adults and kids be physically fit? How are healthy eating and exercise encouraged?**

<table>
<thead>
<tr>
<th>Early childhood pe curriculum</th>
<th>Change (<a href="https://www.breatheforchange.com/our-trainings">https://www.breatheforchange.com/our-trainings</a>); Laughter Yoga <a href="https://tinyurl.com/ya4n28ok">https://tinyurl.com/ya4n28ok</a></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Walk and talk instead of sitting and talking.</td>
</tr>
</tbody>
</table>

#### Organizational Level

- Coordinate a Community Sponsored Agriculture program at your school, providing local produce for anyone who participates. [https://www.localharvest.org/csa/](https://www.localharvest.org/csa/)

### Social Well-Being

**How are healthy relationships supported at school, between adults, between children, and between adults and children?**

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Notice the impact of your emotions on other people</td>
<td>• Provide talking circles to foster communication (both in times of peace and in times of conflict).</td>
</tr>
</tbody>
</table>

#### Individual Level

- Notice the impact of your emotions on other people

#### Organizational Level

- Provide talking circles to foster communication (both in times of peace and in times of conflict).

### Environmental Well-Being

**In what ways does the school model caring for the planet?**

<table>
<thead>
<tr>
<th>Composting: Life Lab (<a href="http://www.lifelab.org/composting/composting-curriculum/">http://www.lifelab.org/composting/composting-curriculum/</a>)</th>
<th>Watch the documentaries/movies on The Story of Stuff website: <a href="https://storyofstuff.org/">https://storyofstuff.org/</a></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Composting: Life Lab</td>
<td>• Reduce your consumption and know that there is no ‘away!’</td>
</tr>
</tbody>
</table>

#### Individual Level

- Reduce your consumption and know that there is no ‘away!’

#### Organizational Level

- Ask families to donate glasses and ceramic plates to reduce paper consumption.

### Emotional Well-Being

**How are emotions acknowledged and celebrated at school, those of children and adults?**

<table>
<thead>
<tr>
<th>Emotions: Second Step (<a href="http://www.secondstep.org/">http://www.secondstep.org/</a>)</th>
<th>Nonviolent Communication for Educators: <a href="https://nyc-uk.com/events/">https://nyc-uk.com/events/</a></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Notice your physical responses to events/thoughts.</td>
<td>• Provide individual counseling for children, staff and</td>
</tr>
</tbody>
</table>

#### Individual Level

- Notice your physical responses to events/thoughts.

#### Organizational Level

- Provide individual counseling for children, staff and
<table>
<thead>
<tr>
<th>Spiritual Well-Being</th>
<th>Financial Well-Being</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>How are love and kindness integrated into your work?</em></td>
<td><em>How financially strong is your school?</em></td>
</tr>
</tbody>
</table>

**Spiritual Well-Being**

- **Social Justice:** Real World Social Justice
  [https://tinyurl.com/y7ggjh5b](https://tinyurl.com/y7ggjh5b)

- **Meditation:** Meditation for Teachers
  [https://tinyurl.com/y74egyzv](https://tinyurl.com/y74egyzv)

**Individual Level**

- Meditate on your connections to other people, the greater good, animals, the universe.

**Organizational Level**

- Create beautiful, uncluttered spaces.

**Financial Well-Being**

- Financial literacy curriculum for children:
  [https://tinyurl.com/y8m28t2k](https://tinyurl.com/y8m28t2k)

- A four week Financial Well-Being Challenge:
  [https://tinyurl.com/yc9oyjrv](https://tinyurl.com/yc9oyjrv)

**Individual Level**

- Know the amount of money that you need to earn in order to live the life you would like; plan how you are going to make that happen; make it happen.

**Organizational Level**

- Make all goals (objectives and key results) public.

---

### Tracking Growth with the Well-Being Wheel

There are a multitude of tools that can be used to measure the different dimensions of well-being. There is intentionally not one tool that measures all of the dimensions of well-being because each school community has to identify the dimension(s) to focus on and identify the measures that they would like to use with their chosen dimensions.

Each school community sets their own goals to track, being mindful of the amount of time and attention and resources put towards each goal. Ideally, at the beginning of each school year, the school community reflects on the data collected in the previous year during an appreciative inquiry cycle, using that information to guide planning for the upcoming year.
Sample of Measures for the Facets of Well-Being

<table>
<thead>
<tr>
<th>Dimension of Well-Being</th>
<th>Construct the Tool Purports to Measure/Tool Location</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cognitive Well-Being</strong></td>
<td>● Building student portfolios that document cognitive growth: <a href="https://www.thoughtco.com/steps-to-building-a-student-portfolio-2081366">https://www.thoughtco.com/steps-to-building-a-student-portfolio-2081366</a></td>
</tr>
<tr>
<td><em>What happens at school to challenge and develop people’s thinking, as well as that of the students and families?</em></td>
<td></td>
</tr>
<tr>
<td><em>How does work help adults and kids be physically fit? How are healthy eating and exercise encouraged?</em></td>
<td></td>
</tr>
</tbody>
</table>
| **Social Well-Being** | ● YouthTruth ([http://youthtruthsurvey.org/](http://youthtruthsurvey.org/))  
● This is a Positive Education survey that measures: Positive emotion; Engagement; Relationships; Meaning; Accomplishment; and Health. It is free for schools - contact them to set up a site for your school that will archive your data ([https://permahsurvey.com/](https://permahsurvey.com/)). |
| *How are healthy relationships supported at school, between adults, between children, and between adults and children?* | |
| **Environmental Well-Being** | ● Environmental awareness questionnaire: [http://gilesig.org/30Sur.htm](http://gilesig.org/30Sur.htm)  
| *In what ways does the school model caring for the planet?* | |
| **Emotional Well-Being** | ● University of Pennsylvania Positive Education website with many different kinds of surveys that measure different emotions that are all FREE: [https://www.authentichappiness.sas.upenn.edu/testcenter](https://www.authentichappiness.sas.upenn.edu/testcenter) |
| *How are emotions acknowledged and celebrated at school, those of children and adults?* | |
| **Spiritual Well-Being** | ● Spiritual Well-Being Scale ([https://lifeadvance.com/spiritual-well-being-scale/6-faqs.html](https://lifeadvance.com/spiritual-well-being-scale/6-faqs.html)) |
| *How is spiritual growth fostered, both with kids and adults?* | |
| *How financially strong is your school?* | |

**Future Research Possibilities**

Currently, schools use the term ‘well-being’ to describe physical well-being - exercising, eating nutritious food, not smoking or not using drugs. Hopefully, the well-being wheel presented in this paper will broaden the definition of well-being to include physical, social, emotional, cognitive, environmental, spiritual and financial well-being for both children and adults in the school community.

Cross-context analyses that compare and contrast the construct of well-being could be an illuminating investigative path. How schools interpret the well-being wheel is an exciting focus for research since every school has the capacity to decide what well-being looks like for their own community. What are the similarities of well-being practices and programs within countries? Across countries?
Spiritual well-being is an area that needs measurement tools. It is a facet of well-being that is challenging to define, and the creation of some spiritual measurement tools could help make that happen.

In sum, the well-being wheel is the fuel that can ignite an education revolution, helping people reimagine how we think about schooling.

References

Developmental Challenges Experienced By Business Enterprises Operating In Sub-Saharan African Countries
Zeleke Worku, Tshwane University of Technology (TUT) Business School, South Africa

ABSTRACT

Addae-Korankye (2014), Kemboi and Tarus (2013), Alvarez and Barney (2014), Nega and Schneider (2014) and Julian and Ofori-Dankwa (2013) have highlighted the need for improving the quality of microfinance services in Sub-Saharan African countries. The authors have reported that the quality of microfinance services is undermined in most Sub-Saharan African countries due to unhelpful economic policies, lack of lending capacity, and poor technical, managerial and leadership skills of government bureaucrats and municipal authorities. A survey was conducted by way of gathering information from microfinance agencies providing money lending services to business enterprises in four Sub-Saharan African countries. Service quality standards recommended for microfinance services by Barry and Tacneng (2014) were used as a benchmark. The study found that 79% of entrepreneurs who rated the quality of microfinance services provided to business enterprises found the quality of services inadequate due to cumbersome bureaucratic procedures, lack of tangible benefits, and low level of formal education.

Key words: Access to finance, Survival, SMME, Ordered probit regression

Introduction and background

Microfinance specialists and developmental economists such as Addae-Korankye (2014), Kemboi and Tarus (2013), Alvarez and Barney (2014), Nega and Schneider (2014) and Julian and Ofori-Dankwa (2013) have pointed out that the quality of microfinance services in Sub-Saharan African countries is often undermined due to obstacles such as cumbersome bureaucracy, unhelpful economic policies, flawed guidelines and regulations have highlighted the need for improving the quality of microfinance services in Sub-Saharan African countries. The authors have reported that the quality of microfinance services is undermined in most Sub-Saharan African countries due to unhelpful economic policies, lack of lending capacity, and poor technical, managerial and leadership skills of government bureaucrats and municipal authorities. The aim of research was to explore and describe causes of poor service in the microfinance industries of four Sub-Saharan African countries (South Africa, Nigeria, Kenya and Ethiopia).

Objectives of study

The research was conducted in order to gauge the quality of microfinance services that are provided to SMMEs in South Africa, Nigeria, Kenya and Ethiopia by the standards of Barry and Tacneng (2014).

Literature review

Access to microfinance services in South Africa is still quite costly and difficult (Newman, Schwarz & Borgia, 2014). The main reasons are the demand for collateral, high service charges and high interest rates. The South African national economy is viewed as a combination of first world and third world economies in which overall economic growth is often undermined due to massive unemployment, rural and urban poverty, poor municipal services, corruption, and lack of good governance (Rose-Ackerman & Palifka, 2016). South Africans are heavily indebted with financial loans. Microfinance services are provided by various money lending agencies. Bazilian, Nakhhoa and Van de Graaf (2014) have shown that South Africans borrow money heavily for purchasing goods and services, and do not do well in terms of saving money in comparison with Japan, Malaysia, Singapore, South Korea and China.
In Nigeria, SMMEs play a key role in extending loans needed for economic development, job creation, and the alleviation of poverty. As is the case in densely populated regions of Africa and South East Asia, SMMEs provide the only means of livelihood to the general population. Small businesses contribute tax money to the national government. They also employ people of all ages and gender. Despite these facts, SMMEs are not afforded due recognition by the national government. According to Filmer and Fox (2014), SMMEs operating in Nigeria’s largest commercial cities such as Lagos are routinely exposed to unfavorable assessment by microfinance institutions in areas related to the demand for collateral and fixed assets as a requirement for the approval of loans from commercial banks and microfinance institutions. The situation in Kenya, Tanzania and Uganda is not so different from the situation in Nigeria according to the research conducted by Julian and Ofori-Dankwa (2013: 1314-1330). The study conducted by Kolk, Rivera-Santos and Rufin (2014) has singled out the demand for collateral as the biggest obstacle to access to finance in Nigeria. Oni (2012) has argued that urban and rural people should be encouraged and supported to borrow money needed for development projects from formal money lending institutions such as commercial banks as a means of alleviating abject poverty and unemployment. In this regard, the key problem has been the demand for collateral and fixed assets by commercial banks and microfinance institutions. Commercial banks and microfinance institutions in most Sub-Saharan African countries demand collateral and fixed assets as a requirement for loan approval, and that newly established SMMEs often struggle to meet this stringent requirement.

In Kenya, microfinance institutions are routinely used for the creation of start-up SMMEs and for the alleviation of poverty among the masses. Since independence, microfinance institutions have played a major role in the alleviation of poverty among men and women as well as the unemployed youth. According to the Kenyan Government, poor and unemployed Kenyans can improve their low socioeconomic status by taking microfinance. Microfinance banks have alleviated poverty in Kenya. The key problem in Kenya has been lack of capacity among microfinance institutions. Examples of some of the key obstacles are lack of capacity, improper regulations, inability to enforce the law, stiff competition with commercial banks, failure to produce innovative and diversified products, lack of profitability, lack of stability, and lack of monitoring and evaluating services to micro finance institutions (MFIs).

Wijesiri and Meoli (2015) have shown that formal money lending institutions as well as traditional microfinance agencies such as commercial banks, the Kenyan Equity Bank, K-Rep Bank, Family Bank and the Kenyan Co-operative Bank, Faulu Kenya, Kenya Women Finance Trust Limited, SMEP, Kadet and Jamii Bora provide loans to operators of SMMEs. However, the loan criteria imposed on SMMEs by formal money lending institutions such as commercial banks is quite stringent. According to the authors, the key obstacle is the demand for collateral and a proven track record of paying back loans.

Ethiopia is one of the poorest countries in the world. Microfinance started in Ethiopia in the mid-1990s. Microfinance institutions in Ethiopia are often under-resourced due to lack of capacity. They often fail to meet demands from large-size entrepreneurs. They mostly meet the needs of small-scale borrowers in income generation schemes. Awareness about microfinance operations is often very poor. MFIs need to open up branches outside the capital Addis Ababa. However, they have no incentive for doing that. Loan repayment conditions are quite stringent. MFIs often demand large collaterals from SMMEs (Bekele & Worku, 2008). Potential borrowers lack basic skills in accounting, bookkeeping, auditing and the preparation of business plans. Due to lack of incentives, global MFIs are quite reluctant to participate in the local market. At present, a total of 35 microfinance agencies provide loan services to SMMEs in the various regions of Ethiopia.

Methods and materials of study

The study is a result of a survey conducted by gathering finance-related information from 401 SMMEs selected from four Sub-Saharan African countries (128 from South Africa, 166 from Nigeria, 80 from Kenya and 27 from Ethiopia). Stratification was done by country. The study had a total of 35 socioeconomic variables that were related to efficiency in the provision of microfinance services to SMMEs in Sub-Saharan African countries. Efficiency was measured by the standards of Barry and Tanceng (2014: 1-20) set out for assessing the quality of microfinance services that are provided to operators of Small, Micro and Medium-Sized Enterprises (SMMEs) in Sub-Saharan African countries. Frequency tables, crosstab analyses (Hair, Black, Babin and Anderson, 2010), ordered probit regression analysis (Hosmer and Lemeshow, 2013), and factor analysis (Weiss and Weiss, 2012) were used for performing data analyses. Efficiency in the quality of microfinance services was measured by using a composite index defined by Barry and
Tacneng (2014: 1-20) for assessing the quality of microfinance services provided to SMAMEs in Sub-Saharan African countries.

Results of data analyses

Based on the criteria set out by Barry and Tacneng (2014: 1-20) for the quality of microfinance services that are provided to SMMEs operating in Sub-Saharan African countries, the results showed that 21.39% of the 401 SMMEs selected for the study were satisfied with the quality of services provided to them, whereas remaining 78.61% of SMMEs were not satisfied with the quality of microfinance services that were provided to them. The general socioeconomic characteristics of the 401 participants of study are shown in Table 1 below. The table shows percentages for the various attributes of the participants of study.

Table 1: General characteristics of respondents (n=401)

<table>
<thead>
<tr>
<th>Variable of study</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall satisfaction with the quality of microfinance</td>
<td></td>
</tr>
<tr>
<td>services provided to SMMEs</td>
<td>Satisfied: 21.39%</td>
</tr>
<tr>
<td></td>
<td>Not satisfied: 78.61%</td>
</tr>
<tr>
<td>Country of business operation</td>
<td>South Africa: 31.92%</td>
</tr>
<tr>
<td></td>
<td>Nigeria: 41.40%</td>
</tr>
<tr>
<td></td>
<td>Kenya: 19.95%</td>
</tr>
<tr>
<td></td>
<td>Ethiopia: 6.73%</td>
</tr>
<tr>
<td>Economic sector of SMME</td>
<td>Agriculture and mining: 34.22%</td>
</tr>
<tr>
<td></td>
<td>Manufacturing: 4.28%</td>
</tr>
<tr>
<td></td>
<td>Oil and gas: 3.21%</td>
</tr>
<tr>
<td></td>
<td>General services: 32.09%</td>
</tr>
<tr>
<td></td>
<td>Trade and commerce: 25.13%</td>
</tr>
<tr>
<td></td>
<td>Others: 1.07%</td>
</tr>
<tr>
<td>Type of business activity</td>
<td>Franchise: 9.63%</td>
</tr>
<tr>
<td></td>
<td>Solely owned: 58.29%</td>
</tr>
<tr>
<td></td>
<td>Partnership: 26.74%</td>
</tr>
<tr>
<td></td>
<td>Others: 5.35%</td>
</tr>
<tr>
<td>Economic sector of SMME</td>
<td>Consulting: 17.11%</td>
</tr>
<tr>
<td></td>
<td>Distribution and sales: 59.36%</td>
</tr>
<tr>
<td></td>
<td>Production: 19.25%</td>
</tr>
<tr>
<td></td>
<td>Others: 4.28%</td>
</tr>
<tr>
<td>Gender of respondent</td>
<td>Male: 50.80%</td>
</tr>
<tr>
<td></td>
<td>Female: 49.20%</td>
</tr>
<tr>
<td>Age category of respondent</td>
<td>Below 20 years: 9.63%</td>
</tr>
<tr>
<td></td>
<td>20 to 30 years: 32.62%</td>
</tr>
<tr>
<td></td>
<td>31 to 40 years: 48.13%</td>
</tr>
<tr>
<td></td>
<td>41 to 50 years: 6.42%</td>
</tr>
<tr>
<td></td>
<td>51 years or more: 3.21%</td>
</tr>
<tr>
<td>Highest level of formal education</td>
<td>Primary level or less: 12.03%</td>
</tr>
<tr>
<td></td>
<td>Secondary level: 44.12%</td>
</tr>
<tr>
<td></td>
<td>Certificate: 10.70%</td>
</tr>
<tr>
<td></td>
<td>Diploma: 10.70%</td>
</tr>
<tr>
<td></td>
<td>Bachelor’s degree: 20.32%</td>
</tr>
<tr>
<td></td>
<td>Master’s degree or above: 2.14%</td>
</tr>
</tbody>
</table>

Table 2, below, shows percentages of businesses that were registered before the year 2000. The table also presents frequency counts and percentages for the type of ownership of businesses that were selected for the study. It can be seen from the table that about 50% of businesses were never registered. The percentage of businesses that were registered before 2000 was about 6%.
Table 2: Operation of business in central business district (n=401)

<table>
<thead>
<tr>
<th>Variable of study</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year of establishment of business</td>
<td></td>
</tr>
<tr>
<td>Before 2000:</td>
<td>6.42%</td>
</tr>
<tr>
<td>Between 2000 and 2010:</td>
<td>19.25%</td>
</tr>
<tr>
<td>After 2010:</td>
<td>24.60%</td>
</tr>
<tr>
<td>Never registered:</td>
<td>49.73%</td>
</tr>
<tr>
<td>Type of ownership of business</td>
<td></td>
</tr>
<tr>
<td>A single owner:</td>
<td>58.92%</td>
</tr>
<tr>
<td>Family or group:</td>
<td>27.03%</td>
</tr>
<tr>
<td>Shareholders:</td>
<td>9.73%</td>
</tr>
<tr>
<td>Others:</td>
<td>4.32%</td>
</tr>
<tr>
<td>Type of business activity conducted</td>
<td></td>
</tr>
<tr>
<td>Agriculture:</td>
<td>20.86%</td>
</tr>
<tr>
<td>Manufacturing:</td>
<td>19.25%</td>
</tr>
<tr>
<td>Wholesale or retail:</td>
<td>42.78%</td>
</tr>
<tr>
<td>Others:</td>
<td>17.11%</td>
</tr>
<tr>
<td>Operation of business in central business districts</td>
<td></td>
</tr>
<tr>
<td>Yes:</td>
<td>45.45%</td>
</tr>
<tr>
<td>No:</td>
<td>54.55%</td>
</tr>
<tr>
<td>Operation of business inside a shopping mall</td>
<td></td>
</tr>
<tr>
<td>Yes:</td>
<td>45.45%</td>
</tr>
<tr>
<td>No:</td>
<td>48.40%</td>
</tr>
<tr>
<td>Number of employees employed by SMME</td>
<td></td>
</tr>
<tr>
<td>Fewer than five:</td>
<td>70.05%</td>
</tr>
<tr>
<td>Five to twenty:</td>
<td>19.25%</td>
</tr>
<tr>
<td>Twenty one or more:</td>
<td>10.70%</td>
</tr>
<tr>
<td>Duration of operation of business</td>
<td></td>
</tr>
<tr>
<td>Less than a year:</td>
<td>1.60%</td>
</tr>
<tr>
<td>One to two years:</td>
<td>5.61%</td>
</tr>
<tr>
<td>Three to five years:</td>
<td>71.39%</td>
</tr>
<tr>
<td>Six years or more:</td>
<td>21.39%</td>
</tr>
<tr>
<td>Conformity with standard operating procedures</td>
<td></td>
</tr>
<tr>
<td>Never:</td>
<td>0.00%</td>
</tr>
<tr>
<td>Rarely:</td>
<td>11.85%</td>
</tr>
<tr>
<td>Sometimes:</td>
<td>34.81%</td>
</tr>
<tr>
<td>Often:</td>
<td>34.07%</td>
</tr>
<tr>
<td>Always:</td>
<td>19.26%</td>
</tr>
</tbody>
</table>

Table 3 shows that about 36% of businesses had defaulted on loans borrowed from microfinance institutions.

Table 3: Defaulting on loans taken from microfinance institutions (n=401)

<table>
<thead>
<tr>
<th>Variable of study</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experience of defaulting on loan repayment at least once in the past</td>
<td></td>
</tr>
<tr>
<td>Defaulted at least once:</td>
<td>36.36%</td>
</tr>
<tr>
<td>Never defaulted:</td>
<td>63.64%</td>
</tr>
<tr>
<td>Experience of bankruptcy at least once in the past</td>
<td></td>
</tr>
<tr>
<td>Bankrupt at least once:</td>
<td>23.53%</td>
</tr>
<tr>
<td>Never bankrupted:</td>
<td>76.47%</td>
</tr>
<tr>
<td>Preferred choice for loan application</td>
<td></td>
</tr>
<tr>
<td>Commercial bank:</td>
<td>44.39%</td>
</tr>
<tr>
<td>Microfinance institution:</td>
<td>38.50%</td>
</tr>
<tr>
<td>Others:</td>
<td>17.11%</td>
</tr>
<tr>
<td>Ability to draw up a business plan</td>
<td></td>
</tr>
<tr>
<td>Yes:</td>
<td>62.03%</td>
</tr>
<tr>
<td>No:</td>
<td>37.97%</td>
</tr>
<tr>
<td>Perception on how helpful microfinance institutions are for SMMEs</td>
<td></td>
</tr>
<tr>
<td>Helpful:</td>
<td>42.78%</td>
</tr>
<tr>
<td>Not helpful:</td>
<td>57.22%</td>
</tr>
</tbody>
</table>

Table 4 shows important determinants of efficiency in the provision of microfinance services to SMMEs. The results were obtained from probit regression analysis.
Table 4: Regression coefficients estimated from ordered probit regression analysis

<table>
<thead>
<tr>
<th>Predictor variable</th>
<th>P-value</th>
<th>Regression coefficients and 95% Confidence Intervals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country of business operation</td>
<td>0.000</td>
<td>3.59 (2.84, 7.01)</td>
</tr>
<tr>
<td>The perception that the benefits realised by SMMEs from microfinance institutions are insignificant</td>
<td>0.001</td>
<td>3.54 (2.02, 6.30)</td>
</tr>
<tr>
<td>Low level of formal education</td>
<td>0.004</td>
<td>2.89 (1.94, 5.82)</td>
</tr>
</tbody>
</table>

Results of data analysis obtained from ordered probit regression analysis showed that 3 of the 9 variables of study were significant predictors of the ability of microfinance institutions to provide efficient services to operators of SMMEs at the 0.1% level of significance. These 3 predictor variables of study were: Country of business operation, Extent of benefits realised by SMMEs, and Highest level of formal education, in a decreasing order of strength.

Table 5: Estimates obtained from factor analysis

<table>
<thead>
<tr>
<th>Determinant of efficiency</th>
<th>Eigen value</th>
<th>Percentage of explained variance in viability</th>
<th>Cumulative percentage of explained variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country of operation</td>
<td>2.809</td>
<td>31.359</td>
<td>31.359</td>
</tr>
<tr>
<td>Duration of service</td>
<td>2.746</td>
<td>24.172</td>
<td>55.531</td>
</tr>
<tr>
<td>Perception on benefits realised by SMMEs from microfinance institutions</td>
<td>2.635</td>
<td>12.505</td>
<td>68.081</td>
</tr>
<tr>
<td>Highest level of education</td>
<td>2.557</td>
<td>10.228</td>
<td>78.309</td>
</tr>
<tr>
<td>Past history of bankruptcy</td>
<td>2.419</td>
<td>6.331</td>
<td>84.640</td>
</tr>
</tbody>
</table>

Table 5 shows 5 determinants identified by performing factor analysis. The five determinants collectively explain about 81% of the total variation in efficiency. Thus, efficiency in the provision of microfinance services to SMMEs depends upon the 5 determinants shown in the table.

Discussion of results of study

MFIs have successfully alleviated poverty in all Sub-Saharan African countries by providing loan services to SMMEs. Some of the key challenges for microcredit are lack of lending capacity and political interference in MFI institutions. A framework is vital for ensuring value for money and the provision of quality microfinance services to SMMEs. In this regard, the ability of microfinance institutions to respect and abide by the relevant regulations, guidelines and legislation in South Africa, Nigeria, Kenya and Ethiopia is critically important. Operators of SMMEs need speedy, highly efficient, reliable, affordable and transparent loan services. Operators of SMMEs require adequate finance. Addae-Korankye (2014), Kemboi and Tarus (2013), Alvarez and Barney (2014), Nega and Schneider (2014) and Julian and Ofori-Dankwa (2013) have highlighted the need for improving the quality of microfinance services in Sub-Saharan African countries. The authors have reported that the quality of microfinance services is undermined in most Sub-Saharan African countries due to unhelpful economic policies, lack of lending capacity, and poor technical, managerial and leadership skills of government bureaucrats and municipal authorities.

LIST OF REFERENCES


Teacher Candidates’ And Future Administrators’ Perceptions Of The Role Of School Counselors
Meghan Bradley, Monmouth University, USA
Kathryn Lubniewski, Monmouth University, USA

ABSTRACT

Teachers and administrators work with school counselors each day, so it is critical to evaluate their perceptions of the roles and responsibilities of school counselors before they begin their careers. There are few studies that have done work in this area, as many researchers evaluate the views of individuals who are already working in the field as teachers and administrators. Thus, the researchers in this study examined the perceptions of over 150 teacher candidates and future administrators regarding their views on the appropriate and inappropriate roles of school counselors, in hopes of disseminating the data with institutes of higher education to help inform their instruction around the roles of school counselors. Data analysis is currently underway and will be completed within the next month. With these results, implications for the training of teacher candidates and future administrators will be discussed.

Keywords: school counselor, teacher candidates, future administrators, ASCA National Model, perceptions
Triggering Symbolic Purchase Intentions By Facebook Posts And Social Media Based Brand Community: A Case Study Of Thai Professional Soccer Fan’s Club
Thongchai Srivardhana, Kasetsart Business School, Thailand

ABSTRACT
The main purpose of this study is to investigate the impacts of Facebook (FB) brand posts on symbolic purchasing intentions occurring within the context of social media based brand communities (Laroche, Habibi, & Richard, 2013). Whereas previous research suggested that characteristics of brand posts significantly influenced online engaging behaviors (i.e. likes, sharing, and comments) (DeVries, Gensler, & Leeflang, 2012; Luarn, Lin, & Chiu, 2015), none has directly examined impacts of the characteristics of brand posts on social media based brand community particularly in sport marketing context (i.e. how the FB posts determine the extents of relationships between focal users and the team, the marketers, the products, & other users?). Further, whereas several research (Cheung & Lee, 2012; Beukeboom, Kerkhof & De Vries, 2015) found influences of online engagement behaviors on purchase intention, their empirical investigations did not include antecedents of such engagement behaviors as types and/or contents of the FB posts in their research framework. This paper infers that engagement behaviors typically occur within social media based brand communities and proposes a model that incorporates characteristics of FB brand posts, social media based brand communities, and symbolic purchase intention in the sport marketing context. Specifically, the model conceptualizes that characteristics of FB brand posts has positive and direct impacts on both social media based brand communities and symbolic purchasing intention while indirectly influence symbolic purchasing intention through social media based brand community.

Keywords: Symbolic Purchase Intention, Facebook Brand Posts, Brand Community, Facebook Marketing, Social Media Marketing, Thai Professional Soccer Club

References
Physics Teaching Incorporating ICTS And Simulation Tools Developed In Python

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J. H. Quintero, Universidad Industrial de Santander, Colombia
D. A. Triana, Universidad Industrial de Santander, Colombia

ABSTRACT

We present in this article a Python script, based on a methodology to obtain the electric field produced by n electric charges. This software tool was implemented in courses of electromagnetism and its laboratory in three institutions of higher education. The aim objective of this work was to incorporate information and communication technologies (ICTs) at the physics subjects, in accordance with the programs promoted by the Colombian Ministry of Education. We wanted to connect the students with sensory experiences of the physical phenomena that allow them to improve their experience of learning of subjects traditionally studied through the board and paper. Finally, in this work, an interactive computational code was obtained, in which the electric field of the discrete and continuous charge distributions can be calculated (see figure 1), for the typical problems that are shown in an electromagnetism course.

Figure 1. Simulation of a cylinder charge performed as punctual charges.
Physics Teaching Mediated By Google Classroom

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Alex Francisco Estupiñan, Universidad Industrial de Santander, Colombia
Daniel Andrés Triana Camacho, Universidad Industrial de Santander, Colombia

ABSTRACT

In Colombia, the students that left their university studies at is led by the engineering area, followed the economy, administration, and accounting and related. The highest dropout populations are found in the first three semesters. On the other hand, students have low scores in the skills of reading and writing of the Saber-Pro proof. In conclusion, the subjects that involve mathematics, physics, reading, and writing are strongly linked to poor results. In order to avoid the growing student desertion, reading and writing competencies must be supported for each faculty with institutional programs. However, the reading and writing processes must also be reinforced from the basic sciences (mathematics and physics). Teachers have the responsibility to propose and execute activities that reinforce these competencies. The activities proposed by the teachers must sensitize the students and awaken them the love for physics, reading, and writing. The previous experience in research has allowed to take the scientific method to the classroom and make it a laboratory of creativity. We have obtained positive results with the systematization of teaching-learning strategies, the creation of bibliographic material, digital contents, and appropriation of ICTs in education. The observation accompanied by a deep reflection in our creativity laboratory has allowed understanding that the culture of the modern student is based on the use of smartphones. Students are used to writing and reading content on social networks and Whatsapp. What seemed a problem we have turned it into an opportunity to mediate and systematize the teaching-learning process. The tool that we have selected has been the web service Google Classroom. Through the classroom, we have not only adapted to the modern student but we have also managed to involve the students with the reading of contents of interest, and the writing of short texts such as critiques, summaries, conclusions, and argumentative texts, also of the topics associated with their training area. It has been observed that students are satisfied with the teaching method because thanks to the web service google classroom the accompaniment transcends outside the classroom, google classroom is enjoyable to the user (teacher and students), the flow of activities is easy to follow, activities are relevant and captivate the students, the grade goes into the background prioritizing the expectation to learn and finally the excessive use of paper is diminished.
Orchestrating Customer Experience Of The Bank Sector In Kuwait: The Mediating Role Of Relationship Quality
Abdullah J. Sultan, Kuwait University, Kuwait

ABSTRACT

Banks, worldwide, face intense competitions to maintain and grow their customer bases and convert them into brand advocates. In an era of rising customers’ expectations, more banks than ever will struggle and fail. To make the matter worse, customers are no longer seeking to purchase industry-standard products and services or access typical customer service and support. In fact, memorable experiences are what customers are after to keep them from switching to other banks. Compared with few years ago, four in 10 consumers find themselves evaluating other brands more often (Accenture 2014). An alarming fact that puts many banks on the edge of losing their customer bases and miss substantial growth opportunities if they continue to fall short of consumers’ expectations.

In its 2014 global consumer pulse survey assessing consumer attitudes toward customer experience, the consulting firm Accenture found differing levels of satisfaction among ten industry sectors. Due to poor customer service, banks, internet service providers (ISPs), and wireless phone companies had the highest levels of switched customers. Only 18 percent of customers agreed that their provider offered a tailored experience. This consistent poor service performance by companies has continued in recent years, as shown by the decrease in the American Customer Satisfaction Index (ACSI) to its lowest levels in nine years (Crosby and Brandt, 2016).

Similarly, the overall customer satisfaction level of retail banks in Kuwait was below the national average indexed level in 2017 (Servicehero, 2017). Moreover, the Net Promotor Score (NPS) of the bank sector in Kuwait was at 30 percent in 2017, while the country average was at 33 percent. When evaluating banks at the individual level, one can easily identify laggards simply by looking into their customer experiences. On the other hand, industry leaders are recognized by their memorable customer experiences, which give them outstanding reputations in the market. It is no secret that customers appreciate banks not for great products and services, which are taken for granted nowadays, but for exceptional experiences in their encounters with the bank. Therefore, customer experience seems to be a critical element of customers’ evaluations of banks. If designed correctly, those experiences can harness customers from switching to other banks.

Although customer experience has received a great attention by practitioners, researchers are still in their early stages to examine customer experience compared to related topics such as customer satisfaction, service quality, and loyalty (Chang and Huang, 2016; Frow and Payne, 2007; Johnston and Kong, 2011; Sultan 2018). The importance of this paper stems from the assertion that delivering a memorable customer experience is a key to preventing customers from switching to other banks. Therefore, the current researcher claims that switching intentions may be influenced by factors associated with the type of the experience that the bank offers to its customers and relationship quality that is developed through customer experience.

One of the purposes of the current research is to expand Sultan’s (2018) findings by examining the effect of customer experience on the bank sector. In addition, it contributes to the customer experience literature in threefold: 1) to identify and validate significant brand touchpoints of the customer experience in the bank sector, 2) to expand the literature by shedding light on how the customer experience depends on relationship quality and what role relationship quality has in switching intentions as portrayed in Fig. 1, and 3) to introduce a research methodology which can assist researchers and practitioners in designing an effective customer experience strategy that will generate value for both customers and the brand.
In Study 1, the researcher identified the construct items of staged customer experience in the bank sector by interviewing 60 customers at six branches in Kuwait. Two researchers conducted the interviews for a period of one month. The interviews were coded by two experts in the field. Then, the coded thoughts were used to form the brand touchpoints in time sequence. The 73 brand touchpoints that were identified from the interviews were then used in Study 2 as the construct items of staged customer experience.

To examine the dimensionality of staged customer experience construct, an exploratory factor analysis (EFA) was performed on a sample of 96 bank customers in Kuwait using Maximum Likelihood with Promax rotation for all 73 touchpoints. The EFA resulted in four unique factors. Each stage of the staged customer experience (pre-touch, in-touch, post-touch, and service failure) loaded on a separate factor. The disqualifications of items resulted in reducing the number of staged customer experience items from 73 to 22 items that loaded on four unique factors. The qualified items were distributed as follows: four items from pre-touch stage, eight items from in-touch stage, three items from post-touch stage, and seven items from service-failure stage.

In Study 3, the researcher examined the predictive validity of the staged customer experience construct and showed that users’ evaluations of the staged customer experience predicted their levels of switching intentions. Also, Study 3 was designed to examine the role of the relationship quality as a mediator that explained the indirect effect of the staged customer experience on switching intentions. In this study, the researcher used the same recruiting method that was used in Study 2 in order to capture a diverse sample of bank customers in Kuwait. The recruiting procedure resulted in an independent sample of 1,532 bank customers, ranging from 18 to 63 years old with an average age of 28.90 (SD = 9.92) and the sample consisted of 960 females and 572 males. Data collection procedures were similar to those reported in Study 2. Participants were asked to provide demographic information and then were asked to rate the 22 touchpoints in terms of satisfaction and importance. These two questions were multiplied to form the staged customer experience construct (α = .91 with 52.52% of explained variance). In addition to completing the staged customer experience construct, participants also evaluated their overall satisfaction with the bank using two items adapted from Crosby and Stephens’s (1987) scale and their trust in the bank using two items adapted from Sirdeshmukh’s et al. (2002) scale. The satisfaction and trust scales were both used to reflect on the relationship quality construct (α = .87 with 76.56 % of explained variance). Last, customers’ switching intentions was measured using three items (α = .95 with 76.51 % of explained variance), adapted from Meuter’s et al. (2005) switching cost scale. All Likert-type scale items on the survey required a response on a 7-point scale.

Measurement model. When constructing the measurement model using the 22 staged customer experience items, four relationship quality items, and three switching intentions item that were suggested in Study 2, the findings showed that the model had adequate fit (Chi-square = 1638, df = 369, p<.001, CFI = .95, NFI = .94, GFI = .93, AGFI = .92, RMSEA = .05). All 22 standardized factor loadings of all constructs were significant at p<.05; indicating good construct structure in the model, refer to Table 1.

In line with Fornell and Larcker’s (1981) recommendations, the researcher used several validity measures to assess all latent constructs prior to estimating the structural model. As shown in Table 2, convergent validity was assessed using composite reliability (CR) where all values of model constructs exceeded the minimum of .7, ranging from .71 to .90; and average variance extracted (AVE) measure for relationship quality and staged customer experience constructs to be above the minimum level of 50% (63% and 70%, respectively). However, the AVE for switching intentions was a little below the minimum level (47%). These results provided support for convergent validity of model’s constructs. Then, discriminant validity of latent constructs was established by showing that AVEs for each latent construct exceeded their correlations with the other constructs. These results confirmed that each construct was explained primarily by its indicators rather than its associations with other latent constructs.

Structural model. To arrive at the best fitting structural model, the researcher estimated three versions of the proposed model: direct-effects model, fully mediated effects model, and partially mediated effects model. In the direct-effects model, the research tested the direct impact of the staged customer experience and relationship quality on switching intentions. Obtained results showed generally adequate fit (Chi-square = 2494, df = 370, p<.001, CFI = .92, NFI = .90, GFI = .90, AGFI = .88, RMSEA = .06). Next, the fully mediated effects model was estimated and yielded improved fit (Chi-square = 1639, df = 370, P<.001, CFI = .95, NFI = .94, GFI = .93, AGFI = .91, RMSEA = .05). The goodness of fit for the partially mediated effects model was found to be identical to the fully mediated model (Chi-square =
1638, $df = 369, p<.001, CFI = .95, NFI = .94, GFI = .93, AGFI = .91, RMSEA = .05) Therefore, the partially
mediated model did not explain more than the fully mediated model and hence the fully mediate model was chosen to
be the best fit for the proposed research, refer to Fig. 2.

Overall, the data provided empirical evidence for the indirect role of the staged customer experience on switching
intentions through relationship quality. The four stages that were identified by the bank customers in Study 1 were
used as a base of evaluations for the staged customer experience in Study 2 and 3. In Study 2, the staged customer
experience was validated and purified to arrive at a more reliable, valid index. By conducting Study 3, the researcher
was able to examine the predictive validity of the model.

About the author

Abdullah J. Sultan earned his Ph.D. degree in Business Administration from Washington State University (USA) and
his MBA and Engineering degrees from the University of Missouri (USA). He is an associate professor of marketing
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freelancer. He is certified global customer experience management (GCEM). His research and teaching interests are
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management (CEM), integrated marketing communications (IMC), marketing strategy, and retailing management. He
is passionate about helping businesses enhance their business performance by changing how they deal with customers.
As part of this focus, he examines business strategy, marketing strategy, interaction design, customer service, and
employee engagement in order to convert business strategies into customer-oriented.

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of Services Marketing, Vol. 32(6), pp.777-788
### Table 1 Standardized loadings of construct items – Study 2

<table>
<thead>
<tr>
<th>Construct items</th>
<th>Loading ( ( \hat{\lambda} ))</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pre-touch stage:</strong></td>
<td></td>
</tr>
<tr>
<td>S1.1 Bank reputation and excellence in the community.</td>
<td>.76</td>
</tr>
<tr>
<td>S1.2 The overall performance of the bank services.</td>
<td>.80</td>
</tr>
<tr>
<td>S1.3 A wide-spread of branch locations.</td>
<td>.54</td>
</tr>
<tr>
<td><strong>In-touch stage:</strong></td>
<td></td>
</tr>
<tr>
<td>S2.1 A short waiting time to be served in the bank.</td>
<td>.66</td>
</tr>
<tr>
<td>S2.2 Instill confidence in the customers during the provision of services in the bank.</td>
<td>.72</td>
</tr>
<tr>
<td>S2.3 The employees give customers the required attention</td>
<td>.77</td>
</tr>
<tr>
<td>S2.4 The employees offer customers the appropriate personal services.</td>
<td>.68</td>
</tr>
<tr>
<td>S2.5 Modern tools and materials used in the transactions.</td>
<td>.67</td>
</tr>
<tr>
<td><strong>Post-touch stage:</strong></td>
<td></td>
</tr>
<tr>
<td>S3.1 The availability of internet banking services.</td>
<td>.61</td>
</tr>
<tr>
<td>S3.2 The availability of mobile banking services.</td>
<td>.65</td>
</tr>
<tr>
<td>S3.3 Provide integrated and coherent services in all distribution points to meet the needs of the customers.</td>
<td>.71</td>
</tr>
<tr>
<td><strong>Service–failure stage:</strong></td>
<td></td>
</tr>
<tr>
<td>S1.1 Handling customers’ inquiries and complaints in the branch.</td>
<td>.70</td>
</tr>
<tr>
<td>S1.2 Following up and communicating with customers to resolve complaints.</td>
<td>.83</td>
</tr>
<tr>
<td>S1.3 Empathizing and interacting with customers to resolve complaints.</td>
<td>.85</td>
</tr>
<tr>
<td>S1.4 Procedures used to arrive at the resolution.</td>
<td>.87</td>
</tr>
<tr>
<td>S1.5 The speed of resolving complaints.</td>
<td>.86</td>
</tr>
<tr>
<td>S1.6 Sincerity in resolving complaints.</td>
<td>.87</td>
</tr>
<tr>
<td>S1.7 Provide satisfactory and appropriate solutions to customers.</td>
<td>.82</td>
</tr>
<tr>
<td><strong>Relationship quality:</strong></td>
<td></td>
</tr>
<tr>
<td>RQ1 Overall, I am very satisfied with my current bank.</td>
<td>.83</td>
</tr>
<tr>
<td>RQ2 My current bank is very trustworthy.</td>
<td>.86</td>
</tr>
<tr>
<td>RQ3 Overall, I like working with my current bank.</td>
<td>.71</td>
</tr>
<tr>
<td>RQ4 My current bank is honest in all of its dealings with me.</td>
<td>.76</td>
</tr>
<tr>
<td><strong>Switching intentions:</strong></td>
<td></td>
</tr>
<tr>
<td>S1.1 Changing from my current bank would be a bother.</td>
<td>.51</td>
</tr>
<tr>
<td>S1.2 For me, the cost in time, effort, and grief to switch from my current bank is high.</td>
<td>.70</td>
</tr>
<tr>
<td>S1.3 It’s just not worth the hassle for me to switch from my current bank.</td>
<td>.81</td>
</tr>
</tbody>
</table>

N = 1,532; Chi-square = 1638, \( df = 369, p<.001, CFI = .95, NFI = .94, GFI = .93, AGFI = .92, RMSEA = .05 \); All reported loadings are standardized and significant (p<.001)
Table 2: Validity measures and factor correlation matrix

<table>
<thead>
<tr>
<th>Measure</th>
<th>CR</th>
<th>AVE</th>
<th>MSV</th>
<th>Correlations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staged CE</td>
<td>.90</td>
<td>.69</td>
<td>.56</td>
<td>(.83)</td>
</tr>
<tr>
<td>Relationship Quality (RQ)</td>
<td>.87</td>
<td>.63</td>
<td>.56</td>
<td>.75** (.71)</td>
</tr>
<tr>
<td>Switching Intentions (SI)</td>
<td>.72</td>
<td>.48</td>
<td>.08</td>
<td>.20** (.69)</td>
</tr>
</tbody>
</table>

N = 1,532; CR=Composite reliability, AVE=Average variance extracted; MSV = Maximum shared squared variance; Values in parentheses are square roots of AVE; ** p<.01

Figure 1: Research model: Staged customer experience

Figure 2: Fully mediated effects model

N = 1,532; Chi-square = 1639, df = 370, P< .001, CFI = .95, NFI = .94, GFI = .93, AGFI = .91, RMSEA = .05
**p<.001; *p<.05; All reported coefficients are standardized

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A Lean Process For Improving Customer Flow In A Thai Food Retailing Business

Supachart iamratanakul, Kasetsart University, Thailand
Premaratne Samaranayake Western Sydney University, Australia

ABSTRACT

Food retailing businesses become a rising demand in a Thai market. The food retailing stores are short product life cycle and sensitive to the demand of their customers. The lean process can be applied to improve the food retail operation such as customer flow and reduce the non-value-added activities, known as wastes. The study proposes to identify the causes of wastes and present the process for lean customer flow, which can improve operational activities in the food retail stores. The methodology is based on the process mapping and the problem-solving sheet to analyze the “voice of process”, the “voice of customers” and the “voice of staff.” The results show that several operational activities of the food retailing stores are the sources of wastes and prevent the customer flow in the food retail stores. As such, a lean customer flow process is developed to eliminate the causes of those wastes. The proposed a lean customer flow process highlights critical areas that need improvement.

*This research is an extension of the paper Ali Al Owad, Premaratne Samaranayake, Azharul Karim, Kazi Badrul Ahsan (2018): An integrated lean methodology for improving patient flow in an emergency department – case study of a Saudi Arabian hospital, Production Planning & Control.
Performance Effects Of Working Capital: Insights From GCC Countries
Turki Alshammari, Kuwait University, Kuwait

ABSTRACT

This paper strives to provide evidence of the effect of working capital policies on corporate profitability in a new and different setting, the Gulf Cooperation Council (GCC) countries. As the corporate private sector receives lavish subsidies from local oil-rich governments, the theoretical propositions and the worldwide accepted evidence are both glitched. Employing a set of pooled regression models, this paper, contrary to the worldwide accepted evidence, documents a trivial, if any, association between the efficiency of working capital management and the corporate profitability for a set of nonfinancial firms in all GCC countries. The results are robust to the econometric model, the profitability measure, and the country.

Keywords: Working Capital, Tobin’s Q, Debt ratio, Profitability, Cash Conversion Cycle, GCC countries, Firm Value

1A modified version of this paper has been published in: The International Journal of Economics and Financial Issues, 2018, 8(5), pp: 80-87, under the title of: “Performance Effects of Working Capital in Emerging Markets”
A Study On Customers’ Buying Pattern Of National Brands Vs Store Brands In Indian Apparel Market: Influence Of Demographic Factors

Hari Shankar Prasad Gandham, National Institute of Fashion Technology, India

ABSTRACT

India has a tradition of retail trade since ancient days. Retail has been a major employer after agriculture in India. Organized retail has been growing since early 1990s and has been on a fast track growth since 2000. Apparel retail has been in the vanguard of this retail revolution. There has been a gradual switch from tailor made to readymade since early 1990s, especially in menswear category. This switch to readymade has seen tremendous growth from 2000 onwards. Post 2000 many multi brand apparel retailers and department stores selling apparel have come into existence. These stores started selling national brands and soon started with store brands / Private labels. Store brands have become important to the stores as they can improve their bottom line, provide exclusivity and better customization to the needs and wants & tastes and preferences of store’s target customer segment. This has set in a competition between national brands and store brands. Competition between store brands and national brands has been studied extensively in academic research domain. There have been good number of studies in apparel category as well. Such studies in India are limited. There is research gap on the study of customer preference for national brands versus store brands in menswear category. The current study focuses on customer preference of national brands versus store brands and influence of demographic factors. The study is based on a pan India survey covering 504 respondents in eight major Indian cities. The findings are significant and have implications for practicing managers of national brands and store brands.

1. Introduction:

India has been a vast market for apparels. Indian retail has seen a revolutionary growth since 2000. Modern retail chains like Shoppers Stop, Life Style, West Side and others have been in the forefront of the growth of retail. The growth in Indian retail is fueled by the entry of Indian corporates into retail industry. Indian major corporates like Reliance, Aditya Birla, TATA, Raheja, Goenka etc. There has been a significant growth in organized retail since 1999. Indian retail market size is USD 672 Billion in the year 2017. It is estimated to reach USD 1.1 Trillion in 2020. (Economic Times, 15th November, 2017). The size of apparel market was USD 51 Billion in 2017. It is estimated to reach USD 97 Billion by the year 2025 with compound annual growth rate (CAGR) of 8%. (Retail and Consumer Quarterly Newsletter Q3 FY 2018 by PWC) organized retail in India was 7% in the year 2016-2017 and is estimated to grow to 10% by the year 2020.

India has witnessed slow switch from tailor made to readymade clothing during the period 1995 to 2000, especially in menswear. Significant rise in readymade clothing has been observed from the year 2000 onwards including womenswear. The apparel retail chains like Shoppers Stop, Life Style, West Side, Trends etc. have led the growth in apparel retail and many other stores have joined the bandwagon. Consequently many international and national apparel brands have seen tremendous increase in their business. Department chain stores have also been multi brand outlets. They show case several national and international apparel brands. These stores have also recognized the importance of store brands or private labels. These are important for the store business in that they boost stores bottom line and also provide exclusivity to the store. The merchandise of the store brands is designed, developed and produced by the store and priced to generate good income for the stores. Almost all apparel selling stores started with their own store labels. This has created a more options and variety for customers to select and purchase. Store brands have also
contributed to store loyalty to some extent among customers of a store. Consequently there has been a competition between store brands and national and international brands. The competition between store brands and national brands has been matter study in many academic research works. However, there is a limited research available especially in Indian apparel context.

2. Literature Review:

The Competition between national brands and store brands has been well studied covering various aspects of the Competition.

In a study (Rao, 1969), issues like whether store loyalty is related to proportion of private brand purchases and also if housewives treat various private brands of same product but from different stores as different or consider them as substitutes. The findings indicated that there is a positive association between store loyalty of customers and their purchase of private labels of coffee. It was also found that there was a positive association between a store’s private brand success and success other private brands of the store.

In an interesting study (Bellizzi, et al, 1981) on Consumer Perceptions of National and Generic Private brands, it was found that national brands were perceived as superior in terms of quality, prestige and reliability. It was also found that generic brands were perceived to be inferior and private brands were positioned between national and generic brands. The study involved thirty three five point likert type scales. Analysis was done using anova. Cunningham, Hardy and Imperia (1982) did a study on different consumers’ preferences and perceptions for generic brands versus national brands and store brands. The study involved consumers of selected canned food products. The study found that there were many differences amongst loyal customers of generic brand, national and store brands of canned food products.

In a study (Hoch and Benerji, 1993) it was found that performance of private labels was better in large categories with high margins. The findings suggest that private labels perform well against national brands with low advertising spend. The study also indicated that high quality is more important than lower price.

Quelch and Harding (1996) published an article on national brands versus private labels competitions. They found that private labels strength varies with economic conditions. The market share of private labels goes up in case of economic slowdown and goes down when economy is booming. According to the authors, the threat of private labels to national brands is serious going forward regardless of economic conditions.

In an elaborate research (Dhar and Hoch, 1997), it was found that private labels do better once they obtain fair share of a category. The study suggested national brands to keep more brands and deeper assortments to keep store brands in check. The study involved data from 34 food categories from 106 major super market chains operating in 50 large retail markets in US. It was also found that everyday low pricing (EDLP) strategy for store brands works better only in low quality categories. Another finding was that retailer promotional support can significantly enhance private label performance.

An interesting study was done (Ailavadi, Neslin and Gedenk, 2001) to if promotions by national brand as well as store brands target same set of value driven consumers, which may result in aggravation channel conflict. The findings identified psychological and demographical trades that promote store brands and national brands usage. The store brand usage was associated with psychographic trades of economic benefits and costs.

Ryan (2003) published a research paper which details increasing popularity of private labels of apparels and clothing’s in US. Retailers were serious about their private label business especially post 2000. Consequently, retailers started investing in them and promoting them. They also started giving better space for private labels.

There was an interesting study (Erdem, Zhao and Valenzuela 2004) of Cross Country Consumer Store Brand Preference, Perceptions and Risk and Impact on Performance of Store Brands. The results found that consistent quality, positioning and lowering the difference between perceived quality levels of national brands and store brands may benefit store brands.
There was a study (Ryan, 2004) to find right blend of national brands and private labels in apparels. In order enhance their margin, department stores were ramping up private label penetration and provided greater differentiation on the selling cloth.

A study examined impact of brand loyalty and price on national brands versus store brands. The finding of the study revealed that brand loyalty is the most influencing factor of consumers’ purchase of store brands versus national brands. Influence of price is varying (Cataluna, Garcia and Phau, 2006).

A study by Yuan, Pi and Chao (2012) examined if there was any positive affect of store brands on equity and loyalty of the store. The study also measured influence of national brands on both store loyalty and equity. The findings suggested that there is a positive influence on equity and loyalty of the store. It was also found that establishing store loyalty strengthened the influence of private brands of retailers on store equity.

In a study (Nasser, Turcic and Narasimhan, 2013), it was revealed that national brand manufacturers generally pursue one of the three strategies. 1. Displace, 2. Accommodate and 3. Buffer. In accommodation strategy, national brand managers repositioned the products in his existing product line. The study found the incentives of national brand manufacturers to accommodate or buffer.

A study by Massara and et al (2018) reveal the presence of transfer of positive affect from national brands to store brands via image of the store and also the presence of a direct negative affect between national brands and store brands. This may be neutralized by positive consumer perception retailer. Promotional activity and shelf placement of store brands may increase the positive perception of the retailer.

There have been many research studies on national brands versus store brands competition. Such studies in Indian Apparel context are however are very limited, making the current study relevant.

3. Research Methodology:

3.1 Research Objectives:

1. Study of customers’ preference between national brands versus store brands in Indian apparel Market.
2. Study of influence of demographic factors on customers’ preference for national versus store brands in Indian apparel market.

Scope of the study: The study is on Customers’ preference for national brands versus store brands in Apparel Market in India. For the purpose of this study national brands include international brands sold in India. The study is covers customers in the Indian cities of Pune, Mumbai, Kolkata, Hyderabad, Delhi, Chennai, Bengaluru and Ahmedabad.

3.2 Hypotheses:

The following hypotheses were tested.

H₀₁: There is no significant difference in the customers’ preference for national brands vs. store brands based on gender

H₀₂: There is no significant difference in the customers’ preference for national brands vs. store brands based on city (geographic region)

H₀₃: There is no significant difference in the customers’ preference for national brands vs. store brands based on educational qualification

H₀₄: There is no significant difference in the customers’ preference for national brands vs. store brands based on age
Hₐ₅: There is no significant difference in the customers’ preference for national brands vs. store brands based on monthly income

3.3 Research Instrument:

A structured, validated and reliability tested questionnaire has been used.

3.4 Data collection:

Primary data collection using structured questionnaire

3.5 Population:

Customers of menswear apparel in select Indian cities, mostly men and occasionally women purchasing menswear for their husband/ family members /friends.

3.6 Sampling Technique:

Judgement sampling was used. Mall intercept sampling method was used. The customers constituting target population were intercepted outside stores in the mall / shopping complex and questionnaire was administered by the researcher and enumerators. 120 questionnaires were targeted in each of the eight selected cities. Finally, 504 usable questionnaires were received.

3.7 Data Analysis and techniques:

Primary data was analyzed using SPSS. Hypotheses testing was done using Chi square test and cross tabulation.

3.8 Limitations:

The study is limited to customers of menswear apparel in select Indian cities. The study covers those customers who generally shop in malls and shopping centers.

4.0 Data Analysis:

4.1 Profile of the respondents: Total respondents 504.

4.1.1 Gender:

Male respondents were 76.4 percent while female respondents were 23.6 percent.

4.1.2 Education:

Graduates constitute 32 percent; postgraduates’ 29 percent and 39 percent were professionally qualified.

4.1.3 Monthly income:

Forty percent of respondents have monthly income of less than Rs50,000 and thirty two percent have monthly income between Rs50,000 to Rs1,00,000. Sixteen percent of respondents have monthly income between Rs1,00,001 to Rs1,50,000 while twelve percent have monthly income more than Rs1,50,000.
4.1.4 City of the respondent:

This is illustrated in the table given below

<table>
<thead>
<tr>
<th>City</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delhi</td>
<td>59</td>
<td>11.7</td>
</tr>
<tr>
<td>Bangalore</td>
<td>110</td>
<td>21.8</td>
</tr>
<tr>
<td>Chennai</td>
<td>47</td>
<td>9.3</td>
</tr>
<tr>
<td>Hyderabad</td>
<td>79</td>
<td>15.7</td>
</tr>
<tr>
<td>Kolkata</td>
<td>44</td>
<td>8.7</td>
</tr>
<tr>
<td>Mumbai</td>
<td>39</td>
<td>7.7</td>
</tr>
<tr>
<td>Ahmedabad</td>
<td>71</td>
<td>14.1</td>
</tr>
<tr>
<td>Pune</td>
<td>55</td>
<td>10.9</td>
</tr>
<tr>
<td>Total</td>
<td>504</td>
<td>100.0</td>
</tr>
</tbody>
</table>

4.1.5 Age group of the respondent: This is illustrated in the following example

<table>
<thead>
<tr>
<th>Age group</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-25</td>
<td>204</td>
<td>40.5</td>
</tr>
<tr>
<td>26-30</td>
<td>157</td>
<td>31.2</td>
</tr>
<tr>
<td>31-35</td>
<td>88</td>
<td>17.5</td>
</tr>
<tr>
<td>36-40</td>
<td>29</td>
<td>5.8</td>
</tr>
<tr>
<td>40-45</td>
<td>11</td>
<td>2.2</td>
</tr>
<tr>
<td>Above 45</td>
<td>15</td>
<td>3.0</td>
</tr>
<tr>
<td>Total</td>
<td>504</td>
<td>100.0</td>
</tr>
</tbody>
</table>

4.2 Hypotheses testing:

4.2.1 Influence of gender

Table No.4.2.1 Gender of the respondent * Everything else equal which one you prefer? NB or SB?

<table>
<thead>
<tr>
<th>Chi-Square Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

H₀₁ Null Hypothesis accepted

4.2.2 Influence of city

Table No.4.2.2 City of the respondent * Everything else equal which one you prefer? NB or SB?

<table>
<thead>
<tr>
<th>Chi-Square Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
H₄ Null Hypothesis Rejected

4.2.3 Influence of Education:

Table No.4.2.3 Education of the respondent * Everything else equal which one you prefer? NB or SB?

<table>
<thead>
<tr>
<th>Chi-Square Tests</th>
<th>Value</th>
<th>df</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>13.421</td>
<td>9</td>
<td>.144</td>
</tr>
</tbody>
</table>

H₅ Null Hypothesis accepted.

4.2.4 Influence of Age

Table No.4.2.4 Age group of the respondent * Everything else equal which one you prefer? NB or SB?

<table>
<thead>
<tr>
<th>Chi-Square Tests</th>
<th>Value</th>
<th>df</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>15.780</td>
<td>15</td>
<td>.397</td>
</tr>
</tbody>
</table>

H₆ Null Hypothesis accepted

4.2.5: Influence of Monthly income

Table No.4.2.5 Approximate Monthly Income * Everything else equal which one you prefer? NB or SB?

<table>
<thead>
<tr>
<th>Chi-Square Tests</th>
<th>Value</th>
<th>df</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>16.022</td>
<td>12</td>
<td>.190</td>
</tr>
</tbody>
</table>

H₇ Null Hypothesis accepted

5. Findings:

The results of the Chi square tests indicate that only city (geographic region) is significant and other demographic factors are not significant. H₂ is rejected as P value is less than 0.05 and H₂, H₃, H₄ and H₅ are accepted as P value in each of these cases is more than 0.05. There is no significant difference in customers’ preference for national brands vs. store brands based on gender, education, age and income. But city (geographic region) is found to be significant factor.

Following observations are made from cross tabulations (Annexure-VIII). Men are little more inclined towards national brands and women are little more inclined towards store brands in comparison to each other. Respondents from Pune, Chennai and Mumbai have more preference to national brands than those from other cities. Respondents from Delhi, Kolkata and Bangalore have low preference for national brands. Respondents from Kolkata and Delhi are relatively more inclined towards store brands in comparison to those from other cities. Store brand preference seem to increase with educational qualification. Highest preference is found with those who are professionally qualified. Indicating more acceptances of store brands among better educated.
6. Implications:

The business managers of national brands and store brands need to look city specific tactics to improve their business. Respondents from Pune, Chennai and Mumbai indicate clear preference for national brands. Hence, national brands can focus and strategies and tactics to strengthen their position. Store brands need to look strategies and tactics to compete with national brands in these cities. In Delhi, Kolkata and Bengaluru cities there is more inclination of respondents towards store brands. Relatively more acceptance of store brands was found among better educated. Men are more inclined towards national brands, while women are more inclined towards store brands. These findings are very relevant to the practicing managers while devising their strategies and tactics.

References:


Massara, Francesco; Scarpi, Daniele; Melara, Robert D and Porcheddu, Daniele (2018): “Affect transfer from national brands to store brands in multi-brand stores”, Journal of Retailing & Consumer Services, November, pp103-110


Revival Of Sustainable Community Business: A Case Study Of Kotpad Village
Binaya Bhusan Jena, National Institute of Fashion Technology, India

ABSTRACT

Before industrialization became a reality and much before the concept of nation-states came into existence, there were many self-organised and sustainable communities flourishing in India. Many villages and communities created their own enterprise based on inherited skills, locally available natural and other resources. Their level of interdependency was managed well within the community in terms of participation and distribution of the value chain for the products they made and sold. This also negates the very notion that the idea of division of labour and specialization came with industrial revolution. But, in fact there used to be many self-organised communities and villages, particularly who were producing handloom textiles in India. They practiced division of labour and work specialisation with an objective of both increasing the productivity and having an equitable distribution of income among its members. Many of these communities have been completely destroyed due to multiple factors, and now the survivors are struggling hard to retain their identity. One such community is Kotpad, a village in the Koraput District of Odisha in India. The village is known for her Natural dyed handloom, and one of the most sustainable and eco-friendly business practices in the world. The entire village economy was based on interdependency of producing handloom fabric with extraction and application of natural dye from a locally available tree called Aal (Indian Maddar). This ancient craft created a very simple but interdependent eco-system for the economic prosperity of the entire village(s). However, with the advent of industrialization, colonization, and modernization this self-organised community business and enterprise was marginalized to the possible extent. With rising awareness of sustainable development, green practices and eco-friendly fashion, the villagers are gaining confidence and reviving the craft largely due to the interventions by Governments, NGOs, academic institutions and other private players.

This paper attempts to assess and compare the past and present business value chain of Kotpad handloom cluster in order to recommend a roadmap for the revival and growth of this community business enterprise. The research was conducted in two stages. First an ethnographic research was conducted to know about the history and organisation of community enterprise around the Kotpad handloom to have an emic perspective. Then, in the second stage, data was collected other qualitative methods like using 'Focused Group Discussions (FGDs)', indepth interviews, and other participatory rural appraisal techniques to assess their problems, prospects and revival.

Keywords: Sustainable business, Community enterprise, Natural dye, Handloom, Revival

1. INTRODUCTION

Kotpad hand-woven natural dyed fabric of Koraput district from the Indian state of Odisha is a centuries old traditional cultural craft. This deep-rooted intangible asset has stood the test of time for generations. Kotpad is a testimony to the rich sustainable practices, that manifests environmental, economic, social and gender justice in doing community business. It also exemplifies the legacy of living in harmony with nature.

Weaving fashion sustainably on a pitloom with limited colours and motifs using natural dyes extracted from the Aal tree (Indian Maddar tree) is distinct to Kotpad. By any measure, if anything can be called "sustainable fashion", Kotpad's name would appear first. However, its beauty, essence and aesthetics could not attract the contemporary consumers. Kotpad failed to understand the science and art of modern day business and languished against the competition from factory made clothes. From more than 250 families once practicing this age old craft, it has come down to around 20 families today. Despite reeling under poverty, economic hardship and social pressure, these handful of artisans are continuing with the legacy which their forefathers once upheld.
With rising movements of sustainable development, green practices, eco-friendly fashion, the craft and the crafts community of Kotpad is on the path of revival and growth. The artisans are slowly gaining strength and confidence through better market linkages and greater acceptance of their products due to continuous interventions and support from Government, NGOs and other private players. The craft has also got intellectual property rights protection through Geographical Indication (GI) in 2005.

This paper focus on the economics of the community business model created around their handloom textile value chain in the history. This paper also tries to understand the erosion and decline of this community system over a period of time. Finally, it also reflects on the recommended solutions for the revival of this craft and community enterprises.

The present study was carried out in the Kotpad cluster region of Koraput District of Odisha, the state in eastern India. Primary data was collected from the weavers and the community member through Focused Group Discussions (FGDs) and through a semi-structured interview from Government officials and NGOs. Interviews were conducted with prospective consumers of the Kotpad handloom. Secondary data was collected from different research studies, Government reports, and newspaper articles to understand the possible scope and market for forward and backward integration of the Kotpad village.

As there was a limited written document available on the history and genesis of the Kotpad Handloom village, the researcher used ethnographic methods from an emic perspective to understand the past and present of this community based enterprise. The researcher has critically evaluated the problems faced by Kotpad handloom cluster and found that Kotpad is one of the unique but languishing handloom clusters of Odisha. The reasons often cited in different studies for the poor performance of the handloom sector are found inadequate to explain the problems of Kotpad handloom weavers. The problems are much deep rooted and unique. The study found that the conditions prevailing with Kotpad weaving cluster are different in many ways from other clusters. The researcher tried to understand the organisation of the village economy around Kotpad village through ethnographic studies, before the collection of data using FGDs and interviews. The researcher, spent 26 days in two different spells (1st 15 days and 2nd 11 days) in the village as a friend in one of the artisans’ family, before the collection of data for understanding and recommending the process of revival for this self-organised handloom cluster. Qualitative methods of data collection like Focused Group Discussion (FGDs), semi-structured interview schedules were used to understand the native perspectives of the issues and concerns of the community. Data was also collected from the officials of Government, NGOs and independent designers involved in the sector through a semi-structured interview schedule. Data was also collected from the buyers and prospective buyers of Kotpad handloom products, again through semi-structured interview to assess the prospective market and possibility of developing a robust market linkage. Secondary data was collected from government reports, newspaper articles and other documentary sources.

2. REVIEW OF LITERATURE

Voluminous literature and research have been available on handloom sector studied at different times. Handloom is the oldest cottage industry in India and the embodiment of the indigenous knowledge system (Rao, 1990). As per Planning Commission (2013), handloom and handicraft sectors offer economical and eco-friendly business opportunities to millions of families. Despite the increase in demand for their skills and products, the Indian weavers have been dismissed (Chatterjee, 2015). Adding to this Goswami emphasized that the decline in the market share of handloom products is attributed to the decline in the handloom sector (Goswami, 1985).

Planning Commission (2014) in a research revealed declining weavers’ population in the last two decades. The same phenomena is also studied and supported by Kumar, P. S. (2014). In 1977, it was estimated that every Indian handloom offered employment to six persons (Chatterjee 2015). Adding to this Goswami emphasized that the decline in the market share of handloom products is attributed to the decline in the handloom sector (Goswami, 1985).

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2.1 Impact of New Textiles Policy

With the advent of a separate Textiles Policy in the 1980s, the handloom sector got priority. Thereafter, different research studies on the handloom sector and weaving community have been undertaken. Some of these are empirical studies conducted pan India. Both Srinivasulu K. (1996) and Jain L. C. (1985) analyzed the possible negative impact
of 1985 Textile Policy on employment in the handloom sector. Winner (1986) pointed out that the introduction of powerloom in a rich handloom base only might be beneficial to the smaller number of relatively privileged groups. It is not the matter of technology itself, but the social or economic system in which it is embedded. Watson (2003) and Devi L. (2014) have stressed the disruption of the traditional community that lead to the decline of the handloom because of industrialization, bureaucracies, urbanization and government policies.

Kasisomajula S. R. (2012) in a study found that despite initiative taken through both central and state Government schemes, the real income of handloom weavers were declining. It was suggested that instead of designing uniform schemes all over the country, separate and customized schemes should be designed considering the state specific and region specific special requirements. In a study conducted by NABARD, it is stated that the weavers in Odisha varied significantly in terms of their techniques and traditions from one district to other. (NABCONS, 2007).

2.2 On Sustainability and Natural Dyes

The issue of sustainability has been widely debated. As a concept, sustainability has been defined differently by different experts. The most common definitions used across discipline are: 1. “an activity that can be continued indefinitely without causing harm to the environment (Fletcher 2008)”; 2. “doing unto others as you would have them do unto you” (Partridge 2011; and 3. “fulfilling the current generation’s needs without compromising those of the future generations” (Report of the World Commission on Environment and Development 1987). Besides, one of the most comprehensive definitions frequently used is “Sustainability is about much more than our relationship with the environment; it’s about our relationship with ourselves, our communities, and our institutions” Seidman (2007).

One of the most endangered and ancient knowledge in the world of textiles and dye making is the making of colour Red from Aal tree, practiced for ages by the handloom weavers of Kotpad, in the Koraput District of Odisha (The Hindu, Puspa Chari, 2010). Traditional knowledge gets endangered because the new generation is not interested to know it from the older generation, or the older generation finds it difficult to pass it to the newer generation because of differences in their culture owning to globalization (Kothari, 2007). Some critics have observed that communities getting the most outwardly driven support become less competent to handle their own issues (Grenier, 1988).

2.3 Cooperative Societies

Exploitation of weavers both within and outside the cooperative societies was pathetic and one of the causes for their marginalisation. It was also observed that one of the reasons for inadequate supply of yarn is attributed to politicization of poor functioning of co-operative societies Mukund K. and Syamasundari B. (1998). Similar observations were made by Dev S. M., Galab S., Reddy P. P. and Vinayan S. (2008) in attempt to study the problems and projections of handloom sector in Andhra Pradesh. According to the study, weavers were paid well and got adequate work if cooperatives are strong.

Boruah and Kaur (2015) in their study about the weavers and weavers cooperative societies concluded that “the success of the Weavers’ Cooperative Societies depends on the satisfaction of its members. Pattnaik and Mishra (1997) in a study analysed the role played by cooperatives is not satisfactory as it do not meet the credit requirement of the poor weavers. As the Banks fail to provide credit to the weavers for their social and consumption needs, they fall into the clutches of the master weavers.

There were some success stories about weavers cooperatives adopting buyer driven strategies. Dharmaraju P (2006) explored such success stories in Andhra Pradesh.

2.4 Problems of Pricing and Inputs, Working Capital and Marketing

In a study on problems of handloom industry it was found that pricing along with rising input cost, working capital and marketing are the major problems of handloom Gurumoorthy and Rengachary (2002). This was also supported by Mathiraj and Rajkumar (2008) in their study on ‘Handloom products production. Tripathy (2009) attributed “illiteracy, inadequate finance facilities, cost and quality control, procurement of raw material, and fluctuation in raw material price” as the major problems of the handloom sector in his study “Problems and Perspectives of Handloom...
Industry in Orissa”
Moorthy, K A N (2014) in the article “Theory and Practice of Handloom Schemes – A Review” found that the weavers are leading a miserable and distressed life. In another study, it was indicated that organizational structure, inferior technology for cotton and yarn processing, high yarn procurement cost and yarn shortage are the major problems for handloom sector (Niranjana S., 2001, 2004). Early research by Paul and Mote (1967) also indicates about high cost of production, low investment, and low purchasing power of consumers contributed to the plight of handloom sector.

The above studies emphasized most of the common problems faced by the handloom sector in India. Some of them have studied handloom sector in specific states, but their findings related to the problems faced by the sector are more or less same. No specific study was found about the problems faced by Kotpad Handloom cluster of Odisha. This research gap is one of the most important motivations for the present study.

3. METHODOLOGY

The study followed a qualitative and participatory research approach in two stages. In the 1st stage, the researcher spent 26 days in two spells (1st spell 15 days, and the 2nd 11 days) in the community as a friend of one weaver and built the rapport with the community, and to understand other actors associated with the craft in the past and present. In the second stage, primary data were collected through five focus groups discussions with: (1) the Office bearers of the Kotpad Weaving Cooperative Society and the Master Weavers, (2) Independent weavers and Weavers who have already left their Occupation, (3) Non-weaving Community members, (4) the women members who were involved either in dyeing, weaving or both, and (5) the youth who have received training in weaving or dying but are doing some other job. Participants were selected on the criteria that they would have something to say on the topic, are either directly or indirectly associated with Kotpad weaving cluster and would be comfortable talking to the interviewer and among each other. To support the research objectives, semi-structured and non-structured interviews were administered with Government officials, Master Weavers and NGOs. Data and information were also collected from different documentary sources like Government reports, independent research works and news paper reports. The interview with the Government officials was conducted at three levels - field level, district level and head quarter at Bhubaneswar to understand their role played in the Kotpad Cluster. The research period was from October 2014 to September 2015, where the researchers visited the craft cluster frequently and lived in the community to understand the micro problems associated with the cluster and the craftsmen. The research area was purposively selected as Kotpad Notified Area Council (NAC) and few nearby villages where handloom weavers live.

4. KOTPAD HANDLOOM CLUSTER:

Kotpad natural dyed handloom is the living relic of the ancient tradition of tribal India situated about 70 kilometers away from the District Head Quarter Koraput in Odisha. Kotpad handloom cluster is surrounded by dense forests of Koraput, Malkangiri and Umerkote in Odisha. Due to natural and climatic conditions Aal trees grow abundantly, which are rarely found elsewhere. These trees play a vital role in the life, skills, and occupation of Kotpad weavers.

Two things make Kotpad handloom unique. First, its ancient dyeing technique - deriving colour from the Aal root, the dyeing process by using castor oil, cow dung, and wood ash and second the traditional weaving method using pit looms. The sequential and manual processing of aal dye and the treatmet of yarn with cow dung, wood ash and castor oil is very tedious and unique, sometimes it takes for a month. It is very interesting note that despite the use of castor oil on the yarn, no stains of oil can be seen on the the fabric and it also does not smell. It rather brings in softness colour fastness on the fabric. The weavers use ten to twenty counts of aal dyed coarse yarn, primarily cotton, and weave on a primitive but highly evolved indigenous three-shuttle pit loom with extra weft to expose their more complicated motifs on the fabric. They also use multi-suttle interlocking method on these looms to bring in solid border effect on the fabric.

The Mirgan community spread over couple of villages in and around Kotpad were the traditional weavers and aal dyers of Kotpad who produced this unique handloom primarily for the King and feudals of Koraput and subsequently for different tribes in the area – like the Muria, Gonda and the Bhatra among others. In order to keep the identity of these different tribes the weavers would use different motifs for different tribes. They would highlight their respective motifs, making the fabric a visual code and a cultural symbol for each different tribe. All the motifs used are basically
associated with their way of life and from their natural world they live in. The popular motifs used are fish, crab, conch, boat, axes, fan, bow, temple, pots, snakes, palanquin bearers, and huts.

With the advent of powerlooms and factory-made garments, Kotpad weaving lost its traditional market. The weavers of Kotpad failed to find a connect with the urban markets due to their socio-economic backwardness and lack of timely interventions by the Government. There are only about 20 families in Kotpad, who hold the knowledge of this ancient technique today, the rest have moved to other occupations primarily due to economic pressure. There are few more villages like Bata Kaudi, Batasana, Dongriguda, Bhonsuli (Near Kotpad Road Railway Station) where the researchers found the weaving is being practiced by a handful of artisans, but no natural dyeing is being done by them.

Kotpad was almost buried and hardly anyone knew about this age-old tradition and practice of making sustainable handloom. It came into prominence in the late 1980s through the support of the Govt. both at the Centre and the State, first through the Kalingavastra Program of the Govt. of Odisha and subsequently through the Visvakarma festival in Delhi. In 2005, Kotpad natural dyed handloom fabric got Geographical Indication (GI) protection for their unique traditional knowledge that includes both product and process. There are many designers and Non Governmental Organisations (NGOs) promoting sustainable fashion and natural dyed handloom fabric. A few among the noted NGOs working with Kotpad are Creative Bee, Dastkar, Craftrevival, Kala aur Katha, and Bhusattva.

5. Value Chain Interdependency and Income Distribution:

It was revealed through the ethnographic study that, Kotpad handloom was predominantly produced in 5-6 villages near to the present place of practice called Mirgan-street of the Kotpad NAC. It was surprising to know that, Majority of the artisans and villagers do not know much about their ancient past. However, about 4-5 elderly persons were able to inform some interesting facts about the history of their craft. For them the handloom practice at Kotpad has been their for generations and an age old craft. Their forefathers used to make excusite handloom for different purposes by using a natural dye from the root bark of the aal tree, that used to be plentifully available in the region. The villages were sorrounded by dense forests and the aal tree (Morinda Citrifolia) was plentifully available in the vicinity. They were the only people in the region who knew the art of dyeing with aal. And they used to sell their produce for their own consumption as a cultural practice and also used to sell sell in the open market. Many of them used to sell it to the merchants who were engaged in international trade particularly in the South Asia, South-east Asian and Middle Eastern countries.

The value chain of Kotpad handloom was so unique and inclusive that every actor in the value chain would get almost equal share for their contribution in the chain of activities. The value chain of Kotpad handloom is described diagrammatically here as explained in one FGD. There were 9 senior artisans who participated in the FGD. When asked to recall what they know about their value chain and who used to get how much in the past. The following chain of activities was agreed by most of the participants.

i. Collection of organic cotton/ tussar from nearby villages (Farmers): Majority of the farmers would sell a portion of their produce directly to the weavers against finished handloom products in exchange. Most of the times the farmers will prepare lint cotton when they sell directly to the weavers. Rest of their produce either they sell it in the open market (flee market) against exchange for other products. The farmers would exchange lint cotton almost six times the weight of the finished cloth. For tussar silk, there was a disagreement among the participants. About 5 of them said that the farmers used to sell the coocons directly to the weavers, and the other 4 said that the farmers would sell it after reeling only. They could not inform the exchange rate of silk against the finished handloom clothing.

ii. Taking out impurities and separation of lint from seed cotton: There used to traders or who would buy seed cotton in the open market for exchange of rice, maize, gram, agricultural equiepment, household goods and furnitures etc. These traders would remove the impurities and separate the lint cotton from the seed cotton. They will sell the lint cotton either in the open market or to the family members of the
weaving village who specialise in hand spinning. These merchants would then create a separate value chain for the cotton seed.

iii. Hand spinning of cotton yarn of different count based on skills: There used to be family members in each village who would do the spinning of yarn with different counts for the weavers. Different families and sometimes family members in the same family would vary in skill levels as far as spinning is concerned.

iv. Aal Root collection and selling: The used to be basically the landless people who would collect the root bark of aal trees from the forest and sell it in the open flee market, some times directly to the dyers or in some cases to the known weavers in exchange of either finished cloth or food grains.

v. Drying, grinding and dye making: Family members in every village used to specialise in gridning and dye making. They knew the art of making different shade variation of red colour from the same aal dye stuffs. In some cases, it was informed that, in some cases the weavers family members also do it on their own. As informed by the participants that the entire dye making process used to be dominated by women. It was basically a women’s enterprise as far as dye making is concerned. The weavers normally place orders with the family of dyers in advance. These dyers make the dye accordingly for each individual weaver based on their quantity and shade variation.

vi. Yarn processing with cow dung, castor oil, wood ash, dyeing and drying: This is the next task, particularly dominated by female members of the community. Most of the times it is the women members of the weavers family who would do the entire processing of the yarn. In some case there used to be family members who specilize in yarn processing also.

vii. Loom setting, reeling and weaving: This used to be the job of the male members who do the entire loom-based activity including weaving. However, few two participants informed that in few cases the women members would do the reeling, and weaving along with the male members too.

viii. Marketing: The weavers had multi-channels for their marketing. Few products they sale dirctly in exchange of different goods including food grains. Some they sale it to the merchants and very rarely they go directly to sale in the open market. Merchants place orders in advance with weavers throughout the year, who ultimately sale both in the local, regional and international markets.

In the FGD where the objective was only to know about the value chain actors, there was no clarity which actor would get how much in the value chain. Nevertheless, there was complete agreement among the participants that every actor used to get almost equal amount of earning in the process. There was economic equality in the weaving villages due to the cotton-natural aal dye-handloom value chain.

However, the participants informed that when their parents were doing this the income distribution among the actors used to be like this:

**Income Distribution for Actors in the Value Chain of Activity for every Rs 100/- of the final produce:**

1. Collection of Root bark of Aal Tree: Per bag Rs 10-14/- (No investment, but skills and knowledge, locally available trees)
2. Preparation of Dye: Vlaue Addition Charges Rs. 11-14/- for converting 1 bag of root bark into dyes
3. Cotton and Tassar Silk Production (Nearby villages, Rs 12-16/- per bag with an investment of Rs 0.20/- for a bag of cotton (Only using knowledge, naturally grown, organic)
4. Spinning Rs 10 – 16/- per bag of cotton/tassar silk
5. Yarn Dye and Processing Rs 8-15/- per bag of cotton converted into yearn
6. Loom seting and weaving Rs 15-22/- per bag of cotton/tasar converted into yarn
7. People involved in the marketing Rs. 12-14/-

### 6. GOVERNMENT INTERVENTION:

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_The Clute Institute_
Handloom is a state subject but for the overall development of handloom sector and welfare of handloom weavers, both the state and the Central Government have taken various policy initiatives and schemes. The Government of Odisha has been making continuous interventions in Kotpad for its revival and promotion through different schemes. Table 1 details about the schemes and benefits received by Kotpad Cluster since 2009.

Table 1: Sanctioned Govt. Schemes to KWCS (2009-2016)

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Year</th>
<th>Name of the Scheme</th>
<th>No. of Beneficiaries</th>
<th>Component</th>
<th>Amount (Rs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2009-10</td>
<td>P.O.H.I.</td>
<td>1</td>
<td>Work shed</td>
<td>35,000/-</td>
</tr>
<tr>
<td>2</td>
<td>2010-11</td>
<td>P.O.H.I.</td>
<td>8</td>
<td>Weaving Accessories</td>
<td>14,400/-</td>
</tr>
<tr>
<td>3</td>
<td>2010-11</td>
<td>P.O.H.I.</td>
<td>11</td>
<td>Margin money</td>
<td>22,000/-</td>
</tr>
<tr>
<td>4</td>
<td>2011-12</td>
<td>P.O.H.I.</td>
<td>20</td>
<td>Basic weaving training</td>
<td>2,40,000/-</td>
</tr>
<tr>
<td>5</td>
<td>2011-12</td>
<td>P.O.H.I.</td>
<td>20</td>
<td>Dyeing training</td>
<td>65,000/-</td>
</tr>
<tr>
<td>6</td>
<td>2011-12</td>
<td>P.O.H.I.</td>
<td>20</td>
<td>Pit loom</td>
<td>1,44,000/-</td>
</tr>
<tr>
<td>7</td>
<td>2011-12</td>
<td>P.O.H.I.</td>
<td>28</td>
<td>Weaving Accessories</td>
<td>77,600/-</td>
</tr>
<tr>
<td>8</td>
<td>2012-13</td>
<td>P.O.H.I.</td>
<td>1</td>
<td>Renovation of Godown</td>
<td>1,50,000/-</td>
</tr>
<tr>
<td>9</td>
<td>2013-14</td>
<td>P.O.H.I.</td>
<td>16</td>
<td>Pit loom, work shed (4 nos.) &amp; solar lantern</td>
<td>4,53,669/-</td>
</tr>
<tr>
<td>10</td>
<td>2013-14</td>
<td>P.O.H.I.</td>
<td>2</td>
<td>Bobbin winding machine</td>
<td>34,000/-</td>
</tr>
<tr>
<td>11</td>
<td>2013-14</td>
<td>P.O.H.I.</td>
<td>1</td>
<td>Warping Drum</td>
<td>25,000/-</td>
</tr>
<tr>
<td>12</td>
<td>2013-14</td>
<td>P.O.H.I.</td>
<td>30</td>
<td>Weavers Credit Card</td>
<td>6,00,000/-</td>
</tr>
<tr>
<td>13</td>
<td>2015-16</td>
<td>P.O.H.I.</td>
<td>2</td>
<td>Work shed</td>
<td>1,40,000/-</td>
</tr>
<tr>
<td>14</td>
<td>2015-16</td>
<td>P.O.H.I.</td>
<td>10</td>
<td>Marketing Activities for society and exposure visits</td>
<td>50,000/-</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>20,50,669/-</strong></td>
</tr>
</tbody>
</table>

Source: Director of Textiles & Handloom, Govt. of Odisha

The data was made available by the field office of Department of Textiles as available since 2009. A total of about INR 2 million has been spent in the last 6 years scattered over 12 different heads. More investments have been planned. Many other investments could not have been made possible due to socio-political reasons.

7. DATA ANALYSIS AND MAJOR FINDINGS

The qualitative research work was primarily used with an objective to uncover the native perspective and grassroot realities through ethnographic and participatory methods. It enabled the researchers to obtain divergent views and experiences through continuous interaction with the key stakeholders. Hunches emerged as the researcher progressed with the interaction with different stakeholders, which were tested for validity during the successive field visits. A great deal of efforts were taken to elicit data through Focus Group Discussions from multiple groups in different settings and through PRA techniques like transect. It required collecting data with the thematic sensitivity keeping the local dynamics in mind. Internal validity of the information was confirmed through triangulation and cross-verification through different methods of data collection from different stakeholders.

It was found that loss of traditional market, decreasing income level of weavers, increase in cost of production, non-systematic and untimely Government support, low productivity, non-availability of required infrastructure, tedious nature of aal dye extraction and processing, problems with sourcing of Aal root, decreasing access to water and wood are the major reasons for Kotpad's present condition. These points are discussed below in detail.

Government Schemes, NGOs and Role of Independent Designers:
The researchers observed that a majority of the participants were not aware of the Government schemes offered by the state and the central Government, except for few KWCS office bearers and master weavers. There is no systematic approach adopted in the training programmes and the schemes are implemented in bits and pieces without any targeted interventions and follow-up action.

Boyanika (The Apex Handloom Weavers Cooperative of Odisha) has many outlets in Odisha and in major metro cities where they sell Kotpad handloom products. Boyanika has also created a special section within its retail store for Kotpad handloom fabric. But the procurement mechanism benefits only to the master weavers.

With intervention of few freelance designers, NGOs, Boyonika, and some traders the weavers have been able to create new products for niche markets. But this is not regular and only limited to the reputed master weavers. There is no flow of work for the weavers. Any order to the weavers is routed through the master weavers or the middlemen who eat away the lion’s share of the profit.

Working Capital and Credit:

Due to absence of any institutional mechanism for working capital, the weavers are exploited by money lenders, master weavers and middlemen. Only recently, the weavers had access to credits through Weavers Credit Card. However, the benefit did not meet the purpose as many of the them had already left the occupation. Therefore majority of them did not repay the loan. The banks are now reluctant and not ready to offer any credit to the weavers again.

Availability of Water:

The weavers earlier used ponds in the village for dyeing and processing of yarn. But as these ponds have been given on lease, access to the ponds have been restricted. The weavers and dyers are facing lot of problems due to shortage of water.

Availability of Wood:

Wood is required for the boiling and processing of dye and yarn. With the current practices, no other means of fuel can be a substitute for wood ash. Earlier, the weavers used to collect wood from the local forests, but due to restrictions these weavers now have to buy wood from the local market adding extra cost to them.

Availability of Aal Tree:

Population of Aal tree, the main source of the natural dye, has drastically gone down in the locality. Earlier, it was abundantly available in the local forests without any restriction. But due to developmental work and restrictions imposed by the forest department, they are finding it difficult to collect the aal root barks. Earlier, dried Aal roots used to be available in the local markets, sold by tribal women at a price per domota (around 14 kgs) for about Rs. 500 to Rs. 700/-. These days it is not available that easily and the prices have gone to Rs. 1800/- to 2200/-.

Interest in Dying and Processing:

Dye making and yarn processing in Kotpad are an inseparable elements. They go hand in hand. This particular task is very delicate and demands a great deal of skill, understanding and hard work. The younger generation are not interested as they find it to be dull and unhealthy.

Social Status of Weavers:

Although Kotpad handloom cluster is known as tribal handloom, but the weavers belong to the Schedule Caste (SC) category. The community members particularly the Panikas, Samraths and Mohantas say that their ancestors were tribal and they migrated from the neighbouring areas of Chhatisgarh. They claim, a correction in the caste identity and inclusion into the Scheduled Tribe category could give them a new and better status.
8. SUGGESTIONS

Kotpad cluster is unique in many respects and so are its problems. Since the Government schemes in bits and pieces have not been so helpful in reviving the cluster, a customised programme with a clear road map is the need of the hour. It calls for development of forward and backward linkages with the niche markets. For the revival and sustainability of Kotpad handloom cluster, each actor in the value chain needs to be intergated the it worked in the past, so that each actor gets almost equal income opportunity in the value chain. By strengthening the KWCS, there can be efficient management of resources, where the weavers can be held more accountable for their business operations. The KWCS can also be used to integrate the value chain by re-integrating all the actors and creating an inter-dependency.

Along with handloom weaving, Kotpad should be developed as a production centre for aal and other natural dyes, for use by other handloom clusters. This would give an added identity and source of income to the weavers.

Training on design development and use of finer count yarns along with skill upgradation and exposure visits for the young members can strengthen the cluster.

The weavers should switch only to high value realisation products demanded by the environmentally conscious elite customers in India and abroad. Promotional measures should be taken by the Government to facilitate the weavers in reaching those customers.

A Collective label should be developed for Kotpad handloom as it enjoys a GI protection and a "Handloom Mark" for better visibility and promotion.

Packaging training should be imparted to the weavers and packaging materials be made available for the cluster through the KWCS at reasonable price.

A direct linkage should be built with the independent fashion designers working with handloom and natural dyes for promotion of Kotpad handloom.

A niche market already exists for natural dyed handloom products in the international market. The Government of Odisha should encourage research to understand and catch the potential markets.

9. CONCLUSION

Kotpad is the only handloom cluster in the world today where aal dye is extracted and used involving a very unique process, completely in harmony with nature. This handloom symbolises one of the most sustainable practices ever used in the history of fashion. The beauty of Kotpad lies in its ecosystem, traditional knowledge, simplicity, and organic structure. Its uniqueness is dignified with 5 “Ts” – where T stands for Tree (Aal Tree), Traditional method of dying, Triumph (motifs), Tedious work and Time consuming. According to an old adage, “a society from which beauty is removed becomes brutalized.” Today Kotpad handloom cluster is approaching the fag end of its extinction even when the sustainable movement is at its peak and the demand for sustainable fashion both in domestic and international market is increasing. This dichotomy raises key questions and concerns about the gap between theory and practices. The issue of Kotpad is more complex than it appears. To bring the cluster on the path of revival and prosperity, in one hand the gap between the producers and consumers should be bridged with systematic and participatory approach involving all the stakeholders. And secondly, the value chain should be re-integrated so that each actors gets equal income opportunity. Many of the actors in the value chain either have been marginalised or in some some cases have completely withdrawn due to sever economic pressure. Now the tremendous market opportunity for eco-friendly fashion can create a reason in bringing back the marginalised or missing actors back to the Kotpad handloom value chain.

REFERENCE


Challenges And Barriers To Success As Experienced By One International Graduate Student Within The Biological, Psychosocial, And Academic Contexts During The Initial Acculturation Process

Barbara Newman Young, Middle Tennessee State University, USA

ABSTRACT

Particular challenges facing international students include culture shock, adapting to new teaching / learning environments, understanding the American higher education system and U.S. social norms, adapting to food, climate, legal systems, as well dealing with feelings of homesickness and isolation. This acculturation (cross-cultural transition) process presents psychosocial, biological, and academic challenges and barriers to success that require adaptation. In addition to receiving correct and updated information, international students require professors and university personnel willing to be prepared not only academically but also socially and culturally to meet their needs. The article identifies challenges and potential barriers to success facing one international graduate student during the initial transition process Phase Two (Fall 2017 / Spring 2018).

*Phase One (Spring 2017 / Summer 2017) findings were reported at a prior Clute conference. The 2019 proposed presentation includes findings for Phase Two (Fall 2017 / Spring 2018) for the same international graduate student within the same categories of meaning as Phase One. The information presented for the first 2017 presentation (with regard to publication) is under review - International Journal in Higher Education.
Unique Input Output Based Teaching And Assessment Methodology For Computer Programming Courses
M.D. Samrajesh, Kuwait College of Science & Technology, Kuwait

ABSTRACT

Today, the popularity of computer programs usage in areas ranging from small innovative application to space exploration application has resulted in a computing revolution. Due to this computer programming, courses are a part of most universities curriculum; moreover, it comes under core courses for computer science and engineering students. However, there are challenges in effective teaching and assessment of these courses. Learning a computer programming language requires the use of composite intellectual skills, such as cognitive, problem solving and planning. Generally, humans are good at handling visual information. Researches have shown that most programming concepts are not in graphical form. Therefore, capturing the essentials of programming is a challenging task for beginners. Moreover, studies have shown that student have to master multiple skills at the same time such as programming knowledge and problem-solving strategies in order to write programs. Hence, an effective teaching and assessment strategy is crucial in bringing out successful students who can master the skills of problem solving and programming.

The proposed Unique Input Output Methodology (UIOM) consists of two innovative methods firstly the Unique Input Output (UIO), secondly Unique Code (UC) method to teach and assess the student’s involvement in programming coursework. In Unique Input Output (UIO) each student has a question that requires a unique input to the program and unique output. Whereas, in Unique Code (UC) each student is assigned with a unique question that also requires unique input, which in turn produces a unique output. When compared to UIO here each student’s code is unique thereby the difficulty level is higher and plagiarism is minimum. A case study based evaluation showed that the proposed methodology reduced Plagiarism Code Index (PCI), improved the Diversity of Code Index (DCI) and it had a positive Impact on students’ Final Grade (IFG).

Keywords: Computer programming, computer science, teaching methodology, teaching strategy, learning styles
Tourist Behavior And Marketing Factors Towards Marine Eco-Tourism Of Samae San Island, Chonburi Province, Thailand

Nadhakan Shinnaranantana, Kasetsart University, Thailand

ABSTRACT

The tourism industry is play a vital role to generate income of Thailand. Moreover, it links to other industries such as hotel and restaurant, transportation business, finance and insurance, entertainment and tour program, guides and etc. In Thailand tourism industries have many types including cultural based tourism and natural based tourism and Thailand is the land with prosperity of natural resources, especially coast and islands. Samae San Island is a small island located at Sattahip District, Chonburi province and under the control of Royal Thai Navy. This island is popular for many Thais and Foreigners tourists. This conceptual paper aim to develop the sustainable marine eco-tourism program. The study of tourist behavior and marketing factors are necessary for develop the program. The paper will provide information about tourism situation of Samae San Island and specially address the issues of tourist behavior. To explore the tourist behavior; what where when whom why who and how questions are asked to the tourists. Therefore, service business marketing factors or 7 Ps are used to ask the samples. This paper used literature review via the published paper that related to the tourism marketing and hospitality especially in the consumer behavior and marketing strategy areas both Thai and English languages. This paper will provide the scope of studying tourist’s behavior and will help the Royal Thai navy and related entrepreneurs to understand tourist’s behavior and then developing the effective service marketing strategy.

Keywords: Tourist behavior, Marketing Factors, marine eco-tourism, Samae San Island, Thailand
Response To Intervention Model Effectiveness; Developing Early Stage Word Recognition Skills For Students With Reading Disabilities
Ali Alansari, Kuwait University, Kuwait

ABSTRACT

The study aimed at determining the effectiveness of a response to intervention model in developing the skill of words recognition for students with reading disabilities in the primary stage in the state of Kuwait in term of diagnosing and teaching, as well as providing an alternative model to the discrepancy norm, that is based upon the IQ and the academic achievement of the students. The study applied on a sample consisting of (501) students in the fourth and fifth primary years. The pattern of discrepancy norm indicated that (45) students out of (501) students, have learning difficulties, which is about 9%, while the pattern of response to intervention identified (10) students, who have learning difficulties (2%). The results indicated that the pattern of response to intervention can minimize the percentage of students with learning difficulties up to 66.66%, and this shows the effectiveness of the pattern based on the qualitative analysis in comparison with this pattern, which is based on quantitative analysis in diagnosing and determining of discrepancy which is students who have difficulties in word recognition.

Introduction

The world today is witnessing a great interest in education, and trying to change what is being what it should be. Many have tried to do research, which focus on special education and try to develop it for students with learning disabilities. Special education includes many specializations and interests that help students to improve their level of education in order to reach a good and useful education for all students, and try to cope with the needs of the modern age through education based on an academic curriculum that make students participate in this education and education is not for a specific category. And that most pupils urgently need to be diagnosed accurately where some suffer from learning disabilities and they need: 1. Special education services 2. Identifying ld students by relying on the test of the gap between intelligence (IQ) and academic achievement, where students should get the intelligence of the average or above the average and performance below the average in Academic achievement (Pamela, Douglas, & Lynn 2008).

It should be noted that the model of the measure of divergence that researchers rely on in diagnosing and diagnosing students with learning disabilities has been widely criticized (Kavale, 2002). The use of spacing between intelligence and learning achievement as a criterion for identifying learning disabilities makes it difficult Identify students with learning disabilities in their schools (Bradley, Danielson, & Hallahan, 2002; Kavale, 2002).

In recent years, Response to Intervention (RTI) model has emerged as a promising alternative to the spacing model after criticism Many of the model of quantum-based spacing, where it is known The National Interdisciplinary Committee on Learning Disabilities (NJCLD) defined the intervention response model as a set of therapeutic interventions that can help provide accurate information about students with learning difficulties, their need for special education and associated services, including therapeutic interventions at different stages (NJCLD, 2005; Klotz, & Canter, May, 2006).

The aim of the study was to determine the effectiveness of the response model to intervene in the development of

1 This paper was submitted at Gulfkids.com by Ali M Alansari “Kuwait”
word recognition and treatment skills. Based on the results, guidance recommendations can be developed to reduce or prevent the educational problem. This study represents a study of the effectiveness of the response to the intervention model this study deals with an important educational problem.

1. This study deals with an important educational problem, which was not addressed by Arab studies and research which is the problem of relying on the model of the measure of distance in the identification and diagnosis of people with learning difficulties, which identifies more than 50% of students with low achievement as having learning disabilities without using of the intervention response model, which is based on qualitative analysis on diagnosis.
2. This educational study may provide an opportunity to reduce the proportion of people with learning disabilities, which reduces the waste of effort and money, through careful diagnosis, which makes the teacher provides services to students better and more accurate.
3. This study prevents the phenomenon of waiting for failure, and supports the early intervention of students with learning disabilities or students with learning problems.

This study tried to answer

1. How effective is the response model to intervene in the diagnosis of learning disabilities (word definition) compared to the spacer model?
2. How effective is the response model for intervention in treatment? People with reading difficulties (known as the word) as a model of qualitative analysis compared to the spacing test as a model for analysis?
3. How stable are intervention mechanisms based on the response model for intervention in the treatment of learning difficulties (reading the word) during the follow-up phase?

The study was conducted on primary school students

The learning difficulties of the 501 students from the fourth and fifth grades of the primary, representing a number of three schools, where schools were randomly chosen (45) students had a gap between intelligence and academic achievement. After applying the diagnostic assessment measure to the difficulties of reading, two students were excluded from the sample to become 43 students. Therefore, 13 students were excluded from the sample due to the transfer of 13 students from the selected schools.

The results of the study

1. The intervention response model reduces the proportion of people with learning difficulties by 66.66%. This indicates the effectiveness of the model based on qualitative analysis compared to the model based on quantitative analysis in the identification and diagnosis of students with learning difficulties Efficiency (you know the word).
2. After applying the intervention response model, 20 students responded to this intervention, which proved the weakness of the gap in the detection of students with learning problems and students with low achievement. In addition, high predictive value of the qualitative response model.
3. After the application of the post-test in the follow-up stage, the performance of two students decreased. This means that the percentage of those whose performance decreased after the intervention was 22.9% = 0.9.9%. Therefore, we can say that the intervention response model is clearly effective in the treatment of learning disabilities.
4. After the application of the fourth post-test it became clear that the rate of stability of intervention mechanisms is 95.95%, after the decline of performance of only two students of the responders to intervene, and this indicates that the stability of the mechanisms of intervention in the treatment of people with learning difficulties reading (know the word).

Recommendations of the study

In the light of the results of the study, the researcher makes the following recommendations, which can contribute to facilitate the application of the response model to intervene and provide through educational programs to reach the
best results are as follows:

It is the shared responsibility of all members of society to change what is to be done, by taking the appropriate decision to choose the correct method of diagnosing low-achievement students and not rushing to judge these pupils as having learning difficulties only after a diagnosis based on the intervention response model Qualitative analysis and not just a spacing test that exposes students to the stage of danger (Pamela, Douglas, & Lynn 2008).

- Directing conferences by professionals, including parents and teachers, to familiarize them with the intervention response model, the features of this model, and how to apply it (Pamela, Douglas, & Lynn 2008).
- Invite researchers and scholars to provide studies and research to prove the effectiveness of the response to intervene in all developmental and academic difficulties. Response to intervention, as early intervention avoids the phenomenon of waiting for failure, which is clearly in the test of the divergence that the student sees up to the third grade to judge and classify.
- Educate teachers and parents about the importance of providing a healthy, stress-free environment so that the student can respond to the treatment provided within the therapeutic program that falls under the intervention response model.
- Holding seminars and special training courses for teachers and specialists based on their awareness about students learning difficulties and how to diagnose them through a model based on qualitative analysis and exposure to training situations that enable them to deal with students through the intervention response model and how to do this model at the lowest cost possible and best results.
- Especially for parents in how to deal with their children pupils and transform the academic failure into academic achievement through proper systematic cooperation with teachers.

References


Use Of Telegram As A Teaching Tool In Kuwaiti Schools
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ABSTRACT
Applications such as Telegram and Pinterest appear to have a good potential to support teachers in learning and teaching activities in schools. This paper reports a research study conducted to investigate the role of mobile application in education focusing on use of Telegram by school teachers. Survey method of research was used to conduct this study. Online questionnaire was used as data collection instrument. Potential participants were identified and contact information was collected from the Kuwait Ministry of Education affiliated Telegram groups. Two thousand teachers for whom contact information was available were invited to participate in the study. However, only 172 teachers participated via online questionnaire. Questionnaire contains 13 questions seeking information about the use of Telegram features in education and related issues. Results showed that teachers use Telegram as source of information effectively and are willing to explore its different features for enhancing teaching functions. Teachers appear to be comfortable in using most of the features of Telegram. Several respondents expressed that enhancing information literacy skills is needed in certain aspects like evaluating the information critically. Teachers also stated that they possess appropriate searching and retrieving skills to find information via Telegram. Some respondents suggested that awareness need to be created to leverage communication management via Telegram groups and communities such as stake holders organizing, monitoring and measuring progress. Results also indicate that Telegram users understand importance of use of this application in education and to maximize productivity. Also, there appears to be good satisfaction level about use of Telegram as a teaching tool. This study indicates that Telegram must be promoted in Kuwaiti schools by integrating it in formal schools’ systems, course curriculums, teachers’ development courses and marketing it among teachers. Moreover, practices are needed to train teachers on proper searching skills via Telegram.

Introduction
Over the last decade technology developed rapidly resulting in the emergence of applications platforms that appear to replace traditional sources of information. In order to incorporate the use of educational applications in teaching, new skills are needed to be learned. These applications have a good potential for using in teaching classes for different purposes. Also, applications help promote several pedagogical objectives. These applications also trigger student interest in subject matter and serve as representational applications for course ideas. Certain skills, e.g., critical thinking and digital literacy can help adopt the new digital platforms faster. Schulz and Fitzpatrick (2016) stated that critical thinking, planning and higher order thinking skills are important for education. Practice assignments and feedback may be helpful to make the teachers and students familiar with the interactive platform.

Using most of the features within the interactive communication application has a potential to broaden the use of Telegram and Pinterest across educational levels and content areas creating an established resource connected to develop the educational knowledge. Moreover, Telegram is interactive, multi access tool, encourages independent learning and creativity. Ibrahim et al (2016) stated that Telegram supports education by providing access and ease of information use.

This study investigated the role of application in education focusing on use of Telegram application by primary school teachers. Telegram is interactive communication platform used for different tasks like learning, advertising, and personal communication. Some teachers have started to use this platform in their teaching classes representing ideas through different aspects. There is also potential to use platform in teaching for determining context skill forming, communication and collaboration in education. This study was designed to survey and focus on the current use and perceptions of teachers about the potential of Telegram in learning and teaching. The results of the study are expected
to be useful for further improvement of these platforms and promoting the platform use in educational institutions.

Research Questions

1- Do school teachers in Kuwait use Telegram platform?
2- What are the main uses of Telegram by school teachers in Kuwait?
3- Do school teachers have the capabilities/skills that are required to make good use of Telegram?
4- What are the teachers’ perceptions about the role of Telegram in learning and teaching activities?
5- What problems/difficulties are faced when school teachers use Telegram?

Literature Review

This research focuses on knowing about teachers use and perceptions of Telegram in schools and educational institutions. Telegram can be used for different tasks such as learning, advertising, and other personal uses for this application. Telegram has interesting way to communicate and connect friends with family and imitating real world environment by participating in inviting/joining, commenting and checking through a special feature of unlimited group members unlike other application. Moreover, Telegram is used for many useful things like keeping up with brands’ news through certain channels, become involved with education, sharing photos etc. Sari (2017) examined teachers using Telegram and results suggest that Telegram can be a suitable platform for encouraging of student learning and understanding. Users of Telegram view ideas and communicate with other teachers and students. Many studies investigated various aspects that involved digital skills and critical thinking skills, while using Telegram tasks with proper subject matters experts and content editors.

Telegram can be used for socialization, sharing news and searching. Telegram facilitates transmitting information and different files formats, searching information needed and communicate with other users. Alizadeh (2018) stated that educational stack holders and policy makers can develop formal agreements to encourage use of Telegram in education field to maximize proper supervised use. Telegram free access insures time saving by having access to material shared any time. Similarly, Telegram develops independent learning, literacy skills and communication skills. Kurniasih (2017) said that Telegram facilitates browsing and sharing of information easily and effectively. Moreover, Iksan and Saufian (2017) stated that Telegram was innovative, flexible and enjoyable tool.

Telegram Skills

Telegram can serve as a tool for educational practices and creativity. Also, Telegram provides different structures for ideas and educational investigation through distance learning and blended learning providing learning chances when teacher and student are separated in time and place. A lot of studies conducted to assess different skills of teachers. Once the skills are assessed, various recommendations may be presented. Brandtweiner, Donat and Kerschbaum (2010) stated that using online application platforms as an ‘administrative tool’ requires at least basic technical skills. These technical skills, defined as computer literacy, include knowing how to operate a computer (start-up and shut-down procedures), typing, how to handle security and Windows structures, English skills and information literacy skills. Similarly, literacy skills are indicated by quickly locating information needed, evaluating information sources, processing information retrieved, integrating information in knowledge base and successfully apply it to the knowledge base. Also, presenting knowledge for others are important as information literacy concept. Moreover, Song, Williams, Pruitt and Schallert (2017) stated that more developed skills are required to use new communication interactive technology, selecting the appropriate media and using contents and interaction. Also, recognizing and responding to the influences of media contents (self-reflection). This study focus will be over Telegram application.

Telegram requires technology skills and basic computer use skills, Internet access and critical thinking skills. Critical thinking skills are defined as identification of appropriate applications, social communication through sharing and inviting, organizing through managing stack holders communication guidelines, collaboration and creativity, expressing ideas and analyzing content. Critical thinking skills are important to use Telegram application. Also, Telegram browsing, exploring and searching are behaviors that allow users to explore and search for information. Searching skills, computer literacy skills and critical thinking skills are technology skills required to use Telegram. Telegram needs several important skills training centers such as libraries and workshops.
Moreover, Iksan and Saufian (2017) and Kurniasih (2017) study stated that Telegram is innovative, flexible and enjoyable tool develops independent learning and literacy skills. Teachers can develop educational knowledge for the students in more supportive environment by using digital tools like Pinterest and Telegram in the framework. However, Alizadeh (2018) stated that there are important responsibilities must be highlighted like ethical practices codes. Also, Alizadeh (2018) suggested that codes of practices must be supervised through organizing training courses, consultation sessions and distribute code of practices pamphlets (guides). Kurniasih (2017) found that members need to learn more about Telegram features like field searching to save time.

**Perception of Educational Potential**

Social media provide a suitable and powerful place for teachers to connect to one another, generate content and share information. Examples of educational social media platforms are Telegram and Pinterest. Similarly, experiencing educational field resulted that faculty are embracing use of new and innovative applications. However technological change is not arriving as carefully planned and is not authorized at institutions visions but represented as caution movement. Educators prefer the new communication and networking tools used by the common people. Telegram is easy to use and brings the opportunity to enhance learning and can be adapted and utilized for teaching purposes. Telegram improves participation, communication and engagement to extend the teaching experience. Teachers incorporating Telegram tools into their instruction appear to build their confidence with employing technology. At the same time, students are encouraged to be active participants in teaching and learning, what creates a more engaging environment for all constitutes.

Teachers use online application platforms with the intention of enhancing engagement, interaction, and excitement that are very useful efforts, but users should ensure that results and teaching process are reasonable and ethical. Online applications are evolving as sources of information, satisfying the information needs of users. Grote-Garcia and Vasinda (2014) stated that online applications allow users to not only seek information but also interact with others through online expression such as teachers using Telegram to post their photographed ideas, connect to their channels, re-pin teaching ideas of other teachers which resulted the growth of Telegram resources. However, big number of teachers have a little experience of using Telegram. New teachers must acknowledge using Telegram in teaching. Also, some of teachers are not familiar of using Telegram platform. Telegram as an application is used to comment on educational issues, share information, and encourage participation.

Online application enables teachers to keep in touch with their students, faculty members, and institutions and allow them to communicate with other teachers. Teachers find online application as a new way of communication and sharing information, ideas, opinions on the Internet between persons or group of users or organizations.

**Telegram as a Source of Information**

Telegram is a cloud-based software application that can be installed in several mobile / smart devices and work as motivator of educational engagement. Telegram has channel features where persons can connect to information without being in a group chat that becomes a field for campaigning, and a public forum of educational idea expression. Also, Telegram allows heavy files to be transferred on their platform making Telegram a good place for file sharing. Users may collect, organize, and share a variety of web-based resources such as blogs, websites, and videos. Similarly, different tasks achieved through various resources made Telegram a collaborative tool. The organizational and sharing features of Telegram has led some users to describe it as a management tool, virtual board, a tool for digital curation, and a collaborative learning center.

Telegram is a source of educational information as it offers independent learning, customize learning, blended learning, collaboration through communication and use of ethics. First, Telegram utilizes independent learning by independently compile online components leading to increase confident, context dependent and customizes learning. Also, ethics standards were applied within communication by showing respect between users. Moreover, Telegram is open access tool and has free of ads service. Similarly, Telegram utilizes blended learning through teachers’ instructions and combining face to face learning mode to online learning mode which raises achievement as Mashhadi and Kaviani (2016) stated. Blended learning is shown through combining Internet, digital media and teacher presence. Moreover, incorporating learning information technology into learning increases understanding and
communication between instructors and colleagues, students and others. Also, learning via communication technology increases skills of navigating and browsing independently.

**Issues in Using Telegram**

Teachers and users have online profile in different platforms such as Telegram. Telegram is strong platform among teachers and rapidly grown in the digital world. Telegram has different unique features as pinning libraries, collaborate and connect to various media platform. Sari (2017) stated that lack of information literacy skills created a barrier as information needed cannot be determined, accessed and organized. Also, Ibrahim et al. (2016) suggested incorporating Telegram in institution curriculum to support the tool. Also, the study by Kurniasih (2017) found that members need to learn how to use telegram features like field searching to save time. And, technical support is a main priority in order to use Telegram effectively. Moreover, group work, and blended learning is difficult and needs proper management. Other Telegram issues such as introducing a bot to a chat or channel reduces its encryption which could be less secure. Also, Telegram status can be seen by any one and not a lot of users want to socialize but it is good for business. Maintaining stability is another issue, loosing network connection in the middle of a lecture or loosing media files that were uploaded cause major issue. Also, lack of business features in Telegram makes the platform usage only non-formally.

**Methodology**

Survey method of research was used to conduct this study. Online questionnaire was used as data collection instrument. This study where conducted at schools located in Mubarak al-Kabeer area in Kuwait. Potential participants were identified and contact information was collected from Ministry of Education affiliated Telegram groups. All teachers for whom contact information was become available was invited to participate in the study by sending invitation letter via teachers’ user names.

**Data Collection Instrument**

Questionnaire contained 13 questions, first the three demographic information questions and then ten questions. Also, questions of the questionnaire were created from examining referenced articles survey questions. Demographics were distributed through three questions (Q1-Q3) include gender, major, and age. The second section contained closed and open-ended questions about teachers’ capabilities/skills to use Telegram, problems facing users of Telegram and the level of satisfaction of using Telegram digital platform and about perceptions around the role of these platforms in learning and teaching activities. Two thousand teachers for whom contact information was available were invited to participate in the study. However, only 172 teachers responded via online questionnaire. As a result, only 172 responses were participated in the questionnaire.

**Data Collection Mechanics**

Questionnaire was distributed through online link created with Google forms by affiliated first line managers. Teachers were given a period of three weeks to answer the survey and invite their colleagues in the school to answer the online survey.

**Findings**

**Use of Telegram**

The first question was about frequent use of Telegram which (70.3%) of teachers used Telegram daily as presented in Figure 1, indicating preference of self-sustaining and imbedded ongoing role like; acquiring new skill and information.
Also, another question asked teachers about use of Telegram for teaching purposes which a lot of teachers used it frequently for teaching purposes as 67.4% indicated in Figure 2.

Also, participants answered question about their opinion about improving education by using Telegram; (73.3%) agreed with “yes”, (23.8%) of participants said maybe and 2.9% said “no”.

Features of Telegram

Teachers rated features of Telegram as presented in Table 1. Teachers appear to be comfortable in using most of the features of Telegram as (74.4%) rated sharing information with other teachers as most helpful feature. However, (56.4%) answers chose the accuracy of information feature as most helpful. Majority of answers varied from neutral to helpful indicating need of more experts of subject matter and content editors regarding the feature.
Table 1: Rated Telegram Features
N=172

<table>
<thead>
<tr>
<th>#</th>
<th>Features</th>
<th>Percentage of answers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>“1”</td>
</tr>
<tr>
<td>1</td>
<td>Ease of use.</td>
<td>6.3</td>
</tr>
<tr>
<td>2</td>
<td>Speed of information retrieved.</td>
<td>4.7</td>
</tr>
<tr>
<td>3</td>
<td>Relevance of teaching information</td>
<td>5.2</td>
</tr>
<tr>
<td>4</td>
<td>Information accuracy</td>
<td>3.48</td>
</tr>
<tr>
<td>5</td>
<td>Sharing information</td>
<td>4.7</td>
</tr>
</tbody>
</table>

Literacy Skills for Using Telegram

Results of teachers’ feedback about information literacy skills that are required to be effectively used for Telegram in education are presented in Table 2. Several respondents expressed that enhancing information literacy skills is needed in certain aspects like evaluating the information critically, as (32.5%) said that this feature is effective in Telegram indicating low percentage of this feature and need of subject matter experts. And (65%) agreed about effectiveness of ability of processing information retrieved, integrate it in knowledge base and successfully apply it to original information needed. In the other hand, the most effective agreed Telegram feature to be used is presenting knowledge for others (84.3%). Results indicated good and proper information literacy skills among teachers.
Table 2: Feedback about Several Telegram Features
N=172

<table>
<thead>
<tr>
<th>#</th>
<th>Features</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>“no”</td>
</tr>
<tr>
<td>1</td>
<td>Locating information needed fast in Telegram</td>
<td>6.4</td>
</tr>
<tr>
<td>2</td>
<td>Evaluation of information source</td>
<td>35</td>
</tr>
<tr>
<td>3</td>
<td>Process, integrate, codify and exchange it.</td>
<td>9.8</td>
</tr>
<tr>
<td>4</td>
<td>Presenting knowledge</td>
<td>5.8</td>
</tr>
</tbody>
</table>

Main Use of Telegram

Investigating main uses of Telegram indicated that participants use Telegram in different certain aspects as presented in Table 3. The most preferred function is sharing files and documents as (91.3%) chose, resulting good capabilities development for building and exchanging knowledge, (72.1%) used Telegram for PowerPoint presentation files, (59.3%) of participants chose group project reports, (47.7%) used Telegram for quizzes and (43.6%) used Telegram mainly to Inform and announce teachers.

Table 3: Main Use of Telegram
N=172

<table>
<thead>
<tr>
<th>#</th>
<th>Main use of Telegram</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Inform teachers</td>
<td>43.6</td>
</tr>
<tr>
<td>2</td>
<td>Share files</td>
<td>91.3</td>
</tr>
<tr>
<td>3</td>
<td>Connect with students</td>
<td>25.6</td>
</tr>
<tr>
<td>4</td>
<td>Quizzes</td>
<td>47.7</td>
</tr>
<tr>
<td>5</td>
<td>Group project reports</td>
<td>59.3</td>
</tr>
<tr>
<td>6</td>
<td>Writing practice</td>
<td>15.1</td>
</tr>
<tr>
<td>7</td>
<td>Speaking practice</td>
<td>26.7</td>
</tr>
<tr>
<td>8</td>
<td>Audio input/feedback</td>
<td>19.2</td>
</tr>
<tr>
<td>9</td>
<td>Problem solving</td>
<td>51.7</td>
</tr>
<tr>
<td>10</td>
<td>Whole class discussion</td>
<td>34.3</td>
</tr>
<tr>
<td>11</td>
<td>PowerPoint files</td>
<td>72.1</td>
</tr>
</tbody>
</table>

Participants were asked to specify limitations and problems in using Telegram for learning and teaching activities and as presented in Table 4. However, 43% of participants did not mention limitations of Telegram in educational activities but some of participants mentioned two or more limitations. And 40.6% of participants did not suggest any aspects for making Telegram more effective for learning and teaching. Also, most high percentage of limitations was about lack of content editors and resources (15%).
Participants were asked to mention suggestions for making use of Telegram Application more effective for learning and teaching as presented in Table 5. As the most requires suggestion was need of content editors which was (15%). There are many different suggestions like the need of Libraries pinned in each group. Indicating need of infrastructure plan to organize stack holders and group discussions, identifying government resources and more practices like seminars as (7.5%).

Table 5: Suggestions for Making Telegram Use More Effective
N=172

<table>
<thead>
<tr>
<th>#</th>
<th>Suggestions</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Add more features like live podcasting</td>
<td>2.5</td>
</tr>
<tr>
<td>2</td>
<td>Marketing Telegram among teachers</td>
<td>8.5</td>
</tr>
<tr>
<td>3</td>
<td>Libraries pinned in each group</td>
<td>6.2</td>
</tr>
<tr>
<td>4</td>
<td>Organize stack holders &amp; group discussions</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>Need for content editors</td>
<td>15.4</td>
</tr>
<tr>
<td>6</td>
<td>Need for advanced search engine</td>
<td>8.5</td>
</tr>
<tr>
<td>7</td>
<td>Need for seminars and exercises</td>
<td>7.5</td>
</tr>
<tr>
<td>8</td>
<td>Need of resources</td>
<td>5.8</td>
</tr>
</tbody>
</table>

Discussion

As showed in Table 3 majority of teachers use Telegram several features and the most used feature is sharing information (84.3%), documents (91.3%) and PowerPoint files (72.1%). The findings show that sharing information via Telegram in teaching is the most dominant feature which matched the literature review aspects as stated by Kurniasih (2017) and Sari (2017). Findings indicate that there is a good level of knowledge sharing among Kuwaiti school teachers in Mubarak Al-Kabeer area via Telegram to distribute information and knowledge. Information sharing is one of most important process to collect knowledge and information within educational organization and it helps to leverage the valuable assets within the school organization. As reported in Table 2 there is an indication, teachers having good literacy skills, but they need more practice and improvement specially for evaluating the information critically, as (32.5%) said that this feature is effective in Telegram indicating low percentage of this feature and need of affiliated subject matter experts.

Also, about the potential of Telegram improving education. Majority of participants agreed (73.3%), (23.8%) said maybe and (2.9%) said “no” which showed a very low percentage of participants refusing use of Telegram in education. Indicating need of integrating Telegram formally in teaching by schools. As reported in Table 3 there are many uses of Telegram in education, these include; group project reports (59.3%), Problem solving (51.7%), Inform and announce teachers (43.6%), Whole class discussion (34.3%) and audio input/feedback (19.2%) participants answers indicating that Telegram has indeed many useful uses in teaching and facilitates collaboration, blended learning activities and expressing ideas which is a result in line with Mashhadi and Kaviani (2016) study that revealed ability of teachers to use Telegram as a balancing device to face to face instruction and assessment.
Table 1 represents findings about three major aspects. First aspect is teachers’ perception of using Telegram in teaching and second aspect is Telegram limitations. Third aspect is teacher’s suggestions to better use of Telegram in teaching. As 128 of teachers out of 172 indicated that features of Telegram are most helpful which is a relatively good number of participants but not an excellent number. Hence (65%) to (75%) rated different Telegram features as most helpful, it is a good percentage and encouraging sign that proposes integrating Telegram features in Kuwaiti schools with proper monitored methods. Also, teachers asked about their feedback (Table 2) the highest effective feature feedback was presenting knowledge (84.5%) and seconded feature was processing information retrieved along with integrate it in knowledge base and successfully apply it to original information needed (65%) agreement. Also, the feature locating information needed fast in Telegram was agreed to be effective (66.2%). Overall, results show that teachers are prepared to leverage on the main features of Telegram with proper formal infrastructure plan.

Teachers appear to understand limitation of Telegram use in education as shown in Table 4. Several problems were mentioned clearly these include lack of; content editors and experts, resources, time due work load and group members organizing. Also, as mentioned in Table 4 not knowing about Telegram is an important limitation indicating need of marketing among Kuwaiti schools. Similarly, as a limitation search engine was not specific indicating need of Telegram search engine improvement to be more advanced. Moreover, in Table 5 teachers suggested to marketing Telegram among teachers (8.5%), need for content editors (15.4%) and to provide seminars and exercises about use of telegram indicating need of infrastructure plan. Limitations found are in line with Ibrahim et al. (2016) and Kurniasih (2017) studies. As the previous studies indicated need of incorporating Telegram in school curriculum and provide exercise sessions for teachers to learn how to use search engine properly to save time. Findings indicated that teachers of primary Kuwaiti schools did incorporate Telegram in teaching with proper percentage usage, but they need more formal commitment in order to integrate use of Telegram effectively among Kuwaiti school teachers. Also, teachers leverage usage of Telegram by several suggestions as shown in Table 5. Suggestions include; need for content editors (15.4%), need for advanced search engine (8.5%), organize stack holders and group discussions (5%), marketing Telegram among teachers (8.5%), libraries pinned in each group (6.2%) and need for seminars and exercises (7.5%).

Conclusions

Communication platforms and mobile applications such as Telegram appear to have a good status supporting teachers in learning and teaching and learning matters. Analysis of Telegram use by Kuwaiti teachers in primary schools indicated that teachers use Telegram as source of information effectively and are willing to explore its different features for enhancing teaching functions. Teachers appear to be comfortable in using most of the features of Telegram. The most preferred function is sharing files and documents resulting good capabilities development for building and exchanging knowledge, participants mainly used Telegram for PowerPoint presentation files, group project reports, quizzes and mainly to Inform and announce teachers.

Several respondents expressed that enhancing information literacy skills is needed in certain aspects like evaluating the information critically. Teachers also stated that they possess appropriate searching and retrieving skills to find information via Telegram. Some respondents suggested that awareness is needed to be created to leverage communication management via Telegram groups and communities such as participants organizing, monitoring and measuring progress. Results also indicate that Telegram users understand importance of use of this App in education and to maximize productivity. Also, there appears to be good satisfaction level about use of Telegram as a teaching tool.

This study indicates that Telegram must be promoted in Kuwaiti schools by integrating it in formal schools’ systems, these include; course curriculums, teachers’ development courses and marketing it among teachers. Moreover, practices are needed to train teachers on proper searching skills via Telegram. Also, infrastructure plan is needed to manage Telegram groups discussion and stack holders. Hence the study investigation method is based on survey as quantitative method it is recommended that more follow up studies with more participants coverage and to use qualitative method such as focus groups, interviews as their data is more in-depth and richer to develop promoting areas to use Telegram in Kuwaiti schools.
Acknowledgement

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Banks’ Risk And The Impact Of Audit Quality On Income Smoothing

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Christos Tzovas, Athens University of Economics and Business, Greece
Apostollos Ballas, Athens University of Economics and Business, Greece

ABSTRACT

This paper investigates the impact that specific audit quality dimensions have upon European Union Banks’ income smoothing behavior and whether firms’ characteristics influence these dimensions. We examine whether auditors’ independence influences bank managers’ decision to smooth income and whether this attribute depends on bank risk. We investigate the association between auditors’ industry specialization and auditors’ tenure and the level of Loan Loss Provisions for a sample of 132 banks from 26 European Union countries for the period 2006-2013. To test our hypotheses we run a multivariate regression model. Similarly to previous research we use an OLS analysis to test our results. Empirical findings provide evidence that the auditors’ industry expertise limits management’s discretion of high risk banks to a greater extent relative to low risk banks. In contrast, our results imply that banks that retain the same auditor for a consecutive fiscal year are more likely to engage in income smoothing through LLPs. The findings of this study contribute to the existing literature concerning firms’ income smoothing behavior with special reference to banks. Furthermore, our analysis contributes in the existing body of research by focusing on the impact of audit quality on managements’ accounting discretion and the influence of banks’ special attributes on the audit process.

JEL Classifications: G21, G14, M41, M42

Keywords: banks, provisions, income smoothing, auditor expertise, auditor tenure

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Developing Students’ Critical Thinking Ability In Liberal Studies In Hong Kong: The Impacts Of Their Intrinsic Motivation, Subject Knowledge, School Banding And Demographics

Yee Wan Kwan, University of St Joseph, Macau

ABSTRACT

Many educators and theorists have suggested the influential effect of specific subject knowledge on critical thinking ability (e.g., McPeak, 1981; Nickerson, 1987; Resnick, 1987), but there are few studies exploring such proposed relations deliberately (Williams, et al., 2003), particularly in secondary school level. The aim of this study was to explore the relationships between students’ background factors (i.e., gender, age, school banding, family’s social-economic level, Chinese Language score, Mathematics score, and intrinsic motivation), subject knowledge, and critical thinking ability in Liberal Studies students in Hong Kong.

The study used a cross-sectional survey design to collect data from a convenience sample of 967 students studying Liberal Studies or Integrated Humanities in Secondary Three (Grade 9) in seven secondary schools in Hong Kong. The findings showed that there was no difference in critical thinking ability by gender and family’s social-economic level in terms of family monthly income and parents’ educational level. Results of multiple regressions indicated the predictors of critical thinking ability of students were varied across three school bandings. Only the variable of Chinese Language score was the common predictor across three school bandings and subject knowledge was not a significant predictor across the three. The six-variable model explained 4%, 12%, and 26% of the variance in critical thinking ability of students of band 1, 2, and 3 respectively.

The findings had provided evidence of the association between critical thinking ability and subject knowledge and the influence of school banding. Implications to front-line practitioners will be discussed.
Proposed Strategy For The Professional Development Of School Leaders In Public Education In Najran In Light Of The Requirements Of The Knowledge Society

Wafa Aldighrir, Najran University, Saudi Arabia

ABSTRACT

The study aimed to identify the reality of professional development programs for school leaders in general education of Najran city as well as detect the statistical differences between the average responses of the sample of the study which are attributed to the variables (qualification - years of service - number of training courses). The researcher used descriptive method with study sample consisted of (159) leaders. The results found that one of the most important obstacles to the development of the professional development system for school leaders is the weakness of the Department of Education's attention to the task of identifying and identifying the training needs of the leaders and the weak management's dependence on the planning, organization and good implementation of the plans for training. The study also found no statistically significant differences in the response averages the sample is based on their views on the reality of professional development programs for leaders of general education schools in Saudi Arabia, which are attributed to the variables.

Keywords: professional development, school leadership, knowledge society.
Investigation Of Pre-Service Teachers’ Knowledge Of Linear Function And Slope

Yea-Ling Tsao, Minnesota State University, USA

ABSTRACT

This study, conducted in the United States, investigated the nature of pre-service teachers’ performance and understanding of slope and linear function. The Diagnostic Test was collected from forty-three pre-service teachers in South Minnesota. The 13-item Diagnostic Test was designed to measure the performance and understanding of slope and linear function of pre-service teachers. The Diagnostic Test includes six categories as recognizing the slope, determining points on the linear function, finding linear function by using points, recognizing linear function with perpendicular line, determining linear function with parallel lines, and understanding properties of linear function and slope. Numeric data was collected with respect to participating pre-service teachers’ particular performance and understanding in terms of linear function and slope by administering the Diagnostic Test instrument to participants. The percent of correct response for six categories on Diagnostic Test recognizing the slope, determining points on the linear function, finding linear function by using points, recognizing linear function with perpendicular line, determining linear function with parallel lines, and understanding properties of linear function and slope were 50.00, 45.35, 60.40, 10.47, 20.07, 53.37 and 42.53, respectively. The lowest-scoring item 1 for Diagnostic Test, had the percent of correct response of recognizing linear function with perpendicular line 4.65%, which represents that the most of participants were unfamiliar with the formula of slope in respect to perpendicular lines.

In this study, a passing benchmark of 70% was considered to assess participants’ content competency as a qualified elementary teacher’s licensure for Minnesota Essential Academic Skills with Math. When seventy percent (9 items) of correctness was used as the passing rate of this instrument, only 11.6% of the preservice teachers reached that standard. In general, the pre-service elementary teachers performed rather inadequately on the Diagnostic Test. The results from this study show that many pre-service teachers possessed with limited understanding of the representation of the slope with linear function. The findings of study suggest that pre-service teachers exhibit difficulties with transformation between graphical and algebraic representations of slopes that may be indicative of a lack of conceptual understanding of the meaning and properties of slope. The data also reveals that preservice teachers had difficulties with recognizing linear function with perpendicular line, determining linear function with parallel lines, and properties of linear functions. In particular, pre-service teachers have need of opportunities to investigate the concept of slope, to reflect on the definition of slope, to make connections among varied representations of slope and to examine linear functions, relation with parallel lines and perpendicular line and to explore linear functions involving with real world situations. In other words, teacher education programs need to assist pre-service teachers in building solid content knowledge, which may then result in a positive effect on student learning.

Keywords: linear function, slope, pre-service teachers, mathematics education
Effect Of Corporate Culture
On Organizational Performance
Of Star-Rated Hotels In Ghana

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Ishmael Mensah, University of Cape Coast, Ghana
Edem K Amenumey, University of Cape Coast, Ghana
Rebecca Dei Mensah, University of Cape Coast, Ghana

ABSTRACT

Although studies on the relationship between corporate culture and organizational performance abounds in other jurisdictions, there is yet to be a study in Ghana to determine which of the corporate types should be encouraged by Star-rated hotels in order to enhance both financial and non-financial performance. Using the four major corporate culture types clan, hierarchy, market and adhocracy on both financial and non-financial performance of star-rated hotels in Ghana, the study hypothesised that each corporate type will exert positive effect on both financial and non-financial performance. Findings of the study indicated that market culture was the most prominent predictor of profitability, return on investment, growth in profit and sales volume. Adhocracy and hierarchy cultures were also the most prominent in predicting trust, improving supplier relations, improving service quality delivery, and customer retention. The study recommends for the promotion of market, hierarchy and adhocracy corporate cultures in order to improve both financial and non-financial organizational performance of star-rated hotels in Ghana.

Keywords: Corporate culture; performance; star-rated hotels; financial performance; non-financial performance
Gender And Ethnicity As Determinants Of Organizational Citizenship Behavior

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Charlotte Quinones, Carlos Albizu University, USA
Amy Lopez, Carlos Albizu University, USA
Sarah Restrepo, Carlos Albizu University, USA
Yimala Telemaque, Carlos Albizu University, USA
Toni DiDona, Carlos Albizu University, USA

ABSTRACT

Nowadays, human capital is a crucial component to the success of organizations. In this context, Organizational Citizenship Behavior (OCB) can play a fundamental role in the organization’s performance. The present study analyzes the relationship between the personal demographic characteristics of the employees, considering the gender, different nationalities and their influence on the occurrence of Organizational Citizenship Behavior. A total of N=281 participants were recruited through convenient snowball sampling method. The inclusion criteria were limited to individuals of 18 years or older. The participants were asked to answer a series of demographic questions in addition to the Likert scale type questions of an instrument designed to measure the occurrence of OCB. The results indicated no significant differences between men and women on reported levels of OCB. The results also indicated that there are differences in the levels of OCB when Hispanics scored higher than African/ American, White/non-Hispanics and multiracial. The study contributes to existing literature by providing more understanding and insight on cultural and racial differences that may influence OCB.
The Cross-Lagged Longitudinal Effects Model Between Academic Emotion And Learning Engagement Of Vocational High School Students In Taiwan

Chi-Chau Lin, Tunghai University, Taiwan
Chih-Ling Hsieh, Dayeh University, Taiwan
Chi-Hsian Lin, National Taipei University, Taiwan.

ABSTRACT

The present study attempted to develop a cross-lagged longitudinal effects between academic emotion and learning engagement on vocational high school students in Taiwan. This study adopted cross-lagged analysis design. Participants were 893 (553 males, 340 females) vocational high school students in Taiwan. Utilizing survey questionnaire procedure (three times measure of the instruments) and structural equation modeling, results indicated that (1) the instruments of academic emotion (positive, negative) and learning engagement had good measure model fits at three times measurement; (2) academic emotion (positive and negative emotion) and learning engagement had stable effects on these three times of measurement (T1 to T3); (3) There were cross-lagged longitudinal effects between academic emotion (positive and negative emotion) and learning engagement of vocational high school students; (4) gender had little differences on cross-lagged longitudinal effects. Suggestions were provided for teachers, guidance and future study.

Keywords: academic emotion, learning engagement, cross-lagged longitudinal effects, vocational high school students
Science And Rhetoric Of Daily Life:
A Course Concept
Janna Levin, University of North Carolina School of the Arts, USA

ABSTRACT

Each day we make hundreds of choices. Should I get a flu shot? How many egg yolks should I eat on a weekly basis? Should I use sugar substitutes? Will this skin cream help my complexion? Answering such questions effectively often requires assessing rhetorical appeals involving scientific or pseudo-scientific claims. The purpose of this presentation is to share a course concept used to teach young performing artists how to think more rigorously and clearly about such questions. At the University of North Carolina School of the Arts, I helped design and teach a Science and Rhetoric of Daily Life course in which students examined claims in advertising, social science, health, and food marketing, and explored strategies for investigating the truth of these claims. Students chose a single question to research for several weeks, developed projects in which they engaged deeply with the question, shared their progress orally with their classmates, and completed reflection pieces. Ultimately, this course taught students to think more systematically about matters that intimately affect their lives.
The Application Of Technology In Student Counseling Interventions: Exploring Ethical Challenges
Matome Jack Mashiapata, University of South Africa, South Africa

ABSTRACT

Counselling and therapeutic services are regulated practices that require that the practitioners to adhere to certain standards of ethical conduct. In various countries around the world, there are professional boards and regulatory bodies that are established to set, maintain and apply fair standards of professional conduct and practice in order to ensure that the interest of the public and consumers of these services are protected.

With the advent of technology, many educational institutions use technology as a medium of enhancing the provision of teaching and learning as well as a range of student support services. With the advantages that technology brings in the teaching and learning sphere, mental health practitioners and student counselling services have begun to implement interventions using technology and the internet to enhance psychotherapy and psychoeducational interventions. It is no doubt that the technological media used in educational contexts, both in school and higher education has provided solutions to overcoming certain barriers to effective provision of services as well as maximizing the extent to which the students can be reached. However, there are some challenges that pose ethical risks for the practitioners in student counselling services.

In this paper, we will reflect on requirements for ethical student counselling practice, the nature of services provided given the institutional context, the advantages of technology and the ethical challenges that the student counsellors may encounter. Recommendations on how to deal with some of the challenges and minimizing ethical risks will be discussed.

Keywords: ethical conduct, student counselling services, technological media
The Microscale Science Equipment
As A Conceptual Change And Cost-Saving Tool Towards Sustainable Development

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Rebecca Quansah, University of Education, Ghana

ABSTRACT

There is no doubt that hands-on activities are best practice for learning science, as they make students feel like
scientists and enable them to build their own concepts from first-hand experiences. However, the cost of obtaining
equipment and chemicals, especially for chemistry activities is not only exorbitant but comes with its own risks. This
problem can be addressed by minimising the use of chemicals through the use of a micro science equipment. Micro
science equipment have been used in America, South Africa, Malaysia, and Taiwan with great success. Trial studies
of the equipment in a Ghanaian university have proved successful. This paper analyses the conceptual, financial, and
environmental benefits that could make the micro equipment relevant to sustainable development in Ghana as it
enhances scientific conception and reduces exposure to hazardous chemical as well as toxic waste through reduced
chemical use. These would implicitly lead to financial gains for national developmental programmes.

Keywords: concept-based, cost-analysis, microscale, sustainable, toxic waste

Introduction

Science educators have for years, stressed on the importance of science activities to help students understand the
theory and practice of science, as it influences everything about the life of an individual to that of an entire community.
Science practical activities are important since the experience helps learners acquire a variety of science skills. Such
experiences equip learners with transferrable skills that they can apply effectively to make everyday life worth living
and meaningful in varying situations. In the school setting, practical activities avail students with an enabling
environment to either refute, confirm or come up with new ideas about natural phenomena. Through such activities,
students are able to form vivid, concrete and understandable concepts through visualisation, assimilation and
accommodation. In the absence of these, the probability of having broken linkages in concept formation and the
subsequent formation of misconceptions, may arise.

Quite often, non-availability of the necessary equipment for science activities, the cost of expensive, delicate and
complicated science equipment puts the benefits of science out of the reach of most students – especially, those in less
endowed communities. Besides, certain science activities come with risks to learners, and so as much as science
activities are advocated, they are not practised in reality. At best, students may only see demonstrations of such
activities, as they are performed by teachers, or through video animations. If they are lucky to be in modern
environments, equipped with computers and internet, they could carry out virtual laboratory activities and observe
them from a ‘distance’. For example, the reaction of some s-block metals, such as potassium and cesium with water;
the disintegration of radioactive materials, and fusion processes that generate massive heat, could be performed and
observed virtually. Such virtual activities and written exercises, in place of hands-on activities, might illustrate or
confirm theories and principles, but they do not necessarily require students to think deeply about their actions nor
test hypotheses, interpret data or engage in critical thinking. Non-inquiry ‘cook-book’ experiments do not expose
learners to hands-on experiments and interactive environment. However, planned and scaffolded experiments expose
learners to useful, integrated hands-on activities. The collection of such activities helps learners to answer questions,
prove or disapprove ideas, collect and analyze data from their experimental results and apply them meaningfully
Learners need real experiences to understand underlying concepts. Thus, safer procedures are required to minimise the occurrence of such incidence to the barest minimum amid safe disposal conditions.

Apart from high cost and risks factors, lack of electricity, water, and conventional fragile equipment (some of which require training before use) have been found to be other factors that limit teachers’ desires to organise practical activities for their students. Again, the supply of equipment, if available, has been a challenge due to the nature of bad roads to remote communities (Hanson, 2014). Most glassware get broken by the time supply trucks reach such less developed communities. Loss of fragile glass equipment could hamper supply efforts and thereby reduce the possibility of learners’ engagement in concept-building science activities. Thus, most Ghanaian schools cannot have the privilege of experiencing first-hand concept-building or fact-finding science. Furthermore, the availability of work and storage spaces are not easily attainable in less endowed communities. When science resource supply is made available, as is observed in the developed countries, the problem of waste chemical disposal poses a threat to human life and the environment. Propositions put up by green and micro/small-scale chemists to solve these problems are to reduce the scale of chemical use to a minimal level at which activities can be effectively performed as well as to use low cost equipment that would make financial demands on national resources bearable (Bradley, Hands-on practical chemistry for all, 1999; Tallmadge, Homan, Ruth, & Bilek, 2004; Hanson, Bobobee, Twumasi, & Antwi, 2015; Ogino, 2016; Tantayanon, 2016). These propositions were based on the inherent-concept-based nature of the micro-scale science equipment (MSE). Thus, using micro-scale science equipment could be the solution to conceptual, financial, and environmental problems associated with school science activities and waste disposal, if education must reach all by the year 2030.

In Africa, micro-scale science equipment has been in use for about two decades but is unpopular as compared to the conventional macro science equipment (Hanson, Enhancing students' performance in organic chemistry through context-based learning and micro activities- A case study, 2017; Hanson, Bobobee, Twumasi, & Antwi, 2015). The micro-scale equipment (MSE) was introduced in underprivileged schools in South Africa by Bradley (2000) with a lot of success. The equipment was also successfully used in secondary schools in Tanzania by Mafumiko (2008) and training colleges in Mozambique (Kombo, 2006). The equipment offered learners the opportunity to study science through hands-on activities in a safe, simple, interactive, and sustainable environment. This idea of hands-on activities with simple equipment were supported and later adopted by the United Nations Educational Scientific and Cultural Organisation (UNESCO, 2006) for global use. The micro-scale science equipment which looks like a lunch box, and measures 14.5cm x 11cm x 5.5 cm contains a range of miniature wells called comboplate, forceps, a gas collecting tube, micro burner, pH guide, universal indicator, micro spatulas, syringes, and propettes, among other things which constitute almost an entire laboratory. So far, the University of Witwatersrand, North Western University in South Africa, and other institutions in the Asia-Pacific regions have produced their own micro science equipment for schools. Institutions in USA and UK have also either produced their own micro equipment or adopted those produced by United Nations Educational Scientific and Cultural Organisation (UNESCO).

Micro-scale science equipment activities use minimal amounts of chemical substances in the range of 1mL and about 150 mg so the fear of accidents during practical activities is eliminated. Since work solutions are minimal, reaction times are shorter and so more time is availed for discussions and reflections on activities for better conceptual understanding of principles. Currently, nations are bothered about the effect of hazardous waste on green life and the environment in general. It is therefore prudent to introduce students to micro scale or green science, so as to instil in them the importance of creating eco-friendly (green) work environments when they carry out science activities. Green science is the application of eco-friendly scientific manipulations to scientific disciplines such as chemistry, physics, biology, integrated, and environmental science disciplines. Micro-scale science, which is known as green science in some circles (Karpudewan, 2016), can easily be used to teach topics such as analytical chemistry, organic chemistry, and environmental science, such as global warming, acid rain, pollution and other impacts of science activities on nature and the planet.

In a modern science class green science or micro-scale kits (which are also miniature sized kits), are employed for teaching science practical work. It ensures miniaturization of laboratories to small portable equipment packages for teaching (Bradley, 1999). These miniaturised equipment and materials do not pollute the environment to appreciable levels, as with standard or conventional macro equipment. They can conveniently be used to perform majority of school science in normal classroom settings (Vermaak, 1997; Kolobe, 1998). Micro-scale equipment is robust,
resilient, unbreakable and inexpensive. It has been designed to enhance the quality, relevance and accessibility of science and technology education. Similar findings were made by Hanson and Acquah (2014) in Ghana. Besides, minimal hazardous waste is generated as was found out in a study in UK (Tallmadge, Homan, Ruth, & Bilek, 2004). This improves the air quality in the laboratory. According to Abdullah, Mohamed and Ismail (2008) and Tantayanon (2016) precision skills are heightened, especially in organic chemistry activities, where students have to ensure that they get the maximum yield of some kind of product for purification and further processes. Ogino (2016) also affirms that the benefits of microscale science include reduced waste, reduced time, improved safety and major cost reduction. The pedagogical reasons for promoting the use of low-cost equipment are to provide simplified, relevant, safe, and attractive experiences, as well as overcome psychological basis to using standard equipment when necessary (Lewin & Ross, 1992). Bradley (1999), found that MSE experiments help to solve problems which educators face when planning practical work, such as fear of getting hurt, insufficient equipment, shortage of or inadequate chemicals, lack of work space, lack of assistants, short time, and lack of confidence on the part of the educators, and so propagated it.

In recent times, most developed countries are moving away from the conventional macro science equipment activities to micro and nano activities, so as to cut down escalating costs of infrastructure, stocking laboratories and legal issues connected with the disposal of generated hazardous chemical waste (Ogino, 2016; Tantayanon, 2016). The move is also to stimulate students’ interest towards science in a friendly pleasant and sustainable manner (Karpudewan, 2016). In this way, micro-scale science and green chemistry are seen to work in consonance to conserve the environment (Rauch, 2015). This eco-friendly awareness about ecology and health has helped in promoting a better image of science, and chemistry in particular, lately (Rauch, 2015). In the USA and India, sustainability and sustainable development have emerged as the core of the chemical industry, its actions, and public image. Though some institutions in the USA have developed chemical policies, yet, they still pursue micro-scale and green science to further sustain and maintain the environment, which is laudable and must be adopted by other nations.

Increased generation of chemical waste from conventional laboratory activities, as a result of improper waste disposal is becoming an issue of concern all over the world. In the developing world proper disposal ethics are not followed. There are no institutional or national policies for managing chemical wastes in educational institutions. Some solid chemical wastes could be ignitable, corrosive, reactive and toxic. Ghanaian institutions do not have waste disposal containers such as chemical spill kit, hazardous waste containers or corrugated cardboard boxes for disposal of sharps and broken glass. Some seemingly harmless laboratory wastes could become dangerous from secondary reactions when they are discarded into general collection bins or drains indiscriminately. The best way to go is waste reduction. Steps must be taken to reduce the scale of chemical use to avoid environmental catastrophe in the study of science and chemistry in particular. Sustainable development must of necessity become a key issue in science education. Adding sustainable development issues to the chemistry curriculum would be laudable (Rauch, 2015; Burmeister, Rauch, & Eilks, 2012).

For the last two to three decades, many scientists have been faced with issues such as maintaining clean water, managing the effects of acid rain, and searching for both renewable sources of energy and raw materials through micro activities (Rauch, 2015). The study of these social topics has been added as content in many chemistry curricula in order to portray chemistry and society as an everyday way of life.

This article would like to do a conceptual, financial and environmental analysis to assess the possibilities that the mass adoption of the small-scale equipment could afford Ghanaian students.

**Purpose of the study**

This study presents the conceptual, financial, and environmental-saving nature of micro-scale science equipment by analysing three laboratory activities from a first year undergraduate chemistry course in Ghana (Hanson, Bobobee, Twumasi, & Antwi, 2015). The main objective was to create an awareness of the existence and possibility of using micro-scale science activities among teacher trainees, science educators, curriculum developers and financiers of science education so that safer, cheaper, sustainable, environmentally friendly and concept-based activities could be performed in schools.
The question which guided this study was:

What conceptual, financial, and environmental benefits could be derived from the adoption of micro science equipment and micro practical activities towards sustainable development?

Methodology

Three out of seven laboratory activities which were performed on a micro scale by 46 undergraduate Chemistry major students were purposively rated for conceptual, financial and environmental impact differences against similar activities performed on a macro scale by another group of 46 Chemistry minor students. These activities, which were aligned with the University of Education’s (UEW) institutional and departmental curriculum requirements were on:

1. Reactivity of group 17 non-metals;
2. Reactivity of metals from groups 1 and 2;
3. Chemical stoichiometry.

The MSE were ordered from the Centre for Research and Development in Mathematics, Science and Technology Education (RADMASTE) in Witwatersrand University, South Africa at eight Dollars ($8.00) per kit.

Prior to teaching the theory and lab practice of periodicity and chemical stoichiometry, all 92 students who participated in this study wrote a pre-assessment concept test. Each pre-assessment concept test (Appendix A) was followed by a theory lesson. A post-assessment concept test was also written after all the said topics and activities were performed. The same lecturer taught and facilitated laboratory activities. However, half of the group (by virtue of their major or minor) used macro or micro equipment to perform their laboratory (lab) activities to mitigate cost of lab work and introduce the conceptual and environmental benefits of the MSE.

Each concept assessment and practical laboratory activity was scored over 20 marks. Students who participated in the micro equipment activities answered a 10-close-ended-item and one open-ended questionnaire which was rated with a Cronbach alpha reliability of 0.76 to express their opinions on its feasibility for use in higher institutions and conceptual understanding. The questionnaire is presented as Appendix C.

The chemicals and equipment used for the three activities were rheostat, power source, ammeter (0 – 1A), voltmeter (0 – 1V), resistance box, micrometre screw gauge, slotted mass, 20mm copper cubes, displacement vessel (115 × 90mm), ……water, sodium metal, potassium metal, magnesium strip (metal), calcium granules, and aqueous chemical solutions of 0.1M NaCl, 0.1 M NaBr, 0.1 M NaI, 0.25 M HCl, 0.25 M Pb(NO3)2 and 0.25 M NaI. The prices of stock chemicals and equipment (Appendix B) were used to work out the exact cost of the various quantities that were needed for each macro and micro activity.

Results

Participants’ results from their pre- and post-assessment concept tests were compared to assess their conceptual gains. Their lab activities were also analysed. The results are presented as Table 1.

<table>
<thead>
<tr>
<th>Group</th>
<th>Test</th>
<th>Lab 1</th>
<th>Lab 2</th>
<th>Lab 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Macro (pre)</td>
<td>8.46</td>
<td>9.98</td>
<td>11.09</td>
<td>12.48</td>
</tr>
<tr>
<td>Micro (pre)</td>
<td>9.09</td>
<td>10.93</td>
<td>13.02</td>
<td>15.93</td>
</tr>
<tr>
<td>Sig. (2-tailed; Pre)</td>
<td>0.17</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Macro (post)</td>
<td>11.07</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Micro (post)</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed; Post)</td>
<td>1.7 x 10-6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed Labs for Micr &amp; Macr)</td>
<td>0.118</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

N = 46; Pre = Pre-test; Post = Post-test
Results from Table 1 show that both groups had about the same conceptual entry points for both periodicity and chemical stoichiometry as there was no statistical significance difference (p=0.17) in their initial content knowledge. However, after tuition and engagement in hands-on activities there was a statistical difference in students’ post-concept assessment at t(45) = 4.97, p < 0.00, with post scores higher than the pre-assessment concept test scores at a 95% confidence interval of difference. This point of departure in the post-assessment scores could be attributed to the differences in the equipment used in practical work, as all other factors remained the same. There was no direct correlation (0.09) between the macro and micro group test scores. Neither was there much difference between their laboratory reports, statistically.

A financial analysis of the resources necessary to perform the three lab activities was also assessed in this paper. These activities were particularly chosen because they form part of the first semester lab practice in first year tertiary Chemistry studies in Ghana. They are also an essential part of high school chemistry curricula. Besides, the activities require the use of chemicals, some of which when carelessly disposed could cause damage to the environment and must be used in moderation. Table 2 shows the costs involved in purchasing resources for the activities on periodicity and chemical stoichiometry in Ghanaian cedis (Ghc) and United States Dollars (USD).

Table 2: Comparison of cost of equipment and chemicals for activities (Ghc & USD)

<table>
<thead>
<tr>
<th>Lab</th>
<th>MAEq</th>
<th>MIEq</th>
<th>MAEq chemical</th>
<th>MIEq chemical</th>
<th>Difference chemical</th>
<th>MAEq-MIEq</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reactivity of non-metals</td>
<td>Ghc 1,104.00 ($276.00)</td>
<td>Ghc 1,472.00 ($368.00)</td>
<td>234.00 ($55.50)</td>
<td>11.71 ($2.93)</td>
<td>222.29 ($55.61)</td>
<td>145.42</td>
</tr>
<tr>
<td>Reactivity of metals</td>
<td>Ghc 6,484.16 ($1,621.04)</td>
<td>Ghc 1,472.00 ($368.00)</td>
<td>12,965.66 ($3,241.42)</td>
<td>1,296.56 ($324.14)</td>
<td>11,669.10 ($2,917.28)</td>
<td>16,681.26</td>
</tr>
<tr>
<td>Stoichiometry</td>
<td>Ghc 1,104.00 ($276)</td>
<td>Ghc 1472.00 ($368.00)</td>
<td>9,413.67 ($2,353.42)</td>
<td>784.32 ($196.08)</td>
<td>8,629.37 ($2,157.34)</td>
<td>826.67</td>
</tr>
<tr>
<td>Gain</td>
<td>Ghc 20,520.00 ($5,130.19)</td>
<td>Ghc 24,797.36 ($6,199.34)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

N = 46; MAEq = Macro equipment; MIEq = Micro equipment; 1$ = 4.00

Table 2 showed a comparative picture of prices of chemicals required in the conventional (macro) and micro activities for the three activities.

The actual quantities of chemicals required for the activities for whose costs are shown in Table 2 are presented in Table 3.
Table 3: Quantities of equipment and chemicals required for the three lab activities

<table>
<thead>
<tr>
<th>Activity</th>
<th>Equipment/chemical</th>
<th>Macro quantity</th>
<th>Micro quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reactivity of non-metals</td>
<td>Test tubes</td>
<td>276</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Micro kit</td>
<td>0</td>
<td>46</td>
</tr>
<tr>
<td></td>
<td>0.1 M NaCl</td>
<td>4.92 g</td>
<td>0.26 g</td>
</tr>
<tr>
<td></td>
<td>0.1 M NaBr</td>
<td>9.47 g</td>
<td>0.47 g</td>
</tr>
<tr>
<td></td>
<td>0.1 M NaI</td>
<td>13.7 g</td>
<td>0.69 g</td>
</tr>
<tr>
<td></td>
<td>Chlorine (aq)</td>
<td>100ml</td>
<td>5.06ml</td>
</tr>
<tr>
<td></td>
<td>Bromine (aq)</td>
<td>100ml</td>
<td>5.06ml</td>
</tr>
<tr>
<td></td>
<td>Iodine (aq)</td>
<td>100ml</td>
<td>5.06ml</td>
</tr>
<tr>
<td>Chemical stoichiometry</td>
<td>Test tube</td>
<td>276</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Micro kit</td>
<td>0</td>
<td>46</td>
</tr>
<tr>
<td></td>
<td>0.25M Pb(NO3)2 (aq)</td>
<td>228.53g</td>
<td>19.04g</td>
</tr>
<tr>
<td></td>
<td>0.25M NaI (aq)</td>
<td>103.43</td>
<td>8.62g</td>
</tr>
<tr>
<td>Reactivity of metals</td>
<td>50 ml Beaker</td>
<td>184</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Micro kit</td>
<td>0</td>
<td>46</td>
</tr>
<tr>
<td></td>
<td>Sodium metal</td>
<td>23g</td>
<td>2.3g</td>
</tr>
<tr>
<td></td>
<td>Potassium metal</td>
<td>23g</td>
<td>2.3g</td>
</tr>
<tr>
<td></td>
<td>Magnesium metal</td>
<td>23g</td>
<td>2.3g</td>
</tr>
<tr>
<td></td>
<td>Calcium granules</td>
<td>23g</td>
<td>2.3g</td>
</tr>
</tbody>
</table>

Table 3 showed quantities of resources that were required by the macro and micro groups in performing their activities at the same concentrations of chemicals but different volumes.

The volumes of waste chemicals which were generated from the activities and wrongly discarded into drains are presented in Table 4.

Table 4: Volumes of generated chemical waste from macro and micro scale activities

<table>
<thead>
<tr>
<th>Activity</th>
<th>Summation of toxic waste</th>
<th>Macro waste</th>
<th>Micro waste</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reactivity of non-metals</td>
<td>Macro: 920ml each of 0.1M NaCl, NaBr, NaI and 100ml each of aqueous chlorine, bromine and Iodine</td>
<td>3060ml</td>
<td>153ml</td>
</tr>
<tr>
<td></td>
<td>Micro: 46ml each of 0.1M NaCl, NaBr, NaI and 5ml each of aqueous chlorine, bromine and Iodine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reactivity of metals</td>
<td>Macro: 20ml H2O each for 4 activities x 46 = 920ml each of solutions of Na, K, Mg and Ca solutions</td>
<td>3680ml basic solutions &amp; unreacted metals</td>
<td>184ml basic solution &amp; unreacted metals</td>
</tr>
<tr>
<td></td>
<td>Micro: 1ml H2O each for 4 activities x 46 = 46 ml each of solutions of Na, K, Mg and Ca solutions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stoichiometry</td>
<td>Macro: 2,760 ml of 0.25M Pb(NO3)2 (aq)</td>
<td>5,520ml</td>
<td>460ml</td>
</tr>
<tr>
<td></td>
<td>2,760 ml of 0.25M NaI (aq)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Micro: 230 ml of 0.25M Pb(NO3)2 (aq)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>230 ml of 0.25M NaI (aq)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grand total waste</td>
<td></td>
<td>12,260ml</td>
<td>797ml</td>
</tr>
</tbody>
</table>

N = 46
From Table 4, it is evident that about 15 times more of toxic waste chemical was generated in the macro lab as opposed to the micro lab and discarded inappropriately into the environment.

Students’ opinions about the MSE were gathered from those who used them through a 10-item closed and one-item open questionnaire. The analysed responses are presented as Table 5.

Table 5: Students’ opinions about the MSE

<table>
<thead>
<tr>
<th>Students’ views on the MSE activities/approach (%)</th>
<th>Positive</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Helps to unearth and correct wrong ideas</td>
<td>88</td>
<td>12</td>
</tr>
<tr>
<td>2 Activities enable the understanding of chemical principles</td>
<td>76</td>
<td>24</td>
</tr>
<tr>
<td>3 Exposure to better way of saving the environment</td>
<td>80</td>
<td>21</td>
</tr>
<tr>
<td>4 Opportunity to use simple materials in a safe environment</td>
<td>86</td>
<td>14</td>
</tr>
<tr>
<td>5 Equipment too tiny to see and read results clearly</td>
<td>51</td>
<td>49</td>
</tr>
<tr>
<td>6 Allows for increased skills acquisition, discussion &amp; reflection</td>
<td>84</td>
<td>16</td>
</tr>
<tr>
<td>7 Gain confidence in handling equipment; doing activities</td>
<td>75</td>
<td>25</td>
</tr>
<tr>
<td>8 MSE interactive in nature (collaboration)</td>
<td>77</td>
<td>23</td>
</tr>
<tr>
<td>9 Time saving; faster way of interpreting results</td>
<td>63</td>
<td>37</td>
</tr>
<tr>
<td>10 Possibility of using MSE in Basic &amp; Senior secondary schools</td>
<td>83</td>
<td>17</td>
</tr>
</tbody>
</table>

From Table 5, we see the pattern of students’ impressions about their engagement with the MSE and its activities.

Discussion

Hands-on activities have been known to enhance students’ understanding of theoretical chemical principles. In this study, the entry level of 92 undergraduate students were compared with their post-test scores in the concepts of periodicity and chemical stoichiometry. Their pre-assessment concept test analysis (Table 1) showed that there was no significant difference in performance of students. However, results from classroom (post-test) and laboratory performances indicated that students in the micro lab group performed significantly better than those in the conventional lab group. Informal observation of students at work showed that those in the micro lab worked with as little distraction as possible. They appeared to collaborate with each other, worked confidently and completed activities in time. They demonstrated high critical thinking, deductive, interpretive, predictive and time management skills with confidence. The conventional group did not exhibit the same degree of confidence and sometimes could not complete their lab reports on time. An interpretive study of their lab reports revealed that the micro lab group presented more logical and scientific answers than their conventional group colleagues. Some of the scientific answers given by the micro group in their concept assessment test were:

- A concentrated solution has relatively large amount of solute dissolved in the solvent. However, reacting ratios remain constant and do not change.
- Doubling volumes of reactants do not affect mole ratio since fixed proportions come together to react each time. Change in volume does not change the reacting ratios.
- The size of a species affects its effective nuclear charge and so this determines the ease or difficulty with which an outermost (valence) electron is released for chemical reactivity.
- The position of an element on the periodic table determines its periodic parameters and chemical reactivity.

The macro group did well with their explanations but their statements were not as apt, logical, and scientific based. A similar observation was made in the lab reports that both groups submitted. A couple of their answers were:

- Increasing concentration or volume of reactants could affect mole ratio.
- The reactivity of elements with water across the periodic table must increase as matter increases.

It was obvious that the micro group had adequate time to carry out their activities in several dimensions and more than a couple of times. It was observed that a few students in the macro lab group did not want to carry out the activity between metals with water. They intimated that they were afraid of the near-explosive nature of the reaction in the
glass beaker. They were encouraged to do so, though reluctantly. This fear and reluctance was not observed among the micro lab group.

From Tables 2 and 3, cost and quantity analysis showed that using the micro science equipment could save money for institutional and national development (on a larger scale) in health, housing, food supply, clean water, affordable energy and industrial growth. Such accelerated development would subsequently eradicate poverty, create well-being in body and mind and lead to the achievement of the sustainable development goals targeted for the year 2030. From Table 2, the difference in chemical expenditure alone between the macro and micro activities is quite enormous—$5,130.19. If equipment were to be purchased for each activity, then the differences in expenditure would be $6,199.34 surplus, in favour of the micro equipment. It must be noted that the multifunctional comboplate in the microscience kit has both big and small wells which serve for different purposes such as conical flasks, beakers and test tubes. Thus the possession of one microkit with such multi-purposes means that the purchase of different vessels for activities such as titration and qualitative analysis, would not be necessary, so financial gains could be higher than has been shown in Table 2.

The cost of work and storage space, lighting, and all other fittings have not been considered in this study for the use of macro equipment in conventional laboratories. Yet, as discussed earlier, a surplus amount of GHc 244,797.36 ($6,199.34) in favour of the micro science equipment, was obtained. Micro science equipment are easily used in classrooms and do not require laboratory fixtures or rooms. Thus, a true analysis and extrapolation of the differences for three more activities within a term or semester programme could run into a profit of several thousands of dollars for national development if micro scale science is adopted. In addition, challenges with waste management and the attendant negative impact on the environment would be reduced. From Table 4, it was observed that the macro group produced 15 times more toxic waste as compared to the micro group.

Besides financial gains, the micro equipment proved to be useful in motivating students to engage in meaningful science activities as observed in other studies (Hanson and Acquah, 2014). Experiments which could otherwise not have been performed in conventional school laboratories for various reasons were performed on micro-scale. Like Orion and Hofstein’s (1994) study, it was found in this current study that students showed positive attitudes towards learning science through safe learning environments. They were observed to work with greater ease, precision, confidence, and flexibility as they constructed their own ideas. Students’ responses from the questionnaire (Table 5) revealed that the MSE was versatile, easy to use, robust, breakage-free, and interactive (play-like). It enhanced their predictive, measurement, analysis and reflective skills. They felt at ease in trying out other ideas (designs) which came into their minds without fear of getting hurt. They added that, because they had shorter reaction times as a result of reduced quantities of chemicals, their results were obtained quickly and so they had adequate time for reflection and discussions. This collaboration, they said, helped them to understand the scientific concepts better. They further added that if they had their own personal kits they could try out simple verification activities with basic home chemicals. Similar observations were made by other researchers who used small scale and green chemistry in their institutions and for teachers at in-service workshops (Burmeister, Rauch, & Eilks, 2012; Zakaria, Latip, & Tantayanon, 2012; du Toit, 2016).

In another study with teacher trainees in a teaching institute, participants reported that the fear, timidity, and dullness associated with the traditional macro activities were reduced with the use of micro equipment. They also commented on the environmentally friendly nature of the MSE. These global observations with the use of MSE buttress the fact that its adoption could enhance the study of science. The reduced chemical use would result in less generation of toxic waste which could impact negatively on the environment (Tallmadge, Homan, Ruth, & Bilek, 2004; Tantayanon, 2016; Ogino, 2016). The adoption of the MSE activities would result in financial gains and reduction of pollution (Hanson, Bobobee, Twumasi, & Antwi, 2015).

Conclusion

The use of micro science kits would be feasible for the Ghanaian economy. This would ensure that meaningful science education with its bountiful benefits reaches all by the year 2030. The adoption of these micro, yet robust, and multipurpose equipment would be a powerful tool to change the face of science education, help students to build their own authentic science concepts, develop useful learning skills and communicate more logically. Furthermore, the
MSE could help to save on chemical and equipment cost, ensure shorter reaction times, reduced reliance on intensive ventilation systems, smaller storage space, reduced wastes and create a safe, healthy, interactive and friendly environment for all. The analysis of expenditure on chemicals and equipment for three activities indicated that ‘doing science’ with micro science equipment could save cost and help learners to develop positive attitudes and gain new knowledge on how to sustain the environment.

Implications

Implementation of micro-scale science activities and its linkage with environmental sustainability could be achieved through teacher training and in-service programmes. The pedagogy and philosophy behind sustainability must be necessary topics in teacher-training curricula. Science teacher education should enhance the importance of the subject by including the use of science education as a tool to allow students to actively learn how to shape their society in a positive, sustainable fashion.

Recommendation

Time spent in doing activities and amounts of waste produced in macro and micro labs could be assessed in follow-up activities, in order to buttress the usefulness of micro-scale activities over the traditional macro activities. The MSE approach and other active learning environments should be provided for students so as to help them to develop strategies for conceptual change. Incorporation of green science would transform classroom teaching and learning to reflect on the promotion of environmental values, attitudes and knowledge.

References


Appendix A: Sample of concept assessment test

1. Why are group 1 metals soft, low melting and of low density?
2. What is the reason for lithium having a greater tendency to form covalent compounds than the other elements in the group?
3. Explain the difference in reactivity of the group 2 metals with water.
4. Why are group 2 elements smaller, harder, and with higher melting points than their group 1 counterparts?
5. Suggest a reason why there is a slow reaction between lithium and water, which is uncharacteristic of its group members.
6. HCl, HBr and HI are all gases but HF is a liquid with a boiling point of 190°C. Why is this so?
7. Explain why HF with highly reactive F is a weak acid.
8. The concentration of two reacting chemicals, Pb(NO₃)₂(aq) and NaI (aq) were increased from 0.01M to 0.05M and from 15cm³ to 25cm³ each. How would these changes affect their mole ratios?
9. Predict the trend in oxidising character of the halogens in aqueous solution.
10. Compare briefly the chemistry of fluorine, chlorine, and bromine under the following headings:
    a) Reaction with H₂O     b) reaction with alkali      c) redox properties

Appendix B: Price list for Chemicals

<table>
<thead>
<tr>
<th>Name of chemical</th>
<th>Quantity / L or gm</th>
<th>Stock price (dollars)</th>
<th>Price in cedis</th>
</tr>
</thead>
<tbody>
<tr>
<td>HCl</td>
<td>1L</td>
<td>$19.41</td>
<td>Ghc 78.32</td>
</tr>
<tr>
<td>Sodium chloride (aq)</td>
<td>1L (0.1M)</td>
<td>$19.74</td>
<td>Ghc 79.66</td>
</tr>
<tr>
<td>Sodium hydroxide</td>
<td>100g</td>
<td>$24.26</td>
<td>Ghc 101.46</td>
</tr>
<tr>
<td>Sodium hydroxide(aq)</td>
<td>1L (0.25M)</td>
<td>$21.73</td>
<td>Ghc 87.67</td>
</tr>
<tr>
<td>Sodium bromide</td>
<td>100g</td>
<td>$28.46</td>
<td>Ghc 114.81</td>
</tr>
<tr>
<td>Sodium iodide</td>
<td>100g</td>
<td>$69.93</td>
<td>Ghc 282.13</td>
</tr>
<tr>
<td>Lead nitrate</td>
<td>10g</td>
<td>$98.94</td>
<td>Ghc 399.17</td>
</tr>
<tr>
<td>Chlorine (aq)</td>
<td>500 ml</td>
<td>$70.77</td>
<td>Ghc 283.08</td>
</tr>
<tr>
<td>Bromine (aq)</td>
<td>500 ml</td>
<td>$49.10</td>
<td>Ghc 196.40</td>
</tr>
<tr>
<td>Iodine (aq)</td>
<td>500 ml</td>
<td>$107.77</td>
<td>Ghc 431.08</td>
</tr>
<tr>
<td>Sodium metal</td>
<td>1gm</td>
<td>$54.05</td>
<td>Ghc 217.02</td>
</tr>
<tr>
<td>Potassium metal</td>
<td>1gm</td>
<td>$76.33</td>
<td>Ghc 305.86</td>
</tr>
<tr>
<td>Magnesium metal</td>
<td>2.5gm</td>
<td>$17.65</td>
<td>Ghc 70.72</td>
</tr>
<tr>
<td>Calcium granules</td>
<td>10gm</td>
<td>$31.33</td>
<td>Ghc 125.53</td>
</tr>
<tr>
<td>Micro science kit</td>
<td>Basic</td>
<td>$8.00</td>
<td>Ghc 32.00</td>
</tr>
<tr>
<td>Test tube</td>
<td>50ml size</td>
<td>$1.00</td>
<td>Ghc 4.00</td>
</tr>
<tr>
<td>Beaker</td>
<td>50ml size</td>
<td>$8.81</td>
<td>Ghc 35.24</td>
</tr>
</tbody>
</table>

(All quotations from Sigma Aldrich Catalogue, 2016 & Fisher, 2016)

Appendix C: Students’ questionnaire sheet on microscale activities

This evaluation sheet is to assess your candid opinions about the micro-scale equipment. Do not write your name or identity on the sheet. Work independently. Your views will be treated as confidential.

Ratings for choices are interpreted as:

SD= Strongly disagree (1pt) D = Disagree (2pts) N = Not sure (3pts) A = Agree (4pts) SA = Strongly agree (5pts)
1. Lab activities unearthed my naïve ideas
2. The MSE was helpful in understanding concepts
3. The MSE produces minimal chemical waste
4. The MSE afforded me the needed opportunity to acquire skills and act like a scientist
5. The MSE was like any other lab equipment and not extraordinarily helpful; too tiny to see results well
6. I understood concepts (stoichiometry & periodicity) better through discussion and directed reflection
7. I gained increased confidence in my activities/results
8. The MSE is quite interactive
9. MSE makes me finish my activities on time
10. Possibility of use of MSE at Basic and Senior school levels
Teacher’s Multiple Roles For Students Engaging Mathematically Conjecturing In Elementary Classrooms

Pi-Jen Lin, National Tsing Hua University, Taiwan
Pei-Yu Chang Liao, National Tsing Hua University, Taiwan

ABSTRACT

The study was to explore teacher’s multiple roles of mathematically conjecturing activities engaging in elementary classrooms that argumentation took place. Five stage of mathematically conjecturing included: constructing cases, formulating conjectures, validating, generalizing, and justifying the conjectures (Lin, 2018). In the context of conjecturing, argumentation to be initiated is a form of discourse that goes beyond conversation or interaction. Mathematical argumentation in classrooms is a process of supporting students with conjectures by data, warrants, rebuttals, or qualifiers. In this regard, mathematical classrooms should be switched toward discursive from traditional instruction. Teacher should not simply play one single role. Instead, teacher should play multiple roles for leading students’ discussions in different teaching situations. The role of a coach playing is for assisting students learn to justify a conjecture that the teacher expects students to using prior knowledge. In some situations, teacher also needs to play a role in comparing and combining students’ conjectures to reach a consensus during debating. This indicates that the attention to a teacher’s multiple role for students engaging in conjecturing activities should be increasingly drawn to mathematics classroom instruction and become an important topic for researchers. Although, research has been investigated teachers’ various roles of scaffolding dialogic interaction in argumentative classrooms, it is limited on teacher’s multiple roles playing in each stage of supporting students engaging mathematically conjecturing. Thus, the purpose of this study was to explore teacher’s roles in each of the five stage of conjecturing engaging in mathematical classrooms for enhancing students mathematical argumentation. The teacher’s roles are characterized by two aspects: behavior and status.

A case teacher was reported in the paper. The case is one of the six teachers participating in a teacher professional development that was designed to enhancing teachers’ knowledge of engaging in mathematical conjecturing in classrooms. The selected case was due to the purpose of the study for the provision of an exemplary of engaging conjecturing in elementary classrooms. The case teacher has most experienced and longest participation of the professional program for six years. The data collection in the study consisted of the verbally transcribed video- and audio-tapes of classroom teaching, students’ worksheets as well as. The teacher role’s of analysis framework was adapted from the framework of Chen, Hand and Norton-Meier (2017). The four roles of teacher consist of dispenser, moderator, coach, and participant.

One of the results of the study indicates that there were different roles and each role playing in different stages of conjecturing activities. Same role playing in different stage of conjecturing had different instructional behaviors. Dispenser was the main role for the teacher supporting students’ engaging conjecturing activities in elementary classroom.

In the stage of constructing cases, teacher played a single role, but when entering the stage of formulating conjectures the teacher played multiple roles. Students formulated rich and high quality conjectures as the teacher played multiple roles in different situations of conjecturing. In the formulation stage, the teacher played as a dispenser for promoting students observing more mathematical relationships. In the validation stage, the teacher played as a dispenser for helping students to classify the conjectures. In the stage of justification, a dispenser helped students to clarify the inclusion relationship and improve the quality of justification. In the stage of generalization, a coach the teacher mainly played was to stimulate the students to think about the domains of supporting the conjectures to be true for all cases, and to achieve the goal of generalization. In the stage of validation and justification, due to the difficulty of
students’ engagement, thus the dispenser was also the main role of teacher often played for students concentrating to the meaning of mathematics. In addition, the teacher played the role of participant for asking critical questions. This study contributes to the role of a teacher supporting students’ engaging in mathematical argumentation was varied by the nature of conjecturing. The multiple roles optimized the effects of each stage of conjecturing activities. The details of teacher’s multiple roles for students engaging in conjecturing and argumentation will be reported in the conference.

Keywords: Conjecturing, argumentation, teacher’s role, mathematics classroom.

References


Adjusting To Post-Millennial Undergraduate Students: An Example From A Business School Capstone Course In Strategic Management

A. J. Stagliano, Saint Joseph’s University, USA

ABSTRACT

Just when college-level academicians qua teachers thought that they had seen it all, along come the post-millennials to add a new challenge to the ever-changing landscape in higher education. This presentation is about motivating the latest crop of business school students—the under-22 tranche—to acquire knowledge about strategic decision making in companies that they soon will be asked to operate and lead.

The specific focus here is on applying alternative pedagogical approaches to delivering strategic management concepts in the nearly universally offered capstone course for the undergraduate business curriculum. The approach taken is that seasoned, industry-savvy specialists who act in an adjunct role can convey a viewpoint that differs from what might be expected from career academicians—and this perspective is more closely aligned with what is needed for students as they leave school to embark on a professional career. Pairing an active management professional with a full-time academician in a team-teaching scenario reinforces the pragmatism that underlies strategic decision making analysis in organizations. By definition, the capstone course encompasses all of the traditional business disciplines in a way that engages students to integrate prior learning and critically think about strategic changes that are value-accrative. The unique background of adjunct (in some schools, “clinical”) instructors allows them to share non-textbook type examples of strategic thinking in action. This significantly enhances the interest students have in acquiring the skill set needed to mature into competent general corporate managers.

In this presentation we examine the forces pressing on Gen Z learners. We show that by adjusting the “normal” pedagogical model positive consequences that lead to authentic learning experiences are readily available. When professors meet students where they are, rather than simply delivering materials and expecting absorption, exceptional results can be obtained.
Corporate Social Responsibility and Taxation

Douglas M. Boyle, The University of Scranton, USA

ABSTRACT

Since the 1960s public corporations in the United States have faced increasing expectations from various stakeholders to become more socially responsible. This pressure has significantly increased over the past two decades fueled by public outcries for socially responsible corporate behavior following the fraud scandals of the early 2000s such as Enron, Tyco, WorldCom, and HealthSouth. These frauds also led to increased government regulation and oversight of public corporations, boards, and the audit profession.

Internationally, the call for corporate social responsibility has also increased. The dimensions of a nation’s culture effect the expectations its society exerts over corporations related to corporate social responsibility. Additionally, these dimensions effect the manner and level in which corporations actually engage in corporate social responsibility. Carrol (1979, 500) states, “Corporate Social Responsibility encompasses the economic, legal, ethical, and discretionary (philanthropic) expectations that society has of organizations at a given point in time.”

In order for philanthropic expectations to be satisfied by corporations in the United States, voluntary philanthropic actions may be taken. Such actions may be rewarded through reduced tax liability. While some corporations take significant action to satisfy this expectation, many firms do not engage in philanthropy since it is discretionary. These corporations typically take action if there is a perceived benefit that exceeds the cost. In certain countries such as Saudi Arabia, corporations are required to satisfy philanthropic expectations through a “religious tax,” which is called Zakat. This method is used in Islamic laws in several Islamic countries and is based on the holy book of the Quran and the message of Prophet Mohammed. In fact, Zakat has some strict regulations for who pays and who receives the payment. However, the United States is a country that values freedom where no specific religion is supported by the government. This freedom supports to the concept of having philanthropy be discretionary in nature.

Our current study investigates how the dimensions of a nation’s culture impacts the manner and degree to which corporations engage in social responsibly and the related taxing outcomes. We discuss elements of Zakat and taxation as one means of pursuing corporate social responsibility based on national culture.

Virtual Reality As A Pedagogical Tool
For Course Content Creation
Kevin W. Tharp, University of Wisconsin-Stout, USA

ABSTRACT

Virtual Reality (VR) provides the opportunity to create content that is impossible in the tangible world because of limitations of size, space and movement. However, VR systems have not been widely adopted and a teacher cannot assume that their students will have access to the requisite technology unless it is provided to the student. This research was an investigation into how content could be created in Virtual Reality (VR) and made accessible to students without access to VR systems. It explored a variety of processes that would allow a creator to develop VR content that did not involve coding or scripting and extracting that content into formats that could be used on a laptop or smartphone. Those processes include: Virtual Cinematography, 360 Degree Video, 360 Degree Motion Graphics Video, and Interactive Flat Screen Investigation of 3-Dimensional Space.

Virtual Cinematography is the collection of cinematographic techniques performed in a computer graphics environment. It allows for the capturing of images in a virtual world in the same way that a cinematographer captures images in the real world. Movies can then be used in the same way as more traditional instructional videos. In this format, there is no freedom of movement, you are limited to the camera’s perspective at the time of shooting.

360 Degree Video is the use of images that can be viewed in all directions from a fixed point of view. It provides 3 degrees of freedom in that you can look anywhere on the x, y, and z axis from the fixed viewpoint of the camera at the time of the video was shot.

360 Degree Motion Graphics Video is similar to 360-degree video, except that the point of view moves within the environment being filmed as opposed to a fixed viewpoint. The viewer is still connected to the point of view of the camera at any frame, so it still provides only 3 degrees of freedom but from a moving camera perspective.

Interactive Flat Screen Investigation of 3-Dimensional Space involved the ability to bring content out of the virtual environment into a format that allows 6 degrees of freedom. With 6 degrees of freedom the user is able to fully control their location and perspective, enabling the user to decide where to locate within the x, y, and z axis, and then have a 360-degree viewpoint from that location.
Really Too Much! Abuse, Emotions And Workload In The Distribution Business: Implications For Employees’ Engagement

Umair Ahmed, Arab Open University, Bahrain

ABSTRACT

Distribution networks and services are one of the major business drivers in any economy (Rahmandoust & Soltani, 2019). The present study attempted to examine what is the impact of some of the deleterious work prospects on employees working in the distribution businesses on their psychological work wellbeing. Therein, the study examined the role and impact on work stressors including abusive supervision, emotional demands and workload on employees’ work engagement. Five major distribution companies were sampled in the present study to examine these relationships on the staff level employees. Structural equation modelling using PLS 2.0 M3 resulted significant negative impact of abusive supervision on employees’ work engagement. Accordingly, emotional demands also posed a significant negative impact on employees’ psychological resources thus decreasing their work engagement. In parallel, workload also reported a significant negative impact in the similar fashion. The study has forwarded noteworthy implications based on findings for the distribution businesses in particular and service based occupations in general. The study also sheds light on limitation and scope for future studies.

Keywords: work stress, distribution business, abusive supervision, emotional demands, workload, work engagement.
Female Directors And The Wealth Effects Of Mergers And Acquisitions In The US Banking Sector

Ioannis Tampakoudis, University of Macedonia, Greece
Demetres Soubeniotis, University of Macedonia, Greece
Michail Nerantzidis, Hellenic Open University, Greece
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ABSTRACT

This paper focuses on the effect of gender diversity on the wealth effects of bank mergers and acquisitions (M&As) in the US. The sample is comprised of 1130 M&A deals announced by US banks between 01/01/2003 and 31/12/2018. In order to investigate the effect of gender diversity on acquiring banks' gains, we categorize the sample into two sub-groups, namely one with female directors and one without. During the entire period (2003-2018), the results show that the mean differences between the two sub-groups are significant over a few event windows around and before the announcement day. Before the banking crisis (2003-2006), we find not statistically significant differences between the mean cumulative abnormal returns (CARs) for banks with and without female directors. With regard to the banking crisis period (2007-2011), the results do not confirm any value discrepancies between the two sub-groups, since the mean differences are not significantly different from zero. The pattern of excess returns changes dramatically after the banking crisis (2012-2018), since the results confirm that banks without female directors create more shareholder value compared to banks with at least one female director. The mean CAR differences between the two sub-groups are negative and significantly different from zero in almost all event windows. In summary, the results of univariate analysis confirm that after the banking crisis the acquirers' gains are negatively affected by the presence of women on board. This suggest that banks with male directors only are able to create more value to their shareholders through M&A transactions.
An Effective Three-Echelon Reverse Supply Chain Strategic Alliance Under Cap-And Trade Regulation

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Jonas C.P. Yu, Takming University of Science and Technology, Taiwan, R.O.C.

ABSTRACT

In recent years, the booming industry has led to the extensive development of petrochemical energy, coupled with extensive deforestation, resulting in more and more serious global warming. Climatic anomalies around the world have made it an imperative for enterprises to effectively limit carbon emissions to protect the environment. In the study, we incorporate carbon emission reduction with implementing corporate social responsibility into a three-echelon reverse supply chain for used products. Assumed that carbon emission depends on sustainability level and the returns (used products) quality is stochastic. The optimization recycling models for both decentralized and centralized systems are formulated and then compared to each other. The results show that the centralized system can achieve higher profits and has lower carbon emissions. A computing software Maple 18 has been developed for this purpose and is implemented to derive the optimum decision for each player. Numerical examples and sensitivity analyses are given to illustrate the results.

Keywords: Cap-and trade; Corporate social responsibility; re-manufacturing; Green technology.

INTRODUCTION

After the entry into force of the "Kyoto Protocol" on February 16, 2005, the United Nations and Member States not only paid more attention to environmental issues and positive effects of the greenhouse effect, but also increased carbon dioxide emissions (Carbon Cap- and-Trade) actively promotes and establishes a carbon trading market. After the rise of carbon trading in the international trading market, it has brought huge business opportunities. Unlike the securities or financial derivative goods that can be traded solely, the carbon emissions of private enterprises supply and demand are used as transactions, but they are similar. Commodity futures can be listed and traded in major international securities or commodity exchanges in the future. It is not only the policy and goal of international environmental protection, but also the plans for emission reduction in the future global countries. The market has great room for growth. Carbon trading can predict and determine development costs and development risks based on the company's sustainability capabilities and market trends (Hepburn, 2007). Therefore, companies should be encouraged to carry out greenhouse gas reductions early, obtain appropriate investment returns through carbon rights trading, and act as specific policies for greenhouse gas reduction (Ellerman & Buchner, 2007). In this paper, we focus on analyzing the strategy of supply chain management under the constraint of cap-and-trade regulation and investment in green technology.
Table 1. Summary of related for the three-echelon reverse supply chain

<table>
<thead>
<tr>
<th>Literature</th>
<th>Reverse supply chain</th>
<th>Corporate social responsibility</th>
<th>Cap-and-trade</th>
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<td>Xu et al. (2017)</td>
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<td>This study</td>
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Note: V stands for YES.

**NOTATIONS**

The following notations are used in this study:

- \( p_r \) Purchase cost ($/unit)
- \( \theta \) The price of return item as a fraction of whole sale price ($/unit)
- \( s_p \) Scrap cost ($/unit)
- \( l \) The acceptance level
- \( s_c \) Screening cost($/unit)
- \( D \) Market demand, \( D(s, p_1, p_2) = D_0 + \alpha s - \beta p_1 + \gamma p_2 \)
- \( p_2 \) The given price of all new item ($/unit)
- \( e_1 \) Carbon emissions per unit in re-manufacturing stage
- \( e_2 \) Carbon emissions per unit in holding stage
- \( b_1 \) Parameter of the green technology effect (re-manufacturing)
- \( b_2 \) Parameter of the green technology effect (holding)
- \( K \) Carbon emission cap
- \( \eta \) Sustainability investment coefficient
- \( c_e \) Unit carbon emissions trading price ($/unit)
- \( c_m \) Unit re-manufacturing cost ($/unit)
- \( h_m \) Unit holding cost for re-manufacturer ($/unit/unit time)
- \( h_r \) Unit holding cost for retailer ($/unit/unit time)
- \( h_b \) Unit holding cost for recycler ($/unit/unit time)
- \( w \) Whole sale price ($/unit) (decision variable)
- \( s \) Sustainability level (decision variable)
The price of re-manufacturing item ($/unit) (decision variable)

* The superscript representing optimal value

MATHMATICAL MODEL

The decentralized system

Three members of a decentralized supply chain system: recyclers, re-manufacturers, and retailers each make decisions to maximize their profits. However, in this decentralized supply chain system, the re-manufacturer is the leader of Stackelberg game and the others are followers. The order of the decision is: the re-manufacturer first determines the wholesale price and sustainability level; then, under this condition, the retailer and the recycler determine the sales price and acceptance level, respectively.

Cost structure of the retailer

For a wholesale price $w$ decided by re-manufacturer, the total profit of the retailer is the sales revenue minus the sum of purchasing cost and holding cost:

$$\Pi_R(p_1) = p_1 \cdot D(s, p_1, p_2) - w \cdot D(s, p_1, p_2) - \frac{h_r}{2} \cdot D(s, p_1, p_2)$$

(1)

Substituting $D(s, p_1, p_2) = D_0 + \alpha s - \beta p_1 + \gamma p_2$ into Eq.(1), one has

$$\Pi_R(p_1) = p_1 (D_0 + \alpha s - \beta p_1 + \gamma p_2) - w(D_0 + \alpha s - \beta p_1 + \gamma p_2) - \frac{h_r}{2} (D_0 + \alpha s - \beta p_1 + \gamma p_2)$$

(2)

For a given wholesale price $w$ and sustainability level $s$, we take the first partial derivative of $\Pi_R(p_1)$ with respect to $p_1$, one has

$$\frac{\partial \Pi_R(p_1)}{\partial p_1} = \alpha s + \beta (\frac{h_r}{2} - 2p_1 + w) + D_0 + \gamma p_2 = 0$$

(3)

We obtain the optimal price of re-manufacturing item and the optimal price of all new item as

$$p_1^* = \frac{D_0 + \alpha s + \gamma p_2}{2\beta} + \frac{w^*}{2} + \frac{h_r}{4}$$

(4)

By taking the second order derivative of $\Pi_R(p_1)$ with respect to $p_1$, we have $\frac{\partial^2 \Pi_R(p_1)}{\partial p_1^2} = -2\beta < 0$, which proves that the profit of the retailer is strictly concave at the selling price $p_1$.

Cost structure of the recycler

For recycler, the acceptance level of collected returns is represented by $l$, which is determined by $S_c = S_0 \cdot l^2$. The expression shows that the unit screening cost is a quadratic function of the acceptance level. The profit function of the recycler is the sales revenue minus the sum of purchasing cost, holding cost, screening cost and scrap cost:

$$\Pi_B(l) = w\theta \cdot D(s, p_1, p_2) - \frac{p_r}{l} \cdot D(s, p_1, p_2) - \frac{s_c(l)}{l} \cdot D(s, p_1, p_2) - \frac{S_p \cdot (1 - l)}{l} \cdot D(s, p_1, p_2)$$

(5)

By substituting $D(s, p_1, p_2) = D_0 + \alpha s - \beta p_1 + \gamma p_2$ and $s_c = s_0 \cdot l^2$ into Eq.(5), we have

$$\Pi_B(l) = w\theta \cdot (D_0 + \alpha s - \beta p_1 + \gamma p_2) - \frac{p_r}{l} \cdot (D_0 + \alpha s - \beta p_1 + \gamma p_2)$$
For a given whole sale price $w$ and sustainability level $s$, we take the first order derivative of $\prod_B(l)$ with respect to $l$, one has

$$\frac{\partial \prod_B(l)}{\partial l} = \frac{p_r}{l^2} - s_0 + \frac{s_p}{l^2} = 0$$

We obtain the optimal acceptance level as

$$l^* = \sqrt{\frac{p_r + s_p}{s_0}}$$

By taking the second order derivative of $\prod_B(l)$ with respect to $l$, we have $\frac{\partial^2 \prod_B(l)}{\partial l^2} = -2p_r - 2s_p < 0$, which proves that the profit of the Recycler is strictly concave at the acceptance level $l$.

**Cost structure of the re-manufacturer**

we assume that the sustainability investment cost for the manufacturer is a quadratic function of sustainability level, $\frac{1}{2} \eta s^2$, where $\eta$ is the sustainability investment coefficient. Since the re-manufacturer is the main carbon emitter in the three-echelon reverse supply chain, they invest in green technology to reduce carbon emissions generated by both production and inventory holding stages. The total emission amount in the system during each production cycle is calculated as

$$E_m(s) = (e_1 - b_1 s) \cdot D(s, p_1, p_2) + \frac{1}{2} (e_2 - b_2 s) \cdot D(s, p_1, p_2)$$

In each production cycle, the profit of the re-manufacturer is the sales revenue minus the sum of production cost, holding inventory cost, investment in green technology, and revenue (cost) from selling (buying) the extra carbon emission permits. One has

$$\prod_M(s, w) = w(1 - \theta) \cdot D(s, p_1, p_2) - c_m \cdot D(s, p_1, p_2) - \frac{h_m}{2} \cdot D(s, p_1, p_2) - \frac{h_b}{2} \cdot D(s, p_1, p_2) - \frac{\eta s^2}{2} - c_e[E_m(s) - K]$$

By substituting Eq. (9) into Eq. (10), one has

$$\prod_M(s, w) = w(1 - \theta) \cdot D(s, p_1, p_2) - c_m \cdot D(s, p_1, p_2) - \frac{h_m}{2} \cdot D(s, p_1, p_2) - \frac{h_b}{2} \cdot D(s, p_1, p_2) - \frac{\eta s^2}{2} - c_e[E_m(s) - K]$$

By substituting $p_1 = \frac{D_0 + a \cdot e + \gamma s^2}{2 \beta} + \frac{w}{2} + \frac{h_r}{4}$ into Eq. (5), for calculating convenience, we define the following parameters:

$$\lambda_1 = \frac{c_e}{2} \left( c_m + \frac{h_m}{2} \right), \quad \lambda_2 = \frac{(1 - \theta) \alpha}{2} - \frac{\beta c_e \left( c_m + \frac{h_m}{2} \right)}{2}, \quad \lambda_3 = c_e \left( c_m + \frac{h_m}{2} \right) \left( \frac{D_0 - \gamma s^2}{2} - \frac{h_r}{4} \right) - \frac{\alpha}{2} \left( c_m + \frac{h_m}{2} + \frac{h_b}{2} + c_e \left( e_1 + \frac{e_2}{2} \right) \right), \quad \lambda_4 = \frac{(1 - \theta) \beta}{2}, \quad \lambda_5 = \frac{\beta}{2} \left( c_m + \frac{h_m}{2} + \frac{h_b}{2} + c_e \left( e_1 + \frac{e_2}{2} \right) \right) + (1 - \theta) \left( \frac{D_0 - \gamma s^2}{2} - \frac{h_r}{4} \right) + \gamma p_2$$

One has

$$\prod_M(s, w) = \lambda_1 s^2 + \lambda_2 sw + \lambda_3 s - \lambda_4 w^2 + \lambda_5 w + \lambda_6$$

Taking the first order derivative of $\prod_M(s, w)$ with respect to $s$ and $w$, we obtain the optimal sustainability level and
whole sale price as
\[ s^* = \frac{2\lambda s - 2\lambda \lambda s}{\lambda s + \lambda^2} \quad \text{and} \quad w^* = \frac{2\lambda s - 2\lambda \lambda s}{\lambda s + \lambda^2}. \] (13)

For the function to be concave, the following sufficient conditions must be satisfied:
\[ \left( \frac{\partial^2 \Pi_M}{\partial s^2} \right) \left( \frac{\partial^2 \Pi_M}{\partial w^2} \right) - \left( \frac{\partial^2 \Pi_M}{\partial s \partial w} \right)^2 \geq 0 \] (14)
and one or both
\[ \frac{\partial^2 \Pi_M}{\partial s^2} \leq 0, \quad \frac{\partial^2 \Pi_M}{\partial w^2} \leq 0 \] (15)

The necessary condition \( \left( \frac{\partial^2 \Pi_M}{\partial s^2} \right) \left( \frac{\partial^2 \Pi_M}{\partial w^2} \right) - \left( \frac{\partial^2 \Pi_M}{\partial s \partial w} \right)^2 \geq 0 \) for maximizing \( \Pi_M(s, w) \) yields the lower bound of \( \eta \):
\[ \eta \geq \alpha c_b \left( b_1 + \frac{b_2}{2} \right) + \frac{1}{(1-\theta)^2} \left[ \frac{c(1-\theta)}{2} - \beta c_e \left( b_1 + \frac{b_2}{2} \right) \right]^2 \] (16)

**Theorem 1.** For the decentralized reverse supply chain, the following holds:

(i) \( \pi_B(p_r) \) is concave in \( p_r \), and the corresponding optimal solution for retailer is
\[ p_{r*} = \frac{D_0 + \lambda s + \gamma p_2}{2\beta} + \frac{w^*}{2} + \frac{h_r}{4}. \]

(ii) \( \pi_R(l) \) is concave in \( l \), and the corresponding optimal solution for recycler is
\[ l^* = \sqrt{\frac{p_r + p_2}{s_0}}. \]

(iii) \( \pi_M(s, w) \) is concave in \( s \) and \( w \), and the corresponding optimal solutions for re-manufacturer are
\[ s^* = \frac{2\lambda s - 2\lambda \lambda s}{\lambda s + \lambda^2} \quad \text{and} \quad w^* = \frac{2\lambda s - 2\lambda \lambda s}{\lambda s + \lambda^2}. \]

**The centralized system**

In a centralized system, recyclers, re-manufacturers, and retailers work together through information transparency, information sharing, and the entire system is like a single company, and together determine the optimal selling price and the optimal level of sustainability to maximize the total profit of the entire system. In this case, the total joint profit function can be expressed as
\[ \Pi_C(l, s, p_r) = \left\{ p_1 - \frac{h_r}{2} - \frac{p_r}{l} - \frac{s_r(l-\bar{l})}{l} - c_m - \frac{h_m}{2} - \frac{b_d}{2} - c_e \left( e_1 - b_1 s + \frac{e_2 - b_2 s}{2} \right) \right\} \cdot D(s, p_1, p_2) - \frac{\eta s^2}{2} + c_e K \] (12)

For calculating convenience, we define the following parameters: \( B = \frac{h_r}{2} + \frac{p_r}{l} + \frac{e_2(l-\bar{l})}{l} + c_m + \frac{h_m}{2} + \frac{h_b}{2} + c_e e_1 + \frac{c_e e_2}{2} \) and \( C = c_e b_1 + \frac{c_e b_2}{2} \). One has
\[ \Pi_C = (D_0 + \alpha s + B \beta + \gamma p_2) p_1 - (C \cdot \beta)p_1 s - \beta p_4^2 + (C D_0 - \alpha B + C \gamma p_2) s + \left( C - \frac{\eta}{2} \right)s^2 + (-BD_0 - B \gamma p_2 + c_e K) \] (13)
For further calculating convenience, we define the following parameters: \( A_0 = D_0 + \alpha s + B \beta + \gamma p_2, \ A_1 = C : \beta, \ A_2 = \beta, \ A_3 = CD_0 - \alpha B + C \gamma p_2, \ A_4 = C - \frac{\eta}{2} \) and \( A_5 = -BD_0 - B \gamma p_2 + c_e K \).

One has

\[
\Pi_C = A_0 p_1 - A_1 p_1 s - A_2 p_1^2 + A_3 s + A_4 s^2 + A_5
\]

(14)

Taking the first order derivative of \( \Pi_C(s,p_1) \) with respect to \( s \) and \( p_i \), we obtain the optimal sustainability level and whole sale price as

\[
\frac{\partial \Pi_C(s,p_1)}{\partial p_1} = A_0 - A_1 s - 2 \beta p_1
\]

(15)

\[
\frac{\partial \Pi_C(s,p_1)}{\partial s} = -A_1 p_1 + A_3 + 2 A_4 s
\]

(16)

From \( \frac{\partial \Pi_C(s,p_1)}{\partial p_1} = 0 \) and \( \frac{\partial \Pi_C(s,p_1)}{\partial s} = 0 \), the optimal sustainability level and selling price are obtained as

\[
s^* = \frac{A_0}{A_1} - \frac{2 \beta}{A_1} \left( A_1 A_2 + 2 A_0 A_4 \right) \quad \text{and} \quad p_1^* = \frac{A_4 A_3 + 2 A_0 A_4}{A_1^2 + 4 \beta A_4}
\]

(17)

The necessary condition \( \left( \frac{\partial^2 \Pi_C}{\partial s^2} \right) - \left( \frac{\partial^2 \Pi_C}{\partial s \partial p_1} \right)^2 \geq 0 \) for maximizing \( \Pi_C(s,p_1) \) yields the lower bound of \( \eta \):

\[
\eta \geq 2 c_e \left( b_1 + b_2 \right) + \frac{\beta c_e^2}{2} \left( b_1 + b_2 \right)^2
\]

(18)

**Theorem 2.** For the centralized supply chain, the maximum total profits per unit is

Derived from Eq. (6), we can get \( p_1^* = \frac{A_4 A_3 + 2 A_0 A_4}{A_1^2 + 4 \beta A_4} \) and \( s^* = \frac{A_0}{A_1} - \frac{2 \beta}{A_1} \left( A_1 A_2 + 2 A_0 A_4 \right) \).

**NUMERICAL EXPERIMENT**

The preceding theory can be illustrated using the numerical example adopted from Xu et al. (2014). The corresponding parameters are \( D_0 = 500, \ \alpha = 0.2, \ \beta = 0.8, \ \gamma = 0.4, \ e_1 = 50, \ b_1 = 0.45, \ e_2 = 23, \ b_2 = 0.34, \ c_e = 1, \ \eta = 25, \ K = 300, \ p_r = 5, \ p_t = 800, \ \theta = 0.1, \ c_u = 8, \ h_u = 2, \ h_r = 3, \ h_b = 1, \ s_c = 1 \) and \( s_p = 0.3 \). The computing results are summarized in Tables 1.

<table>
<thead>
<tr>
<th>Table 1. The optimal solution for the numerical example</th>
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<tbody>
<tr>
<td>The acceptance level ( l )</td>
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<td>Decentralized system</td>
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<td>Centralized system</td>
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</table>

**CONCLUSION**

This study focuses on the three-echelon reverse supply chain system for recycling, re-manufacturing and reuse. For the decision-making model, we use two decentralized and concentrated supply chain models to compare each other. Since re-manufacturer operations are a major source of carbon emissions, we also propose two ways to effectively...
curb carbon emissions: carbon cap and trade regulation and investment in green technologies. Meanwhile, taking into account the real-life demand assumptions, the retailer's market demand depends on the level of green technology and the retailer's new and old product sales prices. Finally, we compare the individual and overall profit and carbon emissions of the decentralized and concentrated models. The results show that the centralized system can achieve higher profits 19.12% and has lower carbon emissions 1.68%. In the future, we may extend the research of such a re-manufacturer and a retailer supply chain to a multi-tier supply system of multiple re-manufacturers and multiple retailers.

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Reference


Intercultural Sensitivity: The Effect Of Intervention In University Japanese English- Language Classes
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ABSTRACT

English as a foreign language (EFL) courses are included as requirements at a majority of four-year universities in Japan. Beyond basic language skills, intercultural awareness and communicative efficacy have become part of the compulsory curriculum since the expansion of globalization in trade, tourism, and related fields. This quasi-experimental research was conducted in freshmen English classes taught by a native English speaker. Pre- and post-tests focusing on intercultural sensitivity were administered in two freshmen English classes, one representing a control group and the other receiving intervention during one semester. A survey on students’ perceptions of English usage in their futures and their intercultural awareness related to other languages was also conducted and the results compared. This study applies empirical analysis to identify the effect of intervention.

Keywords: Intervention, Intercultural, Language
The Product Review Helpful Evaluation Impact In The Online Market

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ABSTRACT

This study investigated how the online market platform, which is growing incredibly, keeps the customer's interest and sells well. The main research question is the influence of prospective customers' participation in the pre-purchaser's opinions or past customer's opinions on sales performance. We analyze a variety opinions of the prospective customers to understand their impact on sales performance. According to information economics theory, product characteristics can be classified into search goods which can easily grasp the value through information search before purchase, and experience goods which can accurately grasp the value of a product only after purchasing it and experiencing it (Stigler, 1961; Nelson, 1970). It is effective to search before the purchase in case of search product because it can evaluate the value through information search, but experience product is more efficient to buy and experience (Nelson, 1970). Because of the possibility of evaluating the value of products makes a difference depending on the characteristics of products, the effect of transferring product information also depends on the type of product (Ford et., al., 1990). As a result of the previous researches (Ahluwalia et al. 2008; Chatterjee, 2001; Chevalier and Mayzlin, 2006; Mudambi & Schuff, 2010), the hypothesis that the usefulness evaluation on the product review affects the sales performance is negative for the sales performance. Another hypothesis is derived from previous researches (Ford et., al., 1990; Mudambi & Schuff, 2010) that the characteristics of the product give a moderating effect to this usefulness evaluation. In the case of search products, most of the product reviews are relatively objective, so it is likely that the usefulness ratio will provide new information. For the purpose of empirical verification, we analyzed the product review data of the last 19 years in the online market Amazon platform through big data processing. The results showed that the higher the rate of usability evaluation of the product, the sales performance is more negative. The characteristics of the product gave a moderate effect on the effect of the product usefulness ratio on sales performance. The results of this study will contribute to the theoretical complement of information economy theory. If the results of this study are empirically used, online market platform manager should have a professional analysis for the product review before utilizing it. Because the product review usefulness may negatively affect the performance which is different from common sense.

Keywords: Online market, Customer communication, Helpfulness, Experience Goods, Search Goods, Sales performance, product reviews

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Repositioning Languages
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ABSTRACT
Marginalisation of indigenous languages continue to create problems in South African Higher Education. Repositioning of these languages in Higher Education is now an imperative move. This is partly an attempt to respond to a plethora of challenges that tertiary institutions are facing in the country. Amongst these challenges is the seemingly insurmountable task of responding to the students’ call for access to Higher Education as well as a transformed and decolonized curriculum. The nature and type of such a curriculum remains oblique to many scholars. The paper advances that the greatest miscarriage of transforming South African Higher Education and its curriculum over the last two and half decades, is the inability to move African languages from the periphery of the curriculum to its centre. For all intents and purposes, these languages remain marginalised and are hardly used to enhance meaningful teaching and learning. This is despite the commitment to use these languages as languages of science by almost all tertiary institutions and government departments. Many papers on this issue were delivered in different conferences with brilliant ideas on how to use these languages for qualitative and substantive transformation of the sector. One unfortunate negative message coming from many of these papers and presentations is the misleading propaganda that African languages are under developed. The tenet of the paper is that these languages are sufficiently developed and satisfy the requirements to be used as languages for science, business as well as for teaching and learning. Another argument is that as producers of knowledge, tertiary institutions can use these languages to democratise and transform knowledge production and the curricula. The paper concludes by proposing possible ways in which these languages could be fully utilised to enhance meaningful learning amongst the students and also making meaningful contribution towards the economy.
Analyzing Friendship Clusters
In An Online Social Platform

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Lifang Zhao, Yonsei University, Korea

ABSTRACT

There has been a rapid growth of social network services in the past decade, and online social networks have gained significant popularity. These large networks are a complex combination of smaller groups (Hansen et al., 2011), which are powerful tools in getting people together. Analyzing these online social networks has become a key interest for both scholars and practitioners. Existing literature mainly focuses on (1) the demographics of users, analyzing their motivations and behavioral patterns (Ross et al., 2009; Cheung et al., 2010), and (2) the utilization of online social platforms in organizations from a marketing standpoint (Kim & Ko, 2012; Lipsman et al., 2012). Online social networks are increasingly being considered as an important source of information influencing the adoption and use of products and services (Chu, 2011; Zhu, 2013).

However, little research has focused on the online social network itself. Identifying groups within a network and mapping their relationship to one another can be essential to making strategic decisions. For instance, it may improve the understanding of online campaigning and viral marketing (Mislove et al., 2007). Research on this field is still limited, and no research has examined the online social network and clustering, especially by using the Facebook network. Thus, our study aims to investigate the relationship between online social network centrality and online friendship clustering on Facebook. In social networks, it is usually considered that “powerful” networks lead to positive outcomes, and here powerful networks refer to nodes with better positions in a network. And centrality is a common dimension to indicate the network position. Individual’s centrality represents his or her ability to touch others in the network. Thus, centrality is a measure of potential influence and popularity based on who an actor seeks to interact with within the social networks (Russo & Koesten, 2007).

We collected Facebook network data from 126 students in a business school; the final sample was 118, excluding missing data. 1.5 networks were used in our study as provided by Facebook, and the Facebook data were analyzed by the Microsoft NodeXL program. Research hypotheses were tested by regression analysis. Various measures of centrality are constructed: degree, betweenness, closeness, and eigenvector centrality (Proctor and Loomis, 1951; Freeman, 1977). We suggest that these four centralities influence Facebook network friendship clustering negatively. The results of our study show that four centralities (degree, betweenness, closeness, and eigenvector centrality) influence network clustering negatively and significantly. The findings indicate that strong ties in online social networks may reduce diversity and creativity of the network community; while weak ties in online social networks may increase the divergent clustering and idea sharing, which indicates that hyper-connected but decentralized networks may lead to more intelligent friendship clustering in an online social platform.

Keywords: Cluster in networks, Facebook network, friendship network, network centrality, online social networks
Pay By Bag Or Pay By Meter For Garbage Collection Payment In Taiwan

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ABSTRACT

The design on the optimal garbage collection payment system for residents has two functions, one is for the financial purpose that covers the trash collection and treatment costs, the other one is for the environmental concerns that promote the reduction of garbage generating and increment of material recycling.

In Taiwan, the typical garbage collection payment is paid by meter based on water use which has long been challenged by the environmental protection groups that enthusiastically advocate the adoption of pay by bag. In 2000, Taipei city was the first administration area that switched to price-per-bag system. In 2010, ten years later, New Taipei city was the second administration area that implements the pay by bag system. Although the basic statistics showed that the amount of trash collected per person dropped significantly for those two areas, however, the remain 18 administration areas still do not have any plans to switch the system while the Taiwan Environmental Administration pursues the target in 2018.

In this study, we investigate the effect of garbage generating after the payment switching based on the application of synthetic control methods developed by Abadie and Gardeazabal (2003). Our estimate show that the amount of trash collected per person were about 20% lower than what they would have been in the payment system of pay by meter for New Taipei city. The results strongly support the price-per-bag system playing a better function in reduction of garbage generating and benefiting the environment.
Environmental Performance And Integrated Reporting Perspectives: Towards Sustainable Development Of Thai Firms

Neungruthai Petchrat, Gulf College, Sultanate of Oman
Phanthipa Srinammuang, Kasetsart University, Thailand

ABSTRACT

This study explores the relationship between environmental performance underlying environmental indicators of the Global Reporting Initiatives (GRI) and integrated reporting perspective of Thai-listed companies. Quantitative research methods are employed to analyse and collect data from two-hundred Thai-listed companies. Evidence was mainly collected through a review of documents. Environmental information in annual reports of sample companies provided on the website of the Stock Exchange of Thailand was targeted. Multiple regression analysis methods are employed to test the hypotheses. The results of the study indicate that environmental information in annual reports of the sample is associated with indicators of the GRI guidelines. Environmental information in annual reports underlying with GRI guidelines is positively relevant to the integrated reporting perspectives. Environmental information was employed to enhance environmentally efficiency and cost savings while reporting eco-efficiency to support demands of stakeholders. Environmental performance in annual reports mainly represents how sampling companies achieve environmental sustainability – reducing negative impacts on the environment and society thus representing sustainable development of firm in the eye of stakeholders.

Keywords: Environmental performance, Environmental indicators, Environmental sustainability, Environmental efficiency, Sustainable development of firm

1. Introduction

Concerns about environmental performance and integrated reporting practices of Thai-listed companies have been necessitated emphasis on business practices towards stakeholders’ satisfaction for decades. Based on economic impacts on business activities in Thailand, environmental sustainability in mandatory disclosures have been introduced to Thai companies in order to provide information needs to stakeholders and public (Kuasirikun, 2005; Lint, 2009; SET, 2008; Suttipun & Stanton, 2012). With this matter, Thai-listed companies are required by the Stock Exchange of Thailand (SET) to set, implement, and incorporate environmental sustainability policies and procedures in mandatory reports (Lint, 2009). The principle of either “explain” environmental performance or “comply” with environmental sustainability reporting can be used for both mandatory and voluntary disclosures (SET, 2008; Suttipun & Stanton, 2012). In addition, Thai-listed companies have been informed the international indicators of the Global Reporting Initiatives (GRI) as a guideline to help identify environmental performance indicators incorporated in the reports in order to promote environmental sustainability in marketplaces (GRI, 2014; Institute of Management Accountants, 2008; The IIRC Organization, 2013). The Global Reporting Initiatives (GRI)’s guidelines provide Thai companies with a way to create data accuracy on environmental performance, as well as enabling to provide information needs to stakeholders and public (Adams, 2010; Chansarn, 2013). Environmental performances in reports enable companies to promote environmental sustainability to take advantage of opportunities for sustainable futures (Deloitte, 2011; The IIRC Organization, 2013).

However, according to Yodprutikarn (2010), Thai companies are aiming to report environmental and social performance to promote sustainable companies and showing how companies reduce operational risk from improving environmental and social issues. Thai-listed companies report environmental performances against the backdrop of environmental issues (Prayukvong & Olsen, 2014). Environmental performance is provided in an informative form
explaining environmentally sustainable achievements of firms (Kraisornsuthasinee, 2006; Kuasirikun & Sherer, 2004; Lint, 2009; Petcharatt, 2015). This results in environmental indicators that could go long way to meet data accuracy goals while having difficulty communicating with stakeholders (Petcharatt & Mula, 2013; Pipat Yodprutikarn, 2010). Sustainable development of Thai companies is not yet focussed on consumption of natural resources and environmental management thus not achieving optimal environmental sustainability (Chansarn, 2013). Thus, this study explores environmental performance in mandatory reports of Thai-listed companies underlying environmental indicators of the Global Reporting Initiatives (GRI) integrated reporting perspectives represents sustainable development of firms in the eye of stakeholders and public. The relationship between environmental information in mandatory and voluntary disclosures of Thai-listed companies and the indicators of the Global Reporting Initiatives (GRI) guidelines and integrated reporting practices is examined. Environmental performance indicators of the Thai companies in the reports and creation of sustainable value of firms in the eye of stakeholders is also investigated.

2. Literature review

Environmental information in sustainability reports aims to promote environmental responsibility and social well-being as a whole (Kuasirikun, 2005). Thai companies are required to implement and demonstrate greater concern of and responsibility for environmental problems (Pipat Yodprutikarn, 2010). In this case, Thai listed companies have not clearly identified environmental performance indicators either “explain” or “comply” with environmental sustainability in mandatory and voluntary disclosures. Also, the environmental performance measurement of Thai companies has not been clearly indicated either using any international guidelines or principles of the Stock Exchange of Thailand (e.g. Kraisornsuthasinee, 2006; Kuasirikun & Sherer, 2004; Lint, 2009; Petcharatt, 2015). Environmental and social performance in the reports are basically reported based on the basic corporate social responsibility guidelines provided by the Stock Exchange of Thailand (Stock Exchange of Thailand (SET), 2008). As per a voluntary regime, environmental performance indicators of Thai companies appears little information in the corporate social responsibility reports (Moisescu & Mihai, 2006; Petcharatt, 2015). Only small number of Thai companies fully reports environmental performance indicators including carbon emissions, energy and water consumptions, and total volume of waste productions externally while a number of companies are facing difficulties in sufficiently reporting environmental performance to external stakeholders (Thanatrakolsri, 2014).

In Thailand, international environmental indicators and measures such as ISO 14000 for Environmental Management and ISO 18000 for Health and Safety at Work Management have been introduced to Thai companies as guidelines for preparing employee responsiveness and environmental awareness reports. The indicators of the guidelines helps Thai companies to disclose their environmental and social development (Kuasirikun & Sherer, 2004). The companies identify how they are aware of energy efficiency and emissions performance, and grants to protect wildlife, waterways and land used including how penalties are applied through government-imposed taxes in both mandatory and voluntary disclosures. The Thai-listed companies are also required to report corporate environmental and social performance along with eco-efficiency for value creation (SET, 2008). This included implement, and incorporate policies and procedures for improvement in environmental and social performance (Lint, 2009). In 2007, the Stock Exchange of Thailand has changed the voluntary approach by forcing listed companies to one of “comply or explain” their environmental performance (Suttipun & Stanton, 2012). Finally, social and environmental sustainability of listed companies was required to incorporate in voluntary disclosures in 2008 (Suttipun & Stanton, 2012). In this relation, the GRI provides essential indicators as appropriate guidelines that are widely used as a standardized sustainability-reporting framework (GRI, 2006). The guidelines enable companies to report environmental data sufficiently regarding the measurement of use of resource, energy efficiency, water consumption, emission abatement, and waste minimizations while driving better market performance as ‘green’ producers. One of the key challenges of the GRI guidelines is to enable a company to communicate with its stakeholders relating the three areas of performance (economic, environmental, and social) and accountability beyond the financial bottom line (Willis, 2003).

According to KPMG (2012), integrated reporting system facilitates companies to incorporate their operational performance along with environmental and social awareness in order to add shareholder value in the eye of stakeholder and public. In relation to this, GRI and International Integrated Reporting Council (IIRC) have pointed out that the financial statement of a company need to show where it is linked with environmental and social performance in both mandatory and voluntary disclosures (Deloitte, 2011; The IIRC Organization, 2013). In doing this, companies not only create data accuracy but having a better opportunity to satisfy information needs to investors and stakeholders where
they are interested in embracing a sustainable future (Deloitte, 2011; The IIRC Organization, 2013). Integrated reporting system has been introduced to Thai companies due to the demands placed on the environmental and social reporting system that adds shareholder value in marketplace (Ratanajongkol, Davey, & Low, 2006). Thai practices for integrating environmental and social data in a company’s reports need to be explored its potential to enable communication between a company and its stakeholders (Kuasirikun & Sherer 2004). Recently, Thai-listed companies have been required to produce sustainability reports incorporating environmental and social performance along with eco-efficiency in both mandatory reports and CSR disclosures. The GRI has introduced the G4 global reporting initiative (GRI) guidelines to Thai-listed companies to report on three areas of indicators – economic, environmental, and social impact assessment on the community for value creation (GRI, 2014). This has put pressures on companies to incorporate sustainable development needs as part of business strategies for maximizing profits along with meeting society’s expectations (Adams, 2010). International measure or guidelines need to be introduced to companies so they better understanding how to identify and capture information on environmental aspects (Petcharat, 2015). To deal with this matter, integrated reporting system can be one of the reporting practices that helps consolidate environmental and social performance indicators together with operational performance in the reports (International Integrated Reporting Council (IIRC), 2013). By having integrated reporting system, Thai companies enable more effective sustainability reporting when incorporating business information along with strategy, government, and performance in the reports (International Integrated Reporting Council (IIRC), 2013). Business information in the reports is linked with environmental and social performance indicators thus giving a clear representation among different resources. This can bring benefits to both shareholders and stakeholders for investment decision at the same time (Boonlua & Phankasem, 2016).

In addition, Thai Government is coming to realise that a sustainable approach can lead to significant economic benefits while achieving environmental benefits at the same time. Thai Government and environmental improvement agency encourage companies to paid attention thus acting sustainability reducing negative impacts on environmental issues (Prayukvong & Olsen, 2014; Suthisak Kraisornthasinee & Swierczek, 2009). Sustainable development policy has been introduced to manufacturers as a business strategy into procurement procedures creating less scrap and waste when producing produces or services (Suttipun & Stanton, 2012). The policy mainly refers to the commitment of a company aims to wisely use natural resources and create environmentally efficient organizations while improving economic growth (Chansarn, 2013). This not only reduces cost of products but also reduces cost of disposal of waste and reduction of environmental pollutants. A more efficient use of resources stimulates growth by allowing open trade of ‘green’ technologies and transfer of expertise. This helps firms to mitigate pressure that is exerted on companies from stakeholders and the public when promoting sustainable organizations to create shared value in the eye of stakeholders and the marketplace (Bebbington, 2007). However, the results of the study of Chansarn reveal that uses of Thailand’s natural resources and environment to create economic growth along with social well-being were higher than real GDP per capita. The efficient uses of natural resources (e.g. materials, energy, and water) to create eco-efficiency and social well-being, was moving towards a lower trend (Chansarn, 2013). Chansarn concluded that sustainable development in Thailand is not yet widely employed to manage uses of natural resources, land, biodiversity, and ecosystem. Thus it could be seen that sustainable development of firms in Thailand as being a long way to creating opportunity to archive environmental sustainability both immediately and in the future.

This study expects that environmental performance of Thai-listed companies underlying environmental indicators of the Global Reporting Initiatives (GRI) is positively relevant to the integrated reporting perspectives. Environmental information in mandatory and voluntary disclosures of Thai-listed companies represents sustainable development of firms in the eye of stakeholders and public. One research question and hypotheses are posted.

RQ: To what extent environmental performance indicators of Thai-listed Company underlying GRI guidelines and integrated reporting perspectives represent sustainable development of firms in the eye of stakeholder and public?

H1. Environmental performance in the reports is positively relevant to the environmental indicators of the Global Reporting Initiatives (GRI)

H2. Environmental performance in the reports in line with indicators of the Global Reporting Initiatives (GRI) are positively related to the integrated reporting perspectives
H₃. Environmental performance in the reports in line with indicators of the Global Reporting Initiatives (GRI) and integrated reporting perspectives positively represents environmental sustainability that builds on sustainable development of firms

4. Methodology

Quantitative research approaches were considered appropriate for this study to collect and analyse data (Creswell, 2009; Gorard, 2004; Neuman, 2006) from annual reports and CSR disclosures provided in the Stock Exchange of Thailand’s website. Purposive sampling methods were employed to select two-hundred listed companies from construction (65), industrial products (54), technology (34), agriculture and food products (30), and consumer products (17). A set of surveys was employed to identify environmental indicators in annual reports and CSR disclosures to respond to the questions. Multiple regression analysis was applied to test hypotheses.

5. Findings

The results of the study are summarized in Table 1. Environmental performance of Thai-listed companies (Env. annual report) is positively relevant to the environmental indicators of the GRI (Env. GRI) guidelines (p=.000, at 0.01 alpha level). Companies incorporated environmental information in their reports along with the indicators of the GRI guidelines (e.g. material, energy, water, biodiversity, waste & emission, product & service, and environmental management programs). Environmental information was disclosed in total volumes of materials used in production processes, energy conservation, water consumption, biodiversity management, waste and emission abatement, environmental prevention of product and/or service, and environmental management programs. Thus when tested on the relationship H₁ Environmental performance in annual reports is positively relevant to the environmental indicators of the Global Reporting Initiatives (GRI) is supported.

Likewise, Table 1 also shows that environmental information in annual disclosures of sampled companies (Env. annual report) are positively related with the indicators based of the integrated reporting perspectives (p=.000, at 0.01 alpha level). This indicates that companies provided environmental performance in CSR disclosures along with the indicators of the GRI guidelines. Environmental performances in reports identified how companies reduced their uses of materials in production processes, energy conservation, water consumption, biodiversity management, waste and emission abatement, environmental prevention of product and/or service, and environmental management programs. Companies also disclosed intelligent operation efficiency by reducing energy consumptions and materials in production processes. Companies also provided all expenditures paid for environmental improvement and increased investment in clean technology solutions. Thus hypothesis H₂, Environmental performance in the reports in line with indicators of the Global Reporting Initiatives (GRI) are positively related to the integrated reporting perspectives, is supported.

Table 1: Environmental performance and the indicators of the GRI’s guidelines

<table>
<thead>
<tr>
<th>Variable</th>
<th>Env. in line with GRI Guidelines</th>
<th>Env. in integrated reporting perspectives</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Beta</td>
<td>t-statistic</td>
</tr>
<tr>
<td>Dependent</td>
<td>Constant</td>
<td>.002</td>
</tr>
<tr>
<td></td>
<td>Material</td>
<td>.043</td>
</tr>
<tr>
<td></td>
<td>Energy</td>
<td>.363</td>
</tr>
<tr>
<td></td>
<td>Water</td>
<td>.245</td>
</tr>
<tr>
<td></td>
<td>Biodiversity</td>
<td>-.012</td>
</tr>
<tr>
<td></td>
<td>Waste &amp; Emission</td>
<td>.008</td>
</tr>
<tr>
<td></td>
<td>Product &amp; Service</td>
<td>-.013</td>
</tr>
<tr>
<td></td>
<td>Env. Mange. Proms</td>
<td>.367</td>
</tr>
<tr>
<td>F Value</td>
<td>34980.245*</td>
<td></td>
</tr>
</tbody>
</table>
This study further analysed a significant relationship between environmental data in annual reports of a sample group of Thai-listed companies underlying GRI guidelines and integrated reporting perspectives is positively represents sustainable development of firms. The result of the analysis confirms that environmental performance in annual reports (Env._ annual report), underlying GRI guidelines (Env. GRI) and integrated reporting perspectives (Env. integrated reporting perspectives) identified how Thai-listed companies positively represented sustainable development of firms in the eye of stakeholders and public (p=.000, at 0.01 alpha level) (Table 2). This indicates that environmental data incorporated in annual reports of the sample represented how firms improved their environmental sustainability by reductions in negative impacts on the environment. Companies (sample group) were mainly aiming to create environmental efficiency to support stakeholder’s demands for value creation. The relationship between environmental data in annual reports (Env._Annual report) and economic efficiency (Eco-efficiency) is statistically significant at 0.01 alpha level. Table 2 also indicates that environmental data in annual reports aims to enhance decision-making on the use of material, energy, water, and air in production process in order to create eco-efficiency. Companies incorporated environmental information in annual reports to mitigate pressure that is exerted on them from particular stakeholders – government, customers, suppliers, or environmental organisations. This can be interpreted as environmental data in annual reports are also positively associated with eco-efficiency relating to reductions in use of materials, energy, water, and waste and pollution abatements. The sample identified how environmental concerns in annual disclosures meet environmental sustainability targets. By disclosing environmental concerns, this helps companies create sustainable growth along with long-term profitability, values-driven businesses, attuned to the environment and communities. As a result, hypothesis H3, Environmental performance in the reports in line with indicators of the Global Reporting Initiatives (GRI) and integrated reporting perspectives positively represents environmental sustainability that builds on sustainable development of firms is supported.

Table 2: The results of environmental performance of a sustainable development of firm

<table>
<thead>
<tr>
<th>Variable</th>
<th>Envly. efficient</th>
<th>Eco-efficiency</th>
<th>Env. sustainability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beta</td>
<td>t-statistic</td>
<td>Beta</td>
<td>t-statistic</td>
</tr>
<tr>
<td>Dependent</td>
<td>Env. Annual report</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>.196</td>
<td>2.703</td>
<td></td>
</tr>
<tr>
<td>Predictors: Environmentally efficient</td>
<td>.832</td>
<td>28.734</td>
<td></td>
</tr>
<tr>
<td>Dependent</td>
<td>Env. GRI guidelines</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>.203</td>
<td>4.443</td>
<td></td>
</tr>
<tr>
<td>Predictors: Economic efficiency</td>
<td>.962</td>
<td>46.255</td>
<td></td>
</tr>
<tr>
<td>Dependent</td>
<td>Env. Integrated reporting perspectives</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>.003</td>
<td>.179</td>
<td></td>
</tr>
<tr>
<td>Predictors: Env. sustainability</td>
<td>1.014</td>
<td>132.268</td>
<td></td>
</tr>
</tbody>
</table>

It can be seen that Thai-listed companies aimed to report environmental performance along with the indicators of the GRI guidelines as part of their business strategies thus meeting expectations of society (Adams, 2010). Environmental information in reports aimed to satisfy information needs of investors and stakeholders seeking sustainable development of firms (Deloitte, 2011; The IIRC Organization, 2013). By having international guidelines such GRI, environmental indicators in reports can be more accurate (Petcharat, 2015) by creating better communications with stakeholders and the public. Thai-listed companies have the ability to report environmental sustainability complying
with the corporate social responsibility guidelines of SET (2008). Environmental indicators are fully captured and incorporated in mandatory reports annually (Moisescu & Mihai, 2006; Petcharat, 2015; Thanatrakolsri, 2014). The sampling companies identified environmental performance incorporated in annual reports similarly to the indicators of the GRI guidelines (GRI, 2014) and integrated reporting system that linked with business information along with strategies, good corporate governance, economic, social performance, and future outlook. Environmental performance in mandatory disclosures was identified from business activities concerning environmental improvement, as well as all sources of expenditures for environmental management programs. Companies realised that environmental indicators of the GRI guidelines help them to identify and capture environmental data while having better ability to report environmental performance. The results are summarised in informative form to see where environmental performance are identified in each category – material, energy, biodiversity, water, emission & wastes, product & service, and environmental management program (GRI, 2014).

By reporting using international guidelines such GRI, companies would have more ability to describe environmental efficiency along with the environmental management programs in their reports (GRI, 2014). Environmental indicators in reports enable firms to promote how they achieve sustainability targets (Institute of Management Accountants, 2008). According to previous studies (e.g. Moisescu & Mihai, 2006; Petcharat, 2015), environmental information was reported as little as possible with only a few companies paying attention to disclose their environmental performance publicly. The results of the study show that Thai-listed companies were taking environmental issues into account as well as identifying how they reduced and avoided negative impacts on the environment from environmental efficiency programs. As a result, companies enabled proactive repositioning of business performance and environmental efficiency to add shareholder value in the eye of stakeholders and the public (Kraisornsuthasinee, 2006). Environmental efficiency truly provides companies with a way to find new business opportunities and competitive success, as well as becoming more sustainable (Burritt & Saka, 2006; Suthisak Kraisornsuthasinee & Swierczek, 2009). Environmental data in annual reports supports stakeholders’ and the public’s interests when decisions need to be made. Environmental data in annual reports creates eco-efficiency when used to support management decisions. Environmental information incorporated in a company’s report can be employed to enhance management decisions in relation to cost savings, energy reductions, waste minimizations, pollution abatements thus creating eco-efficiency (Ratanajongkol et al., 2006; Suthisak Kraisornsuthasinee & Swierczek, 2009). Environmental management policies within Thai-listed firms can influence regulations and stakeholders thus driving continuous improvement to significantly create better market performance for economic growth (Chansarn, 2013). Environmental performance in annual reports can be truly viable and competitive business success enabling corporate sustainability both immediately and in future.

6. Conclusion and policy implications

Based on the results of the study, environmental performance of sampled companies was incorporated in annual reports underlyings indicators of the GRI guidelines. The environmental indicators (e.g. material, energy, biodiversity, water, emission & wastes, product & service, and environmental management programs) in annual reports of sampled companies were aiming to provide environmental efficiencies addressing demands of stakeholders. The indicators identified how sampled companies created eco-efficiency from reducing lower volumes of material, energy, water consumptions, and wastes and emission abatement. Companies reported annually renewable energy technologies in production processes to represent how companies improved environmental efficiencies and create eco-efficiency at the same times. In addition, the environmental indicators in annual report aimed to satisfy information needs of stakeholders and the public to see how a company achieved environmental sustainability. The indicators in both mandatory and voluntary disclosures of the sampled companies helped promote environmentally friendly organizations while having an ability to quickly respond to the inevitable mandates of regulators and investors.

The results of the study contribute to the literature that environmental information identified along with international guidelines such GRI guidelines provide sustainable companies with a way to promote environmental sustainability both immediately and in future (GRI, 2014; Institute of Management Accountants, 2008). Environmental performance identified based on the international guidelines creates data accuracy thus acting sustainably by reducing negative impacts on the environmental (Prayukvong & Olsen, 2014; Suthisak Kraisornsuthasinee & Swierczek, 2009). Environmental information incorporated in reports needs to be captured from all sources of environmental expenditures and improvements in the quality of life in surrounding areas (Burritt & Saka, 2006; Gray, 2006). As
requirements of the Stock Exchange of Thailand, environmental information needs to be incorporated in both mandatory and voluntary forms explaining how companies improve environmental performance along with eco-efficiency (Lint, 2009; SET, 2008; Suttipun & Stanton, 2012). As a contribution to practice, reporting environmental performance in line with the indicators of the GRI enables companies to respond to the requirements of the Stock Exchange of Thailand. Accurate data on environmental factors can enhance management decisions on cost savings (economic performance) while having the ability to promote environmental sustainable markets. The results of the study could create a better understanding for Thai-listed companies to “explain” or “comply” (Suttipun & Stanton, 2012) with environmental sustainability disclosures. Environmental indicators in the Thai context can be used as a contribution to the competitiveness of sustainable companies (Pipat Yodprutikarn, 2010) thus creating positive images in the eyes of stakeholders and the marketplace (Kuasirikun & Sherer, 2004; Suthisak Kraisornsuthasinee & Swierczek, 2009). Companies enable to provide information needs of stakeholders and the public as well as promoting environmentally sustainable achievements both immediately and in future.

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Placement Test Options Within A Moodle Environment
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ABSTRACT

Members of the Foreign Languages Division at Hokusei Gakuen University, a small private Liberal Arts College in northern Japan, administer a placement test for new, returning, and transfer students at the beginning of each academic year. The placement test used has been provided by Cengage Learning as part of the World Link textbook series. The 57 item test is administered to roughly 550 students, producing mean scores from 51% to 54% with a more or less normal bell curve. Yet when it came to sorting students into level appropriate classes across the various departments, trouble set in. Clusters of identical scores would group students into subgroups making line-drawing subjective. In answer to this, it was decided to look at the test items themselves so as to re-weigh the questions from a uniform weight of 1.00 to weights within a range to ensure greater ease with ranking and less score clustering. This paper will share the process undertaken remedy this problem with favorable, time-saving, results.

Keywords: ESL Program; matriculated students; placement test; placement procedure; ranking, testing

INTRODUCTION

ESL Placement Testing has been around in various systematic forms since the 1940s (Ling, Wolf, Cho, & Wang, 2014). J.D. Brown outlines how placement tests differ from achievement tests is that they are Norm-Referenced as opposed to Criterion-Referenced (Brown, 1989). As its name implies, placement tests are to sort students into level appropriate classes for student educational benefit. Not to do so can be detrimental to student, teacher, and institution (Brown, 1989). While there is no shortage of articles extolling the benefits of placement tests, there is a void when it comes to weighing items according to task ease and difficulty. All items appearing within Norm-Referenced tests seem to have equal weight. There are two glaring problems that come to mind. When one considers the variety of linguistic and pragmatic tasks on any placement test, is it sound to assume that the tasks presented are on par and equal to each other? If so, then this is the first failure. Placement test administrators need to recognize that the tasks required by the student are different. Should a bottom-up item about the copula have the same weight as a top-down reading/comprehension item? It is argued items of various tasks have their weights modified with respect to the tasks required of the student. And, the second area of concern is the inevitable clustering of scores as a result. Weighing questions to reflect task burden ensures that clustering is largely eliminated, thus taking the guesswork out of line drawing within groups that have the same score. Realizing that ESL placement tests ask learners a variety of questions with a variety of task expectations, it is argued that adapting questions weights to reflect task difficulty benefits the students, instructors, and administrators.

RESEARCH DESIGN

Subjects: The participants include 523 newly matriculated first year and transfer students within the faculties of Economics, Social Welfare, and Department of Psychology and Communication. The groups were self-selected in that they 1) selected to study English as opposed to other foreign languages, and 2) they are grouped into departments from where English classes are offered at set times throughout the week according to faculty and departmental membership. Selection is done at the institutional level based upon student preference.

Task and Instrumentation: The placement test used has been provided by Cengage Learning as an adjunct to the World Link textbook series (“World Link, Third Edition,” 2016). The World Link series is used in the 1st year English Program, a program designed to build foundational English communication skills (Goetz, 2019). The 57-item multiple choice test is administered on Moodle to roughly 550 students, producing mean scores from 51% to 54% with a more
or less normal bell curve. The test includes a variety of Top-Down and Bottom-Up questions that assess grammar, listening, and reading skills. It is an ideal instrument. By default, all items have been of equal weight, 1.00 points.

The test has been used for several years and administered within a Moddle environment with one day needed during orientation week for all students. After downloading the data, the problem of sorting students into level appropriate classes has been problematic due to the noticeable and recurring problem of score clustering. Score clusters refer to identical scores within a data set that makes line-drawing a subjective task.

Brown states that placement tests need to be taken seriously in that initial group assignments can have a major impact on career opportunities and other lifetime related possibilities (Brown, 1989). The question raised is that in light of a variety of linguistic tasks students have to accomplish, why weight all items equally? Within the literature, this issue has not been addressed. What is addressed is the following: Test validity and reliability. The private firm, Professional Testing, Inc, is highly concerned about test validity and seems to take for granted the outcome scores, even within a clustering environment, as normal (Professional Testing, Inc., 2019).

Long et. al. state their placement test of 100 items for a Spanish program is valid. Reported is that it is a great benefit to the students (Long, Shin, Geeslin, & Willis, 2018). Their test was used with over 2,000 students and one can only wonder about score clustering, which went unmentioned. It is unknown how this problem was resolved.

Size of one’s subject pool may have an influence on why score clustering seems elusive in the literature. Ebadi, et. al., consider question types within a placement test environment as a critical factor as for assessing implicit and explicit knowledge among adult learners. With a subject pool of 91 learners, the researcher probably had more than adequate teacher - student familiarity thus rendering score clustering a moot point (Ebadi, Saad, & Abedalaziz, 2014).

The need to address the problem of score clustering is more than apparent leaving one to wonder why the issue is under report if not non-existent. Observances from previous years show that office support staff have taken a medical leave due to work-related stress. The extra time needed to place students with clustered scores has proven to be exasperating. While it is not within the scope to reduce all of the stress related to the beginning of any academic year, one must wonder how and where a favorably different approach can be initiated.

RESEARCH QUESTION

What can a systematic and principled way to eliminate score clustering look like? To answer this, the test items were re-examined to consider a framework that affords weight credit in balance to item task burden. By weight, it is assumed that weight refers to an attribute of importance or value to an item. Task burden refers to the load associated with the relative ease or difficulty needed to resolve an item. Items were re-weighted from uniform 1.00 weights to weights that ranged from 1.00 to 1.09. The purpose of this new framework was to minimize score clustering.

METHOD

The placement test was modified in the following manner. Items were identified as either Top-Down or Bottom-Up. Top-Down tasks typically require some sort of inferencing from a graphic, audio text or a reading. Bottom-up tasks are those that are data-driven. Most of the subjects are products of a language learning environment that rewards test takers for achieving high scores on largely Bottom-Up tests.

The framework developed uses both Bottom-Up and Top-Down items with features and distractors, weights, and Facility Index. The Facility Index refers to the (F) or mean score of students on an item. To interpret, the following rubric is a generally accepted guide within the Moodle community. Data are reflected in percentages.
The Facility Index (F) Interpretation Table

<table>
<thead>
<tr>
<th>Facility Index (F) Interpretation Table</th>
<th>35-65</th>
<th>About right for the average student.</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 or less</td>
<td>66-80</td>
<td>Fairly easy.</td>
</tr>
<tr>
<td>6-10</td>
<td>81-89</td>
<td>Easy.</td>
</tr>
<tr>
<td>11-20</td>
<td>90-94</td>
<td>Very easy.</td>
</tr>
<tr>
<td>21-34</td>
<td>95-100</td>
<td>Extremely easy.</td>
</tr>
</tbody>
</table>

The following tables indicate a range of weights covering a variety of tasks. The Facility Index confirms that, in general, the greater the weight a question was assigned, the more difficult it was for the students. And, the lighter the weight assigned, the easier it was for the students. The Bottom-up items included comprehension, grammar and vocabulary questions with occasional audio text and pictures. The Top-down questions were all text based and included comprehension, pragmatic, and vocabulary questions. Table summaries that follow show example questions with the assigned weights and resulting Facility Index.

The Bottom-Up Framework:

<table>
<thead>
<tr>
<th>Bottom-Up</th>
<th>Item Sample</th>
<th>Media / Task</th>
<th>Distractors</th>
<th>Wt.</th>
<th>Facility Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comprehension</td>
<td>The plate is [Picture] the forks.</td>
<td>Image of a place setting.</td>
<td>A. under B. next to C. between D. above</td>
<td>1.05</td>
<td>50% About Right</td>
</tr>
<tr>
<td>Audio</td>
<td>[Audio file]</td>
<td>Ryu: What are your plans for Jordy’s birthday?</td>
<td>A. after work on Friday B. this weekend C. at noon on Friday D. Friday morning</td>
<td>1.07</td>
<td>40% About Right</td>
</tr>
<tr>
<td>Comprehension</td>
<td>Ryu: What are your plans for Jordy’s birthday?</td>
<td>Sabeka: Well, at noon on Friday I’m going to pick him up at work in the truck. Sabeka: I’m thinking of inviting his boss. So she’ll have to let him go. Ryu: Great idea, Sabeka!</td>
<td>A. after work on Friday B. this weekend C. at noon on Friday D. Friday morning</td>
<td>1.07</td>
<td>40% About Right</td>
</tr>
<tr>
<td>Grammar</td>
<td>Is this ___ cell phone?</td>
<td>Select one.</td>
<td>A. Manny B. Manny’s C. Mannys’ D. Mannys</td>
<td>1.01</td>
<td>75% Fairly Easy</td>
</tr>
<tr>
<td>Text</td>
<td>When I learn to drive, ___ buy a car.</td>
<td>Choose the incorrect answer.</td>
<td>A. I’ll B. I will C. I’m going to D. I’m going</td>
<td>1.09</td>
<td>23% Moderately Difficult</td>
</tr>
<tr>
<td>Grammar</td>
<td>Yesterday Leticia ___ to get milk at the store.</td>
<td>Select one.</td>
<td>A. forgot B. forget C. forgetting D. can’t</td>
<td>1.02</td>
<td>69% Fairly Easy</td>
</tr>
<tr>
<td>Text</td>
<td>A ___ is a kind of transportation.</td>
<td>Select one.</td>
<td>A. bus B. room C. bracelet D. passport</td>
<td>1.04</td>
<td>56% About Right</td>
</tr>
</tbody>
</table>
### TABLE SUMMARY - Bottom-up Items

<table>
<thead>
<tr>
<th>Weight</th>
<th>Facility Index</th>
<th>Comment</th>
<th>Weight</th>
<th>Facility Index</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.01</td>
<td>75%</td>
<td>Fairly Easy</td>
<td>1.05</td>
<td>50%</td>
<td>About Right</td>
</tr>
<tr>
<td>1.02</td>
<td>69%</td>
<td>Fairly Easy</td>
<td>1.07</td>
<td>40%</td>
<td>About Right</td>
</tr>
<tr>
<td>1.04</td>
<td>56%</td>
<td>About Right</td>
<td>1.09</td>
<td>23%</td>
<td>Moderately Difficult</td>
</tr>
</tbody>
</table>

### The Top-Down Framework:

<table>
<thead>
<tr>
<th>Top-Down</th>
<th>Item Sample</th>
<th>Media / Task</th>
<th>Distractors</th>
<th>Wt.</th>
<th>Facility Index</th>
</tr>
</thead>
</table>
| Comprehension Text | “I’m having friends over for dinner,” Li said. | Choose the sentence that best reports the quoted speech. | A. Li said she’s having a birthday party.  
B. Li said she’s having salmon for dinner.  
C. Li said she’s having a political party.  
D. Li said she’s having a dinner party. | 1.06 | 52% About Right |
| Comprehension Text | Who is most sure of going to college? | Choose the best sentence. | A. Fran: I could go to college after I graduate.  
B. Than: I want to go to college someday.  
C. Kim Dae: I’ll go to college after high school.  
D. Sophie: I might go to college next year. | 1.08 | 38% About Right |
| Pragmatic Text | The motorcycle Luis wants costs $12,000. How do you write 12,000 in words? | Select one. | A. one thousand two hundred  
B. twelve hundred  
C. one hundred twenty  
D. twelve thousand | 1.03 | 60% About Right |
| Pragmatic Text | The sports _____ is my favorite part of the newspaper. | Choose the best word. | A. publish  
B. subscribe  
C. horoscope  
D. section | 1.07 | 40% About Right |
| Vocabulary Text | You want to sleep. You feel this way. | Select one. | A. embarrassed  
B. hungry  
C. tired  
D. confident | 1.00 | 85% Easy |
| Vocabulary Text | The date 9/17/84 is the same as _____. | Select one. | A. September 9, 1984  
B. Feb. 10, 1999  
C. August 8, 1984  
D. September 17, 1984 | 1.02 | 68% Fairly Easy |
### TABLE SUMMARY - Top-Down Items

<table>
<thead>
<tr>
<th>Weight</th>
<th>Facility Index</th>
<th>Comment</th>
<th>Weight</th>
<th>Facility Index</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.00</td>
<td>85%</td>
<td>Easy</td>
<td>1.06</td>
<td>52%</td>
<td>About Right</td>
</tr>
<tr>
<td>1.02</td>
<td>68%</td>
<td>Fairly Easy</td>
<td>1.07</td>
<td>40%</td>
<td>About Right</td>
</tr>
<tr>
<td>1.03</td>
<td>60%</td>
<td>About Right</td>
<td>1.08</td>
<td>38%</td>
<td>About Right</td>
</tr>
</tbody>
</table>

### DATA GATHERING

The Placement Test was made available under ideal circumstances within a Moodle environment, times and locations were set up to accommodate 523 students on a single day with faculty supervision. The subjects had up to 30 minutes to finish and in the case that time ran out, data was saved automatically. Once it was completed, data were downloaded to an Excel file. The results were as expected; score clustering was reduced significantly. With the data in hand, a duplication of the Placement Test was made with student data. The weights were then reset to 1.00 each for comparison purposes to see to what extent, if any, differences between the data sets and within the groups would be.

### RESULTS

When the Placement Test items share the same weights, of the 523 participants, 482, or 92.16% shared the same scores. With the ranging weights in place, of the same 523 participants, only 51, or 9.75% shared the same scores. The following is a representative example. Within the Department of Law and Information Sciences, there were 10 students with an identical score of 49.12 and this also formed a cluster on a class border. This score represents a common result from all items having the same weight of 1.00. One has to decide how to place the students; into either the higher or the lower level class.

When item weights cover a range according to task, the results are favorably different less students needing consideration. The question remains, however, if by introducing ranging weights, was the data skewed or distorted? In short, no. Initially, two T-Tests were performed with the data set to see if there was a difference between the data with uniform set weights and the ranging weights. The Two Sample t-test showed no significant difference between the means of the groups. In the Matched Paired t-test, there was a difference.

### TWO SAMPLE T-TEST - WELCH'S T-TEST

It was observed with the two sample t-test (Welch) test, T distribution, DF=1044 (two-tailed), that the average of the population with set uniform (1.00) weights is considered to be equal to the average of the population ranging weights. In other words, the difference between the average of the two groups is not big enough to be statistically significant. The Null Hypothesis ($H_0$) is to be accepted given that p-value > $\alpha$.

**P-value**

The p-value equals 0.636902, \( p(x\leq t) = 0.681549 \). If we would reject $H_0$, the chance of type I error (rejecting a correct $H_0$) would be too high: 0.6369 (63.69%). The larger the p-value, the more it supports $H_0$. 

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The statistics
The test statistic $t = 0.472173$, is in the 95% critical value accepted range: $[-1.9622 : 1.9622]$, is in the 95% accepted range: $[-1.9000 : 1.9000]$.

Effect size
The observed standardized effect size is small (0.029) indicating that the magnitude of the difference between the average and average is small. There is no significant difference in this case.

PAIRED T-TEST
A paired sample T-test was carried out, using a T distribution, DF=522, (two-tailed) to test the Null Hypothesis ($H_0$) that there is no significant difference between the groups in a matched paired environment, or that the items, when weighted with variant and ranging weights, are not different.

It was observed that the average of the variant and ranging group minus the set weight group’s population is considered to be not equal. In other words, the difference between the averages of the two is big enough to be statistically significant.

P-value
The p-value equals $3.33067 \times 10^{-16}$, $p(x \leq t) = 1.66533 \times 10^{-16}$. This means that the chance of type I error (rejecting a correct $H_0$) is small: $3.331 \times 10^{-16}$ (3.3e-14%). The smaller the p-value the more it supports $H_1$.

The statistics
The test statistic $t = -53.690649$, is not in the 95% critical value accepted range: $[-1.9645 : 1.9645]$, is not in the 95% accepted range: $[-0.01700 : 0.01700]$.

Effect size
The observed standardized effect size is large (2.35) indicating that the magnitude of the difference between the average is large.

ANALYSIS OF VARIANCE
Consideration of a means comparison reassures that the manipulation of the weights did not change the means differences at the population level. Within and between departments is another consideration. To address this, an Analysis of Variance was carried out within the four groups and between the two weight treatments, 1) where the weights were set evenly (Even) and 2) where the weights varied over a range (Varied). The profile of the subjects appears below.

<table>
<thead>
<tr>
<th>SUBJECTS</th>
<th>Econ Even: 161 values</th>
<th>Law/Info Even: 155 values</th>
<th>SW Even: 146 values</th>
<th>Com Even: 61 values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Econ Varied: 161 values</td>
<td>Law/Info Varied: 155 values</td>
<td>SW Varied: 146 values</td>
<td>Com Varied: 61 values</td>
<td></td>
</tr>
</tbody>
</table>

The One Way ANOVA test, using F distribution $df(7,1038)$ (right-tailed) was used to test against the Null Hypothesis that there is no significant variation between the groups where $p$-value$<\alpha$, $H_0$ is rejected. It was observed that some of the groups' averages are to be considered as not equal. In other words, the difference between the averages of some groups is big enough to be statistically significant in all cases.
**F table**

<table>
<thead>
<tr>
<th>Source</th>
<th>Degrees of Freedom</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
<th>F statistic</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groups (between groups)</td>
<td>7</td>
<td>11147.937363</td>
<td>1592.562480</td>
<td>6.738712</td>
<td>7.84631e-8</td>
</tr>
<tr>
<td>Error (within groups)</td>
<td>1038</td>
<td>245310.96246</td>
<td>236.330401</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1045</td>
<td>256458.893609</td>
<td>245</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Differences were observed in the following cases.

**One Way ANOVA (average ± 2 standard deviations)**

It was found that the areas in green were significantly different than the ones in red, raising questions for further research.

**P-value**

With the p-value equal to 7.84631e-8, \( p( x \leq f ) = 1.00000 \), the chance of a type I error (rejecting a correct \( H_0 \)) is small: 7.846e-8 (0.0000078%). With the smaller the p-value the stronger it supports \( H_1 \), that there is a meaningful connection to be investigated. Further study is needed with respect to suspected student behavior within a placement test environment.
The statistics
The test statistic f equals 6.738712, is not in the 95% critical value accepted range: \([-\infty : 2.0184]\). When seen in the aggregate, there is not enough variation between and within groups to say that there is a significant difference in all cases.

FINDINGS

It was found that this new approach of reweighting questions according to task burden was well received by the office staff members and faculty. In fact, many had no idea what was going on, just they worked with a data set that was easy to manage. Within a couple of hours, class creation was completed leaving time for other equally important and timely jobs. While there were some observable differences, they were not enough to dismiss this initiative as an endeavor inherently unfair to the students. With favorable results it would be interesting to see how re-weighing previous years’ Placement Tests would do.

sCONCLUSION

ESL Placement Testing has been around for a long time and they are to be taken seriously. Placement tests need to be seen in a wider picture, one that not only includes students, but teachers and administrators as well. Re-weighing a placement test to reduce score clustering is reasonable. The benefits outweigh the demerits. The benefits include a reduction of time needed to create level appropriate classes and contributes towards greater accountability within the process of class creation. Items of various tasks should have their weights modified with respect to the tasks required of the test taker. This greatly reduces score clustering. With clustering largely eliminated, much of the guesswork with line drawing in problematic areas is also dramatically reduced. The benefits the students is that they will be placed in appropriate level classes, instructors can expect uniform groups and not bipolar learning environments, and administrators can accomplish class creation faster than before with less work related stress.

REFERENCES


Examining Preservice Teacher Preparation For Cultural And Linguistic Diversity

Won Gyoung Kim, Texas A&M International University, USA

ABSTRACT

As students in public schools become increasingly diverse, a growing responsibility of teacher education is to prepare teachers to effectively work with a diverse student body. In this review, I examine how teacher education programs meet the need of preparing preservice teachers for learner diversity. The critical components of teacher education programs are identified to help preservice teachers develop knowledge and skills necessary to work with learners from diverse backgrounds. A professional development school model built upon the culturally responsive pedagogy paradigm is discussed as a promising alternative that increases preservice teachers’ awareness of and practical skills in working with all learners regardless of their diverse backgrounds.

Keywords: teacher preparation for learner diversity, preservice teacher preparation, professional development school

1. Introduction

Teacher education is “the context and the process of educating individuals to become effective teachers or better teachers” (Yarger & Smith, 1990). Participating in a successful teacher education program, preservice teachers are expected to acquire knowledge, skills, and experiences necessary to work with students and their families, including those who come from culturally, linguistically, experientially, and socioeconomically diverse backgrounds. There are many reasons that teacher education programs should prepare preservice teachers to work effectively with learners from all diverse backgrounds. These reasons have already been well recognized in many studies (e.g., Cloud, 1993; Nieto, 2003; Robertson, Garcia, McFarland, & Rieth, 2012). First of all, a widening gap between a teaching force and student population has been an issue for more than four decades. Further, continuing academic achievement disparities among different ethnic groups, overrepresentation of students of color in judgmental categories of special education such as learning disabilities, intellectual disabilities, and speech and language impairment, and high drop-out rate of culturally and linguistically diverse (CLD) students have been persistent issues. To address these issues, a critical question must be asked, i.e., how do teacher education programs prepare preservice teachers to adequately work with learners who differ from themselves culturally, linguistically, ethnically, and socioeconomically?

1.1. Demographic Implications in teacher preparation program

The student population in public schools is becoming more diverse ethnically, culturally, linguistically, and socioeconomically. It is estimated that students of color will become the majority of public-school enrollment by 2035 (National Center for Educational Statistics, 2014). This emerging demographic change has an implication on teaching forces. While ethnic and racial minority groups (i.e., African American, Hispanic, and Asian) will become the majority of school population, teachers appear to continue to be White middle class and English monolingual female. This indicates that preservice teachers have great possibilities to work with students who bring different experiences, cultures, and languages into the classroom from those of their own. Voltz (1998) argued that the cultural dissonance between teachers and CLD students and teachers’ biased expectations might be possible causes of CLD students’ school failure. Schools need teachers who are knowledgeable about learners from diverse backgrounds and are able to apply that knowledge in teaching and learning situations (Gay 2000; Mule, 2010; Nieto, 2000).

1.2. Teaching and Learning in a Pluralistic Society

Gay and Kirkland (2003) described the teaching and learning in today’s society as “a highly contextualized process” (p.182). In this perspective, teaching is a process of developing critical consciousness on diversity to serve each and
every student in various educational settings. This implies that teacher education programs should provide both the context that preservice teachers develop deeper knowledge and necessary skills and the process that they participate in critical reflection on what to teach, how to teach, and to whom. Six principles of teaching and learning proposed by Villegas and Lucas (2002) reflect what teaching and learning means in today’s diverse and dynamic classrooms: (a) sociocultural consciousness, (b) affirming views of CLD students, (c) seeing themselves as change agents, (d) understanding about learners’ ways to learn, (e) knowing about students, and (f) skills to design culturally responsive instruction to meet students’ needs. In essence, teaching and learning is a highly context-dependent practice that teachers interact with multiple levels of variables. Preservice teachers need to be prepared to become culturally responsive educators, changing agents, problem solvers, and collaborators to work in these dynamic and diverse teaching and learning contexts.

1.3. Issues in Teacher Education

Studies reported that pre- and in-service teachers do not think they are adequately prepared to work with students from CLD backgrounds. Research conducted by Futrell, Gomez, and Bedden (2003) found that 80% of teachers polled reported they felt ill-prepared to teach students from CLD backgrounds. Teachers’ lack of understandings about CLD students’ learning and their deficit views were identified as problems because it would prevent students from having opportunities to learn (Garcia & Guerra, 2004). Teachers’ inability or unwillingness to work with CLD learners has also been reported in many studies. This phenomenon might be strongly related to how they are prepared through teacher education programs. Consequently, the inadequacy of teacher preparation may generate persistent problems in education, including inappropriate referral of CLD students to special education services, their low academic performance and high drop-out rate, and most of all, CLD students’ limited opportunities to learn.

2. Effective Teacher Education Programs

The standards suggested by teacher education organizations (e.g., the National Council for the Accreditation of Teacher Education, the council for Exceptional Children, and the American Association of Colleges for Teacher Education) emphasize that all teachers must know the characteristics of their learners and the factors that influence students’ learning, including culture, language, experience, and disabilities. The followings are the components of the program that teacher education must include: (a) awareness and knowledge about learners and their development in social context; (b) subject matter expertise; (c) knowledge in pedagogical skills; (d) knowledge of practice (i.e., construction of knowledge in school contexts); (e) knowledge of sociopolitical context of teaching and learning (Darling-Hammond, 2006). Most importantly, all the courses in the program address all these five elements with a coherent manner under the clear vision of teachers for all and each.

2.1. Dimensions of the Program

The dimensions of teacher preparation program (see Figure I) present how dynamic the context and the process of teacher education programs are.
2.2. Components of Teacher Education to Prepare Preservice Teachers for Learner Diversity

Studies about preparing preservice teachers for learner diversity suggest critical components that be included in teacher education programs to increase preservice teachers’ preparedness to work with learners from all diverse backgrounds (e.g., Gay, 2000; Ladson-Billings, 1994; Villegas, & Lucas, 2002). First of all, teacher education programs must provide preservice teachers with opportunities to critically examine their own beliefs and attitudes toward learners from diverse backgrounds. Participating in the context and the process of teacher education, preservice teachers are expected to increase their socio-cultural consciousness and awareness of diversity. Second, teacher education programs must include a component that preservice teachers can develop a knowledge base about diverse groups of learners and multicultural attitudes. This is necessary for preservice teachers to design instruction according to their students’ strengths and areas to be addressed. Third, teacher education programs must develop relevant curricula in order to help preservice teachers develop necessary skills to effectively teach diverse learners. Research indicates that curricular coherently focused on equity in education and multiculturalism are effective to help preservice teachers better approach to teach diverse learners (Ambe, 2006; Clark, 2002; Ladson-Billings, 1990; Marchitello & Trinidad, 2019). Lastly, teacher education programs must include the structured field experiences that help preservice teachers engage with diverse learners, various educational settings, as well as other school professionals. Only systematically-designed strong core curriculum with the extensive clinical context of practices would bring sustainable changes in teacher education programs.

3. Redesigning Teacher Education Program

One of the promising and powerful models that can respond to these issues would be professional development school (PDS) models. This study proposed an effective link between university teacher education programs and K-12 schools as a model to develop preservice teachers’ readiness to work with all learners regardless of learners’ different backgrounds in various teaching and learning situations.
3.1. Professional Development School model

PDS models are based on a university – school partnership, which emphasizes communities of practice and collaboration between the two parties. Working in the PDS contexts, preservice teachers have extensive field experiences in actual classroom immersion settings, and schools can access to rich resources through universities. In this context, research into practice can be promoted through facilitating inquiry-based teaching and learning, communities of practices, action research, and teachers as researchers. Darling-Hammond (2006) provided detailed descriptions of how highly developed PDS models looked like:

...curriculum reforms and other improvement initiatives are supported by the school and often the district; school teams involving both university and school educators work on such tasks as curriculum development, school reform, and action research; university faculty are typically involved in teaching courses and organizing professional development at the school site and may also be involved in teaching children; and school-based faculty often teach in the teacher education program. Candidates learn all parts of the school, not just individual classrooms; they receive more frequent and sustained supervision and feedback and participate in more collective planning and decision making among teachers at the school. It is a collective approach to prepare teachers to address the particular needs of low income, culturally and linguistically diverse students (p.309).

Teachers who worked through PDS program models felt more knowledgeable and well prepared to teach (Gay, 2000). In addition, PDS graduates were evaluated by their supervisors and researchers as better prepared personnel than those who graduated traditional programs. Burstein and Sears (1998) studied “On-the Job” teacher education program and found the effectiveness of the program. The program was designed to prepare teachers to specifically develop competencies to work with students with disabilities in urban school settings: it linked course works and clinical experiences through experiential and reflective approaches to teacher education. The authors found that teachers developed competencies to serve urban students with disabilities over time. In addition, teachers demonstrated their understandings of the importance of advocacy and collaboration skills to serve students and their families.

Canty, Harriman, and Berkeley (2003) informed the experience of PDS programs of several diverse institutions in three different regions. Though each program described in the study provided different PDS experience depending on their PDS environments and institutional circumstances, all addressed mutual respect between the schools and university teacher preparation programs. Canty and colleagues asserted that “there is no better way to do what we do than being involved in PDS for the most effective training of teachers, assisting in the professional development of practicing professionals, becoming “true” partners with the school and the community, and being more intimately involved with children and in their learning” (p. 144). In addition, as central elements of the PDS success, the authors proposed “strong leadership, administrative support, investment of partners, and fiscal support.”

PDS models could contribute to developing effective teachers for learners from diverse backgrounds. However, there are considerable challenges on how to establish and sustain effective reciprocal partnerships between universities and schools. Research indicates that a significant amount of time and effort are required to establish PDS relationships between the two parties. From university planning through discussions with school principals and district personnel, extensive strategic planning to discuss the characteristics of schools as well as roles and responsibilities, conducting inquiry and action research, and to on-going evaluation, all these are the processes required to build reciprocal relationships between universities and schools. To sustain PDS’ success, it would be critical to maintain strong leadership and beliefs of benefits for all through entire processes of PDS programs.

Further research identified maintaining vision and accommodating transitions in staffing patterns as on-going challenges of PDS models because as the leadership positions change, the vision for the program tends to shift (Canty et al. 2003). The research on the effectiveness of long term PDS is scant, and this might be resulted from difficulties in sustaining PDS programs. Though it is challenging to sustain PDS models, they are promising because they allow prospective teachers to learn to teach in a community of practices and to develop positive dispositions and attitudes toward children and families, resulting in helping them become effective teachers for learners from all diverse backgrounds.
4. Conclusion

Teacher education is responsible for preparing preservice teachers to be reflective on their own teaching and learning, knowledgeable, and skillful as well as mindful for all diverse learners in today’s classrooms. This review of relevant studies indicates that the professional development school model is promising to prepare prospective teachers to be effective teachers for all learners because PDS contexts provide preservice teachers with better learning environment for them to learn to teach in today’s classroom. In the PDS contexts, prospective teachers participate in all aspects of school functioning, and this would help them understand the broader context of teaching and learning. To move from rhetoric version of developing teachers for all to be practically applicable teacher preparation, the field needs more rigorous research, including the effectiveness of teacher education programs for learner diversity (i.e., what type of teacher education program approach is effective under which circumstances for whom) and a long-term effect of teacher preparation programs and outcomes of the students who graduate different programs (i.e., effectiveness of different program approaches).

References


Collaboration For School Safety: Can WE Ensure Safe Schools?  
Fern Aefsky, Saint Leo University, USA

ABSTRACT

The issues of school safety are an area of thought, concern and practice for school leaders. There is agreement among educators, parents and the public that when school doors open, all stakeholders must be in a safe learning environment.

School leaders must be proactive in planning and supporting all stakeholders in being safe, so that learning can occur. Collaborating with police authorities, having plans for various types of school events, and communicating those plans effectively to all stakeholders, can result in outcomes that are more positive should a traumatic event occur.

School leaders must be prepared and be able to educate others through a balanced approach to school safety. Developing school-community partnerships to enhance school safety measures and provide preparedness training, review communication systems within the school district and with community members, implement violence prevention programs are tasks that leaders must facilitate.

Developing an interdisciplinary approach that includes administration, faculty, parents, students, and community partners requires a new collaborative approach with educators, administrators, social workers, health and mental health professionals, criminal justice officials, religious leaders, and our business community.

This presentation will enable participants to address their needs in Prek-12 school settings, and identify systemic approaches to all aspects of school safety. Successful approaches to addressing this issue will be discussed and shared with participants.
Dramatic Arts Enhancing Student Learning
Lisa Castaneda, Foundry10, USA
Chelsea LeValley, Foundry10, USA

ABSTRACT

When we consider the impact of the dramatic arts on student growth and development, we often think fairly narrowly about how to incorporate them into the classroom and measure the impact. Through programs and research we have been running over the several years, we would like to offer examples and illustrations of ways educators can integrate dramatic arts to improve and enhance a variety of areas of students’ lives. Specifically: academic growth, personal development/motivation, and social-emotional learning. Through quantitative and qualitative data we will highlight our research, unique approach to metrics and give concrete examples of a broader perspective on the influence dramatic arts can make in the everyday classroom to improve student outcomes.

Though dramatic arts has repeatedly been shown to enhance literacy skills, it can also be integrated to augment learning in other subjects, such as STEM and SEL, in an impactful way. Through on-site interviews with teachers and students, surveys, scores, and observations we’ve gathered data to support the idea that implementing dramatic arts into traditional curriculum can enhance student learning, identity, and creative leadership. An element that we find particularly important to consider when positioning dramatic arts in this way, is the collaborative aspect of curricular design. Our programs are developed in tandem with the teachers or administrators in an effort to serve the specific needs and interests of their communities. This is essential. As a philanthropic educational research organization we are positioned to work with teaching artists and educators to develop curriculum tailored specifically to the participants rather than needing to use a specific curriculum, so that we can keep our programs socially relevant to the communities in which we work.

In this workshop we’ll highlight findings and offer specific translatable-to-the-classroom exercises from our exploratory and observational work as well as quantitative research with drama to enhance curriculum with students in grades K-early college. We will explore the impact of using dramatic arts to impact SEL, motivation, community and justice awareness as well as augmenting traditional curriculum not just in literacy or English but also in STEM. For example, in one week-long intervention using dramatic arts with math/science/literacy attendance was almost 100% for the entire week. Though attendance was one metric of success, the school was also very interested in the Smarter Balanced Assessment (SBA) scores of students who participated. Participants in the intervention showed solid gains in test scores as well.

From the student data perspective, many elementary students involved in a social studies and dramatic arts collaborative curriculum creation talked about the experience of acting as a way of understanding and empathizing with their character. In their responses to the question “What did you learn?”, many students said they enjoyed “feeling” like they were someone else. In our social justice theater projects with middle and high schools students we asked, “Does using art make it easier to talk about social justice issues? How so or why or why not?” Approximately 64% of students (total n=103) answered positively, saying that at least in some ways, using art makes it easier to talk about social justice issues. For example, one student said, “Yes because when acting you aren’t you you can be as honest as you can without judgment.” In this session, we will use additional data to both support the notion that dramatic arts can bring value in these areas, but also discuss how additional data would be helpful in answering additional questions.

Throughout the workshop we will take a closer look at programs and research involving role play with elementary school students studying their town history, practicing SES with kindergarteners and puppet work, creating or performing theater designed by or chosen by students. Additionally, exploring social justice topics during the school day for cultivating identity and expression with high school students, as well as augmenting math and science curriculum with dramatic arts activities in week long interventions. Workshop participants will leave with practical exercises and resources they can use in the classroom to expand the way they think about using dramatic arts in the...
classroom. Additionally, they will leave with new ideas about how to assess learning through the dramatic arts from both a practical and research perspective.
A Dramatic Arts-Based Approach To Social Emotional Learning
Lisa Castaneda, Foundry10, USA
Chelsea LeValley, Foundry10, USA

ABSTRACT

Educators today are increasingly asked to consider how to incorporate meaningful social emotional learning (SEL) experiences into their everyday curriculum. Research into adolescent behavior suggests that students are losing some of their interpersonal skills as communication becomes more technological in nature (Alter, 2017). Studies have shown that students are increasingly having difficulties understanding how to read social cues and facial expressions resulting in a lack of empathy in social relationships (Dunkley, 2019). How do these shift impact communication in everyday life? What are some ways we can attempt to counteract some of these issues in the classroom?

Research also shows us that social emotional curriculum can be beneficial to students’ overall social development (Jones, Greenburg, et al., 2016; Durlak, Weissberg, et al., 2011). However, it is well-known amongst educators that pre-packaged social-emotional curriculum, with generic lessons and scenarios, may not always resonate in genuine and practical ways with students. Students have expressed to us that it can be challenging to connect these pre-constructed scenarios to their real lives. This led us to consider how to make SEL lessons more practically applicable and relevant to students by drawing upon and connecting to their lived experiences.

For the past couple of years, we have been examining the role that dramatic arts can play in the realm of SEL for both younger children all the way up to high school students. The dramatic arts provide ample opportunities through literature, structured games and exercises, and role-playing to engage with a range of emotions, social interactions and identification of feelings. In fact, research tells us that some of the greatest challenges students have with SEL is finding both the words and proper ways to express or interpret feelings both they and others are experiencing (Brackett, 2019). Our data and experience suggest that dramatic arts can be a useful vehicle for both the identification of emotion but also its expression. Our research adds to the body of other dramatic arts based pedagogical research suggesting that drama is a useful tool for students to utilize when navigating concepts related to SEL and development.

In our presentation, we will share models we’ve employed with dramatic arts-based exercises coupled with traditional curriculum in order to promote SEL. We will also highlight data we’ve collected from students and teachers to illustrate the impact dramatic arts experiences have had on student SEL development. Whether utilizing dramatic storytelling and puppets with kindergartners, creative dramatics with elementary students, or social justice theater with high school students, we will show how dramatic arts-based curriculum integrated into the traditional classroom can introduce and reinforce SEL concepts.

In a study of a teaching artist working with three classes of kindergarteners using dramatic arts to augment traditional SEL curriculum for one semester, across the board, teacher ratings of individual student SEL improved in awareness of emotions and reacting appropriately to feelings, both of self and of others. Additionally, improvements were seen, in just a few weeks, in students’ abilities to use words to describe their feelings. We feel this data is important to share so that others may consider the impact dramatic arts may have in their own learning environment.

Additionally, our data has also shown an increase in students’ willingness to raise their hand to share ideas in class after an eight-week session of dramatic arts infused curriculum, suggesting an increase in confidence and awareness of their own ideas. Several elementary students involved in a social studies and dramatic arts collaborative curriculum creation talked about the experience of acting as a way of understanding and empathizing with their character. In their responses to the question “What did you learn?” many students said they enjoyed feeling like they were someone else. Being able to capitalize on these moments with students, when they are interacting in the world as someone else, presents wonderful opportunities for SEL integration and discussion.

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Our research also shows that these types of dramatic arts experiences, because they are co-created with students, allow for a high level of connection with student ideas and a feeling of genuine investment in the classroom dynamic. Through the sharing of ideas and data in this presentation, we hope to encourage the broadening of participants’ perspectives on what SEL curriculum may look like. We will provide examples of how dramatic arts-based SEL can be integrated into the curriculum to support student learning on a regular basis.
A Non-Linear Framework For Case Studies In Agile Innovation
Michael Schuricht, Jade University of Applied Sciences, Germany

ABSTRACT

Case studies have become essential tools to teach decision making and problem solving tactics. They encourage students to analyze systematically and make informed decisions. With the rise of agile innovation methods, a high demand for tools that explain non-linear decision-making processes has arisen. Therefore, this paper develops a non-linear case study design. It combines the classical case study method with feedback loops and agile, multi-stage validation processes. Inspired by the design of simulation games and interactive television shows, learners determine the development of the case. Depending on which decision they make, they reach a different branch of a widely ramified decision tree. It is always possible to revise a decision and return to a previous phase. In this way, every decision generates new insights and learnings. Students thus experience consequences and discover the connection between their decisions. By going through an agile process, they acquire skills that can be applied to a rapidly changing world.

Keywords: Agile Innovation; Non-Linear Case Study Design; Multi-Stage Validation and Learning Process; Business Education; Agile Learning

INTRODUCTION

In times of rapid technological change, shorter product life cycles and quickly changing business processes, flexible and problem-oriented thinking is becoming increasingly important. It is therefore not surprising that problem- and decision-oriented learning approaches, such as case studies and project seminars, are experiencing increasing popularity (Newman & Sidney, 2018; Wee, Alexandria, Kek, & Kelley, 2003). Case studies have become essential teaching methods, particularly within the context of management training. They encourage students to solve problems systematically and make informed decisions.

However, with the rise of agile management methods and the increasing need to understand non-linear decision-making processes, weaknesses in the classical case study approach have become apparent. Organized as a linear learning process, case studies often focus on solving problems step by step (Leenders, Mauffette-Leenders, & Erskine, 2001). Successive decisions follow a predefined path. Once decisions have been made, they cannot be changed; therefore, incorrect decisions have no consequence. Each case study run is similar to the previous one. This reduces the possibility of recognizing the complexity, interconnection and consequences of decisions. The challenge is to convey agile methods in an agile way and not to fall back into linear patterns.

This is particularly important in the area of entrepreneurship and innovation management, a field that is currently experiencing a major paradigm shift. Where years ago strictly linear process chains dominated, agile methods now lead the discussion. In science as well as in practice, long-term planning is replaced by a learning-by-doing approach in which testing hypotheses and customer feedback are at the center of every decision (Rigby, Sutherland, & Takeuchi, 2016).

The focus of this paper is therefore on the development of a non-linear framework for case studies in innovation management. This should serve as a flexible basis to develop topic-related learning content. In the following section, the basics of the case study approach and agile innovation management are briefly discussed. At the core of the paper, both approaches are then adapted and combined. The resulting framework is then explained and applied to an example step by step. Finally, the advantages and disadvantages of this approach are discussed, and possibilities for its extension are identified.
Conventional Case Study Design

Currently, case studies are a standard tool in higher education and management education. They provide the opportunity for action-oriented teaching under the regulative of self-directed learning. In case studies, exemplary situations are constructed, which largely correspond to reality and contain an economic problem (Kaiser & Brettschneider, 2002). In solving the problem, there are a number of alternative solutions; the learner’s task is to make and justify a reasonably useful decision.

Case studies are highly suited to linking theory and practice, and provide students with skills in various fields (Heath, 2002). Students typically go through all stages of the problem-solving process in tackling case studies, from problem formulation through alternative generation and evaluation to the selection of solution approaches and their implementation. In doing so, students not only learn how to handle assumptions and draw conclusions, but also learn to actively listen and understand other perspectives. Ideally, the scope of a case study is the development of creative problem-solving competence (Easton, 1992).

As shown in Figure 1, both the classical case study design (Leenders et al., 2001) and the case study method (Gasser, 1999; Kaiser & Brettschneider, 2002) follow a linear progression structure:

1. Typically, the learning process begins with a confrontation phase, where learners are told about the initial situation. Therefore, the opening paragraph contains a situation description in text form, which is sometimes supplemented by tables, diagrams or caricatures.
2. This is followed by an information phase, in which learners collect, structure and analyze all the information contained in main body of the case (which includes the general company background, specific area the case covers, specific problems or decisions that should be addressed) and annexed to the case study document.
3. The third phase focuses on exploration. Here, the learners evaluate the information material provided. Building on this, they develop alternative solutions and attempt to discuss their advantages and disadvantages.
4. A resolution phase follows the exploration phase, in which the learners make a decision for one of the alternatives.
5. This is followed by a disputation phase, in which the learners present and defend their results and decisions in plenary sessions. This phase is concluded by bringing together the individual perspectives and reaching a final decision.
6. If there is a decision made in reality, a collation phase completes the case study. The original solution described in the conclusion of the case study document is then presented and compared with the learners solutions. Differences are discussed.

This structure has many advantages (Brettschneider, 2000; Eschenbach, Kreuzer, & Neumann, 1994). For example, during the process, the students acquire a structured way of working and an analytical approach to problems. The practical orientation leads to a better understanding and longer retention of theoretical models. Furthermore, this opens up the opportunity to assess to what extent a learner has been trained in economic thinking, can apply basic methods and has understood the various dependencies and relationships in the economic process.

The disadvantage of this approach is its linearity. The consequences of decisions are only discussed theoretically, but are not made tangible as part of the case study model. Successive decisions follow a predefined path, which narrows the learner’s decision-making space and reduces the possibility of recognizing the complexity, interconnection and
consequences of decisions.

From linear to agile Innovation

For many years, innovation was seen and lived as a linear process (Cooper, 1990; Price & Bass, 1969). Starting from an idea or a concrete customer problem, innovations went through a defined sequence of process steps, such as risk assessment and business model or product development. These process steps were often considered irreversible. In the early phases of the process, there was no direct contact to the market, only towards the end, customer feedback was taken into account.

However, this linearity causes many problems (Kline, 1985). For example, the first decisions are crucial. If good ideas are eliminated too early, they can get lost. In addition, there is hardly any room for risky and particularly innovative ideas. In order to avoid cost-intensive failures, these ideas are filtered out at an early stage. For the remaining ideas, a long journey begins all the way to the marketable product. The three to five years associated with this in practice are very cost-intensive for the innovating company. Since it is only at the end of the process, through direct customer contact, that it is possible to determine whether an idea truly works, the risk associated with linear innovation is extremely high.

It is therefore not surprising that the view on the innovation management process has changed massively in recent years. Linear process models have been adapted and made more flexible (Cooper, 2014; Rothwell, 1992; Takeuchi & Nonaka, 1986). Current models combine the linear innovation management approach with agile concepts (Rigby et al., 2016). The goal of these approaches is to create innovation with as little risk and investment as possible. This is achieved by replacing long-term planning with a learning-by-doing approach, in which testing hypotheses and customer feedback are at the center of every decision.

The origins of agile management methods can be found in the software industry. This industry, which is already strongly characterized by agility, serves as a role model for modern agile innovation management. The core of modern software development is the “Agile Manifesto” (Beck et al., n.d.). Its focus is on four key values: team collaboration, hands-on problem solving, direct customer contact and readiness for change.

These four key values can also be applied to innovation processes. Few other fields of business are so characterized by unpredictability and disruption, while at the same time having almost infinite potential when it comes to future sales and profits. There is much to gain in innovation management, but also much to lose. This is why an agile approach is seen as the best choice (Rigby et al., 2016). In order to develop products for tomorrow, the needs of tomorrow must be clear. In direct contact with customers, beta versions can be tested and adapted according to feedback. In this way, the optimum result can be achieved.

![Build-Measure-Learn feedback loop](image-url)

Figure 2: Build-Measure-Learn feedback loop

The Build-Measure-Learn feedback loop shown in Figure 2 forms a basic building block in the method box of agile innovation management. The approach, which is primarily attributed to Eric Ries, describes a continuous, circular, self-contained process that is repeated several times during the development phase (Eisenmann, Ries, & Dillard, 2012). The goal of the Build-Measure-Learn approach is not to develop a final marketable product, but to learn through step-by-step and iterative development.

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Comparable to an experiment in the life sciences, the cycle typically initiates with the development of a hypothesis set. In the first step (Build), ideas, concepts, mock-ups, prototypes or so-called “minimum viable products” are created in order to test hypotheses on the customer and initiate the learning process. In the second step (Measure), direct customer contact is established, hypothesis tests are carried out, and customer feedback is collected and documented for evaluation within the following step. In the final step (Learn), the customer feedback is analyzed. The previously developed hypotheses are falsified. If the results are negative, the ideas, concepts and products are rejected or adapted if possible. If the results are positive, they move on to the following phase of the development process, where a new set of hypothesis initiates the next Build-Measure-Learn feedback loop.

![Multi-stage validation process](image)

**Figure 3: Multi-stage validation process**

If this agile method is combined with the typical phases of innovation management, a multi-stage validation process results (Aristodemou, Tietze, O’Leary, & Shaw, 2019; Cooper, 2016; Karlstrom & Runeson, 2005). As shown in Figure 3, each phase is an independent Build-Measure-Learn feedback loop, which is traversed once or several times. At the end of each phase, there is a gate. This serves as an orientation point in the innovation process, provides basic hypotheses and ensures detailed evaluation of all steps completed so far. A transition to the next phase is permitted only if the evaluation is successful.

Typically, the multi-stage validation process starts with an exploration phase. Here, customer needs and requirements are identified and problem hypotheses are formed. In order to ensure that the innovation generates actual value, a test is carried out to determine whether the derived problem actually exists in the target group. Thereafter, the search for solution ideas begins. In a creative process, a multitude of alternatives is developed. Step by step, ideas from the resulting pool are selected, prototypically implemented and adjusted until it is ensured that the problem can actually be solved. In the third step, the focus is on profitability. In an equally creative process, various alternative revenue mechanisms and value creation structures are defined. Market tests generate data and calculation models, and simulations then provide the basis for selecting the best business model configuration. Consistent data-driven decisions ensure objectivity. In the final step, the actual product development takes place. Functions and features are defined and technically implemented. In order to ensure that the innovation process does not run out of control in terms of time and costs, a constant comparison with the market expectations takes place. The associated market tests also ensure that only features that customers truly want are developed (Gürtler & Meyer, 2017; Kumar, 2013).

A non-linear Framework

The framework presented here addresses the shortcomings of conventional linear case studies. Inspired by the design of simulation games and interactive television shows, learners determine the development of the case. The story takes a different course depending on the decisions the learners make. True to the agile manifesto, every decision leads to a learning experience that can be positive or negative. Unlike in linear case studies, decisions are not finite. It is always possible to revise a decision and return to a previous phase of the case to choose a different approach.

Earners thus experience consequences and discover the connection between their decisions. By going through an agile process, which is similar to the process of agile innovation management, they acquire (soft) skills that have a
substantial applicability to the real world.

Structure and Features

The framework is based on the classical case study method presented in the previous chapter. However, it expands this by using agile concepts and it explicitly supports the investigation of several subsequent, interconnected decision situations:

1. Consistent with the classical method, the learning process begins with a confrontation phase, where learners are told about the initial situation.
2. This is followed by an information, exploration, resolution and disputation phase. In contrast to the classical method, this framework follows a step-by-step approach. Each decision situation is analyzed separately. Information is provided gradually. Each decision opens a new story path. Only after a decision has been made, justified and discussed will information for the following decision situation be provided.
3. After the completion of the first decision situation, an agile loop cycle starts. For each new decision, an information, exploration, resolution and disputation phase is required. Since decisions are not finite, older decision situations can be revisited, and decisions can be changed. In doing so, the learner might open up a new story path.
4. The case study ends after a final, previously defined decision situation has been solved. If the case is based on an example from reality, a collation phase can be included. There, the original solution and its decision path is described as well as compared with the group solutions. Differences are discussed.

This procedure creates a decision tree (as shown in the following figure). Each group of learners follows a branch of this tree. The challenge for the case author is to skillfully link branches so that each scenario does not have to be described separately.

Figure 4: Sample decision tree for a case in agile innovation

Four decision phases can be identified in agile innovation processes. The first phase is dedicated to the customer problem. Here, the learners decide on a target group and attempt to identify a specific problem. In phase two, a solution to this problem is sought. The learners decide on a solution approach and carry out hypothesis tests regarding its acceptance in the target group. Phase three deals with the business model. Learners primarily make decisions about the revenue and value creation structure. The last phase is dedicated to product development. Decisions regarding product characteristics must be made here.

In each phase, the learners go through one or more Build-Measure-Learn feedback loops. Alternative ideas, concepts, mock-ups, prototypes or different product features are provided within the case description. Learners select one of the alternatives provided, identify critical assumptions and formulate hypotheses. They choose a suitable test method, and the case study shows what the test will lead to. Learners are then asked to interpret the results of the test, formulate a final decision or reconsider their choice.
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To keep track of the entire process, all steps have to be documented. Therefore, a “Validation Board” should be provided along with the case study text (see Figure 5). Each column of this “Validation Board” is used to document one Build-Measure-Learn feedback loop (a so-called pivot). Starting from top to bottom, the learners must first name the innovation phase that they are currently working on. Thereafter, they document the configuration of the innovation object, which could be a problem, a solution, a product feature or a business model element. They then identify critical assumptions, develop hypotheses and decide on a validation method. At the end, they document the result of the hypothesis test and what they have learned.

In order to further clarify this process, the individual steps are further explained below, supplemented by an example. This brief example only serves as an illustration; it is by no means to be understood as a complete case study, but merely traces one specific decision line. The provided decision alternatives are also limited to the absolute minimum.

**Step-by-Step Process and Example**

The case study begins with a description of the situation. Here, the context of the case is clarified and the initial situation of the innovating company is portrayed. Budget constraints are raised and conditions for later decisions are set.

**eXAMPE**

The company is a long-established carpenter’s business that faces increasing competition from online retailers and system providers. The focus of the company is on furniture construction. They are experts for individual office, dining room and kitchen furnishings. The company has a budget of 10,000€ for the first phases of the innovation process. Further funds will then be raised for product development. Funding through the government is possible. The owner of the company is very open to innovative approaches. He would like to take advantage of the opportunities offered by digitalization and develop digital business models. It is important to him, however, that the core of his business and thus his focus on furniture construction remains unchanged.

**Table 1: Company portray**

After the introduction and the presentation of the company, the learners are confronted with the first decision situations. In the context of problem exploration, they must select a target group and an innovation approach, identify problems and validate the Customer-Problem-Fit.
<table>
<thead>
<tr>
<th>ACTIVITIES</th>
<th>EXAMPLE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I. Initial Set-Up</strong></td>
<td>The following generic approaches are proposed in the case study text:</td>
</tr>
<tr>
<td>Selection of a generic innovation approach</td>
<td>Product-oriented</td>
</tr>
<tr>
<td>Identification of the associated basic hypothesis</td>
<td>Sales-oriented</td>
</tr>
<tr>
<td>Documentation using the Validation Board</td>
<td>Cost-oriented</td>
</tr>
<tr>
<td></td>
<td>The teaching notes of the case provide possible hypotheses. A potential hypothesis for a product-oriented approach is “There are unoccupied niches in the furniture market.”</td>
</tr>
</tbody>
</table>

| **II. Identification of the customer problem** | From here on, the case study works like a dictionary. Learners follow a specific path of the decision tree by looking up their decisions in the case study document. When opting for the product-oriented approach, the following market segmentation models can be found: |
| Selection of a target group and explanation of the decision | Buyers of kitchen furniture |
| Discussion of possible customer problems | Buyers of office furniture |
| Selection of a customer problem and explanation of the decision | Buyers of cupboards and shelves |
| Derivation of a problem hypothesis | In the teaching notes, the following hypothesis (for choosing “buyers of kitchen furniture”) can be found: “There is not a satisfactory supply of kitchen furniture” |
| Documentation using the Validation Board | |

| **III. Validation of the Customer-Problem-Fit** | The case study is accompanied by a list of different validation methods, their costs and quality of results. There a learner will find, among others: |
| Identification and discussion of different validation options | Customer survey |
| Selection of a validation method | Expert interviews |
| Documentation using the Validation Board | Industry reports and statistics |

| **IV. Evaluation of the results** | If learners choose a customer survey and look up the results in the case study document, they will find the following: |
| Evaluation of the validation results | The customers are very satisfied with the kitchen segment’s offerings |
| Derivation of consequences | There are both standard and individual offers for every price level |
| Documentation using the Validation Board | The validation was not successful. An iteration must therefore be made. |

| **V. Iteration** | During iteration, a previous decision is revised. The learner thus reaches a new branch of the decision tree: |
| Repetition of previous phases with new decision structure | New target group: buyers of shelves |
| Performing a further validation as end of iteration | New hypothesis: there is not enough supply in the shelf segment |
| Interpretation of the results and derivation of consequences | Chosen validation method: customer survey |
| Documentation using the Validation Board | Result: high dissatisfaction of the customers, since shelves are available only in standard sizes (e.g., they are not available for rooms with slopes) |

| **Gate 1: Customer-Problem-Fit** | Furniture buyers cannot find shelves in sizes suitable for them |

*Table 2: Problem exploration*
The second phase simulates the process of idea generation. In the search for a sustainable business idea, the learners must identify possible solutions to the customer problem. Those solutions have to be analyzed and discussed to form a solution hypotheses. By choosing the most suitable solution and validating this hypothesis, they reach the Solution-Problem-Fit.

<table>
<thead>
<tr>
<th>ACTIVITIES</th>
<th>EXAMPLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>VI. Identification of possible solutions</td>
<td>The case study offers solutions to various problems. For example, to help furniture buyers find shelves in matching sizes, one could:</td>
</tr>
<tr>
<td>Identification and discussion of different solution options</td>
<td>Manufacture cupboards in special sizes not otherwise available on the market</td>
</tr>
<tr>
<td>Selection of one solution and explanation of the decision</td>
<td>Offer instructions on how cabinets can be adapted to requirements using the do-it-yourself principle</td>
</tr>
<tr>
<td>Derivation of a solution hypothesis</td>
<td>Offer a modular system with which each customer can put together their own individual cabinet</td>
</tr>
<tr>
<td>Documentation using the Validation Board</td>
<td>In the teaching notes, the following hypothesis (for choosing “Manufacture cupboards in special sizes …”) can be found: “There are certain special sizes that are not yet offered, but are in great demand.”</td>
</tr>
</tbody>
</table>

| VII. Validation of the Solution-Problem-Fit | In the enclosed list of validation methods, learners will also find the following: |
| Identification of different validation options | Customer interview |
| Selection of a validation method | Expert interviews |
| Documentation using the Validation Board | Landing page A/B-testing |

| VIII. Evaluation of the results | If learners choose an expert interview and look up the results in the case study document, they will find the following: |
| Evaluation of the validation results | Furniture experts do not see an accumulation of demand |
| Derivation of consequences | Customers have very individual needs |
| Documentation using the Validation Board | Since space and place are very different, many customers need an individual shelf |
| | The validation was not successful. An iteration must therefore be made. |

| IX. Iteration | During iteration, a previous decision is revised. The learner thus reaches a new branch of the decision tree: |
| Repetition of previous phases with new decision structure | New solution idea: offer a modular system with which each customer can put together their own individual cabinet |
| Performing a further validation as end of iteration | New hypothesis: customers have individual needs and would like to put together an individual piece of furniture |
| Interpretation of the results and derivation of consequences | New validation method: customer interview |
| Documentation using the Validation Board | Result: customers were enthusiastic about the idea and asked directly for ordering options. |

| Gate 2: Solution-Problem-Fit | Offer a modular system for cabinets |

Table 3: Idea Generation
In phase three, the business model is defined. The learners discuss various options for shaping a value chain and derive the value creation structure of the innovation from this. At the same time, they examine different revenue models, test hypotheses and validate the entire configuration on the market. If they are successful, the business-market-fit will be achieved.

<table>
<thead>
<tr>
<th>ACTIVITIES</th>
<th>EXAMPLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>X. Identification of business model elements</td>
<td></td>
</tr>
<tr>
<td>Identification and discussion of possible revenue and value structures</td>
<td>The case study describes various generic business model configurations that can be applied to different problems and solutions. For example, the following two value structures could be used for a modular system for cabinets and shelves:</td>
</tr>
<tr>
<td>Selection of one business model and explanation of the decision</td>
<td>Online configuration of a product as self-service on the internet</td>
</tr>
<tr>
<td>Derivation of a business hypothesis</td>
<td>Travelling salesmen as franchisees, who handle measurement and distribution</td>
</tr>
<tr>
<td>Documentation using the Validation Board</td>
<td>In the teaching notes, the following hypothesis (for choosing “Online configuration of …”) can be found: “Customers are able to determine the measurements themselves, take responsibility for the results and enter the data themselves on the internet.”</td>
</tr>
</tbody>
</table>

| XII. Validation of the Business-Market-Fit | |
| Identification of different validation options | In the enclosed list of validation methods, learners will also find the following: |
| Selection of a validation method | Internal sanity test |
| Documentation using the Validation Board | Customer interview |
| | Landing page A/B-testing |
| | Commitment sales |

| XII. Evaluation of the results | |
| Evaluation of the validation results | If learners choose landing page A/B-testing and look up the results in the case study document, they will find the following: |
| Derivation of consequences | two different websites are created, one with a self-input configuration tool and one with an appointment calendar |
| Documentation using the Validation Board | After an advertising campaign, Google Analytics Reports show a clear preference for the configuration tool |
| | The validation was successful. One business model element has been defined. |

| XIII. Iteration | |
| Repetition of previous phases with new decision structure | Since the business model has several elements, some iterations are necessary to achieve a complete business-market-fit. |
| Performing a further validation as end of iteration | |
| Interpretation of the results and derivation of consequences | |
| Documentation using the Validation Board | |

| Gate 3: Business-Market-Fit | |
| Specification of a business model | Offer self-service using an online configurator |

Table 4: Business Model Definition
The final phase is all about product development. Product features must be defined, refined and adapted to the customers’ needs. Therefore, the learner must decide on a starting feature set. By pivoting several times, this feature set will be tested and improved. Some features will disappear and at the same time, based on customer feedback, new features will be created. At the end of this process, the learner will reach the problem-market-fit.

<table>
<thead>
<tr>
<th>ACTIVITIES</th>
<th>EXAMPLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>XIV. Identification of suitable product features</td>
<td>The case study describes a variety of possible features that can be applied to different problems and solutions. The learner now must select an appropriate features set in discussion with the team and with the instructors. For example, the following features could apply for an online configurator: Delivery as a web app, Release as an app on iOS, Delivery as an app on Android. In the teaching notes, the following hypothesis (for choosing “Release as an App on iOS”) can be found: “Customers are primarily Apple users.”</td>
</tr>
<tr>
<td>XV. Validation of the Product-Market-Fit</td>
<td>In the enclosed list of validation methods, learners will also find the following: Internal sanity test, Customer interview, Landing page A/B-testing, Concierge service, Minimum viable product (MVP), Market reports and statistics.</td>
</tr>
<tr>
<td>XVI. Evaluation of the results</td>
<td>If learners choose market reports and statistics and look up the results in the case study document, they will find out that there is an even distribution between Apple and iOS users and that web apps are growing increasingly popular. The validation was not successful. However, since the results provide additional information and new insights, a combination of all three alternatives can be agreed upon without further validation.</td>
</tr>
<tr>
<td>XVII. Iteration</td>
<td>Since the product has several features, some iterations are necessary to achieve a complete product-market-fit.</td>
</tr>
<tr>
<td>Gate 4: Product-Market-Fit</td>
<td>Specification of product configurations Release as web app, on Android and on iOS</td>
</tr>
</tbody>
</table>

Table 5: Product Development
Conclusion

This paper presents a framework that addresses the shortcomings of conventional linear case studies. Inspired by the design of simulation games and interactive television shows, learners determine the development of the case. Depending on which decision they make, they reach a different branch of a widely ramified decision tree. Iterations and feedback loops are an essential component of this. It is always possible to revise a decision and return to a previous phase of the case to choose a different approach. In this way, every decision generates new insights and learnings. Learners thus experience consequences and discover the connection between their decisions. By going through an agile process, they acquire skills that can be applied to a rapidly changing world.

The challenge for the author and the instructor lies in the complexity involved. Authors must define a multitude of approaches and solutions and derive consequences from them. In order to keep the size of the document under control, they must link situations, activities and whole branches of the decision tree with each other. Instructors must be able to identify critical assumptions in various situations, and derive hypotheses and test scenarios from them. At the same time, they must be able to competently discuss a variety of alternative approaches, situations and methods with learners. This puts high demands on the teaching instructions, which are supposed to support instructors in every phase of the case study class.

In order to make the case study even more flexible, it is possible to not only accept activities and decisions predefined in the case study document. Rather, creative solutions could be allowed. However, this requires a set of rules. Tabletop role-playing games could serve as a role model here. Under the guidance of the instructor, decisions are evaluated on the fly. By throwing the dice, chance decides on the outcome of a decision situation. Individual, truly agile learning paths result.

References


National Culture And Leadership Practices: Vietnamese-American Entrepreneurs Perspectives
Lena Tran, San Jose City College, USA

ABSTRACT

In past decades, many significant cross-cultural researchers have explored different national culturally derived values and how these values influence leadership practices among Chinese, Singaporean, Korean, and Japanese business leaders and employees as compared to those from other countries, such as the United States, Chile, Austria, and Germany. However, very few studies conducted in the U.S. focus on Asian-American national cultures and what happens when people from these cultures face leadership opportunities in American organizations. Further, no studies thus far have been performed to understand how national cultural characteristics of Vietnamese American entrepreneurs influence their leadership practices.

This qualitative study explored the cultural background of Vietnamese-Americans and the influence of this background on leadership practices of Vietnamese-American entrepreneurs. This study utilized Geert Hofstede’s national cultural dimensions of power distance, uncertainty avoidance, individualism-collectivism, masculinity-femininity, and Confucian Dynamism. Six participants were business leaders who had worked in private and public US companies. They had left their positions, either at will or because they were terminated, and started their own businesses.

The interview process consisted of three sessions with open-ended questions. In the first session, participants were invited to reveal as much as possible about their life history and to reconstruct their experiences. In the second session, participants were asked to share stories and to give concrete details of their experiences relating to Hofstede’s national culture dimensions. In the third session, participants reflected on the meaning of their experiences.

This study included only men; therefore, findings are from a male perspective, but culturally and ethnically specific. The participants stated their beliefs that cultural leadership elements, such as inherited traditions, ethnic values, family teaching and history, and the concept of karma, are the compasses for their leadership practices. These individuals sought to merge their national beliefs with Western leadership theories of business management and operation. They demonstrated how to bring this merged belief closer to the prototype of leadership that ethnic people, like the Vietnamese entrepreneurs, have in mind when they describe their ideal leader.
E-Value-ATE: A Tool For Investment Worthiness Assessment Of E-Learning Systems

Thara Angskun, Suranaree University of Technology, Thailand.
Narintorn Chimsuntorn, Suranaree University of Technology, Thailand.
Jitimon Angskun, Suranaree University of Technology, Thailand.

ABSTRACT

E-learning systems are one of important tools to support teaching and learning in higher education. Although most of the e-learning systems are free software, there are tangible and intangible costs associated with them. Thus, investment worthiness assessment of e-learning system is needed. This paper presents a tool developed for investment worthiness assessment of e-learning systems called E-Value-ATE (an Effortless Value Assessment Tool for E-learning systems). E-Value-ATE employs the value measuring methodology (VMM) approach to measure both qualitative and quantitative value associated with e-learning system investment. Three elements are considered in the assessment: the value, cost and risk. E-Value-ATE is used to evaluate investment worthiness of e-learning system of Suranaree University of Technology, Thailand. The evaluation results reveal that the value per million is 8.97, while the value per million should the risk event occur is 8.2. The score of e-learning value and cost are 73.04 and 8.14 million baht, respectively. While the score of e-learning value and cost should the risk event occur are 69.75 and 8.51 million baht, respectively. E-Value-ATE is also evaluated by experts in terms of usability testing. The overall usability is in the highest level.

Keywords: investment worthiness evaluation, e-learning systems, value measuring methodology

Introduction

E-learning systems (a.k.a. learning management systems) are one of important tools to support teaching and learning in higher education (Felea et al., 2018; Rashida, 2017; Wani, 2013). Typical e-learning systems consist of five principal components: 1) course management 2) content management 3) course tools 4) test and evaluation management and 5) backend data management. These components facilitate various educational concepts and techniques including long distance learning, life-long learning, flipped classroom, etc. Although most of the e-learning systems, e.g., ATutor (Gay, 2009), Claroline (Lebrun et al., 2009), ILIAS (Bednar et al., 2013), Moodle (Brandl, 2005), Sakai (Dubb and Scott, 2014), etc. are free software (Cavus and Zabadi, 2014), there are tangible and intangible costs associated with e-learning systems such as server and networking hardware and their maintenances, salary of system administrators, energy consumption, and other operational costs. Thus, investment worthiness assessment of e-learning systems is needed. The assessment should also consider risks of e-learning system investment that may occur in future. There are several assessment methods for investment worthiness, e.g., an economic assessment method using well-known values: net present value, benefit cost ratio, internal rate of return, discounted payback period, real option analysis, and value measurement methodology (VMM). The VMM was introduced by Booz Allen Hamilton in 2002 for the US Social Security Administration, as part of an electronic services project. It is a technique used to define, capture and measure both qualitative and quantitative value associated with information technology investment. Hence, this paper presents a system developed for investment worthiness assessment of e-learning systems called E-Value-ATE (an Effortless Value Assessment Tool for E-learning systems), which is based on the value measuring methodology (VMM) approach.
Literature Review

There are several existing researches aimed to assess investment worthiness. Most research are based on the economic assessment method using well-known values. Santos-Neto et al. (2010) studied the value assessment of individual contributions in tagging system. The assessment is based on the idea of a user's tags are valuable to other users if they increase an ability to find relevant items. The proposed criteria for the assessment are feasibility, accuracy and robustness. Noomongkud (2010) assessed the value of Internet broadcasting system and video conferencing system using the value measuring methodology. The results indicate that Internet broadcasting system has value per million of 2.58 with value score of 81.54 at cost of 31.52 million baht, while video conferencing system has value per million of 2.5 with value score of 66 at cost of 26.36 million baht. Laophungsak et al. (2013) analyzed economic value of a highway intersection project. Net present value, benefit-cost ratio, and internal rate of return are used to assess the value. The bottom line is that this project was worth for the investment. Metham and Banjaoran (2013) analyzed economic value of a delayed public construction project using net present value, benefit-cost ratio, and internal rate of return. The finding is that this project is not worth to invest if it delayed beyond the year 2018. Phaisarnthayangkul (2014) analyzed economic value of a navigation project in a canal. Net present value, benefit-cost ratio, and internal rate of return are used to assess the project value. The findings indicate that this project generates higher economic and social value than financial value as it focuses on social welfare. Therefore, the government should act as an investor and allowed private sector to operate this project. Jantaphan (2014) studied economic worthiness of a construction project. Net present value, benefit-cost ratio, and internal rate of return are used to assess the project value. It can be concluded that this project is worth investing. It is worth even either the total cost increases, or the total return decreases by 10%. Pantaweesak (2015) analyzed economic investment worthiness of the 2nd Phenol production site construction project of PTT Phenol Company Limited. This research uses Monte Carlo simulation to analyze cash flow of the project. It also analyzes net present value, benefit-cost ratio, internal rate of return, and discounted payback period. It can be concluded that this project is worth investing. Some research assesses investment worthiness using the value measuring methodology (VMM). Foley and Hamilton (2006) evaluated government initiatives with the VMM. Two projects of the NASA are evaluated. The evaluation criteria are value, cost and risk. Mitchell and Lutters (2006) assessed the value of computer science course material repositories. The results indicate that these repositories are underutilized, even though the demand for these materials is high. It is primarily caused by its low visibility. A comparison of E-Value-ATE and other related work is shown in Table 1. Table 1 shows that investment worthiness assessments that involve information technology (including E-Value-ATE) often uses the VMM as an alternative method to economic values. This table also reveals that E-Value-ATE is the developed tool which is a contribution to the field.

Table 1 A comparison of E-Value-ATE and other related work

<table>
<thead>
<tr>
<th>Research</th>
<th>Data Collection Methods</th>
<th>Methodology</th>
<th>Research Output</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Observation</td>
<td>Survey</td>
<td>Questionnaire</td>
</tr>
<tr>
<td>Foley and Hamilton (2006)</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Jantaphan (2014)</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Laophungsak et al. (2013)</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Metham and Banjaoran (2013)</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Mitchell and Lutters (2006)</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Noomongkud (2010)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Pantaweesak (2015)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Phaisarnthayangkul (2014)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Santos-Neto et al. (2010)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>E-Value-ATE</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

E-Value-ATE Overview
The system architecture of E-Value-ATE consists of five principal components as shown in Figure 1. System Administrator can input factors related to assess investment worthiness of the E-learning system via a data acquirer engine. These factors will be saved in the centralized database. Then, the assessment modeling engine will analyze investment worthiness using the value measuring methodology (VMM). The VMM measures the worthiness in three aspects: value, cost, and risk.

The value of e-learning systems is analyzed from a questionnaire. Data collected from the questionnaire is respondent demographics, e-learning usage frequency, satisfaction of user interface, service, and contents of e-learning systems. There are two types of value, including present value ($u$) and value should the risk event occur ($u_r$). When the weight of the present value is obtained, an analysis of value should the risk event occur can be analyzed from equation $u_r = u + (u \times i_u \times \pi)$, where $u_r$ is value should the risk event occur, $u$ is present value, $i_u$ is risk impact to the value (in per cent), and $\pi$ is risk probability (in per cent).

Cost of e-learning systems is analyzed from annual reports. Cost is consisted of hardware, software, and personnel costs. There are two types of cost, including present cost ($k$) and cost should the risk event occur ($k_r$). When the weight of the present cost is obtained, an analysis of cost should the risk event occur can be analyzed from equation $k_r = k + (k \times i_k \times \pi)$, where $k_r$ is cost should the risk event occur, $k$ is present cost, $i_k$ is risk impact to the cost (in per cent), and $\pi$ is risk probability (in per cent).

Risk of e-learning systems is analyzed from a risk assessment form. Risk is identified in eight areas: 1) external events, physical and environment 2) personnel 3) information technology equipment 4) computer software 5) networking system 6) course content 7) legal issues 8) system deployment. Risk of e-learning systems can be classified into three levels: high, medium, and low. The relationship among risk, risk probability ($\pi$), risk impact to value ($i_u$) and risk impact to the cost ($i_k$) are shown in Table 2.

<table>
<thead>
<tr>
<th>Risk</th>
<th>Risk probability</th>
<th>Risk impact to cost</th>
<th>Risk impact to value</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>50%</td>
<td>25%</td>
<td>-25%</td>
</tr>
<tr>
<td>Medium</td>
<td>30%</td>
<td>15%</td>
<td>-15%</td>
</tr>
<tr>
<td>Low</td>
<td>25%</td>
<td>5%</td>
<td>-5%</td>
</tr>
</tbody>
</table>

All three aspects of the VMM (i.e., value, cost, and risk) are kept in a centralized database. When a user (typically, an executive officer) wants to assess the investment worthiness of an e-learning system, users can fill-in factors via a factor processor engine. Finally, the investment worthiness is analyzed via a value analyzer engine in terms of value per million (Thai Baht). The results are shown to the user via a visualizer engine.

Figure 1 E-Value-ATE system architecture
E-Value-ATE Overview

Experimental Environments

E-Value-ATE is used to evaluate investment worthiness of an e-learning system of Suranaree University of Technology, Thailand. Value of the e-learning system is analyzed from questionnaire. The sample size is at least 400 users, which is obtained from Yamane’s formula (Yamane, 1967) with 95% of confidence level. Value to students is surveyed from 397 undergraduate students. Value to the instructor is surveyed from 15 instructors among various institutes. Value to the university is surveyed from 5 executive officers of university at director and above level. Cost of the e-learning system is analyzed from annual reports between year 2012 - 2018. Risk of e-learning system is surveyed from 5 executive officers of university at director and above levels.

Experimental Results and Discussion

Weight of e-learning value to students, instructors and university is prioritized by experts using the analytical hierarchy process (AHP) as shown in areas of sunburst graph of Figure 2.

![Figure 2 A Hierarchy value of E-learning system](image)

Students have 56% of weight, while instructor and university have 30% and 14% of weight, respectively. The results of the e-learning value are shown in Table 3.

Cost of e-learning system is analyzed from annual reports. Cost consists of hardware, software, and personnel costs. Total cost is 8,139,257.7 Baht. Risk of e-learning system is surveyed from 5 executive officers of university at director and above levels. The results as shown in Table 4 reveal that the overall risk is in the medium level. According to Table 2, risk at medium level has 30% of risk probability ($\pi$), 15% of impact to cost ($i_k$), and -15% of impact to value ($i_u$).

Total value of e-learning system can be calculated from value to students, value to instructors, and value to university, which equals 73.04 (derived from 39.31 + 20.96 + 12.77). Thus, value per million equals 8.97 (derived from 73.04 / 8.14).
<table>
<thead>
<tr>
<th>Criteria</th>
<th>Weight</th>
<th>Average Score</th>
<th>Weighted Score</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Value to Students</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S1: System Interaction</td>
<td>56</td>
<td>3.43</td>
<td>39.31</td>
<td>High</td>
</tr>
<tr>
<td>S11: Learning purpose</td>
<td>3.7</td>
<td>3.65</td>
<td>2.70</td>
<td>High</td>
</tr>
<tr>
<td>S12: Communication among students</td>
<td>0.84</td>
<td>3.33</td>
<td>0.56</td>
<td>Medium</td>
</tr>
<tr>
<td>S13: Student advising</td>
<td>0.56</td>
<td>3.18</td>
<td>0.36</td>
<td>Medium</td>
</tr>
<tr>
<td>S14: Content interaction</td>
<td>0.5</td>
<td>3.07</td>
<td>0.31</td>
<td>Medium</td>
</tr>
<tr>
<td>S2: System Services</td>
<td>25.2</td>
<td>3.49</td>
<td>17.48</td>
<td>High</td>
</tr>
<tr>
<td>S21: Functionality</td>
<td>5.80</td>
<td>3.45</td>
<td>4.00</td>
<td>High</td>
</tr>
<tr>
<td>S22: Effectiveness</td>
<td>7.56</td>
<td>3.60</td>
<td>5.44</td>
<td>High</td>
</tr>
<tr>
<td>S23: Security</td>
<td>1.76</td>
<td>3.57</td>
<td>1.26</td>
<td>High</td>
</tr>
<tr>
<td>S24: Convenience</td>
<td>3.78</td>
<td>3.58</td>
<td>2.71</td>
<td>High</td>
</tr>
<tr>
<td>S25: Reliability</td>
<td>6.30</td>
<td>3.23</td>
<td>4.07</td>
<td>Medium</td>
</tr>
<tr>
<td>S3: Contents</td>
<td>25.2</td>
<td>3.48</td>
<td>17.90</td>
<td>High</td>
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<tr>
<td>S31: Reliability</td>
<td>2.52</td>
<td>3.50</td>
<td>1.76</td>
<td>High</td>
</tr>
<tr>
<td>S32: Understandability</td>
<td>15.37</td>
<td>3.55</td>
<td>10.91</td>
<td>High</td>
</tr>
<tr>
<td>S33: Easy to access</td>
<td>4.03</td>
<td>3.67</td>
<td>2.96</td>
<td>High</td>
</tr>
<tr>
<td>S34: Up-to-date</td>
<td>3.28</td>
<td>3.46</td>
<td>2.27</td>
<td>High</td>
</tr>
<tr>
<td><strong>Value to Instructors</strong></td>
<td>30</td>
<td>3.46</td>
<td>20.96</td>
<td>High</td>
</tr>
<tr>
<td>I1: System Interaction</td>
<td>15</td>
<td>3.15</td>
<td>10.11</td>
<td>Medium</td>
</tr>
<tr>
<td>I11: Teaching purpose</td>
<td>11.25</td>
<td>3.38</td>
<td>7.61</td>
<td>Medium</td>
</tr>
<tr>
<td>I12: Student advising</td>
<td>1.80</td>
<td>3.50</td>
<td>1.26</td>
<td>High</td>
</tr>
<tr>
<td>I13: Content interaction</td>
<td>1.95</td>
<td>3.19</td>
<td>1.24</td>
<td>Medium</td>
</tr>
<tr>
<td>I2: System Services</td>
<td>15</td>
<td>3.57</td>
<td>10.85</td>
<td>High</td>
</tr>
<tr>
<td>I21: Easiness</td>
<td>1.65</td>
<td>3.13</td>
<td>1.03</td>
<td>Medium</td>
</tr>
<tr>
<td>I22: Functionality</td>
<td>3.30</td>
<td>3.44</td>
<td>2.27</td>
<td>High</td>
</tr>
<tr>
<td>I23: Effectiveness</td>
<td>3.90</td>
<td>3.88</td>
<td>3.03</td>
<td>High</td>
</tr>
<tr>
<td>I24: Security</td>
<td>0.90</td>
<td>3.56</td>
<td>0.64</td>
<td>High</td>
</tr>
<tr>
<td>I25: Convenience</td>
<td>1.95</td>
<td>3.81</td>
<td>1.49</td>
<td>High</td>
</tr>
<tr>
<td>I26: Reliability</td>
<td>3.30</td>
<td>3.63</td>
<td>2.40</td>
<td>High</td>
</tr>
<tr>
<td><strong>Value to University</strong></td>
<td>14</td>
<td>4.55</td>
<td>12.77</td>
<td>Highest</td>
</tr>
<tr>
<td>U1: Teaching &amp; learning</td>
<td>7.84</td>
<td>4.8</td>
<td>7.53</td>
<td>Highest</td>
</tr>
<tr>
<td>U2: Promote learning society</td>
<td>3.36</td>
<td>3.80</td>
<td>2.55</td>
<td>High</td>
</tr>
<tr>
<td>U3: Academic resource for students</td>
<td>1.40</td>
<td>5.00</td>
<td>1.40</td>
<td>Highest</td>
</tr>
<tr>
<td>U4: Academic resource for instructors</td>
<td>1.40</td>
<td>4.60</td>
<td>1.29</td>
<td>Highest</td>
</tr>
</tbody>
</table>
Table 4 Results of the e-learning risk

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Probability</th>
<th>Impact</th>
<th>Interpreted Risk Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Risk</td>
<td>3</td>
<td>3</td>
<td>Medium</td>
</tr>
<tr>
<td>External events, physical and environment</td>
<td>2</td>
<td>3</td>
<td>Low</td>
</tr>
<tr>
<td>Natural disaster</td>
<td>2</td>
<td>4</td>
<td>Medium</td>
</tr>
<tr>
<td>Power failure</td>
<td>3</td>
<td>4</td>
<td>High</td>
</tr>
<tr>
<td>Security</td>
<td>2</td>
<td>3</td>
<td>Low</td>
</tr>
<tr>
<td>Uncertainty policy</td>
<td>2</td>
<td>2</td>
<td>Low</td>
</tr>
<tr>
<td>Lack of contingency plan</td>
<td>3</td>
<td>3</td>
<td>Medium</td>
</tr>
<tr>
<td>Personnel</td>
<td>2</td>
<td>4</td>
<td>Medium</td>
</tr>
<tr>
<td>Lack of personnel management</td>
<td>3</td>
<td>3</td>
<td>Medium</td>
</tr>
<tr>
<td>Lack of information technology skills</td>
<td>3</td>
<td>4</td>
<td>High</td>
</tr>
<tr>
<td>Fraud or ethical violation</td>
<td>2</td>
<td>4</td>
<td>Medium</td>
</tr>
<tr>
<td>Human errors</td>
<td>3</td>
<td>4</td>
<td>High</td>
</tr>
<tr>
<td>Information technology equipment</td>
<td>3</td>
<td>3</td>
<td>Medium</td>
</tr>
<tr>
<td>Resource management</td>
<td>3</td>
<td>3</td>
<td>Medium</td>
</tr>
<tr>
<td>Equipment maintenance</td>
<td>3</td>
<td>4</td>
<td>High</td>
</tr>
<tr>
<td>Effectiveness of equipment</td>
<td>3</td>
<td>4</td>
<td>High</td>
</tr>
<tr>
<td>Computer software</td>
<td>3</td>
<td>4</td>
<td>High</td>
</tr>
<tr>
<td>Security</td>
<td>3</td>
<td>4</td>
<td>High</td>
</tr>
<tr>
<td>DBMS management standard</td>
<td>3</td>
<td>4</td>
<td>High</td>
</tr>
<tr>
<td>Networking system</td>
<td>3</td>
<td>4</td>
<td>High</td>
</tr>
<tr>
<td>Stability and efficiency</td>
<td>3</td>
<td>4</td>
<td>High</td>
</tr>
<tr>
<td>Security</td>
<td>3</td>
<td>4</td>
<td>High</td>
</tr>
<tr>
<td>Security plan</td>
<td>3</td>
<td>3</td>
<td>Medium</td>
</tr>
<tr>
<td>Course content</td>
<td>2</td>
<td>3</td>
<td>Low</td>
</tr>
<tr>
<td>Incomplete content</td>
<td>2</td>
<td>4</td>
<td>Medium</td>
</tr>
<tr>
<td>Incorrect content</td>
<td>3</td>
<td>4</td>
<td>High</td>
</tr>
<tr>
<td>Outdated content</td>
<td>2</td>
<td>3</td>
<td>Low</td>
</tr>
<tr>
<td>Legal issues</td>
<td>3</td>
<td>3</td>
<td>Medium</td>
</tr>
<tr>
<td>Ethical issues of students</td>
<td>4</td>
<td>3</td>
<td>High</td>
</tr>
<tr>
<td>E-learning system copyright</td>
<td>2</td>
<td>2</td>
<td>Low</td>
</tr>
<tr>
<td>Content copyright</td>
<td>3</td>
<td>3</td>
<td>Medium</td>
</tr>
<tr>
<td>System deployment</td>
<td>3</td>
<td>3</td>
<td>Medium</td>
</tr>
<tr>
<td>University policy</td>
<td>3</td>
<td>3</td>
<td>Medium</td>
</tr>
<tr>
<td>User knowledge</td>
<td>3</td>
<td>2</td>
<td>Low</td>
</tr>
<tr>
<td>Important awareness</td>
<td>3</td>
<td>3</td>
<td>Medium</td>
</tr>
<tr>
<td>Insufficient testing</td>
<td>2</td>
<td>3</td>
<td>Low</td>
</tr>
</tbody>
</table>

The value should the risk event occur ($v_o$) can be analyzed from an equation $v_o = \nu + (\nu \times \nu \times \pi) = 73.04 + (73.04 \times -0.15 \times 0.3) = 69.75$. The cost should the risk event occur can be analyzed from an equation $k_o = \kappa + (\kappa \times \kappa \times \pi) = 8,139,257.7 + (8,139,257.7 \times 0.15 \times 0.3) = 8,505,524.3$ Baht. The value per million should the risk event occur equals 8.2 (derived from 69.75 / 8.51). E-Value-ATE is also evaluated by experts in terms of usability testing in five aspects as shown in Table 5. The overall usability is in the highest level.
Table 5 Usability testing of E-Value-ATE

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Mean</th>
<th>S.D.</th>
<th>Interpreted Usability Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Usability</td>
<td>4.33</td>
<td>0.64</td>
<td>Highest</td>
</tr>
<tr>
<td>Effectiveness</td>
<td>4.48</td>
<td>0.62</td>
<td>Highest</td>
</tr>
<tr>
<td>Efficiency</td>
<td>4.45</td>
<td>0.64</td>
<td>Highest</td>
</tr>
<tr>
<td>Flexibility</td>
<td>4.40</td>
<td>0.62</td>
<td>Highest</td>
</tr>
<tr>
<td>Learnability</td>
<td>3.80</td>
<td>0.62</td>
<td>High</td>
</tr>
<tr>
<td>Security</td>
<td>4.50</td>
<td>0.72</td>
<td>Highest</td>
</tr>
</tbody>
</table>

Conclusions and Future Work

This paper aims to develop a tool for investment worthiness assessment of e-learning systems called E-Value-ATE (an Effortless Value Assessment Tool for E-learning systems). E-Value-ATE employs the value measuring methodology (VMM) approach to measure both qualitative and quantitative value associated with e-learning system investment. Three elements are considered in the assessment: the value, cost and risk. E-Value-ATE is used to evaluate investment worthiness of e-learning system of Suranaree University of Technology, Thailand. The evaluation results reveal that the value per million is 8.97, while the value per million should the risk event occur is 8.2. The score of e-learning value and cost are 73.04 and 8.14 million baht, respectively. While the score of e-learning value and cost should the risk event occur are 69.75 and 8.51 million baht, respectively. E-Value-ATE is also evaluated by experts in terms of usability testing. The overall usability is in the highest level.

E-Value-ATE can also be used to evaluate other systems, e.g., video conference system, MOOC (Massive Open Online Course) system, etc. In near future, The E-Value-ATE will be developed in mobile platform. Some intelligent logic will be deployed in the next version of E-Value-ATE such as recommended action after evaluation.

References

An Intelligent System For Advising An Academic Major Of University Students
Jitimon Angskun, Suranaree University of Technology, Thailand.
Porn-anant Iamkhajornchai, Suranaree University of Technology, Thailand.
Thara Angskun, Suranaree University of Technology, Thailand.

ABSTRACT
In higher education, several students have faced with a problem of selecting faculty, department, or major that suits them best. This problem is caused by a decision factor overload. To overcome this problem, this paper proposes an intelligent system for student academic advising in major selection. The intelligent system is based on an analytic hierarchy process (AHP) of decision factors. Decision factors for major selection are divided into two types called individual factors and external factors. The system is used by students in School of Information Technology, Suranaree University of Technology, Thailand. There are four choices for academic major selection of Information Technology students which are Communications, Enterprise software, Information studies, and Management information system fields. The evaluation results reveal that the intelligent system for advising students in academic major selection is achieved in 85.72 per cent of recall by average.

Keywords: intelligent system, academic major, university student

Introduction
Prospective university students of Thailand need to choose faculty, course or major that is suitable to themselves. Many students have a problem in choosing the field of study. For instance, Pinyo (2008) found that a small number of the twelfth-grade students decided to study the fields of science and technology. It may be caused by social context factors such as the economic and social conditions of their family, influence from related persons, or public relations of educational institutions. Those factors empower students to make decisions to choose a field of study. The research of Waiyamai et al. (2011) found that the first-year students of the Faculty of Engineering, who chooses academic majors in the second year, cannot choose an appropriate academic major for themselves because of a lack of experience and knowledge about majors. Most students make decision based on their feelings, preferences, or environment instead of their abilities and characteristics. Magjaroen (2008) findings revealed that students in the Faculty of Business Administration faced problems in every semester, such as requesting to change the academic major, resignation or termination of student status. The reason is that students choose to study what they do not like and have low aptitude. From the survey of university admission in Thailand, the problem in choosing the field of study occurs in almost all educational institutions. Because there are many decision-making factors and these factors vary according to each institution. Most related work about the decision-making model in selecting academic majors applied data mining techniques to analyze data (Waiyamai et al., 2011; Ahmad et al., 2009). Some research used different data mining techniques such as Bayesian network (Uttamamunee and Praneetpolgrang, 2010) and association rule (Alshareef et al., 2015). In addition, the assessments are different depending on the research objectives and data used in analysis are grade point average (GPA). In this research, the use of data mining techniques may not be appropriate because there are many criteria in selecting academic majors of Information Technology of Thailand University. Those criteria are future career, affection, proficiency, course content, career opportunities, job security and career advancement, and future income. Data of these criteria have not been collected; therefore, the data mining techniques which need to use a large amount of data are not appropriate.

However, a technique that are mostly used in decision-making related research is an analytic hierarchy process (AHP). For instance, Pichaichok and Payakpate (2006) applied the AHP technique to study about scholarship consideration for students by using four criteria, which are grade, behavior, station in life, and the class year. The research of Jarmil and Jarot (2012) applied the AHP technique to recommend students an undergraduate curriculum by considering three
criteria: educational background, interests and tuition fees.

The AHP technique can rank academic majors without the use of enormous data like data mining techniques, but it uses the opinions from experts. The AHP can analyze factors related to a human decision-making process. It is performed by decomposing the decision problem into a hierarchy of more easily comprehended sub-problems. Once the hierarchy has been constructed, the decision-makers evaluate it systematically through a series of pairwise comparisons that derive numerical weights or priorities for each element of the hierarchy. Thus, it is a very scalable technique. This capability distinguishes the AHP from other decision-making techniques (Tonsirikongkon, 1999).

Thus, this research applies the analytic hierarchy process for developing an intelligent system for advising an academic major of university students.

Methodology

The intelligence system is essential to advise students in the selection of academic major. Figure 1 illustrates the framework of the proposed intelligence system consisting of three principal components which are users of the system, a data gathering process, and a model construction process.

Users of the system can be grouped into three types as follows.

1. Target student: A student who need academic major recommendations.
2. System Administrator: An administrator who creates a recommendation model for academic major selection.
3. Students: These are the second-year students of Suranaree University of Technology (SUT) in Thailand who provide opinions about criteria of academic major selection.
4. Expert: An academic staff who can assign the scores for the criteria comparison.

Figure 1 The framework of an intelligent system for advising academic majors

In the data gathering engine, the data of academic major selection are collected from students and an expert. These gathered data are stored in a database and then applied for the recommendation model construction. More details of data gathering are explained in the data gathering section. A model construction engine applies an analytic hierarchy process (AHP) to calculate criteria priorities of major selection and create a recommendation model. A user interactive engine gets a personal data of a target student, employs the recommendation model to rank academic majors, and advise to the target student. Details of the model construction process are explained later.
Data Gathering

The development of the intelligent system for advising academic majors requires input data from students and an expert as follows.

Data from students

The population of this research comprised 280 of sophomore students in Information Technology, Suranaree University of technology. a stratified sampling method was used. The sample size is 165 students, which was obtained from Yamane’s formula (Yamane, 1967), which has a 95 per cent confidence level. Data from students included opinions about criteria of academic major selection. Criteria and sub-criteria of academic major selection of University students can be summarized as shown in Figure 2.

Data from experts

An expert of this research is a chief of academic staffs at School of Information Technology in SUT. Data collected from the expert are opinions about criteria comparison for major selection.

An expert must give opinion which criteria in each pair of compared criteria are more important when selecting a major. Important scores for the criteria comparison are referenced from the 1-to-9 scale of relative importance (adapted from Saaty, 1980), where “intensity of important = 1” implies that two criteria are equally important, and “intensity of important = 9” implies that one criterion is absolutely more important than another criterion. A pairwise comparison matrix for criteria is shown in Table 1.

The pairwise comparison matrices for the sub-criteria are also constructed in a similar fashion. An example of a pairwise comparison matrix of sub-criteria of personal criterion as shown in Table 2.

![Figure 2 An AHP hierarchy of criteria of academic major selection](image)

![Table 1 A pairwise comparison matrix of major selection criteria](image)

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Individual Factor</th>
<th>External Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual Factor</td>
<td>1.00</td>
<td>5.00</td>
</tr>
<tr>
<td>External Factor</td>
<td>1/5.00</td>
<td>1.00</td>
</tr>
</tbody>
</table>
Table 2 A pairwise comparison matrix of sub-criteria of personal criterion

<table>
<thead>
<tr>
<th>Sub-criteria of Individual Factor</th>
<th>Future career in the academic majors</th>
<th>Affection and proficiency in the academic majors</th>
<th>Course content in the academic majors</th>
<th>School Record</th>
</tr>
</thead>
<tbody>
<tr>
<td>Future career in the academic majors</td>
<td>1.00</td>
<td>1/4.00</td>
<td>4.00</td>
<td>4.00</td>
</tr>
<tr>
<td>Affection and proficiency in the academic majors</td>
<td>4.00</td>
<td>1.00</td>
<td>6.00</td>
<td>7.00</td>
</tr>
<tr>
<td>Course content in the academic majors</td>
<td>1/4.00</td>
<td>1/6.00</td>
<td>1.00</td>
<td>1/2.00</td>
</tr>
<tr>
<td>Grade</td>
<td>1/4.00</td>
<td>1/7.00</td>
<td>2.00</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Model Construction

This research applies the AHP (Saaty, 1980) to rank the academic majors because of its capability of embedding the information of expert in the ranking process. The information of expert plays an important role in the ranking of academic majors. The designed recommendation model has four processes, which are described as follows.

**Process 1:** calculating the priority of criteria. The priority calculation of major selection criteria is started by collecting data of pairwise comparison of criteria, as described in Table 1. After that, there are four steps processed in the priority calculation of criteria:

- Step 1: Summarize all values in each column to obtain a total in the column.
- Step 2: Divide all values in each column with a total in their column.
- Step 3: Summarize all values in each row to obtain a total in the row.
- Step 4: Divide all values in the total in row column by a total in the column.

According to an example data as shown in Table 3, it can be concluded that the Individual Factor is more important than the External Factor.

Table 3 The priority calculation of criteria

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Individual Factor</th>
<th>External Factor</th>
<th>Total in Row</th>
<th>Priority of Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual Factor</td>
<td>1.00/1.20</td>
<td>5.00/6.00</td>
<td>1.67</td>
<td>1.67/2.00 = 0.83</td>
</tr>
<tr>
<td>External Factor</td>
<td>(1/5.00)/1.20</td>
<td>1.00/6.00</td>
<td>0.33</td>
<td>0.33/2.00 = 0.17</td>
</tr>
<tr>
<td>Total in Column</td>
<td>1.20</td>
<td>6.00</td>
<td>2.00</td>
<td>1.00</td>
</tr>
</tbody>
</table>

**Process 2:** calculating the priority of sub-criteria. A process of sub-criteria comparison is similar to that of criteria comparison as illustrated in Table 4 and 5. After calculating the priority of sub-criteria, those priorities of sub-criteria must be adjusted by multiplying the priority of sub-criteria with the priority of their criteria as depicted in Table 6.

Table 4 An example of calculating the priority of sub-criteria of Individual Factor

<table>
<thead>
<tr>
<th>Sub-criteria of Individual Factor</th>
<th>Future career in the academic majors</th>
<th>Affection and proficiency in the academic majors</th>
<th>Course content in the academic majors</th>
<th>School Record</th>
<th>Total in Row</th>
<th>Priority of Sub-criteria of Individual Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Future career in the academic majors</td>
<td>1.00/5.50</td>
<td>(1/4.00)/1.56</td>
<td>4.00/13.00</td>
<td>4.00/12.50</td>
<td>0.97</td>
<td>0.242</td>
</tr>
<tr>
<td>Affection and proficiency in the academic majors</td>
<td>4.00/5.50</td>
<td>1.00/1.56</td>
<td>6.00/13.00</td>
<td>7.00/12.50</td>
<td>2.39</td>
<td>0.598</td>
</tr>
<tr>
<td>Course content</td>
<td>(1/4.00)/5.50</td>
<td>(1/6.00)/1.56</td>
<td>1.00/13.00</td>
<td>(1/2.00)/12.50</td>
<td>0.27</td>
<td>0.067</td>
</tr>
</tbody>
</table>
in the academic majors

<table>
<thead>
<tr>
<th>School Record</th>
<th>(1/4.00)/5.50</th>
<th>(1/7.00)/1.56</th>
<th>2.00/13.00</th>
<th>1.00/12.50</th>
<th>0.37</th>
<th>0.093</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total in Column</td>
<td>5.50</td>
<td>1.56</td>
<td>13.00</td>
<td>12.50</td>
<td>4.00</td>
<td>1.000</td>
</tr>
</tbody>
</table>

Table 5 An example of calculating the priority of sub-criteria of External Factor

<table>
<thead>
<tr>
<th>Sub-criteria of External Factor</th>
<th>Career Opportunities</th>
<th>Job security and career advancement</th>
<th>Future Income</th>
<th>Total in Row</th>
<th>Priority of Sub-criteria of External Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Career Opportunities</td>
<td>1.00/1.40</td>
<td>5.00/7.00</td>
<td>5.00/7.00</td>
<td>2.14</td>
<td>0.714</td>
</tr>
<tr>
<td>Job security and career advancement</td>
<td>(1/5)/1.40</td>
<td>1.00/7.00</td>
<td>1.00/7.00</td>
<td>0.43</td>
<td>0.143</td>
</tr>
<tr>
<td>Future Income</td>
<td>(1/5)/1.40</td>
<td>1.00/7.00</td>
<td>1.00/7.00</td>
<td>0.43</td>
<td>0.143</td>
</tr>
<tr>
<td>Total in Column</td>
<td>1.40</td>
<td>7.00</td>
<td>7.00</td>
<td>3.00</td>
<td>1.000</td>
</tr>
</tbody>
</table>

Table 6 The priority adjustment of sub-criteria according to their criteria

<table>
<thead>
<tr>
<th>Sub-criteria</th>
<th>Priority of Sub-criteria</th>
<th>Priority of Sub-criteria according to Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual Factor</td>
<td></td>
<td>(Priority = 0.83)</td>
</tr>
<tr>
<td>Future career in the academic majors</td>
<td>0.242</td>
<td>0.201</td>
</tr>
<tr>
<td>Affection and proficiency in the academic majors</td>
<td>0.598</td>
<td>0.496</td>
</tr>
<tr>
<td>Course content in the academic majors</td>
<td>0.067</td>
<td>0.056</td>
</tr>
<tr>
<td>Grade</td>
<td>0.093</td>
<td>0.077</td>
</tr>
<tr>
<td>External Factor</td>
<td></td>
<td>(Priority = 0.17)</td>
</tr>
<tr>
<td>Career Opportunities</td>
<td>0.714</td>
<td>0.121</td>
</tr>
<tr>
<td>Job security and career advancement</td>
<td>0.143</td>
<td>0.024</td>
</tr>
<tr>
<td>Future Income</td>
<td>0.143</td>
<td>0.024</td>
</tr>
</tbody>
</table>

Process 3: calculating the priority of student’s opinion scores. The personal data of a target student for calculating the score priority is obtained from the student enquiries. The target student will assign opinion scores in accordance with the criteria of academic major selection using the 5-rating scale [10], where “rating = 1” implies strongly disagree, “rating = 2” implies disagree, “rating = 3” implies neutral, “rating = 4” implies agree, and “rating = 5” implies strongly agree. The priority of student’s opinion scores is depended on each target student.

Process 4: ranking academic majors to the target student. Ranking academic majors occurs when the target student specifies his/her personal data. Then, the intelligent system will rank academic majors for the target student. The four following steps are used to calculate the priority of major selection criteria for ranking purposes.

First, the personal data of target student are transformed into the priority of student’s opinion scores. Second, the priority of student’s opinion scores in each criterion is multiplied with the priority of its criterion. Third, the overall score of each academic major is derived from a summation of the multiplication results. Finally, the academic majors are ranked by those overall scores in a descending order, as shown in Table 7.
Table 7: An example of ranking academic majors using the analytic hierarchy process

<table>
<thead>
<tr>
<th>Major Selection Criteria</th>
<th>Academic Majors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Enterprise Software</td>
</tr>
<tr>
<td>Individual Factor (Priority = 0.83)</td>
<td></td>
</tr>
<tr>
<td>Future career in the field of study (0.201)</td>
<td>5.00*0.201</td>
</tr>
<tr>
<td></td>
<td>= 1.01</td>
</tr>
<tr>
<td>Affection and proficiency in the field of study (0.496)</td>
<td>3.82*0.496</td>
</tr>
<tr>
<td></td>
<td>= 1.89</td>
</tr>
<tr>
<td>Course content in the field of study (0.056)</td>
<td>5.00*0.056</td>
</tr>
<tr>
<td></td>
<td>= 0.28</td>
</tr>
<tr>
<td>School Record (0.077)</td>
<td>4.14*0.077</td>
</tr>
<tr>
<td></td>
<td>= 0.32</td>
</tr>
<tr>
<td>External Factor (Priority = 0.17)</td>
<td></td>
</tr>
<tr>
<td>Career Opportunities (0.121)</td>
<td>3.71*0.121</td>
</tr>
<tr>
<td></td>
<td>= 0.45</td>
</tr>
<tr>
<td>Job security and career advancement (0.121)</td>
<td>3.73*0.024</td>
</tr>
<tr>
<td></td>
<td>= 0.09</td>
</tr>
<tr>
<td>Future Income (0.024)</td>
<td>5.00*0.024</td>
</tr>
<tr>
<td></td>
<td>= 0.12</td>
</tr>
<tr>
<td>Overall Scores</td>
<td>4.156</td>
</tr>
<tr>
<td>Ranks</td>
<td>1</td>
</tr>
</tbody>
</table>

Results and Discussion

The intelligent system focuses on performance of the recommendation model in the term of accuracy. This research applies a statistical method called precision and recall (Goutte and Gaussier, 2005) to measure the accuracy of model as equation (1) and (2), respectively.

\[
\text{Precision} = \frac{TP}{(TP+FP)} \times 100\% \quad (1) \\
\text{Recall} = \frac{TP}{(TP+FN)} \times 100\% \quad (2)
\]

Where

TP indicates the number of true positives (model correctly recommends positive class, e.g., the communication student is correctly recommended as the communication major)

TN indicates the number of true negatives (model correctly recommends negative class, e.g., the non-communication student is correctly recommended as the non-communication major)

FN indicates the number of false negatives (model incorrectly recommends negative class, e.g., the communication student is incorrectly recommended as the non-communication major)

FP indicates the number of false positives (model incorrectly recommends positive class, e.g., the non-communication student is incorrectly recommended as the communication major)

The population of this evaluation comprised the 159 senior year students in Information Technology, Suranaree University of technology. These students have selected a major as the left column in Table 7. There are four majors which are Communication (COMM), Enterprise Software (ES), Information Studies (IS), and Management Information System (MIS). The results of major recommendation by the designed model are shown in Table 8.
Table 8 The results of major recommendation by the designed model

<table>
<thead>
<tr>
<th>Recommended Major</th>
<th>COMM</th>
<th>ES</th>
<th>IS</th>
<th>MIS</th>
<th>Total</th>
<th>Weight</th>
<th>TP</th>
<th>FP</th>
<th>TN</th>
<th>FN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication (COMM)</td>
<td>40</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>43</td>
<td>43/159 = 0.2704</td>
<td>40</td>
<td>16</td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>Enterprise Software (ES)</td>
<td>3</td>
<td>17</td>
<td>0</td>
<td>1</td>
<td>21</td>
<td>21/159 = 0.1321</td>
<td>17</td>
<td>6</td>
<td>4</td>
<td>132</td>
</tr>
<tr>
<td>Information Studies (IS)</td>
<td>5</td>
<td>2</td>
<td>26</td>
<td>1</td>
<td>34</td>
<td>34/159 = 0.2138</td>
<td>26</td>
<td>4</td>
<td>8</td>
<td>121</td>
</tr>
<tr>
<td>Management Information System (MIS)</td>
<td>8</td>
<td>2</td>
<td>3</td>
<td>48</td>
<td>61</td>
<td>61/159 = 0.3836</td>
<td>48</td>
<td>2</td>
<td>13</td>
<td>96</td>
</tr>
<tr>
<td>Total</td>
<td>56</td>
<td>23</td>
<td>30</td>
<td>50</td>
<td>159</td>
<td>1</td>
<td>56</td>
<td>23</td>
<td>30</td>
<td>50</td>
</tr>
</tbody>
</table>

Figure 3 presents precision and recall values of each major. The figure shows that the recommendation model is achieved in 84.44 of precision and 82.39 of recall by average.

Figure 3: Accuracy results of the recommendation model in academic major selection

Conclusions and Recommendations

This paper focuses on designing and developing the intelligent system for advising an academic major of university students. The designed model for advising the major applies an analytic hierarchy process. The main criteria for decision-making consist of individual and external factors. There are four alternatives to make decision which are communication, enterprise software, information studies, and management information system. The evaluation of recommendation model uses a total of 159 senior students. The evaluation results indicate that the designed model is achieved in 84.44 of precision and 82.39 of recall. Thus, the intelligent system could advise students to select their academic majors.
Although the developed intelligent system is applied for Information Technology curriculum of Suranaree University of Technology, the recommendation model of the system is general so that it can be applied to any curricula. In the near future, the intelligent system for advising majors could integrate with an academic advisor system to make decisions that support education.

Reference


Teaching / Learning Process And Adaptation Of Disabled Students Of Some Faculties In University Of Ngaoundere
Mohamadou Bassirou Arabo, The University of Ngaoundere, Cameroon

ABSTRACT

Integrating handicap students in ordinary classes is useful to improve learning style of student with disabilities. Global education refers to Education for all human beings. Adaptation of teaching to disabled students raise questions about the operation of learning task needed necessary gesture skills and getting complex visual informations. To help these students to acquire knowledge and competences which refers to individual development and social integration (Handiscol, 2001), it needs to adapt content and strategy of teaching. We are studying task needed situation involve necessary gesture skills and complex visual informations during teaching/learning process. Our research is based on the qualitative analysis of interview with teachers in some Faculties of The University of Ngaoundere and observation of disabled students during activities in classes. Our results highlight the adaptation of teaching in relation to students with particular difficulties in various situations, and possible design that can help student to acquire competences. They lead us to consider the impact of adaptation in teaching disabled students. From this work, we draw some perspectives on inclusive practices according to acquiring knowledge and competences by disabled students.

Keywords: inclusive education, teaching /learning, gesture, disabled, adaptation.
Risk Perceptions Among Potential Airbnb Hosts
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ABSTRACT

The past few decades have witnessed major advancements in technology, which has transformed the business world for good. Airbnb has taken advantage of these technologies and emerged as a disruptive innovation in the tourism and hotel industry. Airbnb is based on the concept of the sharing economy, an aspect which has seen it attract millions of customers annually. The company currently has presence in over 65,000 cities in 191 countries. There rapid success of Airbnb has attracted several researchers, who have explored issues of concern in the industry. However, majority of the research has focused on issues affecting the guests and their intention to use or recommend the service. This study attempts to fill the existing gap in research by assessing the perceived risk among Airbnb hosts. The study focuses on service, financial, safety and security, psychological, political, and privacy risks. Ease of use is also considered in the study among factors that determine adoption intention among hosts. A survey consisting of 22 questions was administered on a group of young adults situated in Dubai, most of who were students. The results of the study revealed that host’s adoption intention is positively influenced by financial risk and time concern. A negative correlation was found between safety and security risk, psychology risk, political risk, privacy risk, ease of adoption, and the hosts’ adoption intention. This study informs the management of Airbnb on the existing concerns of hosts that might affect the continuity of the business and recommends strategies for addressing the issues.

Keywords: Airbnb, host, perceived risk, sharing economy
Sustainable Development From A Local Perspective: An Interpretive Faafaletui Inquiry

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Tolu Muliaina, Auckland University of Technology, New Zealand
Vaoiva Ponton, Auckland University of Technology, New Zealand
Sione Vaka, Auckland University of Technology, New Zealand

ABSTRACT

This paper provides a literature review of sustainable development from a ‘local’ perspective. Sustainable development can mean different things to different groups of people. For indigenous people, this can be voiced in several ways. Indigenous communities/people around the world share the following: strong links to lands and environment, genealogy, distinct social, economic, political and cultural systems, and resolve to maintain self-identification and self-determination in terms of knowledge, management and development. When it comes to sustainable development, Pacific island countries like Samoa are measured according to how well they have achieved sustainable development goals (SDG), which were preceded by millennium development goals (MDG). These goals can contradict with how first world development notions of sustainable development are perceived. These goals may not be inclusively indigenous but serves developed nations’ notion of their development in their world view. Considering this, the local people’s voices are imperative to ensure sustainable development is pursued from their lens. This concern warrants further investigation utilising Pacific methodologies from an interpretive inquiry, faafaletui framework.
Keynote
Here And Now: Everyday Technology In The Modern Classroom
Rachel Dunbar, ReDirect Consulting, Inc., USA

ABSTRACT
During a time when technology seems to be a driving force in both business and education, it is not uncommon for some individuals to become frustrated with its dominant presence. While we can surely boast that it is the “wave of the future”, we must also be concerned with the impending loss of simplistic, traditional processes. It is inevitable that the Digital Age will continue to grow each day. However, leaders and educators must discover how to harness this incredible energy and use it in ways that will not only be advantageous to them, but beneficial to their employees and students as well.

BIOGRAPHY
Rachel Dunbar, Ph.D. is the founder and CEO of ReDirect Consulting, Incorporated (RDC, Inc.), an educational consulting company specializing in industry assessment and program restructuring in order to help clients realize academic and professional excellence. Rachel has taught and presented in Australia, Asia, Europe, and Africa, which has influenced the work that she does. She created #getapassportandgo to help students gain global exposure and increase their interest in traveling abroad. Rachel holds a Masters degree in Curriculum and Teaching from Teachers College, Columbia University and a Doctorate in Early Childhood/Urban Education from Georgia State University.
The Busy Professor’s Interactive Teaching Toolkit For Adapting To A Quickly Changing Student Body

Timothy F. Slater, University of Wyoming, USA

ABSTRACT

No matter where you teach or at what age level, we all start each new year with increasingly diverse groups students populating our courses. By and large, the current cadre of faculty and teachers fully understand the value and importance of training a wider diversity of students who understand and contribute to the world's scientific and economic enterprise; yet, few professors have had the opportunity to learn how to best teach the quickly broadening range of contemporary student audiences in multi-cultural classrooms. Successfully teaching an ever-increasing diversity of students requires professors and teachers to have a flexible toolkit of various teaching strategies. Today’s educators need to be able to do far more than deliver information accurately with illustrations to their students. Instead, the most effective educators need a modern and flexible toolkit of strategies to be able to also manage two-way interactions with students through real-time questioning and providing multiple, alternate representations of ideas. Strategies based on students voting on question choices and completing collaborative group activities during class is one approach. Another approach is to use in-class time for students to do research projects while allocating outside of class time to reading and listening to Internet-delivered lectures. Today’s educators benefit by having a wide variety of strategies at the ready to be able to help all students learn.
Leading An International Experience:
Insights From The Field
Jo Ann M. Pinto, Montclair State University, USA

ABSTRACT

With many colleges and universities adding an international component to their curriculum, it is entirely likely that educators may be tapped to lead an overseas experience. The following paper provides insights, in the form of a timeline, to guide faculty and staff who may find themselves in this position. The author of this paper has lead four trips on three continents in recent years.
MBA Student Performance In Diversity-Related Assignments, Online Versus Face-To-Face Classes: A Content Analysis Of Assessment Results
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Suresh Chalasani, University of Wisconsin-Parkside, USA
Parag Dhumal, University of Wisconsin-Parkside, USA

ABSTRACT
An analysis of MBA student assessment results for a major diversity-related assignment is in progress to ascertain whether there are any significant differences due to course delivery formats: online versus face-to-face classes. This analysis is one part of a large-scale research project analyzing assessment results from different business disciplines. The research project also focuses on competency-based education. The sample in this part of the research project consists of 189 MBA students in the required Creative and Innovative Management course at a small Midwestern comprehensive university during the academic year 2018-2019. Content analysis is one of the primary analytical methods specifically used to address research questions applicable to this management class. An external partner, Academic Partnerships, primarily funded the large-scale research project.
What Is The Future Value Of Present Value Tables In Teaching The Time Value Of Money?

John A. Rude, Bloomsburg University, USA
Carolyn Lamacchia, Bloomsburg University, USA

ABSTRACT

One of the basic financial statements is the Statement of Cash Flows. It is divided into three sections, financing, investing and operating, which present the basic reasons to raise and spend money. Whether starting or growing a business, the first step is to raise money (a financing activity), which is then invested in revenue producing assets (an investing activity). These decisions are affected by the cost of capital and the rate of return, which brings us to the time value of money. Throughout accounting and finance courses students are taught how to solve time value of money problems so that financing and investing decisions made by companies result in successful operations. Before the advent of readily available personal computers and spreadsheet software, students were taught to solve time value of money problems using present value and future value of amounts and annuities tables. The process has always seemed cumbersome and limited by the number of periods and number of interest rates shown in the tables.

VisiCalc, released on 1979, was the first spreadsheet program. VisiCalc ultimately led to Lotus 1-2-3 in 1983. In 1981, the Osborn 1 was released. These and other events led to the widespread use of personal computers for business applications. So, today, students may be taught to solve various time value of money problems like internal rate of return and net present value in a computer lab which have a Microsoft excel program. And, they are able to solve time value of money problems on their tablet or sell phone. Documents 2 Go, Quicksheet, Sheet2, and Google Documents are just a few of the apps available for tablets and phones. Our question is why are present value and future value tables used to teach and solve time value of money problems?

The advantage of laptop computers, cell phones and calculators with spreadsheet apps or programs is that the limitation of paper present and future value tables no longer exist. Furthermore, our belief is that the key skill in understanding and solving time value of money problems is understanding and diagraming when the cash flows occur.

In the current study, we reviewed finance and accounting texts to determine the pedagogy use to teach the solutions to time value of money problems. We then suggest a change in the emphasis of the pedagogy used to teach the solution to time value of money applications. We believe the emphasis should be placed on the ability of the students to develop time lines of the cash flows and prepare prove the results of the various applications that determine the present or future value of cash flows. We believe that present value and future value tables belong in courses showing the history of accounting and finance applications.
Assessing The Impact Of Online Video Tutorials On Student Performance In A Chemistry Lab
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Ozgur Ecevit, Borough of Manhattan Community College, USA

ABSTRACT

The majority of undergraduate students are classified as Generation Z, born after 1995. One of the most distinct characteristics of this generation is their reliance on technology. Most of them learn by watching videos rather than by reading textbooks. Instructors may need to consider adding digital based content to their traditional teaching materials in order to meet the needs of Generation Z students. CHE 121 (Fundamentals of General, Organic and Biological Chemistry I) is the first part of a two-semester course sequence that introduces principles and concepts of general, organic and biological chemistry. It is recommended for students intending to transfer to bachelor’s degree in nursing and allied health science curricula. Around 700 students enroll in CHE121 each semester, about 30 sections. It is usually the first Science course the pre-nursing students take. In this study, we investigated the impact of online video tutorials on student performance in CHE121. We created instructional videos for two experiments to convey aspects of experimental procedure and calculations. To evaluate the effectiveness of the video tutorials, we analyzed the performance of students who watched the instructional videos using sections of students who did not view the tutorials as the control.
Consumer Behaviors In Certified Green Buildings -An Empirical Study
S. Ping Ho, National Taiwan University, Taiwan
Van Hieu Nguyen, National Taiwan University, Taiwan
Wei-Che Hsu National Taiwan University, Taiwan

ABSTRACT
Globally, green buildings (GBs) are receiving more and more attentions and being considered a major strategy for the goal of sustainable development. Although the importance of GBs has been recognized by many governments, evidence shows that real estate developers are still reluctant to develop certified green houses. In other words, in spite of governments’ long years’ efforts in promoting GBs, the developers do not perceive that housing buyers are willing to pay for the green premium of certified GBs. We argue that the failure of promoting GBs in housing market is mainly because of the lack of knowledge on the consumers’ behaviors in certified GBs. Therefore, this study aims to study what factors motivate the housing buyers to consider buying a certified green building and to propose suitable strategies for governments in further promoting GBs in housing markets. In this study, we study the consumer behaviors of Vietnamese because there are more serious potential housing buyers due to the blooming housing market in Vietnam. An empirical study was conducted with 308 responses from Vietnamese to test the proposed hypotheses on the factors that may affect the housing buyers’ willingness to purchase a certified green house. The results of econometric analysis confirmed the importance of many hypothesized factors, including income, environmental awareness, knowledge of GBs, perceived personal benefits from GBs, and the perceiving of GBs as a trend. Then, by combining the results from the empirical study and literature review, a series of strategies are proposed for promoting green buildings.

Keywords: Green buildings, consumer's behaviors, Vietnam, econometric analysis.

I. INTRODUCTION

The world population has now reached to 7.7 billion people and the world is facing with natural resource depletion and serious social problems. The question being asked is today is "How can sustainable development be achieved?" Solving environmental problems is recognized as an approach to adapt to whole three features of sustainable development (SD) (Lipu et al., 2013). Green buildings have been recognized by many governments and promoted as a strategy for minimizing negative effect of construction industry as well as reaching SD.

The promotion of certified green buildings has been focusing on public infrastructure and some sectors such as factories, offices, and schools, etc. Residential buildings have received much less attention. However, globally, residential sector is responsible for 16–50% of national energy consumption by all sectors, and averages approximately 30% worldwide (Saidur et al., 2007). Currently, in housing markets, the certified green buildings are often limited to luxury buildings. As a result, the overall performance of promoting green buildings are largely discounted.

Therefore, this study aims to study what factors motivate the housing buyers to consider buying a certified green building and to propose suitable strategies for governments in further promoting GBs in housing markets. In this study, we study the consumer behaviors of Vietnamese because there are more serious potential housing buyers due to the blooming housing market in Vietnam. The results of econometric analysis confirmed the importance of many hypothesized factors, including income, environmental awareness, knowledge of GBs, perceived personal benefits from GBs, and the perceiving of GBs as a trend. Then, by combining the results from the empirical study and literature review, a series of strategies are proposed for promoting green buildings.
II. EMPIRICAL STUDY

2.1. Hypotheses and the conceptual model of the consumer's behaviors of certified green buildings

2.1.1. Theoretical background

Nowadays, social norms, values, and individual beliefs have become new factors to be considered by consumers in addition to price and quality preferences (Caruana, 2007). Environment-friendly products have considerable growth as a result of the increasing consumers’ environmental considerations (Hunt & Dorfman, 2009). Hueber (1991) pointed out that over 70% of Americans supported environmental protection programs and 49% of them would reject products that were bad influence to the environment. In this study, we study the consumer behaviors of Vietnamese because there are more serious potential housing buyers due the blooming housing market in Vietnam.

2.1.2. Hypotheses

The conceptual model depicting the proposed hypotheses is shown in Fig. 1. The dependent variable of the model is the 'Willingness to buy': assuming at 2% extra cost or at 5% extra cost.

Group 1: Personal traits

Personal traits, particularly income, place of living, and education level, are hypothesized the factors that may influence the consumer’s willingness to purchase a certified GB. ‘Income’ indicates an individual’s purchasing power. ‘Place of living’ may represent locational specific normative or cultural characteristics toward green consumerism. ‘Equational level’ may also represent educational related cultural-cognitive characteristics toward greenness and GBs. These individual traits normally are used as control variables to prevent possible biases. In this study, these variables representing personal traits are both the control and the independent variables. Accordingly, we propose the following hypotheses.

H1a: Income has a positive impact on the willingness to buy, in other words, people with higher income people will have higher willingness to buy.

H1b: Place of living has a positive impact on the willingness to buy, in other words, people live in bigger city will have higher willingness to buy.

H1c: Education level has a positive impact on the willingness to buy, in other words, people with higher education level will have higher willingness to buy.

Group 2: Rational traits.

We hypothesize that the perceived benefits to both environment and individuals due to GBs are critical to the consumers’ decisions to buy a certified GBs. ‘Environmental awareness’ affects the perceived value of better environment. ‘Knowledge’ of the GBs affects the perceived benefits to the environment and individuals. Accordingly, we propose the following hypotheses.

H2a: Environmental awareness has a positive impact on the willingness to buy, in other words, people have higher environmental concern will have higher willingness to buy.

H2b: Knowledge has a positive impact on the willingness to buy, in other words, people have higher knowledge about green building will have more willingness to buy.

H3c: Personal benefits from GBs has a positive impact on the willingness to buy, in other words, people who think green building offer higher benefits for them will have higher willingness to buy.

H4d: Environmental benefits due to GBs has a positive impact on the willingness to buy, in other words, people who
think green building offer higher benefits for environment will have higher willingness to buy.

Group 3: Mental/Social traits

We further hypothesize that mental and social traits may also play an important role in green consumerism. ‘Perceived trend’ is a consumer’s perception on buying certified GBs as a trend in a society. ‘Sense of honor’ from owning a certified GB relates to how a society values a certified GB and how the consumer reacts to such value. Accordingly, we propose the following hypotheses.

H3a: Perceived trend has a positive impact on the willingness to buy, in other words, people who think green building will be a trend in the future will have higher willingness to buy.

H3b: Sense of honor has a positive impact on the willingness to buy, in other words, people who feel honor when own green building will have higher willingness to buy

2.2. Empirical Model and Research Design

2.2.1. Econometric model for testing hypotheses.

Ordinary least-squares (OLS) multiple linear regression analysis is used to test the hypotheses. OLS estimators are the best linear unbiased estimators (BLUEs) (Wooldridge, 2015). To ensure that the homoscedasticity assumption for OLS regression is satisfied, a White test (White, 1980) is performed. A regression specification error test (RESET) test is performed to test potential specification errors, especially the nonlinearity of functional form. Econometric model is as follows.

\[
\text{Willingness to buy} = \beta_0 + \beta_1 \text{Gender} + \beta_2 \text{Log(age)} + \delta_1 \text{Area-special} + \delta_2 \text{Area-small} + \beta_3 \text{Log(income)} + \delta_3 \text{Above_college} \\
+ \delta_4 \text{Under_college} + \beta_4 \text{Environmental awareness} + \beta_5 \text{Knowledge} \\
+ \beta_6 \text{Personal benefits} + \beta_7 \text{Environment_benefits} + \beta_8 \text{Trend} + \beta_9 \text{Honor} + u
\]

In the models, \( \beta_0 \) is the constant, \( \beta_1 - \beta_9 \) and \( \delta_1 - \delta_4 \) are the regression coefficients and \( u \) is a random disturbance. To test each hypothesis, we examine the data against the null hypothesis that the hypothesized variable has no significant impact, positive or negative, on the 'willingness to buy'. Two-tailed significance level is used because it gives a more conservative or stringent criterion. The empirical model is depicted as shown in Figure 1.
2.2.2. Data

To obtain the necessary data for the analysis, we conducted a questionnaire survey with Vietnamese response. The age of observations is mainly focus on 30 to 40 (67%) because people of this age are those who have highly demand and practicality for buying a house. After reviewing literature, a questionnaire was created. The questionnaire format consists of three components: basic information of the interviewee; questions for rational traits variables such as, environmental awareness, knowledge, etc.; and mental/social traits variables such as, trend, and honor. This sample size is 308 collected from questionnaire replies.

2.2.3. Measures of regression variables.

Dependent variable: Willingness to buy.

The limited of higher initial cost of green buildings was used to examine the willingness to buy of customers. Level 'silver' of LOTUS certification was used as a standard to calculate. Using six-point Likert scales. In this case, the score is ranging from 1 (strongly disagree) to 6 (strongly agree).

Control variables:

- Gender: This variable is control variable, which is designed by dummy variable. ‘Gender’ equals zero, which means the respondent is female, and the respondent is male if ‘gender’ equals one.
- Age: This variable is control variable, which represent for age of respondents. It may be related preferences.
- Income: This variable represent for purchasing power so it is concerned as independent variable and it is used to test H1a. In this case, respondents were asked about family income instead of personal income because in Vietnam case, to date, it is still common when Vietnamese people received financial support
from their parent or their family when they want to buy a house.

- Living places: Three groups and two dummy variables are used to represent for this variable. In detail, people were asked about the city, which they live in and following Vietnam urban center system classification the respondent will classify in respective group. Three groups are group 1 (people live in special urban center), group 2 (people live in grade-I urban center), group 3 (people live in grade-II and grade-III urban center). In which, group 2 is chosen as base group, group 1 is represented by ‘area_special’ dummy variable, group 3 is represented by ‘area_small’ dummy variable. H1b is examined by this variable.

- Education level: Same idea with living places, three group and two dummy variables are used for this variables. In which, three group are group 1 (education level of respondent is higher college, such as, master degree or PhD degree), group 2 (people finish college degree), group 3 (under college education level people). Group 2 is chosen as base group, ‘above_collge’ is dummy variable, which represent for group 1, ‘under_colege’ is for group 3.

Independent variables:

- Environmental_awareness: This variable was used to test the impact of 'Environmental_awareness' on the willingness to buy, as specified in H2a. 'Environmental_awareness' includes respondent concern about environment and their actions to protect environment. It is collected by take average of three questions. The first question is proposed to see how respondents concern and support to policy protects environmental. The second and third questions asked about the respondents actions such as, garbage sorting and using power equipment properly and reduce water consumption.

- Knowledge: This variable represents for respondent's knowledge about green buildings. It is defined by two questions. The first question is used for respondents to evaluate themself, in their opinion, how much they think they know about green buildings. The second question is proposed as a confirmation or a test for the first question. It is mentioned about main components of green buildings. Several choices are proposed and respondents have to pick all correct features, the score was counted by count the correct features they picked. After all, 'knowledge' equals average of two questions. If a respondent think he or she knows about green buildings a lot in the first question but the score of second question is low that it will lead to the valuable of 'knowledge' is lower than when only use the first question to collect dataset. It is a good way to ensure the accuracy of data.

- Personal_benefits: This variable represents for respondent's opinion about how much green buildings benefits effect to them. It is used to test the correlation between green buildings personal benefits and the acceptance of the respondents.

- Environ_benefits: Same idea with 'Personal_benefits' variable, this variable talk about environment benefits due to green building.

- Trend: This variable belongs to Mental/Social variable group. This group have no clearly explanations compare to Rational variable group, variables in this group mostly based on actor guess and experiences. 'Trend' used to test the correlation between the thinking green buildings will be the trend in the future and customer willingness to buy.

- Honor: This variable represents for reputation achieved when own a green buildings. To ensure the quality of database, two questions are asked in indirect way. The first question mentioned about own a green building will give people a good reputation. The second question talks about own a green buildings will make people different.

2.3. Results of econometric analysis and discussions.

2.3.1. Robustness of OLS regression analyses.

Several regression diagnostics were taken to ensure that major OLS assumptions were satisfied. Specifically, we tested whether there were specification errors and heteroskedasticity. First, the Ramsey RESET test was performed to test the linearity assumption for OLS. The F-statistic of the RESET test of the full model at 2% extra cost and 5% extra cost were 0.674 with a p-value of 0.413 and 1.73 with a p-value of 0.19, respectively. The test statistics indicated that
the functional form problem were not significant in both full models; i.e., linear regression were a proper empirical method for our study. Second, a White test was performed to test the homoskedasticity assumption for OLS. The F-statistic of the White test of the full model at 2% extra cost and 5% extra cost were 2.073 with a p-value of 0.0156 and 3.591 with a p-value of 0.000, respectively. Thus, we rejected the homoskedasticity assumption. Owing to the heteroskedasticity concern, we calculated the more stringent hetero-robust standard errors to determine the significance of regression coefficients through OLS regression.

2.3.2. Empirical results of hypothesis tests.

Table 1 summarizes the empirical results from the regression analysis. In the first step, we built the ‘model 1’ shown in Table 1, by including only the control variables as regressors. Both $H1b$ and $H1c$ are not supported which means ‘living places’ and ‘education level’ have not significant impacts on the ‘willingness to buy’. Only $H1a$ is supported in both ‘willingness to buy’ at 2% extra cost and 5% extra cost. In another word, people who have higher income will have more acceptances in buying a green house, it is reasonable but it may have not much meaning because it seem to be a fact that easy to understand. In addition, the adjusted R-squares (adj.$R^2$) in both models are very low which are 6.70% and 5.63% at 2% and 5% extra cost models, respectively. It indicates that the control variables together have not much impact on dependent variable. Thus, the inclusion of group 2 variables in model 2 (basic model) will contribute to the adj.$R^2$ of model 2.

In model 2, at 2% extra cost basic model, these variables explain 16.09% of ‘willingness to buy’, group 2 variables contribute 9.39% of explanation compare to model 1. Same situation with model 1, $H1a$ is supported but $H1b$ and $H1c$ are not supported. $H2b$ and $H2c$ are supported but surprisingly $H2a$ and $H2d$ are not. It is contrast to several previous studies. For example, in Taiwan, ‘environmental awareness’ is very significant on ‘willingness to buy’. (Suki, 2013) and (Kim & Choi, 2005) also emphasize the importance of environmental awareness on green purchase behaviors. At 5% extra cost basic model, the adj.$R^2$ is 19.43% which higher than model 1 is 13.8%. Compare to basic model at 2% extra cost, everything is the same, only ‘environmental awareness’ become significant. It can be explained that at higher cost, people may see the cost difference between green building and conventional building so they need more proof to justify the purchase; in this case, the proof is ‘environmental awareness’. To summarize, when we do not use mental/social traits variables, income, knowledge, personal benefits and environmental awareness are importance variables, which have significant effect to willingness to buy.

Most important, the result of full model is shown in table 1. At 2% extra cost full model, the dependent variable is explained by 17.36%, in which, mental/social traits variables contribute only 1.27% of willingness to buy. $H3b$ is not supported; only ‘trend’ is significant so 1.27% additional is come from ‘trend’ effect. Compare to basic model at 2% extra cost, income, personal benefits are still significant but knowledge become insignificant. So knowledge is not importance anymore or when we add ‘trend’ in the basic model, somehow it effect to this insignificant of knowledge? It calls for further investigation of ‘trend’ which we will discuss after examining full model at 5% extra cost. At 5% extra cost full model, adj.$R^2$ is 26.26 – increasing 6.83% compare to basic model. The same situation with full model at 2% extra cost, $H3b$ also is not supported; ‘trend’ is significant and contributing 6.83% of explanation – much higher than 1.27% in 2% full model. Compare to 2% full model, ‘knowledge’ is significant and the reason can be the same with situation in basic model, which is at higher cost, people need more proof to justify the purchase. An interesting thing is ‘environmental awareness’ become insignificant when comparing basic model, so the reason may be the same with ‘knowledge’ in 2% full model. Table 2 shows a model where ‘trend’ become dependent variable to see the correlation between trend and others which may explains why when we used mental/social traits variable, some variables become insignificant.

As the result in ‘trend’ model, knowledge is significant with positive effect to trend, in another word; trend includes influent of knowledge inside. It may explain why when we add ‘trend’ in full model, knowledge in 2% full model become insignificant. Another way to explain, 2% extra cost may be not too high; people do not see the cost different between green buildings and conventional buildings so they decided to follow the trend because trend has included knowledge inside already. The explanation is the same with environmental awareness in 5% full model. In addition, ‘honor’ is not significant in both 2% and 5% full model. It is contrast to study of Taiwan. In Taiwan, honor is very significant and the explanation is about 12% of willingness to buy. The reason may be due to only 8 years of LOTUS certification system compare to 20 years in Taiwan so in Vietnam green building may not offer enough reputation for
## OLS Regression Analysis on the Willingness to Buy

<table>
<thead>
<tr>
<th>Model 1 (full model)</th>
<th>Model 2 (basic model)</th>
<th>Model 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>X_i</td>
<td>Willingness to buy at 2%</td>
<td>Willingness to buy at 5%</td>
</tr>
<tr>
<td>Gender</td>
<td>0.142159 (p-value: 0.1299)</td>
<td>-0.074491 (0.5831)</td>
</tr>
<tr>
<td>Age</td>
<td>0.431556 (0.1352)</td>
<td>0.238582 (0.6119)</td>
</tr>
<tr>
<td>Area_special</td>
<td>0.119230 (0.5181)</td>
<td>0.059571 (0.3150)</td>
</tr>
<tr>
<td>Area_small</td>
<td>0.132954 (0.4905)</td>
<td>0.190229 (0.4381)</td>
</tr>
<tr>
<td>Leg(Income)</td>
<td>0.211357 (0.0028)***</td>
<td>0.346794 (0.0012)***</td>
</tr>
<tr>
<td>Above college</td>
<td>-0.118145 (0.2520)</td>
<td>0.148226 (0.2940)</td>
</tr>
<tr>
<td>Under college</td>
<td>0.078731 (0.6989)</td>
<td>0.368550 (0.1914)</td>
</tr>
<tr>
<td>Environmental aware</td>
<td>0.066617 (0.2145)</td>
<td>0.096572 (0.2691)</td>
</tr>
<tr>
<td>Knowledge</td>
<td>0.072825 (0.2004)</td>
<td>0.191063 (0.0107)***</td>
</tr>
<tr>
<td>Personal benefits</td>
<td>0.159775 (0.0005)***</td>
<td>0.219065 (0.0000)***</td>
</tr>
<tr>
<td>Environment_benefits</td>
<td>0.000176 (0.9329)</td>
<td>-0.031741 (0.0273)</td>
</tr>
<tr>
<td>Trend</td>
<td>0.117145 (0.4485)***</td>
<td>0.357908 (0.0000)***</td>
</tr>
<tr>
<td>Honor</td>
<td>0.002395 (0.9483)</td>
<td>0.033061 (0.5670)</td>
</tr>
</tbody>
</table>

Adjusted R-squared: 17.36% 25.26% 16.08% 19.43% 6.79% 5.53%
III. CONCLUSIONS

The regression results confirm the significant impacts of the knowledge, environmental awareness, personal benefits and trend on the willingness to buy. However, since we have considered almost all variables that we can think of, the full model only explains 26.26% of buying willingness, the adj. R² indicates that currently the buying willingness may still largely depend on “personal taste or preference,” which cannot be effectively stimulated. In other words, the impacts of personal traits are not as large as we have expected. Therefore, we suggest that more education for knowing what green buildings are and what the actual benefits of green buildings to both environment and households are and for establishing higher environmental awareness may be the key for future success of promoting green buildings. In summarize, to promoting green buildings, especially in developing countries such as Vietnam, “GBTs-related educational and training programs for developers, contractors, and policy makers,” “availability of institutional framework for effective GBTs implementation,” “availability of better information on cost and benefits of GBTs,” “public environmental awareness creation through workshops, seminars, and conferences” and “more publicity through media (e.g., print media, radio, television, and internet)” as proposed by Chan et al. (2017) may be the key strategies to be considered in the future.

REFERENCES


