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It is our pleasure to present the *Proceedings of the Appalachian Research in Business Symposium* from the 2022 conference. The conference was held on March 24-25, 2022, hosted by the College of Business at Eastern Kentucky University.

The Appalachian Research in Business Symposium provides a venue for presenting new research, discovering contemporary ideas, and building connections among scholars at Appalachian State University, Eastern Kentucky University, East Tennessee State University, Marshall University, Radford University, and Western Carolina University.

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# TABLE OF CONTENTS

<b>ETHICS AND MORAL HAZARD OF UNIVERSITY RESPONSES TO SARS-COV2 THROUGH A TERROR MANAGEMENT PERSPECTIVE .....</b>	<b>7</b>
Lee Allison, Eastern Kentucky University James Robert Blair, Eastern Kentucky University Michael Fore, Eastern Kentucky University	
<b>SENSE OF COMMUNITY: A DRIVER OF BRANDED FITNESS SUCCESS .....</b>	<b>13</b>
Reanna Berry, Georgia Gwinnett College Luis Torres, Georgia Gwinnett College Phillip Hartley, Georgia Gwinnett College	
<b>STRATEGIC DATA ANNOTATION TO FACILITATE AI-ENABLED NEWS ASSESSMENT: THE CASE FOR APPLE AND TESLA .....</b>	<b>20</b>
Wingyan Chung, Western Carolina University Zachery Busby, Western Carolina University	
<b>USING SOCIAL MEDIA NETWORKS TO SUPPORT KNOWLEDGE ASSET MANAGEMENT .....</b>	<b>28</b>
Wingyan Chung, Western Carolina University Zachery Busby, Western Carolina University	
<b>WHAT ARE STATE-OF-THE-ART AI TECHNOLOGIES AND APPLICATIONS? AREVIEW OF BUSINESS AUTOMATION AND AUGMENTATION .....</b>	<b>32</b>
Wingyan Chung, Western Carolina University Zachery Busby, Western Carolina University	
<b>INCOME INEQUALITY TRENDS IN VIRGINIA .....</b>	<b>39</b>
Zachary A. Collier, Radford University Jennifer Sobotka Elias, Radford University Joyendu Bhadury, Radford University	
<b>THE ROLE OF AI IN WESTERN NORTH CAROLINA TOURISM CONVERSATIONS .....</b>	<b>47</b>
Heidi L. Dent, Western Carolina University	
<b>COVID’S IMPACT ON SUPPLY CHAIN MANAGEMENT: IMPLICATIONS TO MEAT, MASKS AND MEDICINE .....</b>	<b>56</b>
James Kirby Easterling, Eastern Kentucky University Autumn Robinson, Eastern Kentucky University	

<b>A STUDY ON STATE BUDGET ALLOCATIONS TO KENTUCKY REGIONAL PUBLIC UNIVERSITIES .....</b>	<b>60</b>
James Kirby Easterling, Eastern Kentucky University	
Laura Barthel, Eastern Kentucky University	
Tyler Caviness, Eastern Kentucky University	
<b>RECIPROCITY NORM IN STATE-OWNED ENTERPRISES: SOCIAL SUPPPORT, HRM PRACTICES AND EMPLOYEE ATTITUDES TOWARD ORGANIZATIONAL CHANGE .....</b>	<b>67</b>
Yang Fan, Western Carolina University	
Yanju Li, Georgia State University	
Nathan Johnson, Western Carolina University	
<b>MANUAL PRACTICE SET AND STUDENT SUCCESS IN INTERMEDIATE ACCOUNTING I.....</b>	<b>73</b>
Sarah Feltus, Eastern Kentucky University	
<b>REMOTE LEARNING DURING THE COVID-19 PANDEMIC: A DESCRIPTIVE ANALYSIS ON CHALLENGES AND OPPORTUNITIES AMONG BUSINESS STUDENTS.....</b>	<b>78</b>
Michael Fore, Eastern Kentucky University	
Kristen Wilson, Eastern Kentucky University	
Faridah Awang, Eastern Kentucky University	
<b>A BRIEF BIBLIOMETRIC ANALYSIS OF THE RESEARCH OUTPUT OF THE CURRENT FACULTY AT THE SCHOOL OF BUSINESS OF EAST TENNESSEE STATE UNIVERSITY: 2000-2021 .....</b>	<b>85</b>
Richard P. Gregory, East Tennessee State University	
<b>INFLUENCES AND CONSEQUENCES OF PROJECT MANAGERS' ATTITUDES TOWARD CHANGE .....</b>	<b>93</b>
Leigh Hartman, Western Carolina University	
John Shaw, Jacksonville University	
Doug Johansen, Jacksonville University	
<b>EXOTIC STRUCTURED PRODUCTS – THE CASE OF VICTORY CERTIFICATES .....</b>	<b>102</b>
Rodrigo Hernández, Radford University	
Kaschia Wade, University of Kentucky	
<b>HAVE KENTUCKY GOLF COURSE WEBSITES EVOLVED OVER A DECADE? A STUDY WITH RECOMMENDATIONS .....</b>	<b>112</b>
Kimberly S. Kincer, Eastern Kentucky University	
Kambiz Tabibzadeh, Eastern Kentucky University	

<b>GROWING ‘POLITICAL POWER’ OF LARGE FIRMS AND THE DOWNWARD CASH ETR TREND .....</b>	<b>117</b>
Yuzhu Lu, University of Nottingham Ningbo China	
Liang Shao, Radford University	
Yue Zhang, Lingnan University	
<b>FOUR FACTORS IN THE WNBA .....</b>	<b>125</b>
Hollye Moss, Western Carolina University	
<b>FROM ABSTRACTION TO APPLIED EXPERIMENTATION: ENTREPRENEURIAL EDUCATION THROUGH A REAL-WORLD, REAL IMPACT SERVICE-LEARNING PROJECT .....</b>	<b>129</b>
Lane Graves Perry, III, Western Carolina University	
Janice Black, Western Carolina University	
<b>WHAT DO EMPLOYERS WANT? HARD SKILLS + SOFT SKILLS = POWER SKILLS .....</b>	<b>138</b>
Marcel Robles, Eastern Kentucky University	
<b>RETURNSHIP: AN OPPORTUNISTIC APPROACH TO THE CURRENT LABOR CRISIS.....</b>	<b>142</b>
Marc Sollosy, Marshall University	
Monisha Gupta, Marshall University	
Marjorie McInerney, Marshall University	
<b>ASSOCIATION OF ELECTRONIC MEDICAL RECORDS AND OPIOID PRESCRIPTION .....</b>	<b>147</b>
Archana Suwall, Marshall University	
Jemimah Okonjo, Marshall University	
Stacie Deslich, Marshall University	
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# **ETHICS AND MORAL HAZARD OF UNIVERSITY RESPONSES TO SARS-COV2 THROUGH A TERROR MANAGEMENT PERSPECTIVE**

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## **Introduction**

Terror Management Theory (TMT) is a dual-defense model that explains how people protect themselves against concerns for their own mortality (Greenberg, Pyszczynski, and Solomon 1986; Pyszczynski, Solomon, and Greenberg 2015). The core propositions of the theory are that people invent, absorb and cling to cultural worldviews that (a) model a reality that adds meaning, significance and purpose to life, (b) provide a mechanism to assess and value human life, and (c) provide a sense of either symbolic or literal immortality for those who live consistent to their

cultural worldviews (Pyszczynski, Solomon, and Greenberg 2015, pp. 7–8). Summarily, those who comport their lives to their cultural worldviews find themselves active participants in a meaningful universe, and this gives rise to a sense of self-esteem, which serves to mediate anxiety about death. Such death concerns are moderated by the (in)validation of others, thereby increasing(decreasing) death related anxiety. This leads people to dissociate(associate) from(with) those critical (supportive) and diverging(aligning) from(to) one’s own cultural worldviews (Pyszczynski, Solomon, and Greenberg 2015). More than 30 years of research has shown this theory to be insightful in better understanding a comprehensive range of human behavior. Essentially, people need to insulate themselves against a meaninglessness existence and subsequent inevitable death.

This paper adopts the theoretical lens of terror management theory to investigate ethical and moral hazard implications related to a number of widespread practices implemented en masse in universities and colleges across the world in response to the pandemic. We use TMT to consider how university and college practices of direct-to-consumer-advertising (DTCA), nudging, evaluative conditioning, and redesign of service architecture and incentives may represent ethical and moral hazard issues. We seek to determine their impact on goals to teach and assist students in developing strong critical thinking skills and attaining important life goals. We hypothesize that the effect of these widespread practices will be mediated by student self-esteem and the shaping of the students’ cultural worldviews on goal attainment based on TMT.

The concept of nudging gained worldwide attention when Richard Thaler, who coined the term, won the Nobel Prize for Economics in 2017. Nudging suggests that human psychology gets in the way of individuals making the best decisions. Conceptually, nudging offers a way to structure choices in such a way that it becomes easier for people to make choices that are better aligned to self-interest. Restructuring choices occurs through adjustments in choice architecture, or the design of the physical or digital environment where choices occur (Vugts et al. 2020). As examples, in a work environment, onboarding teams in human resources could set the default selection for new hires to be for automatic signup in the company 401K program at the full match rate. Employees would have to fill out paperwork to opt out if they wanted to decline participation or to participate below match rate.

Thaler’s work represents developments in the field of behavioral economics, a field synonymous to researchers like Daniel Kahneman, Amos Tversky and Dan Ariely. Classical economists have often been criticized for modeling human decision-making as that belonging to rational, logical beings (homo economicus) optimizing decisions. In contrast, behavioral economists note that humans experience finite and limited resources, which may lead them to irrational choices. Debate in the behavioral economics field has ensued around Thaler’s work as a mechanism to scale shaping human behavior. As stress, fatigue, workloads, time-demands and other aspects of day-to-day life impair human decision making, humans largely operate most often in their mere mortal state than their rational, computer-like thinking state (Kahneman 2003). Thus, human decisions often rely on heuristics and intuition. Regularly, shortcuts lead to sub-optimal decisions, and the nudging contribution suggests that policy makers at all levels can insert redesigned choice architectures in such a way as to save the individuals from him/herself (Vugts et al. 2020). Changes are designed so as to alter “people’s behavior predictably without forbidding options or significantly changing economic incentives...the intervention must be easy and cheap to avoid (Sunstein 2014a, p. 2).”



A key consideration in implementing the nudging to alter human behavior is determining how such change should be institutionalized, and at what level the nudging should occur. Sunstein (2014) suggests one approach would rely on existing institutions, given their familiarity with where the decision-making of those in their charge goes awry. They also have necessary networks and reach, mitigating costs. An alternative is the creation of new institutions or “nudge units” (Sunstein 2014b). Response to the pandemic relied on both. Top teams were assembled to suggest and guide the response, other existing institutions such as universities and colleges followed the top teams to implement the guidance.

Examples of nudging devices used widely in university settings during the pandemic use was advertising. DCTA is an awareness type of campaign where advertising is targeted toward the consumer. Commonly, consumers experience this type of campaign when they encounter pop-up ads when visiting websites. Other responses involved evaluative conditioning (also referred to evaluative learning), whereby the university may inadvertently train or teach students to establish linkages between one object and another. This may cause the student to (dis)like one thing through its association to another (i.e., education linked to pharmaceutical treatments). It may also foster or weaken a student’s self-esteem and lead them to adopt a cultural worldview apart and distinct from their own according to TMT. University pandemic response also redesigned service architecture. For example, traffic flows were controlled and altered. Entry and egress were strictly enforced. Personal space bubbles were restricted and altered for social distancing (Dangor 2021). Young people’s physical appearance was anonymized, and communication was restricted via masking (Paul E Alexander 2021; Paul Elias Alexander 2021; Klompas, Morris, and Shenoy 2020). Young people were placed into solitary confinement situations of quarantine for specified periods (Deliatto 2022), and at various times removed prematurely from their dorms and restricted from congregational spaces. Incentives were also altered through some of these initiatives. Strictly speaking, nudging should not change incentive structures. However, examples proffered by Thaler and Sunstein do in fact deviate from that restriction (Thaler and Sunstein 2008, p. 190). Some of these practices by the universities likely altered student incentives to continue education, or alter when and where they would receive it based on TMT.

### **Concerns and Tradeoffs**

Advocates of these concepts believe that these various redesigns of policy makers will result in significant improvement in the lives and well-being of those making otherwise “impaired” decisions. Few could argue that making better decisions is anything but, better. Thus, the idea appeals to many policy makers, who have explored the concept across a variety of contexts. However, as in all economic activity, there are tradeoffs. A particularly interesting characteristic about tradeoffs is that they often go unacknowledged, particularly in policy circles, because the tradeoffs represent unseen consequences. Such unseen consequences may particularly fly under the radar during times of crisis. Imperfect decision making is definitely an aspect of the human condition, given the psychological nature of humans, but so too are some of the tradeoffs that occur in the presence of redesigning human behavior.

A number of tradeoffs can be expected to occur with respect to the aforementioned implementations, and research suggests that some of these tradeoffs may pose moral and ethical dilemma (Boddewyn 1982). Sunstein defends nudging, admitting it is paternalistic (Sunstein 2014a), while noting that nudging doesn’t eliminate or restrict choices; it simply reorders them

such that the probability increases for the optimal choices. Other researchers question the legitimacy of the approach arguing the practice can be manipulative and interfere with autonomy (Vugts et al. 2020).

There is also concern that some of these practices relate to fragmented selves (Bovens 2009), a kind of use it or lose it concept, where constant interference in people's choices actually impairs the ability to make moral decisions, and may also limit the ability to monitor losses of freedom (Selinger and Whyte 2011). This also may be expected to escalate over time (Rizzo & Whitman (2010). A sense of fragmented self would likely undermine both self-esteem and goal achievement. Becoming a fragmented self would conceivably alter one's cultural worldview. Suicides increased dramatically during the pandemic and fractured selves would clearly have deleterious effect on mental health. Still other concerns revolve around to whom the privilege of designing choice architecture goes given that their preferences and values are elevated above those affected with the design (Selinger and Whyte 2011). Moral hazard could be seen in a situation where university decisions are contingent on COVID policy implementations for funding support during a time when enrollments are falling. Implementing such policies may thus align more to the institution's interest than that of the nudged individual.

Another possible negative consequence implementing this into practice is the creation of reactance in the audience impacted by the "forced" nudging. Reactance theory suggests individuals who feel their freedom is being restricted by another individual or entity will act out against that entity who is restricting their freedom (Brehm 1966). As a result, higher education institutions "nudging" their student population to take actions like wearing masks could result in students possessing higher levels of reactance. This could have negative consequences for the higher education institution like students feeling less connected to the university, less likely to donate to the university, less likely to spend funds on-campus, and acting out in other ways.

The debate about these practices extends beyond freedom and social anxiety concerns in areas of bioethics, medicine and education. In such cases, nudging may occur tandem to other activities designed to enhance the effectiveness of the nudging. Interaction effects are likely to occur and the potential for moral hazard and ethical violations becomes stronger. Real questions exist in terms of how other individuals are better suited to surreptitiously make choices than the given individuals, and what the impact of that kind of hidden influence is for people's rights to self-determination and self-governance. All are questions that call for further research and discussion.

Another question of interest to our study concerns the redesign of choice architecture related to the fact that young college students may be a particularly vulnerable population given their place in the life cycle. Such measures may not only increase anxiety related to life and death, but also according to TMT, but may also "trigger the action of distal defenses associated with the protection of one's own cultural picture of the world and a simultaneous increase in rejection of someone else's, resulting in greater aggression" and intergroup tensions (Dmitrieva 2021, p. 5).

## **Methods**

Our method will collect data from a large convenience sample of university and college students across the globe using measures established in the literature. We seek to understand the perceptions of students about how the responses of the colleges and universities impacted their self-esteem,

their perceived ability to critically think, and to achieve the learning goals they had prior to SARS-Cov2 as well as linkages between objects of positive (negative) affect.

### **Limitations and Direction for Future Research**

This paper proposes adopting a terror management theoretical lens to gain a better understanding of how the responses of colleges and universities altered the development of self-esteem, critical thinking and the learning goals of the students in the respective service regions of the universities and colleges they students attended. The study has a number of limitations. First, convenience sampling is known to suffer from selection bias and non-representativeness. Additionally, the study relies on self-reports to explain and provide the insights of the students in the study. Self-report measures can be extremely valuable and informative. However, such data is necessarily limited by the scope and accuracy of the individuals reporting the information. Future studies can add to this study, by pairing self-report data with objective measures of student performance.

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# **SENSE OF COMMUNITY: A DRIVER OF BRANDED FITNESS SUCCESS**

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Sense of community, branded fitness, purchase intentions, brand love

## **Introduction**

The popularity of branded fitness programs is apparent. Turn on the TV or open a web browser and almost immediately advertisements for branded fitness will appear. One recent example is the solitary rider sweating it out at home on their Peloton bike while virtually connected to other riders. But ads are not the only indication of the popularity of branded fitness, consider the co-worker, friend, or neighbor, who is a self-described CrossFit junkie and can't stop talking about the WOD (work out of the day), or the person who constantly invites others to join Beachbody. Of course,

branded fitness is not a recent development, think back a few decades and it is easy to conjure images of unitard and legwarmer-clad fitness enthusiasts jumping around in a Jazzercise class. So why do people want to participate in branded fitness programs? To answer this question, we examine drivers of branded fitness success.

We utilize Zumba Fitness for examination of our primary research question: what drives branded fitness success? Although Zumba Fitness (2021) is a single brand, it is a good representation of branded fitness programs due to longevity (over 20 years), global reach (180 countries) and number of participants (15 million weekly). Our examination is based on analysis of results from a survey administered to Zumba consumers, which focuses on Brand Love, Sense of Community, Attitude toward Fees, and Purchase Intentions. Although these concepts have been used by prior researchers to examine specific contexts (Swimberghe, Astakhova, & Wooldridge, 2014; Wang, Sarkar, & Sarkar, 2018), results have been mixed for the relationship between Sense of Community and Brand Love. Further, branded fitness is an emerging area of the literature. Accordingly, we contribute to this emerging area of literature with evidence which supports that Sense of Community is the key connection in the relationship of Brand Love and Purchase Intentions.

## **Literature Overview**

Brand Love has been studied in a variety of contexts (Palusuk, Koles, & Hasan, 2019), and refers to an individual's feelings toward a brand. This includes past, current, and future consumer interactions with a brand (Langner, Bruns, & Rossiter, 2016), and brand experiences and consumer engagement (Junaid, Hou, Hussain, & Kirmani, 2019). The most recent and full scale for measuring Brand Love contains 56 items representing 14 sub-factors (Batra, Ahuvia, & Bagozzi, 2012). Subsequently, researchers have utilized a condensed measure of Brand Love (Bagozzi, Batra, & Ahuvia, 2016).

Sense of Community developed from the field of psychology and refers to an individual's sense of belonging to a group (McMillan & Chavis, 1986). Sense of Community has been studied in a number of groups including, church members, science-fiction fans, school children, and firefighters (Peterson, Speer, & McMillan, 2008) and business oriented groups such as customer loyalty programs and financial services (Fraering & Minor, 2006; Rosenbaum, Ostrom, & Kuntze, 2005). A positive association between Sense of Community and Brand Love has been identified in prior research (Bergkvist & Bech-Larsen, 2010).

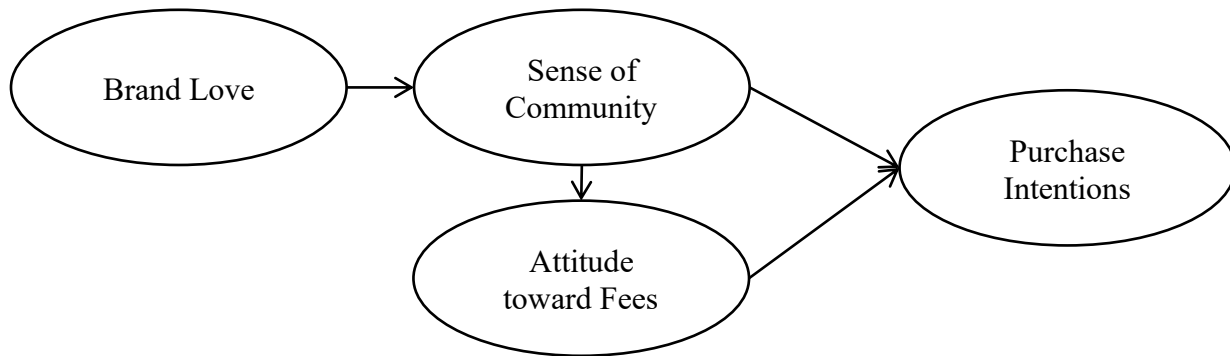
Attitude toward Fees is an established concept (Maddox, 1976), which can influence consumer purchase decisions. Similarly, a consumer's Purchase Intentions can influence the ultimate purchase decision as prior research has found that consumers who strongly identify with a brand have higher Purchase Intentions for the brand (Eagleman & Krohn, 2012; Zhang, Won, & Pastore, 2005). Therefore, both Attitude toward Fees and Purchase Intentions are important to consumer purchase decisions.

## **Methodology**

To capture Zumba consumers, we administered a survey at an annual Zumba convention. To participate in the convention, individuals had to have made branded fitness purchases directly from

Zumba. This is an important distinction which differentiates convention participants from the average gym goer or fitness enthusiast who may be taking Zumba classes at their gym but who is not making direct purchases from Zumba. The convention was attended by thousands of global Zumba consumers. Therefore, the population from which our sample was drawn was an ideal representation of Zumba consumers.

Our survey contained 36 items and brief demographic questions to gather data for analysis of the proposed model in Figure 1. To measure Brand Love, we utilized a scale adapted from the work of Batra et al. (2012) and Bagozzi et al. (2016). The scale developed by McMillan and Chavis (1986) was used to measure Sense of Community. Attitude toward Fees and Purchase Intentions were measured using the scales developed by Maddox (1976) and Grewal, Monroe, and Krishnan (1998), respectively. One hundred fifty-five Zumba consumers completed the survey. Following review, five responses were found unusable, so our final sample consisted of one hundred fifty Zumba consumers (n=150).



**Figure 1. Proposed Model**

Because we are exploring branded fitness success through a proposed theoretical model, partial Least Squares Structural Equation Modelling (PLS-SEM) was employed for analysis (Hair, Risher, Sarstedt, & Ringle, 2019). This is consistent with prior international marketing research (Hult, Hair, Proksch, Sarstedt, Pinkwart, & Ringle, 2018; Richter, Cepeda-Carrion, Roldán Salgueiro, & Ringle, 2015). SmartPLS-3 software (Ringle, Wende, & Becker, 2015) was utilized to estimate PLS-SEM. First, indicator loadings were examined. The indicators represent the questionnaire items as listed and numbered in Table 1. Five indicators were eliminated because the loadings were below .70. After elimination of these, the remaining indicators all had loadings above the established threshold of .708 (Hair et al., 2019). Next, internal consistency reliability was examined. Based on this examination, four redundant items were eliminated. Following elimination of redundant items, internal consistency reliability was met as  $\rho_A$  values ranged from .87 to .95, with the exception of Sense of Community with a value of .954, which was deemed acceptable as it did not significantly exceed the threshold of .95 (Dijkstra & Henseler, 2015). Convergent validity was achieved based on AVE values of .60 to .79 which is greater than the threshold of .50. Discriminant validity was achieved based on the Heterotrait-Monotrait Ratio, the most rigorous measure of discriminant validity, as all values are below the cut-off of 0.85 with a range of .42 to .64 (Henseler, Ringle, & Sarstedt, 2015).

<b>Sense of Community</b>	
1	I feel like a member of this group.
2	I feel connected to this group.
3	I can get what I need in this group.**
4	I have a good bond with others in this group.
5	People in this group are good at influencing each other.*
6	I feel like I belong to this group.
7	I get ideas from other people in this group.**
8	My opinion matters to other people in this group.
9	I am part of this group.
10	I have a say about what goes on in this group.
11	This group helps me fulfil my needs.
12	I fit in with this group.
<b>Attitude towards Fees</b>	
1	ZIN fees are too high.
2	I am happy with the price of ZIN fees.
3	ZIN fees are worth the money.
4	ZIN fees are a good buy.*
5	ZIN fees are too high for the quality.*
<b>Purchase Intentions</b>	
1	I intend to continue to pay for Zumba Instructor Network membership.
2	I am willing to continue to pay for Zumba Instructor Network membership.
3	I will definitely continue to pay for Zumba Instructor Network membership.
4	I plan to pay for Zumba Instructor Network membership in the future.**
5	The probability I will continue to pay for Zumba Instructor Network membership is high.**
<b>Brand Love</b>	
1	You have a feeling of desire for time spent on Zumba.
2	You are willing to spend a lot of time to get the most out of Zumba.
3	Zumba is inherently important.
4	You feel emotionally connected to the Zumba instructors' group.
5	You experience anxiety at the thought of living without Zumba.
6	You frequently find yourself thinking about Zumba.*
7	Zumba meets your needs perfectly.
8	Zumba will be a part of your life for a long time to come.
9	Zumba makes you look like what you want to look.
10	Zumba helps you relax.
11	You hold your evaluations of Zumba strongly.*
12	Zumba meets your expectations.
13	You have done a lot of things with Zumba in the past.
14	Zumba is an important part of yourself.
	* Item eliminated due to loading below .70
	** Item eliminated due to redundancy

**Table 1. Questionnaire Items**



To test for statistically significant relationships in the PLS-SEM model, a bootstrapping procedure with 5,000 sub-samples was performed. Collinearity is not an issue as VIFs are below the established threshold. R-squared values of .404, .328, and .237 for Purchase Intentions, Sense of Community, and Attitude towards Fees, respectively, demonstrate adequate explanatory power. All relationships have predictive power and are significant at the 95% level or greater as shown in Table 2. Therefore, the results support our proposed model.

<b>Paths</b>	<b>Coefficients</b>	<b>p-values</b>
Attitude towards Fees -> Purchase Intentions	0.425	0.000
Brand Love -> SOC	0.573	0.000
SOC -> Attitude towards Fees	0.487	0.000
SOC -> Purchase Intentions	0.308	0.020

**Table 2. Path Coefficients and Significance**

## **Results and Implications**

In the context of Zumba branded fitness, our findings support that Sense of Community mediates the relationship between Brand Love and Purchase Intentions. Attitude toward Fees is also a driving factor behind Purchase Intentions in that it mediates the relationship between Sense of Community and Purchase Intentions, but does not directly impact Brand Love. Logically, Brand Love is important to Purchase Intentions because people typically seek to buy things they like rather than things they dislike. However, a purchase decision is not as simple as liking equals buying. Other factors influence purchase decisions. Attitude toward Fees is one of these other factors, as cost is part of the decision making process for purchases. If a person does not have the money to cover the cost of a purchase, then they cannot make the purchase. Similarly, if the cost of a purchase would put a person in debt or if the cost of the purchase is more than deemed reasonable, the person may not make the purchase. So, what makes a person deem a cost to be reasonable? Sense of Community influences the perception of reasonableness. Sense of Community also serves as the bridge between Brand Love and Purchase Intentions, which seems particularly relevant for branded fitness because a person is paying for their own participation in the activity. This means that a person feeling like they belong is a key factor in branded fitness purchases.

## **Conclusion**

Branded fitness companies should focus on creating a sense of belonging for consumers. It is important that the potential consumer be able to see themselves participating in the activity for the consumer to move forward with the purchase. Additionally, branded fitness companies must also consider the reasonableness of fees and the creation of an engaging product that connects with consumers, a product that the consumers desires and ultimately loves.

A limitation of our study is that we only examined Zumba participants and did not examine participants from other fitness brands. However, we believe that our findings are generalizable to other branded fitness companies, particularly group fitness companies, because although Zumba is a specific type of activity, participants are exercising together with others. The movements may

differ, yet exercising with others is the main underlying concept of other well-known fitness brands such as CrossFit, Les Mills, and Jazzercise. Additionally, Zumba is a global brand with demonstrated longevity. Future studies can examine participants from multiple fitness brands.

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# STRATEGIC DATA ANNOTATION TO FACILITATE AI-ENABLED NEWS ASSESSMENT: THE CASE FOR APPLE AND TESLA

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## Introduction

Artificial intelligence (AI) technologies are increasingly adopted by companies across the world (McKinsey, 2021) and are estimated to produce \$13 trillion of GDP growth globally by 2030 (Ng,2020). Among many benefits of AI, automatically identifying company movements and potential threats from textual news articles can provide managers with business intelligence (BI) (Norris, 2020), defined as the result of “acquisition, collation, analysis and exploitation of information in business” (Chung, Chen, & Nunamaker, 2005). These articles describe company financial performance, competition, product and service trends, technological changes, and legal issues. Foreexample, the sentence “*While Apple’s iPhone brand has taken a hit in China amid increased tradetensions, the wireless earbuds – the US giant’s second-best-selling product ever – are as popularas ever*” indicates that environmental and economic factors (trade tensions and international product sales) are of concern to *Apple Inc.* Similarly, key words, phrases, and expressions found in company-specific articles are often used by AI techniques to categorize the article content into specific BI categories to indicate threats posed to a company.

Traditionally, researchers and practitioners focus their effort on building AI learning models (Chen, Chiang, & Storey, 2012) and assume that datasets are static once collected and assembled (Khan, McCarthy, & Pradhan, 2020). While developers and managers understand intuitively that data quality matters in AI development, most organizations fail to create or meet any data quality standards (Sambasivan et al., 2021). Effort to improve data quality is viewed as “operational”

relative to lionized work of model development. This lack of attention to data can lead to problematic AI model deployment in high-stake domains such as fraud detection, autonomous driving, and cancer treatment, leading to missed business opportunities, undetected crimes, and even loss of lives (Strickland, 2019). Data annotation, a process of labeling information systematically by humans to enable machines to use the data, has the potential to increase the effectiveness of AI learning models (e.g., (Hendrycks, Burns, Chen, & Ball, 2021)). Despite this, strategic use of data annotation in BI extraction is not available. This research seeks to answer these questions: (1) How can a methodology be developed for strategic data annotation of textual data to facilitate AI-enabled news assessment? (2) How can the methodology be applied to annotating news content about two high-tech companies? (3) What are the results of annotating company-specific news to support AI-driven extraction of BI? The research should enhance the performance of AI techniques in automatically assessing business news articles.

## **Literature Overview**

AI technologies are applied to automating and augmenting decision making through extensive analysis of structured and unstructured data (Benbya, Pachidi, & Jarvenpaa, 2021). Traditional development of AI emphasizes the use of datasets as benchmarks to iteratively improve AI methods. Examples include the GLUE benchmark, IMDB movie reviews, and Enron email dataset. There is increasing work to improve the quality of datasets. The 2021 Conference on Neural Information Processing Systems held the first Data-Centric AI Workshop (Ng et al., 2021) that presented a variety of techniques and issues such as content moderation, crowdsourcing, spotting incorrect labels, and managing data pipelines, among others. The DataPerf is a group of academic and industry researchers who are developing a new benchmark suite for machine learning datasets and data-centric algorithms (DataPerf Working Group & MLCommons, 2021).

The Atticus Project (Hendrycks et al., 2021) has developed for the legal domain the Contract Understanding Atticus Dataset (CUAD), a corpus of 13,000+ labels in 510 commercial legal contracts that were manually labeled under the supervision of experienced lawyers to identify 41 types of legal clauses (such as contract name, parties involved, agreement date). The project aims to harness the power of AI to accelerate accurate and efficient contract review. Another project, ATOM3D, aims to facilitate AI method development for molecular and structural biology by providing several molecular datasets that describe small molecule properties and protein interactions (Townshend et al., 2021).

In general, existing benchmarks and annotation efforts use non-domain-specific data as target. Relatively little attention is put into specific domains such as business and healthcare. Language-specific data annotation for BI categorization is not widely available.

## **Methodology**

In this research, we have developed a methodology for strategic data annotation to facilitate AI-driven BI extraction. Company-specific textual news articles are the target data source due to their widespread usage in business to understand and assess risk and business intelligence. The methodology consists of four generic steps for annotating BI factors (textual sentences)

extracted from company-specific news articles using a generic BI taxonomy:

- (1) identification of target companies for BI analysis,
- (2) systematic retrieval of textual news articles about the companies,
- (3) manual annotation of BI categories shown in the articles using a 5-category taxonomy (Chung, 2014) of company BI factors, and
- (4) iterative refinement of annotation and categorization scheme (see Table 1).

The methodology aims to produce high quality datasets whose textual content of news articles is categorized accurately according to their BI categories, thereby enhancing the performance of AI-driven BI extraction.

We followed the aforementioned steps to implement the methodology, using two companies' news articles as a research test bed. *First*, we selected as our domain of study two high-technology companies, Apple Inc. and Tesla Inc., which specialize respectively in personal computing products and in electric vehicles. These two companies are highly representative of modern businesses due to several reasons: As of this writing, Apple Inc. has the highest market value in the world based on its stock market capitalization. The CEO of Tesla Inc., Elon Musk, is the richest man in the world – his wealth comes primarily from his stock ownership of Tesla. Globally, these companies are ranked first (Apple) and sixth (Tesla) in market value. Therefore, the companies represent not only technology sectors but an important subset of most valuable companies in the world.

*Second*, we retrieved news articles about these two companies from the U.S. Newsstream online database (<https://www.proquest.com/usnews>), which contains articles from 1,160 titles of U.S. and international news platforms, broadcasts, wires, and blogs in full-text format, covering major news outlets such as The Wall Street Journal, The New York Times, The Washington Post, Chicago Tribune, and The Los Angeles Times. Queries (as shown in the first column of Table 2) related to each company's products were used to retrieve 500 articles per company from the database. These full-text articles were published between 2017 and 2021 and typically report on the companies' product reviews, product failures, supply chain issues, legal disputes, operations problems, and new product development.

*Third*, we manually annotated each of the first five sentences of each article to indicate its BI category. Because an article's main ideas usually appear in the beginning, we focused our annotation on the first five sentences only and labeled each sentence to belong to one of the five BI categories as shown in Table 1. We filtered out irrelevant sentences (e.g., a line starting with "Full text:") and redundant standard descriptions (e.g., "Enlarge this image").

*Fourth*, we reviewed the labels assigned and enhanced the overall consistency of annotation.

Code	Category	Description	Examples
1	Operations Management	Entailing the everyday operations or processes of a business	Product development, priority conflicts, scheduling, efficiency and performance, sourcing, distributors, product failure, employees, employee health, company reputation, theft
2	Economic / Environment Factor	Change due to economic or environment factors	Status of economy, factors that affect the demand of a product, pandemic
3	Strategic Management	Change dealing with company strategies	Competitors, pricing, planning, company acquisitions, environmental scanning, life cycle, customers, stakeholders, joint ventures
4	Technological Change	Change associated with technology	Technological change, upgrades
5	Legal Issue	Issues dealing with legal matters	Lawsuits, response to new legislations or laws, fines, tariffs, embargos

**Table 1. A Five-Category Business Intelligence Taxonomy Results and Implications**

Table 2 provides the results of applying our approach to annotating the news articles about the two selected companies. The right-most column shows the number of sentences (lines) annotated and the prior probabilities of the sentences tagged to be respectively Categories 1-5 as shown in Table 1. Table 3 provides examples of news content annotated and explanation of the annotation.

Query Used	# Articles	# Lines	# Lines filtered	# Lines tagged (Prior prob. of categories 1-5)
<i>Apple iPhone</i>	60	264	50	214 (.45, .06, .32, .15, .02)
<i>Apple iCloud</i>	100	400	176	224 (.50, .16, .10, .04, .20)
<i>Apple AirPods</i>	50	428	35	184 (.68, .01, .28, .03, 0)
<i>Apple iPad</i>	100	421	148	273 (.66, .03, .24, .07, 0)
<i>Apple AirTags</i>	91	428	185	243 (.73, .02, .24, 0, .01)
<i>Apple iMac</i>	100	450	272	178 (.77, .03, .20, 0, 0)
<b>Total (Apple)</b>				<b>1,277 (.63, .05, .23, .05, .04)</b>
<i>Tesla Model S</i>	150	548	113	435 (.57, .05, .29, 0, .09)
<i>Tesla CyberTruck</i>	100	457	124	333 (.75, .00, .25, 0, 0)
<i>Tesla Roadster</i>	50	227	68	159 (.65, .10, .08, .16, .01)
<i>Tesla Model3</i>	100	424	176	248 (.47, .08, .44, 0, .01)
<i>Tesla Model X</i>	100	425	164	261 (.67, .02, .31, 0, 0)
<b>Total (Tesla)</b>				<b>1,436 (.62, .04, .29, .02, .03)</b>

**Table 2. Queries used and statistics of the results**

Category	Sample News Content	Explanation of Annotation
Operations Management	<i>iMac offers the best camera, mics, and speakers ever in a Mac, and Touch ID for the first time.</i>	Describes product development and specifications of an existing product and existing technology
	<i>AirPods Max feature incredible high fidelity audio, Adaptive EQ, Active Noise Cancellation, and spatial audio.</i>	These are features that are being added to an already existing products therefore making it product development
Economic / Environment Factor	<i>In response to a 2017 Chinese law, Apple agreed to move its Chinese customer's data to China and onto computers owned and run by a Chinese state-owned company.</i>	Apple was forced to make a change in its operations due to factors outside of their control. This falls under the economic/environment factor because Apple was forced to make a change due to a change in the economic environment.
	<i>While Apple's iPhone brand has taken a hit in China amid increased trade tensions, the wireless earbuds - the US giant's second best-selling product ever - are as popular as ever.</i>	Apples reputations affects the demand for their products. Their reputation has gone down in China due to factors outside of their control between the US and China.
Strategic Management	<i>Plus, Apple is entering a cutthroat market in which audiophiles picked their favorites long ago (such as Sony, Bose or Sennheiser) and even top models command half their price.</i>	This sentence describes apples competitors within a specific market. Additionally, it describes apples price point within that market and it is therefore considered to be strategic management.
	<i>No other tech brand even comes close to Apple when it comes to how seamlessly the company, devices interact with each other. This is one of the reasons why the Apple ecosystem still has a lot of lure for many.</i>	This sentence both describes the competitive strategy of the company and how they compare with their competitors making it strategic management.
Technological Change	<i>Researchers from Apple and Cornell University (United States) have studied a method of remote monitoring of respiratory rate for which they have resorted to Apple Airpods.</i>	Due to the fact that this is being researched to potentially be added to a product it is clear that this is new technology or a technological change.
	<i>This kind of tablets may look much the same, but its new M1 chip gives it unbelievable speed.</i>	While the product already existed the new chip that goes into it did not making it a technological change.



Legal Issue	<i>Tracking devices are nothing new for family law practitioners, but Apple's newest gadget, the AirTag, may pose a particularly significant concern. The AirTag, which is a new implementation of location tracking, brings with it the potential to make tracking without consent easier due to its simplicity, convenience, and anti-stalking design decisions.</i>	The AirTag poses potential legal problems concerning privacy.
	<i>It's time to reclaim our iPhones. The debate that's happening in courts and Congress about Big Tech's power is also playing out in the palm of our hands.</i>	This includes a general court and congress battle pertaining to Apple and Big Tech.

**Table 3. Applying the approach to annotating news about Apple Inc.**

These results show that Categories 1 and 3 are dominant classes to which sentences are tagged due to more content describing production and strategic environment of the company. This observation reflects the majority of news content about the companies' operations management (e.g., product and services) and competitive strategies, which are two major aspects of interests to customers and investors respectively. We also used the data as experimental input (with a 70-30 train/test split, 1,000 epochs) to a two-layer artificial neural network using GloVe (6B, 50-dim) as word embedding (Pennington, Socher, & Manning, 2014) and a simple averaging approach to predicting BI categories. The results indicate overall training and testing accuracies of 69% and 49% respectively for Apple and 66% and 68% respectively for Tesla. Average precision, recall, and F-score are 65%, 30%, 28% for Apple and are 83%, 45%, 53% for Tesla respectively. Considering a pure random approach to annotating the data would result in an average 20% accuracy in a 5- category prediction, our preliminary results are very promising. These results show that the dataset can provide useful guidance for AI methods to acquire prior knowledge about the categorization of BI factors, especially related to operations management and strategic management. On the other hand, because there are much fewer sentences annotated as Categories 2, 4, or 5, the results provide relatively less reliable guidance for AI methods to classify new sentences of these categories. One way to improve the results is to deliberately increase the proportion of news content of these minority categories to reduce the bias in the dataset. We call this practice "strategic boosting" – adding content of minority classes to boost their representation and to increase content diversity. Strategic boosting should enhance the quality of the resulting dataset and hence "boost" the performance of AI methods that train on the dataset.

## Conclusion

Traditional research and practice of AI applications focus their effort on building learning models and lack attention to data quality. This can lead to problematic deployment of AI models in high-stake domains such as fraud detection, autonomous driving, and cancer treatment, resulting in missing business opportunities, undetected crimes, or even loss of lives. In this research, we developed a generic methodology for strategic data annotation to facilitate AI-

enabled news assessment. We applied the methodology to annotating news articles about two high-tech companies. Our preliminary results show that the methodology is very promising to enhance performance of AI methods to classify different BI factors, especially on operations management and strategic management. This research is limited by the amount of resources available for data verification and for data processing. Future direction include strategic boosting of the dataset to increase diversity of content and extensive testing on various AI modeling techniques. The research contributes to providing a new reusable method of strategic data annotation for BI extraction and to facilitating AI techniques in automatically assessing business news articles.

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# USING SOCIAL MEDIA NETWORKS TO SUPPORT KNOWLEDGE ASSET MANAGEMENT

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## Introduction

Businesses increasingly use social media networks (SMNs) to support relationship development and managing network ties with knowledge assets (Quinton & Wilson, 2016), such as software, patents, and expertise (Ihrig & MacMillan, 2015). For example, software developers discuss program code issues and vulnerabilities in SMNs to facilitate timely resolution (Shrestha et al., 2020). Marketers promote their services in SMNs to increase customer recruitment and loyalty. Business intelligence specialists and scientists learn about innovations and patents of related partners and market rivals. These SMNs are estimated to contribute over \$1 trillion of values to organizations and economies (Kane, Alavi, Labianca, & Borgatti, 2014) due to enhanced communication and improved collaboration (Bughin, Chui, & Manyika, 2012).

A social media network (SMN) is a digitized network of entities that represent corresponding entities connected socially in the physical world (Chung, Rao, & Wang, 2019; Quinton & Wilson, 2016). How SMNs will impact organizations, however, is not entirely clear, because the technologies are changing very quickly and their novel capabilities may violate assumptions of established theories (Kane et al., 2014). As more knowledge workers are engaged in SMNs, it is instructive to identify and predict activity trends from these networks to connect heterogeneous expertise, guide technological investments, and protect cyber infrastructure, among other tasks. Despite this, modeling evolutionary changes of SMNs to manage and protect valuable knowledge assets is not widely studied. Existing social and psychological theories have not been used to examine evolutionary SMN behavior. Therefore, we pose these research questions: (1) How do

conformity and temporal memory affect SMN behavior? (2) How can an intelligent system be developed to model conformity and temporal memory and to simulate and predict activities in SMNs? (3) What is the performance of the models in predicting SMN behavior of a cryptocurrency software development community?

This research has developed and evaluated an intelligent system for strategic management and detection of trends and activities in dynamic SMNs. To demonstrate its usability, the system was applied to detecting activities of a cryptocurrency software development community. Two theory-based, data driven models are implemented in the system to represent respectively conformity and temporal effects on human behavior in SMNs. The research should advance understanding of SMN behavior and has strong implication for managing knowledge assets using SMNs.

## **Literature Overview**

Various theories and methods have been developed to facilitate understanding and prediction of collective behavior and network dynamics. For example, social contagion theory asserts that people behave based on available information, which is often contradictory due to a lack of agreement in a mass crowd, forcing the individuals to look for additional cue (Le Bon, 1895). As a second example, Emergent Norm Theory posits that new norms happen when group leaders and members agree on a new normative status or purpose for the group (Turner & Killian, 1957). As a third example, research shows that people are more likely to join mass groups and share information when they are exposed to that information recently (recency) (Hovland, 1957; Miller & Campbell, 1959) and when it has immediate importance to them (primacy) (Gino, Ayal, & Ariely, 2009). However, none of these prior studies were conducted in the context of SMNs, which provide more technological capabilities (e.g., online presence, asynchronous massive communication) than traditional social networks do. In addition, research into these effects on dynamic SMNs of cryptocurrency software development community is not widely available.

## **Methodology**

This research has developed an intelligent system for modeling and simulating the conformity and temporal memory of users in dynamic SMNs and for predicting their nodal activities. Through accurate prediction of nodal activities, the system aims to enhance the management and security of organizational knowledge assets. Developed based on a design science paradigm (Hevner, March, Park, & Ram, 2004), the system is built based on relevant social and psychological theories and can be used to extract dynamic bipartite SMNs (consisting of links between user nodes and knowledge asset nodes). User behavior in the extracted networks are learned in the system by using two different models (Conformity Model (COM) and Recency-Primacy Model (REM)), which predict nodal activity counts based on Social Contagion Theory (Le Bon, 1895) and human cognitive mechanism (Miller & Campbell, 1959) respectively. In this study, we hypothesized that REM would outperform COM due to REM's capability to represent social contagion in an online environment.

This research conducted experiments to study the effectiveness of the system on predicting and simulating activities of the SMNs of 83,536 GitHub software repositories related to three widely traded cryptocurrencies (Bitcoin, Monero, and Ethereum). The data consists of user and software repository interactions related to the three cryptocurrencies on GitHub social media networks

(<https://github.com/>), a professional online platform for sharing software code and development ideas. User-repo interactions form events that become links in GitHub SMNs. The network consists of two types of nodes (users and software repositories) and seven types of events (links between a user and a repository) such as “push,” “pull,” “fork,” and “watch” (detailed explanations available at: [https://docs.github.com/v3/activity/event\\_types](https://docs.github.com/v3/activity/event_types)).

REM has three variants that represent different emphases of primary and recency effects (REM1 emphasizes on recency, REM3 emphasizes on primacy, REM2 balances the two effects). COM has only one model. Each of these model variants was trained on the same dataset spanning 1/2015-8/2017 and was tested using a dataset spanning 2/1/2018-2/28/2018 (with an initial condition dataset spanning 1/17/2018-1/31/2018 for startup during testing). The predictions made by each model variant were evaluated against the ground truth that is the actual observation of the SMN activities in the testing dataset. Four categories of metrics (engagement, contribution, popularity, influence) and performance measures were used to evaluate the predictive performance.

## **Results and Implications**

Overall, REM model variants achieved the best performance, outperforming COM in most measures. REM3 achieved the best performance in measures pertaining to repository distribution, daily repository contributions, number of unique repositories contributed by users, and user activity distribution, proportion of contributing users, and burstiness of contribution events. REM1 achieved the best performance in influence measures. Recent events are found to be more important in simulating the repository influence than earlier events. The conformity effect illustrating the tendency of average behavior is found to be useful in simulating repository interactions. The results has strong implications for representing cognitive bias of recency or primacy in modeling (by REM) and predicting cryptocurrency software SMN activities. Primacy effect is found to enable a better high-fidelity simulation and prediction than other effects. Because different performance measures emphasize on different social aspects, managers need to attend to specific subsets of performance measures when applying the models to their predictive tasks. Managers can gain better insights about their customers and knowledge assets by modeling the effects of conformity and temporal memory using SMN data. Managers can also deploy a SMN predictive system to project future trends to enhance organizational responsiveness.

## **Conclusion**

Social media networks (SMNs) are increasingly used to manage business relationship and network ties among knowledge assets. However, modeling evolutionary changes of SMNs to manage and protect valuable knowledge assets is not widely studied. This research developed an intelligent system to model and simulate SMNs of cryptocurrency software development communities and evaluated four model variants (COM, REM1, REM2, REM3) that represent theoretical assumptions of conformity, recency, and primacy respectively. Experimental results show that REM model variants outperformed COM significantly. Primacy effect (modeled in REM3) was found to enable overall better predictive accuracy, whereas recency effect (modeled in REM1) was found to be more important in simulating repository influence. The research has strong implication for using SMNs for strategic management of important knowledge assets, and contributes to building an intelligent, proof-of-concept system to enable SMN simulation and prediction. The research was limited by data-intensive tasks and scarce prior work on simulating dynamic SMNs

of cryptocurrency software development. Future directions include extending the modeling capabilities to account for other social and psychological theories, applying the system to other business domains and networks, and examining predictive performance over longer time frames.

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# WHAT ARE STATE-OF-THE-ART AI TECHNOLOGIES AND APPLICATIONS? A REVIEW OF BUSINESS AUTOMATION AND AUGMENTATION

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Key words:

Artificial intelligence, business automation, augmentation, technologies, literature review

## Introduction

Global demand for artificial intelligence (AI) technologies and applications are increasing rapidly in recent years. A study finds that the number of organizations with active AI projects has grown dramatically from one out of twenty-five to one out of three in just three years (Mohammad et al., 2020). Despite the strong demand, people's general knowledge about the promise and capabilities of AI is weak. A national survey of 1,547 US adults finds that most Americans are ill-informed about AI (DeCario & Etzioni, 2021). As the role of AI is increasing in businesses globally (Li et al., 2021), business leaders and managers urgently need to understand the potential usage and applications of AI technologies to help them solve problems in their functional areas, such as accounting, finance, information management, and operations. Against this backdrop, we seek to answer these research questions: What are state-of-the-art AI technologies and applications in business? How does AI support the business functions of accounting, finance, marketing, information systems, and operations management?

## Literature Overview

AI is defined as technologies that leverage machine-based intelligence and advanced computing capacity to mimic human "cognitive" functions (Russell & Norvig, 1995). Many articles exist that review AI technologies, applications, and its potential challenges in the business world. One article addresses the outlook of AI in the accounting industry, finding that inherent biases exist



in the human and machine learning process that has the potential to hinder integration of AI into the accounting industry (Losbichler & Lehner, 2021). In the information systems discipline, the presence of Chief Information Officers (CIOs) in a firm was found to positively influence AI orientation, and the educational diversity, R&D experience, and AI experience of the board of directors were found to positively moderate CIOs' effect on AI orientation (Li et al., 2021). In human resource management, Fleming finds that, in order to cope with employees' fear of being replaced by AI, business leaders should reallocate capital resources and invest in a workforce training program that will prepare employees for the new tasks they will complete (Fleming, 2020). In sales and marketing, AI is creating innovative ways for companies to optimize price offers, forecast sales, upsell and cross-sell, and manage salespersons (Antonio, 2018). General advices for managers to integrate AI in business processes are available in (Daugherty & Wilson, 2018). Despite this, advices and technologies described in previous research may need updates to provide up-to-date view of AI technologies and to summarize AI applications in business.

## Methodology

We conducted a systematic review of literature in business journals and technology publications, focusing on major the business functions of accounting, finance, marketing, information systems, and operations management. Two literature databases were used in our literature search. *BusinessSource Premier* was used due to its relevance to the business search queries and ability to generate high quality results. *Google Scholar* was used due its ability to broad and deep coverage on Internet resources. Only those articles featured in scholarly journals or conferences were selected. We used these search queries in our literature search (with total number of articles returned): "Impact of AI in accounting" (282,000), "Impact of AI in Marketing" (323,000), "AI in Information Systems" (3,424), "Impact of AI in Operations Management" (843), and "Impact of AI in Finance" (219,000). The results were further narrowed to include only recent articles (published between 2014 and 2021). The search was conducted during December 2021 – January 2022. After filtering the results to remove non-business and non-relevant articles, the search process resulted in eleven articles that describe state-of-the-art AI technologies and their applications to business.

## Findings

We identified state-of-the-art AI technologies and describe the way these technologies are applied to the five business functions as follows. Table 1 summarizes the findings and categorizes the results into respective technologies and applications. Each technology in the table is marked by "O" and/or "U" to indicate automation (O) and/or augmentation (U) respectively. Automation assumes that tasks are performed by a machine without human involvement. Augmentation assumes a continuous close interaction between humans and machines, with machines learning examples from humans and human learning from insights gained through machines (Benbya et al., 2021).

Existing state-of-the-art AI technologies are based primarily on the brain-inspired paradigm, which implements learning by evolving or hand-designing rules for modifying connections strengths in simulated networks of artificial neurons (Bengio et al., 2021). Examples of these technologies include soft attention and the transformer architecture (Vaswani et al., 2017), BERT (and its variants), contrastive learning, generative adversarial networks, self-supervised

learning, and variational auto-encoder (Salehi & Davulcu, 2020).

## **Accounting**

Accounting can benefit much from AI due to the highly quantitative and computational aspects in recording and reporting information. AI tools can be used to efficiently check significantly more documents (e.g., purchase invoices, sales receipts, general journals, bank statements) than human auditors can possibly review, thus increasing the overall accuracy and efficiency of the accounting industry. It is estimated that with the emergence of AI-enabled Sharing Service Centers, a business employing 40 full time accountants can save 25,000 hours of work annually (Li et al., 2020). Another form of intelligent augmentation known as Robotic Process Automation (RPA) helps to complete tasks automatically for accountants (Vishnu et al., 2017). RPA was found to improve processing times by 70 to 80 percent and to lead to increased employee job satisfaction (Cooper et al., 2019). AI technologies can also improve data entry process for accountants (Guo, 2019), through such methods as voice input and automatic character recognition and interpretation.

## **Finance**

Finance is being revolutionized by AI due to the need to its computerized trading environment and emerging technologies such as blockchain and high-speed trading algorithms. The National Stock Exchange of India announced in 2017 that they would be implementing machine learning to prevent the manipulation of its Frequency Trading markets (Donepudi, 2017). In the banking sector, AI-supported services can be categorized into enhancing customer experience, improving efficiency of the banking process, or developing security and risk control (Soni, 2019). India's use of AI falls into the developing security and risk control category. Genetic programming is used to predict the quality of service for a bank (Castelli et al., 2016). This use of AI would allow banks to optimize customer experience while minimizing their operating costs.

## **Marketing**

Marketing is impacted significantly by AI due to the availability of massive customer and interaction data (Antonio, 2018). Using natural language processing (NLP) and deep learning on data such as social media comments, surveys, or voice recording of customer interactions, companies can gain a deeper understanding of customers and their wants (Ramaswamy & DeClerck, 2018). AI-supported personalization also allows companies to know which customers they should be targeting (Simester et al., 2020).

## **Information Systems**

AI can be utilized to improve the decision-making process in the information systems function due to the need to manage data and information. AI-enablement allows decision making for information systems to be fully automated (Zdravković et al., 2021). Enhanced machine learning systems have the ability to generate new software which can be used to run information systems (Benbya et al., 2021). This would allow information systems to continually evolve in order to properly adhere to the many complex issues that modern companies face.

## Operations Management

AI can be used to innovate operations management to support logistics, product procurement, and supply chain management (Koster et al., 2021), among others. One example is data-driven fulfillment model indicates when a company should reorder products. Li and Liu presents a data-driven supply chain management (SCM) framework that leverage big data to support various aspects of SCM: demand forecast, quality control, conceptual design, logistic and transportation management (Li & Liu, 2019). As machine learning (ML) is increasingly used in various business functions as reviewed above, ML operations (MLOps) is a set of practices that aims to deploy and maintain machine learning models in production reliably and efficiently (Lwakatare et al., 2020).

## Results and Implications

AI is being integrated in various business functions. Our review provides a broad view of AI technologies and their applications to these functions, as summarized in Table 1, in which “O” indicates automation and U indicates augmentation, respectively.

Function	AI Technology	Application
Accounting	Sharing Service Centers powered by AI aiding in the completion of repetitive accounting tasks	AI has the potential to power sharing service centers which have the potential to save businesses 25,000 hours of work annually (Li et al., 2020). (U)
	Robotic process automation that works alongside an accountant	A software robot that mimics human function has the ability to work alongside humans to
		help them complete routine tasks (Cooper et al., 2019). (O/U)
	Intelligent software aiding in the process of data entry	Intelligent software can be utilized through voice input or document scanning (Guo, 2019). (O/U)
Finance	Machine learning in high speed trading	Utilized in the finance industry to enhance security. Can be specifically used to prevent manipulation of frequency trading markets (Donepudi, 2017). (O)
	Genetic programming in financial advising	Genetic programming is used in the customer service area of finance. This form of AI anticipates the quality of service a customer will receive. Depending on the quality of service that the program predicts a customer will receive, it can help to adjust the customer service accordingly to fit the customer’s needs (Castelli et al., 2016). (U)

Marketing	Natural Language Processing (NLP) and Deep Learning used to process customer feedback	Natural language processing and deep learning allows a company to process massive amounts of feedback on the various products or services that it offers. It allows for a volume of feedback to be processed that would not be feasible without AI implementation (Ramaswamy & DeClerck, 2018). (O/U)
	Artificial Intelligence use in the identification of a target market	AI can be used to allow companies to identify their target audience. For example, if a company is launching a new product, they can implement AI techniques to identify its potential customers (Simester et al., 2020). (O/U)
Information Systems	AI-enablement in automated decisions	AI-enablement has the ability to fully automate decision making for information systems (Zdravković et al., 2021). (O)
	Enhanced machine learning that generates information system software	Enhanced machine learning systems innovate new software that can be used to run information systems (Benbya et al., 2021). (O)
Operations Management	Data-driven fulfillment models	Simple operations management decision making can be automated using data-driven fulfillment models (Koster et al., 2021). (O)
	Supply chain management with a data-driven framework	Presents a data-driven supply chain management framework and illustrates the conceptual analogy with the power split device of hybrid vehicles (Li & Liu, 2019). (O/U)

**Table 1. AI Technologies and Applications in Business Functions**

## Conclusion

Artificial intelligence (AI) technologies and applications are rapidly adopted in businesses globally. However, users' general knowledge about AI is weak, leading to misunderstanding, fear, and loss of opportunities. This research provides an up-to-date review of business literature on state-of-the-art AI technologies and their applications in different business functions. Due to fast development in AI, our work is limited by the resources available to identify and document relevant new publications. Our ongoing research will continue to review latest articles and summarize their technologies and business applications. Future directions may include covering new AI technologies from top-ranked sources and research entities and soliciting their input on new business applications.

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# INCOME INEQUALITY TRENDS IN VIRGINIA

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Key words:

Gini index, income inequality, housing prices, economic geography

## Introduction

After years of narrowing income gaps between communities throughout the U.S., the trend has been reversing towards greater inequality over the last 20 years (Saez, 2017; Yellen, 2016; Parker, 2014). Moreover, income is distributed in a geographically heterogeneous manner, with wealth concentrated along the coasts and relatively high unemployment in the eastern heartlands (Austin et al., 2018). Florida (2018) described how some geographic areas have a concentrated advantage while other neighborhoods remain distressed, resulting in a “winner-take-all geography”.

Virginia is home to five of the top-ten highest income counties, including the top three in the nation (U.S. News and World Report, 2020), while the western regions of the state have struggled economically. Within Appalachia, many counties simultaneously experience high inequality and high poverty (Greenberg, 2016). Joshi and Gebremedhin (2012) found that the majority of counties within the Appalachian region experienced an increase in income inequality between 1990 to 2000. Given the economic diversity observed across the state, in this paper we seek to investigate the following research question: *Has the income gap between wealthy and poor communities in Virginia increased, and if so, what are the contributing factors?*

## **Literature Overview**

Much has been written on the trend of widening income and wealth inequality, and many theories have been proposed for this phenomenon, especially as it relates to the observed spatial variation. Thiede et al. (2020) proposed that geographic variation could be explained by migration dynamics, with rural areas experiencing net out-migration, and that individuals with higher education have tended to migrate toward urban and suburban areas. Tolbert and Lyson (1992) found gender, college education, and younger workers entering the labor force to be the most significant predictors of earnings inequality. Chevan and Stokes (2000) also explored the role of deindustrialization, finding that the lowest two quintiles were tied more closely to trends in manufacturing employment. Geographically, they found that areas that lost manufacturing jobs experienced greater inequality. Greenberg (2016) found that within Appalachian counties, poverty displayed a “U-shaped” pattern where the poorest neighborhoods were closest to county seats, followed by wealthy suburbs, and then poorer rural areas.

Austin et al. (2018) performed an in-depth analysis of the trends in inequality across the United States. The evidence suggested that migration, from low-income to high-income places, would have several effects: an increase in wages for low-income earners in low-income places; mirrored by a decrease in wages for low-income earners in high-income places. Migration, therefore, explained long trends of average income convergence in the U.S. Moreover, housing prices, arguably the largest component of living expense, remained unchanged during the convergence period. Evidence suggests that this trend slowed down, and in some cases reversed starting somewhere around the first decade of the 21st Century. Several researchers found “local anchors” that slowed down migration: primarily housing costs grew fast in high income areas, and State welfare programs provided sufficient income support to the non-employed, mostly in the form of housing vouchers and disability benefits, which are State funded and therefore do not carry over to other states if people move. Austin et al. (2018) suggested that policy needs to be rebalanced from people-based incentive frameworks to place-based incentive frameworks.

## **Methodology**

To advance existing research, we decided to create a measure of income inequality for counties in Virginia that accounts for differences in the cost of living. Accordingly, our analysis uses income data from the Bureau of Labor Statistics’ Quarterly Census of Employment and Wages and housing prices from the Virginia REALTORS Association. We focused on 2013-2019 because housing price data prior to 2013 was collected using different geographic boundaries, which makes it difficult to determine consistency across counties. Additionally, although data for 2020 was



available in both data sets, given the unusual economic environment of that year, the analysis looks at 2013-19 only (results including 2020 are available by request).

While the Gini index is the most common metric of inequality, others including the Atkinson index and the Theil index have found a place in common usage (Frank, 2014). We chose to use the Gini index as our metric as it is the most common measurement of inequality. To construct the corrected Gini index, we adjusted the income data by using the average sales price of houses for each county as a proxy for cost of living. All houses are assumed to be equivalent and, therefore, of equal value with respect to earnings. We constructed an index as follows:

$$PPP\ Index = \frac{Price_{avg}/Income_{avg}}{Price_i/Income_i} \quad (1)$$

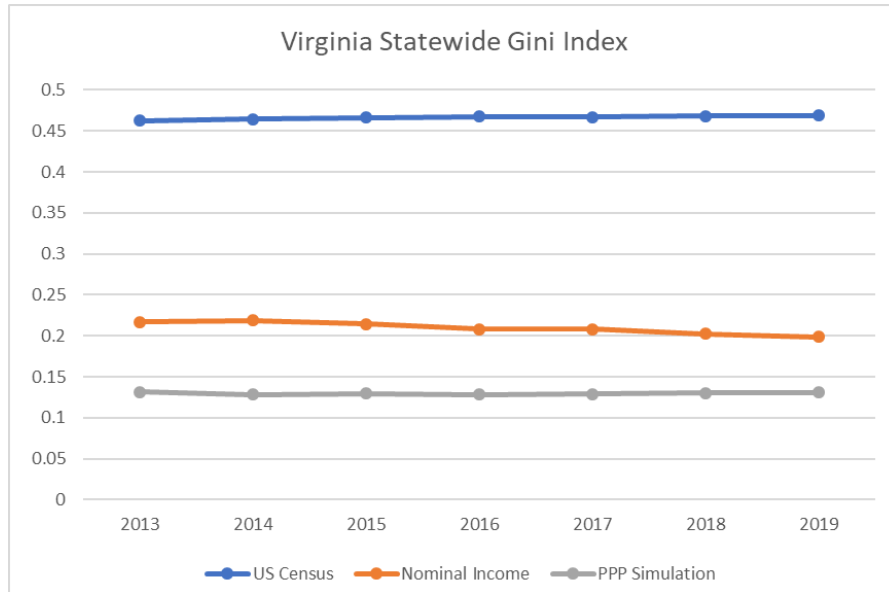
We used this index to create average incomes (by county) adjusted for cost of living in each county. With this index, we then calculated a Gini index using corrected incomes across all counties/cities across the Commonwealth (except in the case of two localities in which data points were missing). Given that the dataset was county-based rather than household-based, we anticipated that our result would be lower than those looking at household level data. A similar calculation using nominal income rather than cost-of-living corrected income resulted in a higher Gini index result (as expected) but still less than a household-based one.

Finally, we calculated a simple percent change in the Gini index over the 2013-2019 period to determine the extent to which inequality was still increasing.

## **Results and Implications**

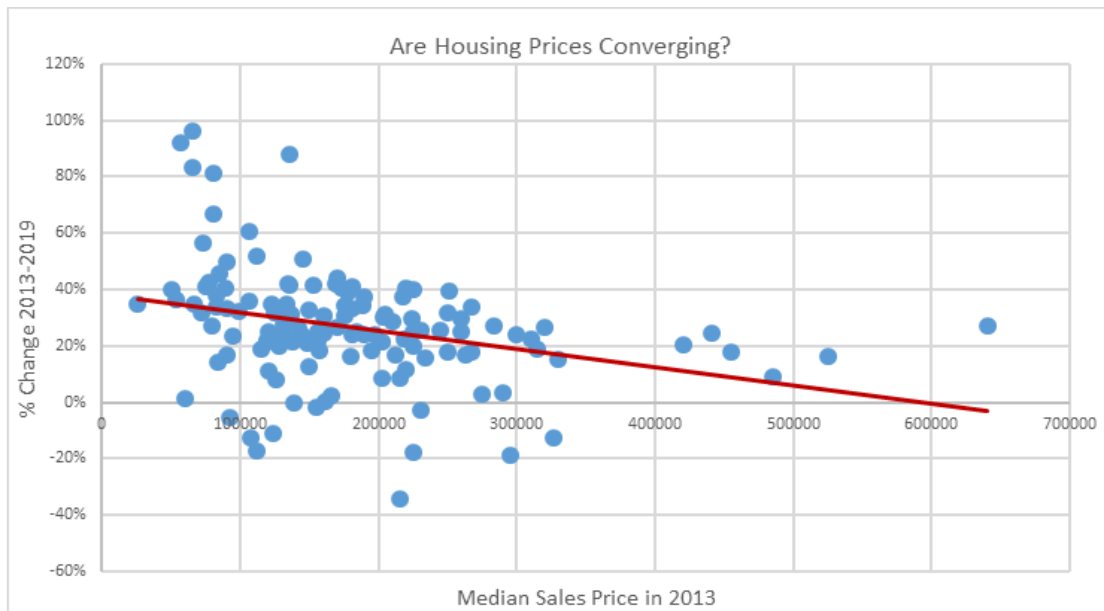
As mentioned in the previous section, our Gini index showed less inequality than other published results. By using county averages rather than household incomes, the data cuts off the highest and lowest earners, perforce reducing inequality.

For the trends, the results for both the nominal and the cost-of-living corrected incomes showed a decrease in inequality from 2013-2019. The nominal Gini decreased by 8% while the corrected showed little movement during the period, declining by 0.5% overall (Figure 1). For comparison, the U.S. Census Bureau (2021) data show a modest increase of 1.4% in Virginia over the same time period. National level non-corrected Gini coefficients showed movements in the -1.5% (Frank, 2021) to 1.7% (World Bank, 2021) range so these results seem reasonable despite the lower overall Gini levels. Although the decline or slower increase in inequality appears to be a positive sign at first glance, there are worrisome underpinnings to the results. In the first place, the higher rate of decline in the nominal Gini must be compared with the lack of movement in the corrected Gini number. That is, in terms of real income, there has been little improvement in inequality so the change recorded for nominal income appears due to changes in cost of living.



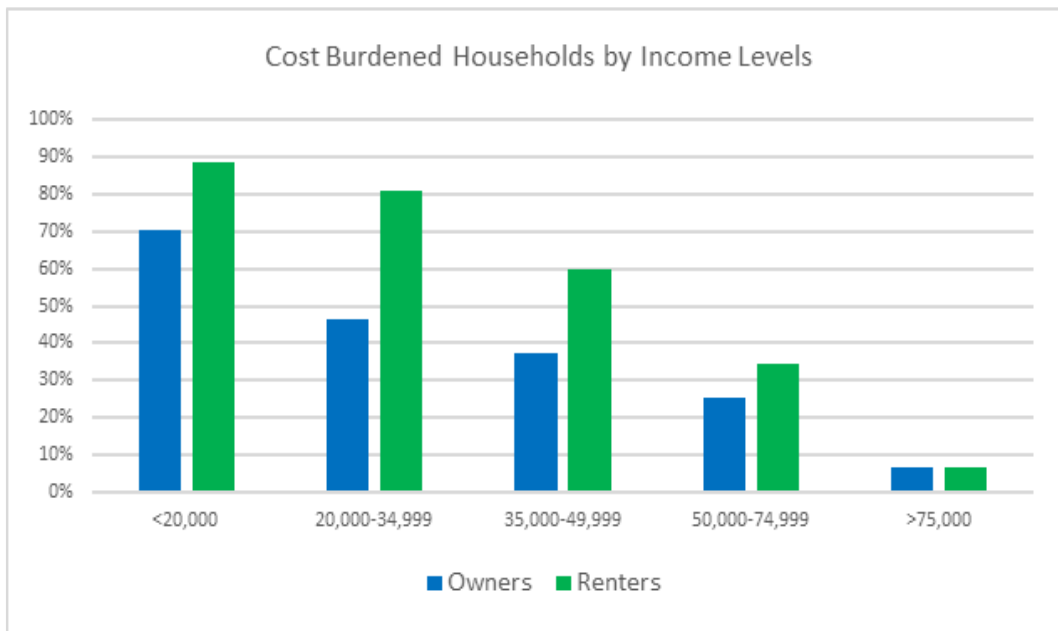
**Figure 1. Calculated Gini Coefficients for Virginia from 2013 to 2019**

To test this hypothesis, we examined whether housing prices were converging and found this to be the case - lower priced housing increased more in cost over the 2013-2019 period than did higher priced housing (Figure 2). If the cost of lower-priced housing is increasing faster than that of higher priced housing, it follows that housing costs for lower income households are increasing faster than those of higher income households, which explains why nominal income-based Gini coefficients decreased more than the adjusted ones.



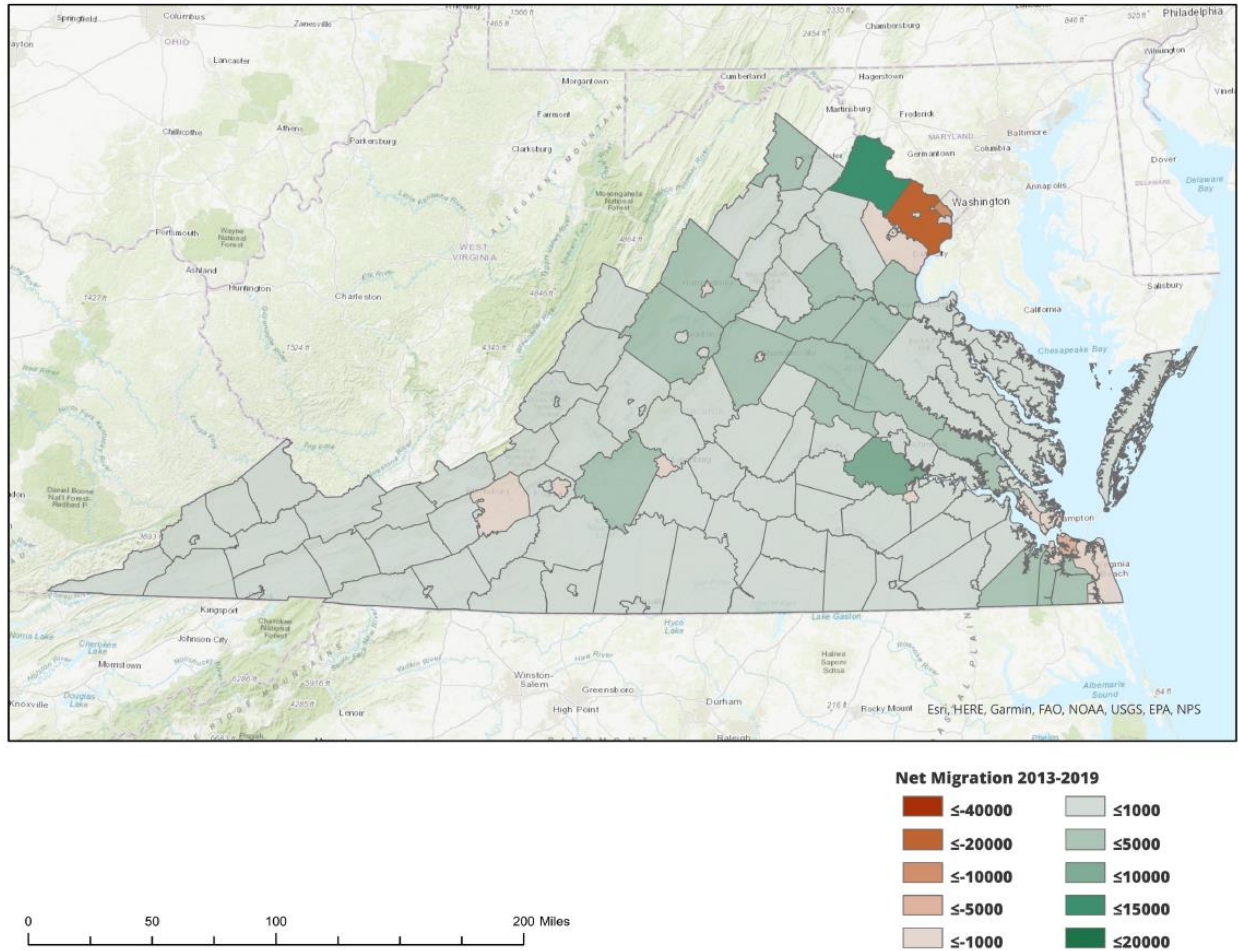
**Figure 2. Change in Housing Prices Relative to Median Sales Price**

An additional concern regarding housing is that lower income households are more likely to be considered “housing cost-burdened” than higher income households, defined as when housing costs more than 30% of reported household income. Evidence from Housing Forward Virginia (2021) indicates that, during the years of our sample, cost-burdened households represented from 27-31% of total households. For those earning under \$20,000, however, the number went up to over 70% (Figure 3). Moreover, renters are in a worse position. Not only are the cost-burden numbers higher for renters but they are not able to benefit from higher housing prices by selling. Changes in housing prices disproportionately impact the budgets of the poor (Schuetz, 2021).



**Figure 3. Cost Burdened Households in Virginia**  
**(Source: Housing Forward Virginia, 2021)**

If the housing price convergence trend continues, it would have interesting implications for migration within Virginia and, accordingly, the place-based policies discussed by Austin et al. (2018). They argue that employment subsidies targeting firms in income-depressed places are a good alternative (as found in research that studies the outcome of policies to increase employment by the Federal program of urban empowerment zones). The shift in policy makes room for large increases in education funding at all levels in economically depressed areas. If housing prices continue to converge, it would become more feasible for poorer families to move as housing costs will be less of a deterrent. This might weaken the argument for place-based policies. Increased funding for education or job provision would be less effective if the recipients are more likely to leave and take their human capital with them. Migration patterns over the period of our study (Figure 4) indicate that this is not yet happening as housing price differences appear to be driving migration (prices in the out-migration counties generally exceed those of the neighboring in-migration counties) but additional research and testing is needed to confirm this.



**Figure 4. County Level Net Migration, 2013-2019**  
(Source: U.S. Internal Revenue Service, 2021)

## Conclusion

Our results point to a slight reduction in income inequality within Virginia (or at the very least, a reduction in the growth), which should be good news for lower income levels. We saw a very slight reduction in the income-corrected Gini numbers and larger reductions for the nominal ones. Unfortunately, this might indicate that the reduction in inequality is driven by faster growing housing costs at those lower levels.

In general, the endeavor of inequality calculation is fraught with numerous methodological pitfalls which can account for differences in results (for further discussion on this topic, see Frank, 2014; Mills, 2009). Using household data would have provided more accurate Gini indices and is an area for future examination.

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# THE ROLE OF AI IN WESTERN NORTH CAROLINA TOURISM CONVERSATIONS

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Key words:

Artificial intelligence, chatbots, tourism, customer experience (CX)

## Introduction

Western North Carolina is known for the Blue Ridge Mountains, fresh air, and the beauty of the outdoors. The top hashtags for #wnc revolve around nature, outdoors, and music (besthashtags.com, 2022). Even with the intention of nature and the outdoors, "automation of consumption" has become a new reality in today's marketplace (Sheth, 2021). Part of Appalachia, hospitality and tourism dominate the Western North Carolina industry, generating employment for more than 225,000 each year (N.C. commerce, 2022). To continue to support tourism in the changing technological and demographic landscape, artificial intelligence (AI) is increasingly incorporated into business strategy. AI is broadly defined and overarches numerous technologies. While AI may be the latest buzzword, the term emerged in the 1950s. Fast forward 70 years, this year, companies are predicted to spend \$77.6 billion on AI systems (IDC report), and AI is expected to grow by 26%, up to \$15.7 trillion by 2030 ( PwC's Global Artificial Intelligence Study). AI bridges humans and machine interactions, enable computers to solve problems with minimal or no human intervention and creates value through three main processes: problem-solving, reasoning, and machine learning (Marr, 2016, Paschen et al., 2019, Syam & Sharma, 2018). This paper examines the role of AI in the customer experience in tourism in the Western North Carolina Region.

## Literature Review

### *Sales, Marketing, and Service*

There are multiple ways that organizations in tourism can incorporate AI into tactics to enhance the consumer experience, such as sales, marketing, and customer service (Paschen et al., 2020,

Syam & Sharma, 2018). These technologies could be perceived as a replacement for frontline employees (Lin et al. 2020); alternatively, they open human-machine integration possibilities (Davenport et al. 2020; Huang and Rust 2018). AI for sales and customer service training helps ensure that the right employees receive appropriate training and enables managers to focus on soft skill development. AI and human coaches complement each other (Luo, Fang, Quin, Qu, 2021). Chatbots are an increasingly used tactic to engage consumers using conversational ai.

Organizations struggle to comply with the rapidly changing regulations while providing a personalized experience in the current pandemic. The changing regulations, social distancing, quarantines, and shutdowns have forced organizations and consumers to adapt. Organizations can adjust by incorporating four modes of AI-based service encounters: AI-supplemented, AI-generated, AI-mediated, and AI-facilitated encounters (Li, Yin, Qiu, & Bai, 2021). AI-supplemented service encounters include recommendation services and virtual reality, while AI-generated meetings include chatbots. Both AI-supplemented and AI-generated technologies support tourism's sales, marketing, and service. Chatbots answer frequently asked questions around the clock, minimizing human involvement in specific situations. When consumers plan to travel and vacations, they are likely to research the internet. Research reflects that the predictors of chatbot adoption include perceived ease of use, perceived usefulness, perceived trust, perceived intelligence, and anthropomorphism and are not influenced by technological anxiety (Pillai & Sivathanu, 2020). The challenges of COVID-19 have adversely impacted the tourism industry over the last several years, where organizations have leveraged chatbots to comply with social distance regulations (Li, Yin, Oiu, & Bai, 2021). Consumers are increasingly looking to access information quickly and easily. They are just as likely to utilize chatbots to find information rather than reading a website. The efficiency of interactive communication is essential for innovative organizations to drive their sales. (Zsarnoczky, 2017). The research found that factors beyond product information may affect the perceived helpfulness of an online consumer review (Schindler & Bickart, 2012) product evaluative and descriptive statements. Chatbots effectively extract sentiment to understand customer experience (Sidaoui, Jaakkola & Burton, 2020). Artificial intelligence (AI) and augmented reality (AR) technology-mediated experiences enhance customer experiences and effectuate participation (Xu, Buhalis, and Weber, 2017).

### *Advertising*

Reaching consumers throughout their customer journey creates a difficult challenge for tourism organizations to deliver personalized campaigns following the European Union's General Data Protection Regulation (GDPR) and the California Consumer Privacy Act (CCPA). The CCPA data regulation applies to personal consumer identifiers, geolocation, biometric data, Internet browsing history, psychometric data, and inferences an organization might make about the consumer (Ghosh, 2018). This information is integral to the segmentation and personalization process needed for AI applications in the advertising process. This information helps with programmatic advertising to effectively serve consumer awareness and brand positioning. When targeting multi-generational visitors, tourism marketers must deliver intelligent ads to serve consumers better while establishing trust and building relationships.



## *Customer-Experience*

Customer experience is a foundation for tourism. Customers often look for information and advice word-of-mouth (WOM) channels because one cannot easily evaluate tourism-related products and services without engaging in first-hand experience (Litvin, Goldsmith, & Pan, 2008). Consumers tend also to use online travel forums to gain product knowledge and evaluate tourism-related products and services (Hwang, Jani & Jeong, 2013). When incorporating AI into consumer experience, chatbots must be easily accessible, have a user-friendly interface, be more human-like, and communicate in various native languages with customers (Pillai & Sivathanu, 2020). Beyond chatbots, the use of augmented reality technologies has increased significantly. Augmented reality (AR) is used in tourism as a marketing, information, and experience channel and has been used to help improve entertainment and engagement (Xu, Buhalis, & Weber, 2017). It has been used to sales by allowing tourists to visualize the intangible and creates a substantial marketing opportunity for organizations, creating a more valuable and poignant experience for tourists (Cranmer, Dieck, Fountoulaki, 2020). Incorporating an augmented experience for tourists results in higher satisfaction, brand awareness, and loyalty by creating more rewarding interactions (Xu, Buhalis, & Weber, 2017). Utilizing AI and AR to enhance the customer experience will help add value to tourism organizations by helping develop stronger relationships through improved communications and process improvement.

## *Western North Carolina*

Western North Carolina tourism has been a tourism destination for two hundred years due to the scenic mountain region. Established in 1934, the Great Smoky Mountains National Park preserves the cultural diversity of Southern Appalachian history. The park offers over 500 thousand acres of forests, streams, rivers, waterfalls, and hiking routes that include a segment of the Appalachian Trail. Additionally, local property owners, tourism advocates, and environmentalists who shunned the visual clutter found along roadways outside of the region supported the construction of the Blue Ridge Parkway (Whisnant, 2009). With a ranking of 4.9 out of 5 stars and over 43 thousand reviews, the park is visited by over 10 million people annually, hoping for opportunities to see white-tailed deer, elk, black bear, raccoon, turkeys, woodchucks, and other animals. Marketing strategies have focused on cultural attractions to increase overnight visits in Western North Carolina. Additionally, tourists have purchased indigenous crafts or consumed mountain music and moonshine from distilleries, which provide a bridge between local and visitor experiences. A balance has been stridden to maintain a high quality of life for full-time residents and preserve indigenous natural and cultural resources. (Starnes, 1999; Strom and Kerstein, 2015).

## **Methodology**

### *Data Collection*

This study uses secondary data and follows a content analysis approach. Consumer questions from TripAdvisor.com North Carolina Mountains Travel Forum were carefully examined. The website offers a place for consumers to post questions and reviews for travel destinations. There were over 8,500 trending topics for the Western North Carolina Region. On March 5, 2022,

1,000 of the 8568 topics were retrieved and grouped into categories. The collected topics should reflect the current, trending, and candid opinions.

### *Data Analysis*

Data was scraped from the TripAdvisor.com travel forum website to understand tourist needs. This study explored the Internet virtual space in terms of people, situations, emotions, processes, and the associations among these elements (Maxwell, 2013). The author read the consumer posts prior to March 5, 2022, which is the cut-off date. This study used Atlas.ti as a tool for analyses. Atlas.ti is a computer-aided qualitative data analysis software program that enables a researcher to search, count, or index specific or similar words across multiple documents (text, audio, and image). The software package comes with some basic Query functions in which Text Search and Word Frequency can be performed (Atlas.ti, 2022). The analytical tools can help expedite the review process to determine which major themes or topics have been repeatedly opined by online consumers. Determined themes can indicate useful patterns of user comments, such as the types of activities and amenities that consumers look for and discuss the most.

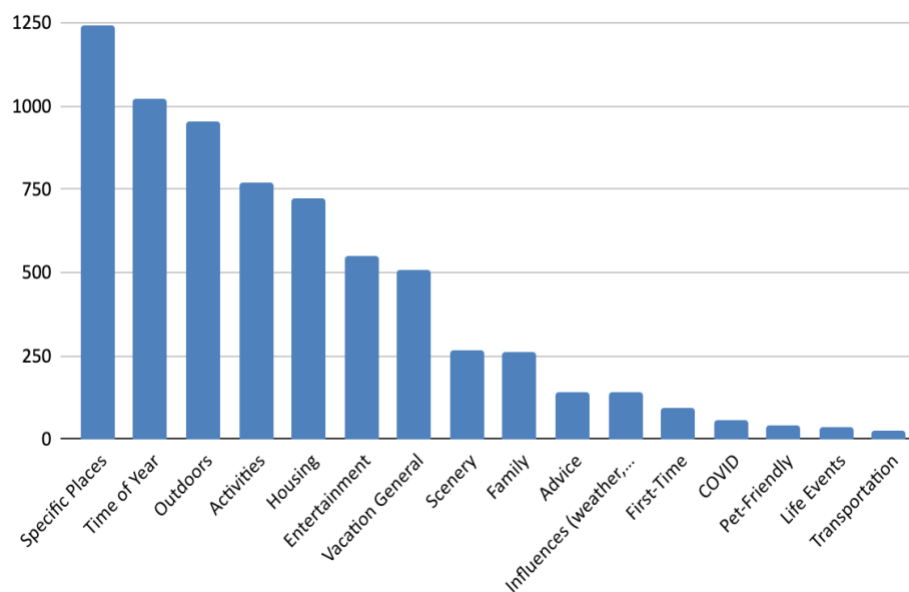
## **Results & Implications**

### *Results*

This study examined the consumer topics of interest in the Western North Carolina Region, as revealed in the TripAdvisor travel forum website. One thousand online posts from the travel forum website were analyzed following the taxonomic review process in Table 1. Several themes emerged from the analysis. Consumers are actively researching specific places, the best time of year to visit the region, outdoor experiences, regional activities, places to stay, and things to do and see (Figure 1). Environmental factors influence consumers in the region such as scenery, crowds, the weather, and the proximity and ability to be outdoors. The attributes of outdoors, activities, and entertainment align with initial hashtag research for the region (Appendix A).

Count	Attribute	Sub-Attribute
1244	Specific Places	Places, Asheville, Biltmore, Blowing Rock, Boone, Cherokee, Highlands, Gatlinburg, Florida, Bryson, Hendersonville, Chimney Rock, Charlotte, Atlanta, Maggie Valley, South Carolina, Brevard, Beech Mountain, Pisgah, Waynesville, Mount Mitchell, Nashville
1020	Time Of Year	Month, Time, Week, Weekend, Days, Year, June, July, April, Christmas, March, Morning, Overnight, Holiday, Winter, Spring, August, December
956	Outdoors	River, Elk, Gardens, Nature, Forest, Hiking, Trails, Fall Foliage, Outdoor, Rock, Waterfalls, Mountains, Lake
768	Activity	Drive, Blue Ridge Parkway, Parkway, Activities, Shopping, Ski, Snow, Fly Fishing, Tubing, Rafting, Attractions, Music, Casino, Train, Biking
721	Housing	Stay, Rental, Cabin, House, Hotel, Lodging, Resort, Camp, Campground, Airbnb
549	Entertainment	Restaurants, Dining, Brewery, Winery, Downtown
510	Vacation General	Traveling, Trip, Visit
266	Scenery	Mountain, Scenery
262	Family	Family, Daughter, Son, Husband, Kids, Wife
144	Advice	Recommendations, Tips
140	Influences	Weather, Beauty, Crowds, Relaxation
94	First-Time	
58	Covid	Covid, Restrictions
40	Pet-Friendly	
35	Life Events	Anniversary, Birthday, Wedding
27	Transportation	Airport

**Table 1. Taxonomy of Consumer Comments**



**Figure 1. Frequency of Trending Topics Discussed on Travel Forum**

## *Implications*

This research focused on the relationship between artificial intelligence and the tourism industry in western North Carolina. The review of relevant literature highlights that AI's scientific field and application possibilities are continually changing. Earlier literature focused on the technical facets of AI, more recent literature focuses on the multi-disciplinary impact, application, and future impact of AI. While AI has been discussed for almost seventy years, there have been many significant advancements in technology rapidly. There remains limited knowledge regarding AI functionality and how the industry could create value for customers and organizations. Customers are increasingly looking online to assist in their decision-making process and participating in two-way conversational forums on social media. Marketers in the tourism industry can leverage these insights and AI-supplemented and -generated technologies to deliver relevant content, build brand awareness and engage prospective visitors. The World Economic Forum launched the 'Reskilling Revolution,' a public-private initiative designed to aggregate government and businesses' efforts and share best practices. The goal of this initiative is to train a billion workers by 2030. Training includes providing tools and opportunities for employees to apply new AI skills to day-to-day work, identify new skills and roles needed and implement upskilling and continual learning. Tourism is a crucial factor to the western North Carolina economy. Supporting organizations need to consider pathways for upskilling current staff to attract new service-oriented and technologically competent talent and enhance the customer experience utilizing AI technologies.

## **Conclusion**

The present study outlines several ways to introduce AI to create value in Western North Carolina tourism. AI-supplemented and AI-generated technologies have been highlighted, which support the sales, marketing, and service aspects of tourism. The customer experience is essential during all stages of the customer journey. From brand awareness to post-purchase engagement, artificial intelligence technologies can help to support the customer experience. Analyzing interactions and capturing customer journeys can be leveraged to increase personalization and marketing program tactics. The emergent themes can become valuable knowledge for tourist destinations to leverage ai to meet consumer needs, such as creating useful conversational ai chatbots or relevant, targeted advertisements. Innovative tourism organizations can incorporate AI to enhance the customer experience by helping develop stronger relationships for future economic stability in western North Carolina Tourism. Future research should address employees' recruitment, retention, and training to support the AI-supplemented and AI-generated tourist experience.

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## Appendix A:

Western North Carolina Top Hashtags:

#wnc #isgreat #asheville #avl #ashevillenc #blueridgemountains #northcarolina #visitnc #nc #solmeister #wncfam #avltoday #visitasheville #hendersonvillenc #ashevillelocal #mountains #wncmountains #marseaux #westernnorthcarolina #blueridgeparkway #blueridgemoments #downtownasheville #dpans #ncmountains #cknd #nature #sxisma #westasheville #georvsd #bhfy #brando #sikonebrando #coolkidsneverdie #appalachia #wncfamily #shoplocal #wednesdaynightcypher #exploreasheville #southasheville #avleats #westernnc #ashevillefolk #ashevillestrong #supportlocal #avlnews #decipher #ncoutdoors #hendersonville #getoutside #yoga #lovehendo #ashevilletrails #wncquotes #wavl #mountainlife #pisingahnationalforest #landscape #millsrivernc #cashiersnc #xartinobasileio #wncfam #avltoday #visitasheville #hendersonvillenc #ashevillelocal #mountain #wncmountains #marseaux #westernnorthcarolina #blueridgeparkway #blueridgemoments #downtownasheville #dpans #ncmountains #cknd #nature #sxisma #westasheville #georvsd #romanticasheville

Best wnc hashtags popular on Instagram, Twitter, Facebook, Tumblr:

#wnc 32%, #isgreat #15% #asheville 12% #avl 8% #ashevillenc 8# blueridgemountains 5% North Carolina 4% visiting 4% solmeister 3%

<http://best-hashtags.com/hashtag/wnc/>

# COVID'S IMPACT ON SUPPLY CHAIN MANAGEMENT: IMPLICATIONS TO MEAT, MASKS AND MEDICINE

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Key words:

supply chain, personal protective equipment (PPE), COVID, pandemic, disruption

## Introduction

Over the past two years, the novel Coronavirus (COVID) has impacted nearly every aspect of our daily routines—both personally and professionally—from face coverings to social distancing to online learning to working remotely with mass shortages and shutdowns. Since March 2020, the United States has seen numerous shortages of various essentials such as toilet paper, hand sanitizer, face masks, and other medical supplies (Ranney et al, 2021). While 2021 saw an exponential increase in vaccine distribution, the new variants of COVID have been running rampant throughout the global economy, with major supply chain implications continuing into 2022. Over the course of the past year, the federal administration has slowly accepted that the best course of action against COVID is to leave these decisions to the state legislatures. During a call with governors in December 2021, President Biden stated that “There is no federal solution. This gets solved at the state level.”

This research initiative suggests that the most effective way to avoid mass shutdowns of supply chains and shortages of essential goods is to limit the federal government's regulatory overreach



and to allow state and local governments the power to oversee supply chains for items such as meat, masks, and medicine. Primary research includes information regarding vaccine distribution at the national and state levels, as well as information from interviewing US Congressman Thomas Massie (R-KY).

## **Government Response to COVID-19**

The US government's response to COVID was slow in the first few months of the pandemic (Haffajee et al, 2020). Then in March 2020, the government passed into law the CARES Act, providing \$1,200 stimulus checks to qualifying citizens, PPP (payroll protection program) loans for small businesses, among other protections. The CARES Act totaled \$2 trillion. As months passed, however, conditions continued to worsen. Daily cases were reaching new levels, workers were going on and off unemployment as states opened and shut down their businesses, and intensive-care beds in hospitals were at maximum capacity. In December 2020, the HEROES Act was passed, which provided \$1.13 trillion in relief to state governments and small businesses, as well as a \$600 stimulus check to qualifying Americans.

States have varied in responding to COVID. For instance, California has been in intense lockdowns for nearly a year while Florida reversed mask mandates, allowed Walt Disney World and other theme parks to reopen at 33% capacity, and allowed restaurants and bars to reopen. There are also some states—South Dakota in particular—that never issued a statewide lockdown, while other states—like Kentucky—have had cycles of lockdowns and as cases rose and fell.

## **Literature Review**

Experts in the field of supply chain have been quick to study various aspects of the pandemic, from how the political atmosphere has impacted supply and demand, to safety measures within food logistics, to rethinking medical supply chains, at the state, national, and global levels. Atkinson et al (2020) studied how policies in the US impacted both global and local supply chains for essentials such as personal protective equipment (PPE), ventilators, and even hydroxychloroquine in analyzing the government's response on supply chains – global, national, and local. Rizou et al (2020) focused on food supply chains and safety implications, exploring the possibility of COVID transmission through the food supply chain, then researching the development of detection tools for food and environmental applications.

## **Primary Research**

Supply chains vary from the national, state, and global levels. For instance, at the national level, how the US allocates vaccines can differ compared to how the United Kingdom allocates vaccines. The Michigan allocates vaccines to their counties can differ compared to how California allocates vaccines. Vaccine supply chains are vital to getting the right number of vaccines to the right place at the right time under the right conditions; this concept is known in supply chain as the “perfect order.” Getting the perfect order is crucial, especially given vaccines must be stored and transported in refrigerated (cold chain) units to remain useable. Effective supply chain management is essential for minimizing the risk of waste. According to the Centers for Disease Control (CDC), the number of COVID vaccines allocated per state is determined by the number

of people 18 years of age or older within the state or jurisdiction in proportion to the entire United States population (2021). Each week the CDC posts new allocations of doses, and then states order doses accordingly based on specific needs (2021). Kentucky uses the same technique to allocate vaccines at the local level. Instead of having major vaccine sites in only Lexington, Louisville, and other major cities, Governor Beshear has encouraged all 120 counties to have at least one vaccine site. Each vaccine site then receives a pro-rated allocation of vaccines, based on the population of that county that is eligible to receive the vaccine.

The PRIME Act is a bill introduced by US Congressman Thomas Massie (R-KY) to reduce and remove bottlenecks within the meat processing industry. Congressman Massie shared, “I first introduced this bill in 2015 to help regulate the price of U.S. grown foods and make them the same price as imported foods. I have been reintroducing it every session since then. From 2015 to 2019 legislative sessions, I would get 20-25 co-sponsors. When I introduced it last year, I doubled the number of co-sponsors.” When asked how the PRIME Act would benefit farmers, Massie said, “This act gives them an advantage in the market. It allows them to compete against the four major meat production in the United States.” Massie went on to explain that there are four major companies that control 85% of the meat production in the United States; these four companies do not allow farmers to use their facilities without regulation fees.

Congressman Massie explained that there is only one loophole for farmers when they cannot afford to go to the four major companies to slaughter their animals: selling the live animal directly to the consumer. With the PRIME Act, farmers would not have to worry about using this loophole. COVID further exacerbated the problems with the meat supply chain. COVID caused the major companies to shut down processes, which caused bottlenecks in supply chains, which caused anxiety for farmers and consumers. Because of these bottlenecks, unofficial slaughterhouses saw an increase in business. Congressman Massie reintroduced the PRIME Act during the 2021-2022 session on June 11, 2021. It was then referred to the Subcommittee on Livestock and Foreign Agriculture on July 15, 2021, where it has since been tabled. Senator Angus King (I-ME) introduced the same bill to the Senate, where it was submitted to the Committee of Agriculture, Nutrition, and Forestry on June 10, 2021. Massie’s version of the bill has nearly fifty co-sponsors while King’s bill has six (6) co-sponsors.

## **Conclusion**

Even after extensive research, there may never be a definitive and all-encompassing solution to combat COVID’s impact on supply chains. We are still learning new things about COVID, including new variants of the virus found in various countries. With vaccine distribution rising exponentially and new vaccines constantly being developed and tested, supply lines need to be prepared for the inevitable increase in demand. This research provides an argument for stronger free market protection against political rhetoric, manipulation, and monopolies. Additionally, it provides evidence for a need to strengthen the resiliency of our supply chains when another global pandemic arises. Finally, this research projects lends itself to subsequent quantitative research in examining the relationship (regression analysis) between government intervention and changes at the national, state, and global levels.

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# **A STUDY ON STATE BUDGET ALLOCATIONS TO KENTUCKY REGIONAL PUBLIC UNIVERSITIES**

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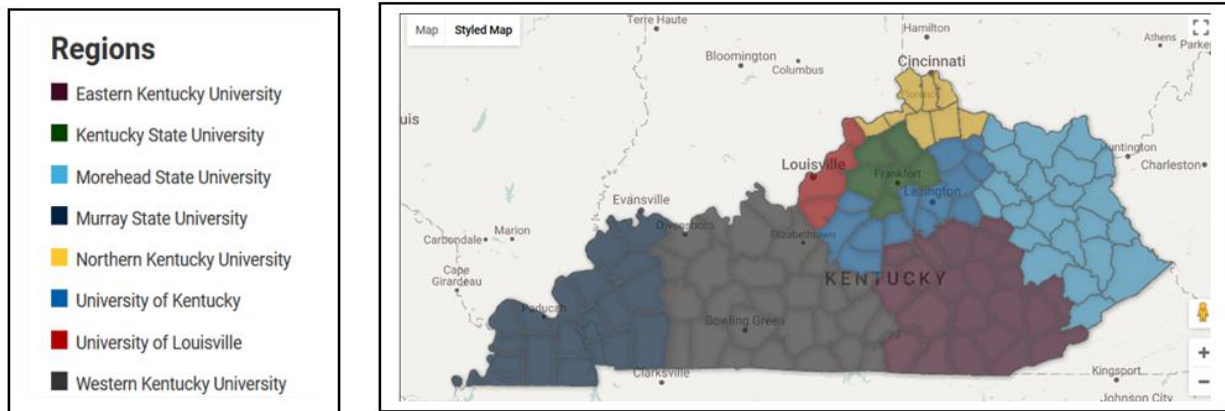
## **Key words:**

performance-based funding, higher education, budget allocation, regional universities, economic development

## **Introduction**

The Commonwealth of Kentucky's public higher education system includes eight (8) publicly funded ("State") universities, each with a specific service region (The Carnegie Classification of Institutions of Higher Education, n.d.). Regional universities are unique in that they tend to focus on teaching and have a specific mission of providing higher education to a particular service region

(Bok, 2015). Eastern Kentucky University’s service region, as example, comprises 22 south-eastern counties. Figure 1 shows the county-by-county service regions for each of the eight public universities. This preliminary study sets the foundation for subsequent research initiatives to quantitatively examine the extent state expenditures in higher education impact regional and statewide economic development.



**Figure 1. Service Regions for Kentucky Public Universities**

## Literature Review

Fundamentally, investments by the state in higher education should produce a positive return on investment, in both a school’s service region and the state overall. Bowen (1997) suggested that college graduates are more likely to be involved in public service, more likely to make healthier lifestyle choices, and more likely to contribute to economic growth and efficiency. Privately, an individual who secures a college credential is far better off financially than an individual who does not, despite the recent research suggesting that “not all college degrees are created equal” (Singletary, 2012).

Investments in higher education by the state of Kentucky should consequently lead to improved economic prosperity, as evidenced by lower levels of unemployment, higher income levels, higher levels of investments by non-government (i.e., private) entities (due to a more educated workforce), and higher levels of state gross domestic product. Actual investments in higher education by the state have been decreasing in terms of percentage of the overall annual state budget since 2011. The last five years have been Kentucky’s lowest percentage of overall budget allocation to higher education within the years 1980-2018 (State Higher Education Finance: State Profile-State Allocations to Higher Education). Kentucky is like other states, such as North Carolina, who have also seen decreases and the lowest allocation percentages the last three years. However, not every state has decreased the portion of the budget allocated to higher education. For example, Tennessee has had slight but continued increases in the percentage of budget allocation to higher education since their lowest allocation in 2015. The 2012 national average state appropriation per student of \$4,981 was last seen in 1959, which was a 26% drop since 2008 when the level of appropriation was \$6,722 (Comrie, 2021). This mirrored decrease seen during the Great Depression, but there has been a cyclical decreasing trend by almost half for three decades nationally (Comrie, 2021).

As a result of decreased state appropriations to public universities, universities are forced to seek other methods of funding (revenue). Indication of this shift is the percentage change of university revenue paid by the students (student share). The student share of university revenue has risen from 33.3% in 2006 to 55.3% in 2020 for Kentucky institutions (State Higher Education Finance: State Profile – Student Share). When state appropriations decrease, but operating costs remain similar, then the difference is made up through higher tuition, increases in student fees (Wang, 2013), as well as focus on fundraising efforts to increase university endowments (Drezner, 2019). A simple formula for understanding the funding sources (revenue model) for higher education can be summarized as follows:

**Funding sources for public higher education = State budget allocations + Student/parent contributions + Federal allocations + Public & private donations + Awarded grants + Other**

The cost side of the higher education equation is a complicated mixture of fixed and variable factors such as employee salaries, physical infrastructure (i.e., buildings, laboratories), pension costs, athletic programs, and utilities, which continue to rise (Ehrenberg, 2000; Simon, 2017). Public universities must balance their budgets each year, and adjustments in one area (for example, lower state budget allocations) must be met with a corresponding adjustment in other areas, such as a heightened focus on donor engagement and fundraising, a reduction in underperforming academic programs, or a freeze on annual merit adjustments. In the case of Pennsylvania for example, the PASSHE Board of Governors recently approved a campus consolidation plan to help address the state’s budgetary challenges (Whitford, 2021).

There is considerable prior research that attempts to estimate the economic impact of public higher education (Courant et al., 2006; Hoekstra, 2009; Lendel, 2010; Moretti, 2004). Many of those studies are very general and not specific to a particular state. As stated by Smith and Drabenstott (1992).

*“Publicly supported colleges and universities play a critical role in economic development, but that role is neither well defined nor easily understood. States seeking to improve their economic fortunes are turning to these postsecondary institutions to participate more fully in economic development. For their part, universities are promoting new economic development agendas while trying to increase state support. A few studies have found education generally to be an important business location factor, but little attention has been directed at understanding how universities stimulate economic development. Understanding the role of universities in economic development is difficult because the key linkages between universities and economic growth are complex, hard to quantify, and subject to change over time. Nevertheless, a detailed comparison of university programs and economic growth in various states does begin to illuminate a connection between university spending and economic growth.”*

## **Research Questions**

The major research questions are:

- **Research Question #1:** To what extent do the state allocations to individual regional universities impact regional economic development (success)?

- **Research Question #2:** To what extent does the statewide investment (% of the state budget allocation) to education impact state economic development (success)?

### **Future Methodology**

In a subsequent study, regression analysis will be used to examine the relationship between variables of interest. While there are many types of regression analysis, at their core they all examine the influence of one or more independent variables on a dependent variable. Research will evaluate the extent of impact the annual expenditures by the State (independent variable) have on regional and statewide employment rates and average income (dependent variables).

One of the challenges of this study is the presence of many confounding variables which also influences regional and statewide economic growth. Confounding variables distort the observed relationship between dependent and independent variables. There are several methods available to decrease the impact of confounding variables in research, including restriction, matching, statistical control and randomization. Supply chain infrastructure (e.g., highway systems for industrial transport), entrepreneurial initiatives (e.g., Centers for Economic Development-CEDET, Small Business Development Centers, SOAR, etc.), availability of funding for private investments, macroeconomic shifts (e.g., national economy moving away from coal production), access to high-quality healthcare, specialty programs newly offered by universities (e.g., Supply Chain, Banking), new industries or major employers move into or start in the state (e.g., AppHarvest) are but a few of the confounding variables that also impact regional and statewide economic growth.

### **Data**

The primary data needed for subsequent studies is accessible from a variety of statewide agencies and Federal organizations:

- Commonwealth of Kentucky Annual Budget Allocations to Public Universities
  - Council on Postsecondary Education (CPE)
  - Annual Commonwealth of Kentucky State Budget
- University Service Region
  - Council on Postsecondary Education (CPE)
    - See Figure 1
- Regional University Enrollment (# students) by year:
  - Council on Postsecondary Education (CPE)
  - Respective Universities' Admission Offices
  - Integrated Postsecondary Education Data System (IPEDS)
- County Employment Rates:
  - County Employment Office (state agency)
  - Commonwealth of Kentucky Department for Economic Development
  - United State Department of Labor-Bureau of Labor Statistics
- County Average Income:
  - Commonwealth of Kentucky Department for Economic Development
  - United State Department of Labor-Bureau of Labor Statistics

- County Educational Attainment
  - Census Bureau County Profile
- State Economic Indicators
- Kauffman Indicators of Entrepreneurship
  - New Employer Business Indicators
  - Entrepreneurship Indicators
- Kentucky Economic Statistics from Kentucky Government
  - Kentucky contribution to GDP

## **Implications**

This study adds to existing literature by extending general research into a specific state, that being the Commonwealth of Kentucky. This study and additional research have several implications to stakeholders, researchers, policymakers, and the higher education industry.

Firstly, the Commonwealth of Kentucky is struggling with major pension obligations (historically underfunded) and as such future investments in funding higher education is expected to decrease. An article by Bailey (2018) shares that *“In recent reports, they have called the budget “brutal,” with officials claiming an unprecedented \$1 billion gap between revenues and expenses. We're now careening toward drastic budget cuts to fill that gap and are told such cuts are an inevitable reckoning. Decision makers claim it's all due to the size of our pension liabilities — a penance for Kentucky's sins of the past.”*

Secondly, examinations of state budget allocations to higher education and subsequent research could lead to policy inputs that restructure the Commonwealth of Kentucky's higher education system. Discussions are already underway in terms of implementing performance-based funding metrics for regional universities to assess student retention and graduation rates, starting salaries, and the goal of having 60% of working-age Kentuckians with a college-level certificate or degree by 2030. Council of Postsecondary Education (CPE) President Aaron Thompson said "the performance funding model has proven to be an effective way to help close achievement gaps for underrepresented minorities, increase STEM+H degrees and accelerate progress toward the state's 60x2030 goal. Performance funding is an investment in the solutions that are essential to improving career outcomes of our graduates and meeting employers' needs for a highly trained and skilled workforce" (Kentucky Council on Postsecondary Education, 2021).

## **Limitations & Future Research**

One of the major limitations of this study—and expected future quantitative studies—is that the findings are not generalizable to other states since each state has different funding practices and policies for their universities. Additionally, states vary in terms of levels of entrepreneurship (ex. Research Triangle Park/North Carolina vs. Mississippi Delta) and overall budget considerations and priorities (ex. Illinois pension problems), etc.

Furthermore, there are many confounding variables which also affect regional and statewide economic development. While regression analysis allows for controlling of confounding variables, the expected results could lead to validity concerns.



The next phase of research will include collecting data and performing quantitative analysis and regression modeling. Efforts will include controlling for the confounding variables, and then examining the statistical results in relation to the two primary research questions. The results of this study will be shared with policymakers as well as the Council of Postsecondary Education.

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# **RECIPROCITY NORM IN STATE-OWNED ENTERPRISES: SOCIAL SUPPORT, HRM PRACTICES AND EMPLOYEE ATTITUDES TOWARD ORGANIZATIONAL CHANGE**

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Key words:

Employee attitudes, organizational change, state-owned enterprise, reciprocity norm, HRM practices

## **Introduction**

Employee attitude is an important factor in determining employee's behavior and the organizational effectiveness (Tosi, Mero and Rizzo; 2000). According to Vakola and Nikolaou (2005), attitudes toward change are made up of an employee's "cognitions about change, emotional reactions to change, and a behavioral propensity toward change," (p. 162) and can range from positive intents to negative reactions to organizational changes. Positive attitudes among employees can assist organizations in effectively achieving their goals (Eby et al., 2000; Gilmore and Barnett, 1992).

There is a necessity to research organizational architecture in order to comprehend employees' attitudes and how they are related to other management factors. The relationship between employers and workers, human resource management (HRM) practices, and other social anecdotes are especially relevant since they have a considerable influence on employees' attitudes regarding changes (Triandis, 1967). However, much research on organizational changes and organizational contexts is based on a Western viewpoint and does not take into consideration Chinese business culture and HRM practices (Guest, 2002; Edgar and Geare, 2005). Attitudes of employees working for state-owned enterprises (SOEs) and their reactions to organizational changes are of special interest, a hitherto unexplored issue (Sun and Alas, 2007).

Chinese SOEs have seen tremendous changes in the last 40 years, with HRM practices shifting from paternalistic manner to transactional approaches to improve performance. However, unlike typical private-owned firms, SOEs continue to be subject to central government supervision, with benevolent authoritative management dominating HRM practices making SOEs operate more like government branches than market-oriented enterprises (Hu & Lee, 2020).

This research has two objectives. The first is to look into how employees in Chinese SOEs react to organizational change, specifically, how do employee attitudes, HRM practices, and social support in SOEs interact? The second objective of this research is to look at the elements that influence the aforesaid relationship. This investigation will be based on a review of the literature on the reciprocity norm, SOE business culture, and survey data.

## **Literature Overview**

According to Ekeh (1974), the reciprocity norm can be mutually reinforced by the persons involved by exchanging positive behaviors. When one actor launches a friendly "move," the other reacts with a supporting attitude and behavior. This sets off a chain reaction that allows individuals involved to maintain and strengthen their ties.

According to Cropanzano and Mitchell (2005), reciprocity may take different forms and can apply to both individuals and organizations. Saks (2006) refers to a two-way interaction created between employees and their employers to describe how employees' positive attitudes are generated when they get economic and socioemotional support from their employers.

An organization can give a variety of assistance to its personnel who will respond with positive attitude toward organizational change. One of the antecedents influencing employee behaviors and attitude, according to Ranjani and Singh (2019), is perceived as reciprocity between employers and employees.

Given that the reciprocity has become a globally acknowledged norm (Arnesen and Foster, 2018), Asian cultures, according to Flynn (2005), are "more attentive to sentiments of gratitude and reciprocity" (p. 746). As a result, we predict that reciprocity will be embraced as a social norm in Chinese SOEs just as it is in other societies.

The second category of antecedents influencing employee attitudes is HRM practices, such as caring for employees' well-being, valuing their contributions, and providing training and professional development opportunities, in order to elicit desired employee attitudes (Newman et al., 2011).

Aside from the advantages/benefits employees might obtain from their employers, an organizational career path, internal promotion opportunity, and job security are all important factors in determining employees' attitudes because many workers were primarily interested in promotion and concentrated their efforts on the organization's internal job market for long-term employment (Cappelli, 2001).

Based on the above literature, we propose eight (8) hypotheses regarding how social support and HRM practices impact employee attitudes toward organizational change in SOEs.

## **Methodology**

To empirically explore the hypotheses proposed in this research, we collected a sample through a survey questionnaire and conducted quantitative research.

Among 206 participants from the oil and petrochemical SOEs in China, a total of 143 respondents completed the survey. Data were stored on a password-protected university platform.

For this study, a total of 25 items were developed, including three demographic questions. Three dimensions were measured using Likert-type items: positive attitude toward change (, social support, and human resource management (HRM) practices. The majority of the items in this study were adapted from previous research by Giaque (2015).

Previous studies suggested that employees' gender, age, and tenure status were all related to job performance (Meyer et al., 2002). As a result, age, gender, and tenure status were included in this study as control variables.

A hierarchical model was built, and multiple linear regression analyses were conducted using R software to examine how social support and HRM practices impact employee attitudes toward organizational change in SOEs. The dependent variable is employee positive attitude toward organizational change, while there are 8 predictors in this model, they are: relationship with supervisors; relationship with colleagues; training; internal promotion opportunities; communication; employees' participation; remuneration, and job security.

## **Results and Implications**

Only a statistically significant relationship between Internal Promotion Opportunities and Employee Positive Attitude toward Organizational Change was discovered in our investigation. The remaining variables investigated did not predict employee positive attitude toward organizational change in SOEs. These disparities in findings might be attributed to the cultural distance between the SOEs and study on the issue conducted in Western countries. In other words, while the principle of reciprocity is universally recognized and practiced, its significance and centrality are stronger in different cultures (Smith et al., 2015).

According to the literature, the reciprocity norm is very important in Chinese culture, where favors given by one person are typically expected to be returned by the other who received the assistance (Flynn, 2005). However, such a principle may not always apply to the relationship between individuals and organizations since, according to Gamble and Huang (2008), Chinese tend to be committed to their interpersonal networks but consider the organization as "an impersonal and abstract entity" (p. 234). Employees in SOEs, who are more dedicated to their colleagues than to the dummy-owned employers, are unlikely to exhibit favorable attitude toward organizational strategies for the support they receive from their employers.

This study found that employees do not respond positively to supportive HRM policies such as job security, training, and other perks offered by employers, just as they do not respond positively to social support in SOEs. We explain that this disparity was caused by the government's central controls over SOEs, which had drastically changed a one-to-one reciprocity relationship between SOEs and the employees into a complex multi-party relationship among central government, SOEs and their employees, thereby eliminating the likely reciprocal exchanges between employees and SOEs.

As we reported above, a statistically significant relationship between Internal Promotion Opportunities and Employee Positive Attitude toward Organizational Change was found in our study. Our explanation is that unlike other HRM policies that are fully controlled by the central government, the decision regarding internal promotion for low-level employees (our survey population) are left to SOEs and the one-to-one reciprocity relationship between SOEs and the employees remain intact in this area. Therefore, employees tend to believe that they could influence such decisions about internal promotion by engaging reciprocal exchange with the SOEs management.

## **Conclusion**

The purpose of this study is to examine the relationship between Chinese SOE employee positive attitude about organizational changes and their views of social and organizational support. This combination has never been studied in the literature. The findings contribute to our knowledge of Chinese SOEs through the lens of employee attitude toward organizational changes. One contribution of this study is the finding that, unlike in Western culture, social support in Chinese SOEs does not lead to employee positive attitude. Traditional Chinese culture (person centered reciprocity) appears to restrict the application of the reciprocity norm in Chinese organizations. This conclusion emphasizes the significance of taking into account national culture in the reciprocal relationship.

This research also contributes to our understanding of the dynamics of multi-party reciprocity relationships. Based on the findings that most of the HRM variables tested do not predict employees' positive attitudes toward organizational change, this study highlights the importance of a precondition leading to the reciprocal relationship, which is, employees tend to identify their real reciprocal partner in a complex multi-party relationship before entering a social exchange.

Future research could quantitatively test suggestions regarding multi-party reciprocal relationship. Also, this research can be extended by surveying employees, using a pertinent sample with quantitative data captured with an organizational structure questionnaire.

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# MANUAL PRACTICE SET AND STUDENT SUCCESS IN INTERMEDIATE ACCOUNTING I

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Key words:

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## Introduction

Both educators and practitioners have expressed concerns over the years about the quality of accounting education and the adequacy of student preparation for the workforce (Albrecht & Sack, 2000; Huang et al., 2005). One of the most important and difficult courses in a standard accounting curriculum is Intermediate Accounting I (Eikner & Montondon, 2001) (hereafter, ACC 301 or Intermediate).

For the fall semester of 2016, the accounting program at Eastern Kentucky University (EKU) introduced a new accounting class, ACC 251. ACC 251, a systems class, is a pre-requisite for ACC 301. The purpose of the class was to better prepare students for upper division accounting classes. The class focuses on the accounting cycle and utilizes a manual accounting practice set (Systems Understanding Aid or SUA) to reinforce topics from Introduction to Financial Accounting and give students an opportunity to observe the flow of information through the accounting cycle (Arens & Ward, 2016).

The purpose of this study is to determine if there is a difference in ACC 301 grades pre- and post-introduction of ACC 251. The SUA has now been in use for eight semesters, but no empirical study has been conducted to determine if grades have improved in upper division accounting classes at EKU. For this study, I tested final ACC 301 grades from before and after the implementation of ACC 251 to determine if there is a difference. I also tested whether or not there is an association between grades on the SUA, final grades in ACC 251, and final grades in ACC 301.

The results of my study show a significant, positive difference in ACC 301 grades after the introduction of ACC 251 utilizing the SUA. I also found a significant, positive association between overall grades on the SUA and final grades in ACC 301. In addition to this, a significant, positive

association between final grades in ACC 251 and final grades in ACC 301 was found. These results indicate that reinforcement of introductory financial accounting topics, particularly through the use of simulation, may have a positive impact on student success in upper division accounting classes.

### Literature Overview

Prior research has shown that the instructional approach can affect student learning outcomes (Boyd, Boyd, & Boyd, 2000, Burnett, Friedman, & Yang, 2008) and that a holistic, interconnected approach helps students understand the financial statements and the accounts within them (Spiceland, Sepe, & Nelson, 2013). One way to help students with this understanding is with a comprehensive practice set (Fatemi, Marley, & Marquis, 2015). The practice set chosen by EKU was the SUA<sup>1</sup> created by Armond Dalton.

### Methodology

If the introduction of a manual practice set has had an impact on the performance of students in accounting, I should see that reflected in their grades in upper division accounting classes. EKU does not have a capstone accounting class or Accounting Theory, so I used performance in ACC 301 to represent performance in upper division accounting classes. I used ACC 301 because a determining factor in a student’s overall performance in an accounting program is their grade in Intermediate Accounting I (Danko-McGhee & Duke, 1992).

To test if there is a difference in ACC 301 grades pre- post-introduction of ACC 251, I ran a one-way ANOVA on final letter grades for all students in ACC 301 from Spring of 2016 and Fall of 2016 (before implementation of ACC 251) and from Spring of 2019 and Fall of 2019 (after implementation of ACC 251 and before the pandemic). Final grades in ACC 301 were letter grades coded as A=4, B=3, C=2, D=1, and F=0.

### Results and Implications

Table 1 shows the mean, standard deviation, and frequency of final grades in ACC 301 from before and after the implementation of ACC 251. Final grades in ACC 301 were available for 146 students, 80 students from the semesters before ACC 251 and 66 students from the semesters after it. As can be seen from the table, average final grade in ACC 301 increased from 2.58 to 3.23.

<b>Semester</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Freq.</b>
<b>After</b>	<b>3.23</b>	<b>0.92</b>	<b>66</b>
<b>Before</b>	<b>2.58</b>	<b>0.92</b>	<b>80</b>
<b>Total</b>	<b>2.87</b>	<b>0.98</b>	<b>146</b>

**Table 1. Summary of ACC 301 grades from after and before ACC 251**

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<sup>1</sup> Armond Dalton released an e-version of the SUA for Spring of 2020. All uses of the SUA in ACC 251 were the hard copy version.

Table 2 shows the results of the ANOVA of final ACC 301 grades from before and after the implementation of ACC 251 and the use of the SUA. The increase in average final grades is significant at the 0.01 level. Results indicate that the addition of ACC 251 utilizing the SUA may have had a significant, positive effect on final grades in ACC 301.

	<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
<b>Between Groups</b>	<b>15.38</b>	<b>1</b>	<b>15.39</b>	<b>17.99</b>	<b>0.000</b>
<b>Within Groups</b>	<b>123.14</b>	<b>144</b>	<b>0.86</b>		
<b>Total</b>	<b>1389.52</b>	<b>145</b>	<b>0.96</b>		

**Table 2. ANOVA Results of ACC 301 Final Grades**

### *Additional Analysis*

There are other factors that may have contributed to the increase in average ACC 301 grades from 2016 to 2019. To see if there is an association between overall grade on the SUA or grade in ACC 251 and final grade in ACC 301, I ran a multivariate regression using all students from the population of post-ACC 251 students used in my ANOVA.

$$301\_GRADE = \beta_0 + \beta_1SUA\_GRADE + \beta_2251\_GRADE + \beta_3GPA + \beta_4INTRO\_GRADE + \beta_5AGE + \beta_6ACT + \beta_7QB\_GRADE + \epsilon_i$$

Our tests variables are SUA\_GRADE and 251\_GRADE. These are measured as the letter grade received overall on the SUA with A=4, B=3, C=2, D=1, and F=0. The independent variable, 301\_GRADE, is measured the same. I controlled for factors known to affect Accounting grades. A student's overall GPA, their performance in Introduction to Financial Accounting, composite ACT, and age have been shown to have a positive relationship to Intermediate grades (Eikner & Montondon, 2001; Waples & Darayseh, 2005). GPA is the student's overall grade point average using a four-point scale. INTRO\_GRADE is the final letter grade from Introduction to Financial Accounting and is coded the same as 301\_GRADE. AGE is the student's age in years. ACT is the student's composite ACT score. Because the students in 251 also learn to use an accounting software (QuickBooks), I also controlled for total grade on the QuickBooks (QB\_GRADE) as it reiterates the accounting cycle.

Table 3 shows the results of the regression model for the additional analysis. The results indicate that there is a positive, significant (at the 0.10 level) association between both SUA\_GRADE (p=0.91) and 251\_GRADE (p=0.069) and 301\_GRADE. As expected, INTRO\_GRADE was positive and significant (p=0.04). The other control variables, except for QB\_GRADE, were positively associated with 301\_GRADE, however, none were significant.

Taken together, the ANOVA and regression results indicate that ACC 251 and the SUA had a positive impact on grades in ACC 301. The results of the regression also show that age, composite ACT, overall GPA, and total grade on QuickBooks assignments were not significant to final grade in 301, indicating that the class itself and the use of the SUA were the determining factors in improving the average final grades in ACC 301.

<b>301_GRADE</b>			
	<b>Coef.</b>	<b>t-stat</b>	<b>p-value</b>
<b>SUA_GRADE</b>	<b>0.38</b>	<b>1.73</b>	<b>0.09 *</b>
<b>251_GRADE</b>	<b>0.43</b>	<b>1.93</b>	<b>0.06 *</b>
<b>GPA</b>	<b>0.01</b>	<b>0.03</b>	<b>0.97</b>
<b>INTRO_GRADE</b>	<b>0.58</b>	<b>2.1</b>	<b>0.04 **</b>
<b>AGE</b>	<b>0.01</b>	<b>0.27</b>	<b>0.79</b>
<b>ACT</b>	<b>0.06</b>	<b>1.57</b>	<b>0.13</b>
<b>QB_GRADE</b>	<b>-0.08</b>	<b>-0.54</b>	<b>0.59</b>
<b>Observations</b>	<b>44<sup>1</sup></b>	<b>-0.07</b>	<b>0.95</b>
<b>R<sup>2</sup></b>	<b>0.34</b>		

**\*, \*\* Denote significance at the p<0.10 and p<0.05 levels, respectively.**

**Table 3. Additional Analysis: 301 Grade and ACC 251 Grade and SUA Grade**

## **Conclusion**

In the fall of 2016, the accounting program at ECU introduced a new course (ACC 251) designed to reinforce introductory Financial Accounting topics, primarily through the use of a manual practice set (the Systems Understanding Aid), improve student grades, and fortify the understanding of concepts in upper division accounting classes at ECU. Anecdotally, the course appeared to help with Intermediate Accounting instructors reporting better grades and a better understanding of the Accounting Cycle.

However, in the eight semesters since its introduction no empirical study had been conducted on ACC 301 grades. I, therefore, ran an ANOVA on final ACC 301 from the two semesters before ACC 251 was taken a pre-requisite to ACC 301 (Spring and Fall of 2016) and the latest two semesters before the pandemic (Spring and Fall of 2019). The results of my ANOVA show a significant, positive increase in average final grades from the semesters before ACC 251 and the semesters after ACC 251. I then ran a regression on students in the second two semesters to determine if overall grade on the SUA was associated with final grade in ACC 301. I found a significant, positive association. I also found a significant, positive association between final grade in ACC 251 and final grade in ACC 301.

I believe this study will be of use to educators interested in student success in upper division accounting classes. Although this study was limited to one institution and one class grade, I believe the findings do indicate that additional emphasis of introductory Financial Accounting topics, particularly the use of an accounting practice set, help students achieve success in future accounting classes. Future research may wish to explore whether a computerized or manual set is important to student success or explore other ways of emphasizing important introductory topics to students before taking Intermediate Accounting.

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<sup>1</sup> There are only 44 observations here instead of 60 because INTRO\_GRADE and ACT were not available for all 60 students, likely due to transfer students.

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# **REMOTE LEARNING DURING THE COVID-19 PANDEMIC: A DESCRIPTIVE ANALYSIS ON CHALLENGES AND OPPORTUNITIES AMONG BUSINESS STUDENTS**

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## **Introduction**

Over the past two years, the COVID-19 pandemic has caused massive changes across higher education. Teaching modalities have undergone a massive shift in favor of online and hybrid formats. Changes have been rapid, widespread, and largely uneven. Educators at all levels continue to work to distill the best practices in this "new normal." This research, conducted via a student online survey in Fall 2021, focuses on student impressions of the recent online experience to gain insights on online best and worst practices.

## Literature Overview

In the wake of the pandemic's disruptions to existing systems, research has already begun to study the challenges and possibilities made possible by this greater move online.

Attree's (2021) student interview study indicated that the most successful strategies in coping with the COVID-19-induced move online were interactivity in online courses, clear and regular communication and reminders, and flexibility and empathy in responding to the challenges facing students. The importance of clear and consistent communication was echoed in the work of Morgan (2020), which focused on primary education settings.

Some research has also emphasized that keeping to a clear, consistent schedule in the wake of COVID-19 disruptions was the best approach to create a sense of community and ease student anxiety. In addition, the willingness to institute course design changes to meet new circumstances was seen as key to student success (Olson & Kenahan, 2021).

There is already a well-established body of research on the characteristics of a successful online learning experience. The foundational work of Garrison et al. (2000) suggested that online learning could be conceptualized as a "community of inquiry," wherein students and faculty interact with course content in cognitive, social, and teaching presences. The present survey builds on this past work.

Recent research has expanded on the Community of Inquiry (COI) model, indicating that students perceive distinctions between the role of instructors online vs. in-person. According to Gering et al. (2018), students believed the in-person instructor should "lecture and explain," whereas online education should "guide and provide resources."

A successful online learning environment includes interactions among students, the interactions between instructor and students, and the collaborations in learning that result from these interactions (Palloff & Pratt, 1999). Past studies have shown that contact by email appears beneficial, with frequent out-of-class communications being positively associated with student learning and perceptions of instructor rapport (Sidelinger et al., 2015). Further, students identified that frequent email use by instructors outside of traditional classrooms led to increased perception of instructor capability and led students to rate the affective experience positively (Ledbetter & Finn, 2018).

Park and Kim (2020) concluded that using an interactive communication tool (Microsoft Teams in their study) in online learning fostered strong student-instructor interactions and promoted students' perceptions of instructor presence, which eventually enhanced student engagement and satisfaction in online classes.

While many students, including a significant portion of respondents to the present survey, indicated a preference for in-person formats, experiences online for students are generally measured as positive (Spencer & Temple, 2021). The present study builds upon this body of knowledge.

Finally, all of these changes have impacted more parties than students alone. It is important to note that faculty stress levels surrounding the shift to online and blended learning have significantly increased after the onset of the pandemic, specifically concerning technology stress, contributing to lost productivity, absenteeism, and job turnover (Boyer-Davis, 2020). Moving forward, educators and administrators alike must identify and implement best practices to effectively transform online learning while protecting precious faculty resources (and their well-being); a balance must be struck to cultivate the most effective use of time for both faculty and students.

## **Methodology**

The research consisted of an online survey of undergraduate business students conducted using Qualtrics software. The research subject pool included student respondents from eight separate classroom sections. The surveyed sections included both online and in-person learning environments. Nearly all survey respondents had experience with online learning in either past or current courses.

Surveys were open to students for twenty-one days during the Fall 2021 semester. The course sections involved drew from various disciplines across the AACSB-accredited College of Business university. Survey-subject sections included Accounting 440: Accounting Law (1 section, in-person), Business 204: The Fundamentals of Business Law and Ethics (2 sections, 1 in person, 1 online), Business 207: The Fundamentals of Interpersonal Business Communication (in-person), Corporate Communication and Technology 270: Entrepreneurship (online), Business 301W: Fundamentals of Formal Communication (2 in-person; 1 online), Corporate Communication and Technology 310: International Business Communication (online), and Corporate Communication and Technology 550/750: Integrated Corporate Communication (online).

In total, 297 students were invited to participate in the survey, yielding 232 complete responses for a 78 percent response rate, which formed the basis of the data discussed below. The high response rate was attributable to several classroom sections which integrated this activity as a first-day-of-class participation requirement. The survey instrument consisted of basic demographic inquiries (age, sex, race, level of undergraduate progress) and a baseline question on experience with computers and online learning.

Respondents completed 31 inquiries about online learning characteristics related to the advantages of online learning and problems/challenges they have faced. A seven (7) point Likert scale was provided for responses. The survey then included a Likert scale inventory of ten (10) potential student characteristics required for success in online education. Finally, survey participants were provided with an array of five (5) open response subjective questions about their perceptions on the best/worst practices in online education. While these open responses questions sometimes provided fascinating insights, this paper concerns the results of the objective inquiry responses. See Appendix A for the complete survey instrument.

## **Results and Implications**

First, to guide improvement, it's crucial to identify what students indicate does not encourage a positive online learning environment. An initial examination of worst online course practices identified several student-perceived deficiencies. First, students identified that they found full-



course deployment (including all chapters and assignments) on the first day to be discouraging. Specifically, students indicated that this method was overwhelming, and they felt they were to ' fend for themselves' and self-guide the material. While many students do like to work ahead, especially in online courses, this finding is eye-opening in that too much at once can engulf students and leave them feeling defeated from the very beginning. This couples with an additional recurring theme from the results; online students are prone to work overload and burnout. As educators, one must find a balance between the necessary work and presentation in a goal-oriented and achievable way in students' eyes. Course content must be organized in such a way as to guide students through the learning process, where all items are easy to locate and navigate.

Second, interpersonal skill rhetoric becomes increasingly difficult in an online environment. Namely, teamwork, where individual grades are dependent on commitment and participation from all group members, was frowned upon by students. Perhaps this is due to the physical distance between peers, making it more challenging to connect and rely on others to 'pull their weight' when individual grades are at stake. Regardless, the disapproval of team projects is interesting, as evident from the initial responses. Educators and course facilitators can improve team conditions conceivably by integrating benchmark goals throughout the semester and implementing a peer evaluation component to combat this pushback.

Third, a recurring theme of excitement and commitment from the professor emerged. Students identified that the professor's lack of clear instructions and communication, coupled with slow response time to address questions or concerns, was daunting. Students mentioned that they craved face-to-face interaction with their instructor even in an online course, either through video conferencing, virtual meetings, or at a minimum, individually recorded course materials. It is encouraging that students identify the professor/student relationship as an essential factor in their course success. Educators must embrace and cultivate that relationship as much as possible through digital connections.

The initial data suggest some silver linings to balance out the negative. Students recognize that online courses require a substantial amount of work. There are qualities embodied by those who are successful, including excellent time management skills and being independent and responsible. Surprisingly, an overwhelming majority of students said that they would retake an online class—even those with less than stellar prior experiences—due to the flexibility in scheduling.

Student responses did include suggestions for improving online courses. First, students identified that they value a learning model focused on learning and retaining, not just 'getting the question right.' This goal is undoubtedly attainable through precise course organization and structure, real-world topical knowledge application, and clear feedback on work. Students also suggested that interactive activities would greatly mend this gap between students and professor(s).

Finally, one area for online course improvement involves cultivating supportive communication between professors and students. One way to improve communication, as suggested by students, is that required 'check-ins' with the professor are structured into the class schedule. A fine line must be tread between setting clear expectations and due dates with flexibility and understanding when technical issues arise (as they so often do).

## Conclusion

Online teaching and education in business programs is not a new or novel concept. While many AACSB-accredited programs continue their commitment to traditional, on-campus degree programs, new programs and continued course offerings are still prevalent online. In other words, online learning is here to stay, even as we lighten COVID-19 restrictions.

So, what else can educators do to ensure quality programming and curriculum while presenting course materials in an engaging, inclusive format for students? Perhaps a good idea is to identify best practices directly from students forced into this COVID-19 modality, even if online learning was not their initial preference, as the authors contend to start with here. This study might help educators identify the path forward for online education, specifically, identifying benefits, advantages, problems, and challenges associated with online learning. Future work on this topic will include additional data to be analyzed and presented in future manuscripts.

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## **Appendix A: COVID-19 Response Survey**

What is your age?

Which gender do you most identify with?

What is your country of origin?

What is your primary race/ethnicity?

Total years of education? (e.g., 12 years = HS Diploma; 16 years = Bachelor's Degree)

Current Grade Level Status (Freshman, Sophomore, Junior, Senior, Graduate Student)

Experience with Computers (Very Limited to Very Proficient; 7 point Likert)

Have you taken an online course before? (Yes/No)

### Questions Related to the Advantages of Online Learning

*What are the benefits of an online class? (options ranging from 1 – Strongly Disagree to 7 – Strongly Agree)*

Online courses are convenient.

Online courses allow me to work at my own pace.

Online courses offer flexibility.

Online courses give me access to a huge amount of knowledge

Online courses bring education right to my home.

Online courses increase independence in learning

Online courses offer more individual attention.

Online courses help me meet interesting people.

Online courses give me real-world skills.

Online courses promote life-long learning.

Online courses have financial benefits.

Online courses teach me to be self-disciplined.

Online courses help me in promoting online research and resources.

Online courses connect me to the global village

Online courses provide updated and authentic information

### Questions Related to the Problems/Challenges You Have Faced

*What are the challenges associated with online education (teaching/learning)?*

Online courses require more time than on-campus classes.

Online courses require more work than on-campus classes.

Online courses require good time-management skills.

Online courses may create a sense of social isolation.

Online courses do not give me personal attention.

Online courses make me lazy.  
Online courses don't have an instructor hounding me to stay on task.  
Online courses give me more freedom, perhaps, more than I can handle.  
Online courses require that I must find my path to learning.  
Online courses provide limited and delayed feedback.  
Online courses require reliable internet at home.  
Online courses increase plagiarism/cheating.  
I do not like having to meet the deadlines for submitting tasks.  
Online courses do not promote hands-on learning.  
I miss the personal interaction with my fellow students.  
Online Courses are only effective in certain subjects.

### Questions Related to the Characteristics Required for Online Education

*I believe the following qualities/characteristics are required for online education:*

Good work ethic  
Time management skills  
Independent and responsible  
Goal-oriented  
Self-motivated  
Effective communicator  
Personal commitment  
Computer literate  
Academic Readiness  
Technologically prepared

### Questions Related to Your Future Strategies and Recommendations

Would you take an online course in the future? Why or why not?  
What advice would you give to instructors who are planning on setting up and teaching an online course?  
What suggestions would you make to the policymakers/course designers regarding online education practices in education?  
Does online education need integration of face-to-face interaction for more effective implementation and results? Explain.  
What are the things you like best about online learning?  
What are the worst practices you've seen in an online course set-up?

# **A BRIEF BIBLIOMETRIC ANALYSIS OF THE RESEARCH OUTPUT OF THE CURRENT FACULTY AT THE SCHOOL OF BUSINESS OF EAST TENNESSEE STATE UNIVERSITY: 2000-2021**

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Bibliometric, East Tennessee State University, School of Business

## **Introduction**

The School of Business part of the School of Business and Technology at East Tennessee State University consists of 52 full-time faculty as of the Fall Semester 2021. The average teaching load is three classes per semester. The faculty has experienced rapid turnover in recent years.

This study comprises a brief bibliometric analysis of the research record of the present faculty. Bibliometrics generally aims at investigating a given literature of a given subject from a quantitative point of view. This approach allows the uncovering of the main topics and the research directions that has taken place into the journals of publication. Here, Bibliometric analysis will be used to uncover the research trends and collaborative networks within the School of Business. Section 2 introduces Bibliometrics. Section 3 presents the results of the analyses performed on the School of Business.

## **Bibliometric Methodology and Related Work**

In the recent era, there has been a growing attention devoted to the systematic study of scientific literature within the domain of research, thanks in part to the availability of online databases and the development of tools to perform analysis.

Bibliometrics aims to depict the history and the general state of a specific research field, considering the research publications as the major formal channel of communication amongst

researchers Bellardo (1980). Using the bibliometric approach allows a more objective and reliable analysis based on statistical techniques (Diodato and Gellatly 2013), allowing the possibility of carrying out both basic statistics (e.g. tabulations of the research by years) to describe patterns of research and advanced statistical methods.

**The School of Business**

The data on the 52 faculty was gathered from the Web of Science (WoS) and Google Scholar databases on November 17, 2021. WoS is considered the source with the highest quality of information (Aria et al, 2020). It includes documents from 20,000 databases. Google Scholar covers more sources, but has been criticized as a bibliometric database for its inclusion of papers in low impact journals, popular scientific literature, and unpublished reports or teaching supporting materials (Aguillo 2011). Google Scholar includes journal and conference papers, theses and dissertations, academic books, pre-prints, abstracts, technical reports and other scholarly literature from all broad areas of research. Shorter articles, such as book reviews, news sections, editorials, announcements and letters, may or may not be included (Walters 2007). Neither source is perfect. It should be emphasized that the results are dependent on the databases used and the results here do not reflect the AACSB counted contributions of the faculty. A different set of databases could result in a different set of results. The data analysis was conducted using Harzing’s Publish or Perish, the R package bibliometrix (Aria and Cuccurullo 2017), and spreadsheets.

*Production*

Table 1 shows the output of the Faculty in total and by Department.

Department and Total	Faculty Members	Number of Published Documents	Documents per Faculty
Accounting	10	63	6.3
Economics and Finance	19	251	13.21
Management and Marketing	23	231	10.04
Total	52	545	10.52

**Table 1. Published Documents Produced by the Faculty of the East Tennessee State University School of Business Faculty: 2000-2021.**

Over the 21 years, the 52 existing faculty members produced 545 documents accounted for in the searched databases. That’s an average of 25.95 documents per year. The Accounting Department produced 63 documents for an average of 6.3 documents per faculty member or 0.3 documents per faculty per year. The Economics and Finance Department produced 251 documents for an average of 13.21 documents per faculty member or 0.63 documents per faculty member per year. The Management and Marketing Department produced 231 documents for an average of 10.04 documents per faculty member or 0.48 documents per faculty member per year. For the School as whole, 10.52 documents were produced per faculty for an average of 0.50 documents per faculty per year. Of course, not all of the faculty were working scholars for all of the 21 years.

Table 2 shows the citations generated over the 2000-2021 era by the faculty.

Department and Total	Faculty Members	Number of Citations of Published Documents	Citations per Faculty
Accounting	10	261	26.7
Economics and Finance	19	1701	89.53
Management and Marketing	23	1747	75.96
Total	52	3715	71.44

**Table 2. Citations of Published Documents Produced by the Faculty of the East Tennessee State University School of Business Faculty: 2000-2021.**

The documents produced by the Accounting Department produced 261 citations for an average of 26.1 citations per faculty or 1.24 citations per faculty per year. The documents produced by the Economics and Finance Department produced 1701 citations for an average of 89.53 per faculty or 4.26 citations per faculty per year. The documents produced by the Management and Marketing faculty produced 1747 citations for an average of 75.96 per faculty or 3.27 citations per faculty per year. The School of Business as a whole produced document gaining 3374 citations for an average of 64.88 citations per faculty or 3.62 citations per faculty per year. The average citations per documents was 6.79 or 0.32 citations per document per year.

Table 3 Shows the ten most productive authors in terms of documents produced from 2000-2021.

Faculty		Department	Number of Documents
L.	Mitchell	Management and Marketing	41
R.	Gregory	Economics and Finance	39
J.	Alavi	Economics and Finance	34
J.	Bhandari	Economics and Finance	25
L.	White	Economics and Finance	25
B.	Liang	Management and Marketing	23
P.	Bhattacharjee	Economics and Finance	20
T-H.	Chu	Economics and Finance	20
G.	Shelley	Economics and Finance	20
C.	Koen	Management and Marketing	20

**Table 3. Top Ten Faculty by Document Production: 2000-2021**

Professor Lorianne D. Mitchell is the top producer at 41 documents. Of the top ten, the Economics and Finance Department make up 7 of the members, while the Management and Marketing faculty make up the remaining three. Altogether, the top ten producers are responsible solely, or in part, for 267 documents, or 49% of the faculty production.

Productivity in terms of citations looks a little different, as seen in Table 4.

Faculty		Department	Citations
J.	Alavi	Economics and Finance	607
U.	Saglam	Management and Marketing	261
T-H.	Chu	Economics and Finance	229
B.	Liang	Management and Marketing	225
D.	Shemwell	Management and Marketing	216
K.	Atkins	Management and Marketing	215
D.	Harrison	Management and Marketing	191
L.	Mitchell	Management and Marketing	181
S.	Kim	Management and Marketing	179
L.	White	Economics and Finance	132

**Table 4. Top Ten Faculty by Citations: 2000-2021**

Dr. Jafar Alavi leads by Citations with 607. Seven of the leaders in citations come from the Management and Marketing Department, with the remaining three from the Economics and Finance Department. Altogether, the top ten faculty by citations are responsible solely, or in part, for 2436 citations, or 65.57% of the faculty total.

The h-index is an author-level metric that measures both the productivity and citation impact of the publications. By h-index, defined as the highest number of publications of a researcher that has received h or more citations each, the faculty ranking in the top eleven looks like this in Table 5. The h-index here has been calculated using data from both Google Scholar and Web of Science.:

First name	Last name	Department	H-index
J.	Alavi	Economics and Finance	13
B.	Liang	Management and Marketing	8
T-H.	Chu	Economics and Finance	7
G.	Shelley	Economics and Finance	7
K.	Atkins	Management and Marketing	6
L.	Becker	Accounting	6
R	Gregory	Economics and Finance	6
S.	Kim	Management and Marketing	6
R.	Maihami	Management and Marketing	6
U.	Saglam	Management and Marketing	6
K.	Schneider	Accounting	6

**Table 5. Top Eleven Faculty by H-index: 2000-2021**



Dr. Jafar Alavi ranks first with an h-index of 13. There are two members of the Accounting Department in the top ten by h-index, four members of the Economics and Finance Department and five members of the Management and Marketing Department.

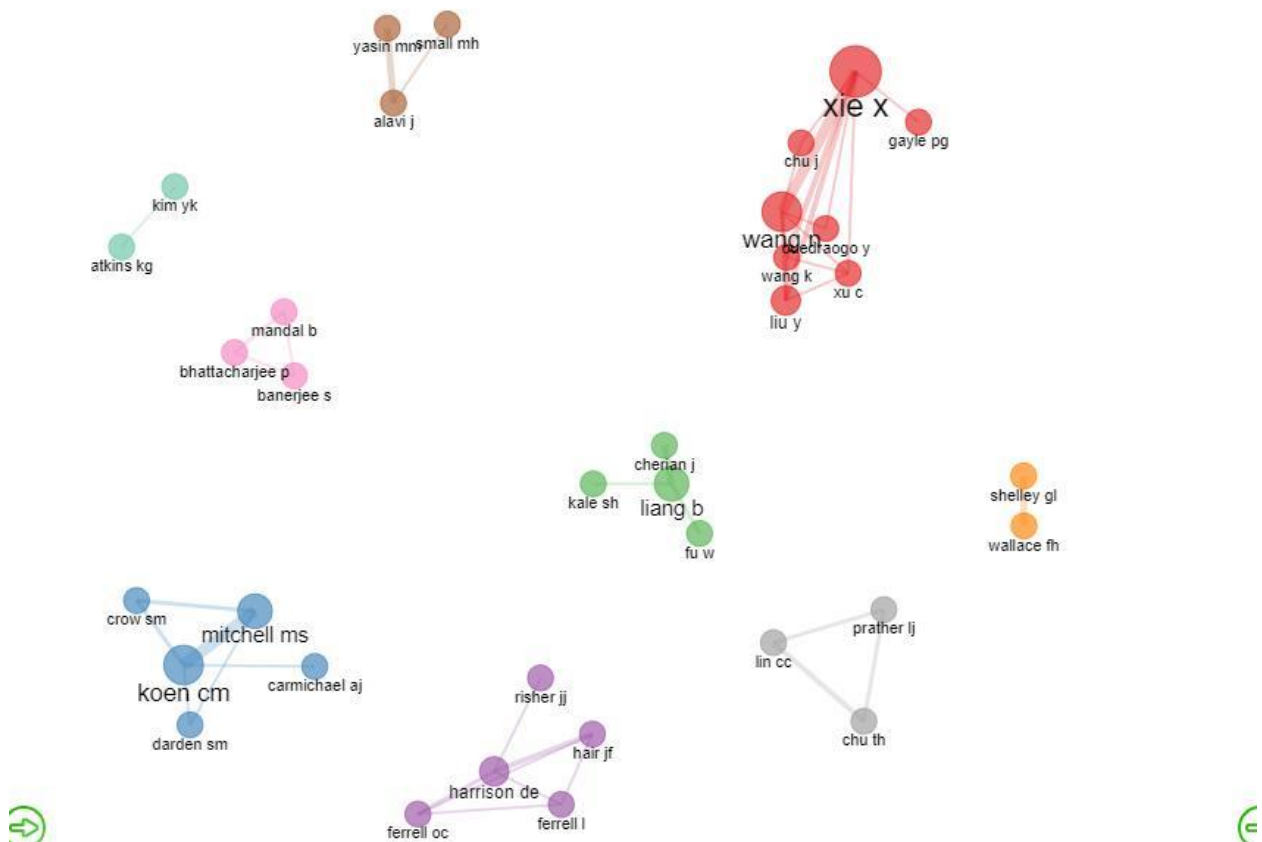
*Collaboration*

On average, the average document produced had 2.32 authors. Table 6 shows the school’s ten most collaborative authors measured by the average number of co-authors per paper.

Faculty		Department	Number of Documents	Average Number of Authors
J.	Smith	Economics and Finance	1	4
X.	Xie	Economics and Finance	12	4
B.	Bergiel	Management and Marketing	3	3.67
T-H.	Chu	Economics and Finance	20	3.5
J.	Harlan	Management and Marketing	3	3.33
J.	Hayter	Economics and Finance	9	3
J.	Alavi	Economics and Finance	34	2.94
D.	Harrison	Management and Marketing	15	2.87
M.	Jenkins	Management and Marketing	5	2.8
R	Maihami	Management and Marketing	17	2.71

**Table 6. Top Ten Faculty by Average Number of Authors per Document**

Professors Jon Smith and Xin Xie are the most collaborative, averaging four co-authors per document. The top ten faculty by average number of authors is made up of, five from the Economics and Finance Department and five from the Management and Marketing Department. Regressions were run on authors per documents and productivity. No significant relationship was found.



**Figure 1. Collaboration Networks School of Business 2000-2021**

Figure 1 illustrates the most productive author collaboration networks in the School of Business, or rather, one should say, outside of the School of Business, because generally, the collaboration takes place outside of the school.

The most prominent network is Professor Xin Xie and her work with N. Wang at the University of Maryland that includes up to six other researchers primarily in the health economics field. Next is Professor Cliff Koen and his work with M. S. Mitchell outside the School of Business in the *Health Care Manager* with up to three other researchers. Third, there is Professor Dana Harrison's work with O.C. and L. Farrel at Auburn University with two other researchers. Fourth, there is Professor Beichen Liang's work with J. Cherian at St. Xavier University in Chicago and S.H. Kale at Bond University in Australia and W. Fu.

The fifth group, the only one entirely within the School of Business, is Professor Javar Alavi and Professor Michael H. Smalls with retired Professor M.M. Yasmin which has published in *Benchmarking: An International Journal*.

The other three person collaborations is Professor Prasun Bhattacharjee with B. Mandal at Visva-Bharati University, India and S. Banerjee at Boston University - School of Medicine. And then Professor Ting-Heng Chu with C.C. Lin at National Tsinghua University in Taiwan and L.J. Prather at Southeastern Oklahoma State University.

Then there are two two-person collaboratives that are prominent. Professor Gary Shelley with F.H. Wallace at Universidad de Quintana Roo in Mexico and Professor Kelly Atkins with Y.K. Kim at the University of Tennessee. As can be seen, most of the productive collaborations are outside of the School of Business.

### Documents

Department	Citations	Authors	Year	Journal
Management and Marketing	187	U Yavas, DJ Shemwell	2001	International Journal of Health Care Quality Assurance
Management and Marketing	140	OC Ferrell, DE Harrison, L Ferrell, JF Hair	2019	Journal of Business Research
Economics and Finance	130	MM Yasin, J Alavi, M Kunt...	2004	Managing Service Quality: An International Journal
Economics and Finance	116	J Alavi, MM Yasin	2000	Journal of Business Research
Management and Marketing	110	LD Mitchell, JD Parlamis...	2015	Journal of Management Education
Management and Marketing	109	KG Atkins, YK Kim	2012	International Journal of Retail & Distribution Management
Economics and Finance	103	TH Chu, CC Lin, LJ Prather	2005	Quarterly Journal of Business and Economics
Economics and Finance	67	M Yasin, J Alavi, F Sobral, J Lisboa	2005	Journal of Travel & Tourism Marketing
Economics and Finance	67	WJ Trainor Jr	2010	Technology and Investment
Management and Marketing	66	J Park, E Ko, S Kim	2010	Journal of Global Academy of Marketing

**Table 7. Top Ten Documents Amongst the Faculty by Total Citations: 2000-2021.**

Table 7 gives the top ten most cited documents amongst the faculty of the School of Business for documents published between 2000-2021. The leading document, at 187 citations is “Modified importance-performance analysis: an application to hospitals” by Ugur Yavas and Donald J. Shemwell in 2001 in the *International Journal of Health Care Quality Assurance*.

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# **INFLUENCES AND CONSEQUENCES OF PROJECT MANAGERS' ATTITUDES TOWARD CHANGE**

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## **Introduction**

The competitive pressures of the global economy require that companies continuously strive to improve performance (Bernerth, Armenakis, Feild, & Walker, 2007). Efforts to improve the strategic position of a firm relative to its competition (M. E. Smith, 2002) often take the form of organizational change projects that drive deployments of new strategies, acquisitions, mergers, expansions, culture change, technology change, and process redesign (Iverson, 1996; Shenhar &

Dvir, 2004; C. Smith, 2012). Unfortunately, organizational change projects are typically viewed as challenged, at best.

Several scholars have attempted to understand the role of attitude toward change in driving the realization of expected benefits from organizational change investments (Abdul Rashid, Sambasivan, & Abdul Rahman, 2004; Elias, 2009; Giauque, 2015; Vakola & Nikolaou, 2005; Vakola, Tsaousis, & Nikolaou, 2004; Yousef, 2000a, 2000b). Scholarly work focused on change recipients suggest that attitudes toward change are influenced by role ambiguity, role conflict, perceived organizational support, and procedural justice (Abdul Rashid et al., 2004; Bernerth et al., 2007; Giauque, 2015; Vakola & Nikolaou, 2005). While the organizational change literature is replete with studies focused on the reaction of change recipients to stress, work attitudes, and job performance (Bommer, Rich, & Rubin, 2005; Oreg, Vakola, & Armenakis, 2011), comparatively little is offered from the perspective of change implementation (Rahschulte & Hartsfield, 2013).

As implementors of organizational change, project managers work in ambiguous, political, and technically complex environments. Project managers are expected to function as change leaders and serve as role models to their cross-functional project teams as they endeavor to deliver organizational change (J. K. Pinto & Kharbanda, 1995; Prabhakar, 2005). However, Bommer et al. (2005) and Battilana, Gilmartin, Sengul, Pache, and Alexander (2010) suggest that even leaders who are supposed to be heavily invested in organizational improvements do not always engage in change-promoting behaviors. Battilana et al. (2010) further suggest there may be a common but potentially erroneous assumption that change implementers are innately equipped with the skills and abilities required for organizational change and therefore are underrepresented in this aspect of organizational change research. Thus, this research directs attention to project managers' attitudes toward change.

## **Literature Overview**

Attitude toward change research describes dispositions toward change recipient actions that enable or inhibit the implementation of organizational change (Armenakis, Harris, & Mossholder, 1993; Eby, Adams, Russell, & Gaby, 2000; Herscovitch & Meyer, 2002; Miller, Johnson, & Grau, 1994). Surveying change recipients in the United Arab Emirates, Yousef (2000a) found that role conflict and role ambiguity have independent and adverse effects on attitudes toward change. Vakola and Nikolaou (2005) surveyed Greek change recipients about attitudes toward change, finding negative correlations between occupational stressors and attitudes toward change. In a survey of US-based employees, Bernerth et al. (2007) suggest that procedural justice significantly predicts change recipient organizational cynicism and change commitment, both of which are subcategories of attitudes toward change (Choi, 2011). Giauque (2015) surveyed public middle managers in Switzerland and found that communication, employee participation, work relationships, work-life balance, and stress explained 48% of the variation in positive attitudes toward change (Giauque, 2015).

Project managers are recognized as being different from functional managers and, therefore, must have a different skillset devoted to accomplishing a finite piece of work within a specific time and budget constraint (Millhollan & Kaarst-Brown, 2016). The management and project management

literature suggests a link between soft skills such as work-related attitudes and project performance (Carmeli, 2003; Maqbool, Sudong, Manzoor, & Rashid, 2017). As leaders in the change implementation process, project managers are expected not only to be change agents demonstrating change-promoting behaviors but also to be motivational geniuses to influence the probability of organizational change success (Creasy & Anantatmula, 2013; J. Pinto & Trailer, 1998; Slevin & Pinto, 2007). Müller and Turner (2010a) assert that studies on project managers' attitudes of any kind are rare and suggest that a combination of project manager attitudes and emotional competencies influence business results. Given the practitioner and scholarly interest in improving project managers' performance and the low rates of organizational change project success, it is important to examine factors that influence project managers' attitudes toward change.

## **Methodology**

Data for this research was collected in 2018 via an online survey hosted and administered by Qualtrics. The survey returned 262 usable responses completed by self-identified project management professionals screened for organizational change experience. This study leverages structural equation modeling (SEM) methodology (Bagozzi & Yi, 2012) using Statistical Package for Social Sciences-25 (SPSS) and AMOS 25 software.

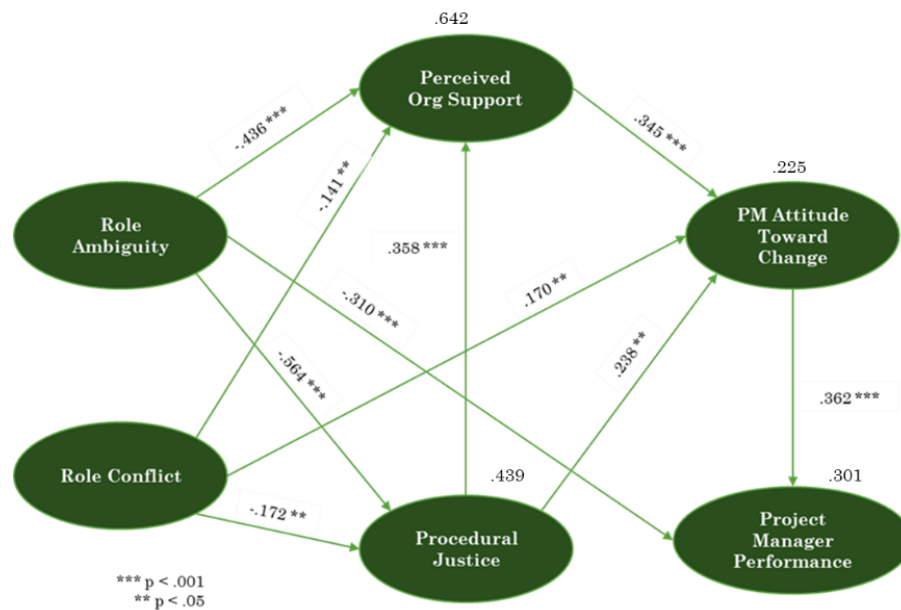
Measurement instruments for this study were taken from the literature. All measures used seven-point Likert-type scales where strongly disagree equals one and strongly agree equals seven, except when reversed scored. Role ambiguity is measured using 11 items by House, Schuler, and Levanoni (1983). Role conflict is measured using seven items by House et al. (1983). A four-item scale by Daly and Geyer (1994) is used to measure perceptions of procedural justice. The nine-item scale by Eisenberger, Huntington, Hutchison, and Sowa (1986) is used to measure perceived organizational support. Attitude Toward Change is measured using an 18-item scale by Dunham, Grube, Gardner, Cummings, and Pierce (1989). Project managers' performance is measured using nine self-reported items (Müller & Turner, 2010b).

Following the suggestions of Anderson and Gerbing (1988), the measurement model was tested using confirmatory factor analysis, and then the data were fitted to a structural model. The process of data analysis involved collection of the data, its screening, descriptive statistics, examination of participants' demographics, reliability assessment, and model identification (Bagozzi & Yi, 2012). Before subjecting the data to analysis, it was screened for any missing values and unengaged or extreme responses (Mertler & Reinhart, 2016). The data were analyzed for linearity, homoscedasticity, and multicollinearity. The data presented non-normal characteristics, and the Bollen-Stine bootstrapping procedure was performed and indicated that the model is most likely accurate, even though the data is not normal (Bollen & Stine, 1992). Principal Axis Factoring (PAF) with Promax rotation was used to test the models' adequacy, convergent validity, discriminant validity, and reliability. The Kaiser-Meyer-Olkin Measure (KMO) was sufficiently high (.907) and Bartlett's test for sampling adequacy was significant. The communalities were appropriately high (all above .4), indicating that the chosen variables are adequately correlated for factor analysis. Reliability of the measurement scales was analyzed using Cronbach's alpha ( $\alpha$ ), and found a minimum of .8 for each construct (MacKenzie, Podsakoff, & Podsakoff, 2011). Finally, the factors demonstrate adequate convergent validity as the pattern matrix loadings were

well above the minimum threshold of .350 for a sample size of 250 (Hair Jr, Wolfinbarger, Money, Samouel, & Page, 2015). The factors also demonstrate satisfactory discriminant validity given the correlations matrix shows no correlations above .700, and there are no problematic cross-loadings (MacKenzie et al., 2011). The model has a total variance explained of 62%, with all extracted factors having eigenvalues above 1.0. Confirmatory factor analysis (CFA) was performed to test the validity of the measurement model (Bagozzi & Yi, 2012). Indicators that loaded poorly were eliminated. The data for this study was collected using a single survey; therefore, a test of common method bias test was performed. The tests did not detect any specific response bias affecting the model. The fitted structural model, using a full latent factor construct, demonstrates satisfactory fit ( $\chi^2 [174] = 241$ ; CFI = .971; SRMR = .041; RMSEA = .046; PClose = .731).

## Results and Implications

Fifty-seven percent of the respondents are female, males are 41%, and two percent declined to designate a gender affiliation. Sixty-five percent of respondents are under 40 years old, and thirty-five percent of respondents are over 40 years old. Years of experience were reported as 34% less than five years, between five and ten years 30%, and more than ten years at 36%.



**Figure 1. Project Managers' Attitudes Toward Change Structured Model**

Role ambiguity was found to be negatively related to perceived organizational support ( $\beta = -.436$ ,  $p < .001$ ), procedural justice ( $\beta = -.564$ ,  $p < .001$ ), and project managers' performance ( $\beta = -.310$ ,  $p < .001$ ). The data suggest that role conflict has a negative direct effect on perceived organizational support ( $\beta = -.141$ ,  $p < .05$ ) and procedural justice ( $\beta = -.172$ ,  $p < .05$ ). The data suggest that role conflict ( $\beta = .170$ ;  $p < .05$ ) positively affects project managers' attitudes toward change. While this is potentially a counterintuitive finding, it becomes clearer upon examination of the retained indicators. The retained items include "I have to buck a rule or policy to carry out project management assignments," "As a part of managing projects, I have to do things that should be done differently under different conditions," and "In the projects I manage, there are unreasonable pressures for better performance." The data further suggests that procedural justice



has a positive effect on perceived organizational support ( $\beta = .358, p < .001$ ) and project managers' attitudes toward change ( $\beta = .238, p < .05$ ). The data also suggest that perceived organizational support ( $\beta = .345, p < .001$ ) is positively associated with project managers' attitudes toward change. Finally, the data suggest that project managers' attitudes toward change ( $\beta = .362, p < .001$ ) positively influences project managers' performance.

The model was tested for specific indirect effects of perceived organizational support and procedural justice using AMOS 25 with an estimand a plug-in that allows for simultaneous testing of multiple mediators (Gaskin & Lim, 2018; Hayes, 2009; MacKinnon, Fairchild, & Fritz, 2007). The data suggest that perceived organizational support mediates the relationships between role ambiguity and attitude toward change ( $\beta = -.114, p < .05$ ) and project managers' performance ( $\beta = .017, p < .05$ ). The data also suggest that perceived organizational support mediates the relationships between role conflict and attitude toward change ( $\beta = -.045, p < .05$ ) and project managers' performance ( $\beta = -.042, p < .05$ ). Further, the data suggest that procedural justice mediates the relationships between role ambiguity and attitude toward change ( $\beta = -.074, p < .05$ ) and project managers' performance ( $\beta = -.084, p < .05$ ). Finally, the data also suggest that procedural justice mediates the relationships between role conflict and attitude toward change ( $\beta = -.028, p < .05$ ) and project managers' performance ( $\beta = -.031, p < .05$ ). It is interesting to note that neither procedural justice nor perceived organizational support directly affects project managers' performance but do demonstrate an indirect effect when examined in conjunction with the role-based constructs in this model (Hayes, 2009). The squared multiple correlations report the variance in each endogenous variable: procedural justice (.439), perceived organizational support (.642), attitude toward change (.225), and project managers' performance (.301).

## Conclusion

This research aimed to examine the relationships among role ambiguity, role conflict, procedural justice, perceived organizational support, attitudes toward change, and project managers' performance. This study suggests that many of the factors that influence change recipient attitudes toward change also influence project managers' attitudes toward change and performance either directly or indirectly. This research suggests that when project managers have clear roles and responsibilities, fair decision-making processes, and organizational support, they have more positive attitudes toward change and increased performance. This study advances project management research by applying established theories from management into the project management domain. Additionally, this study provides project manager practitioners with interesting managerial implications. Cultivating positive project managers' attitudes toward change through role and process clarity and organizational support may improve project managers' performance. To increase positive attitudes toward change, managers of project managers may evaluate their role definitions, organizational support, and decision-making processes to ensure they enable change-promoting behavior.

This study naturally includes limitations. First, survey respondents self-reported their performance which introduces the possibility of bias (Crowne & Marlowe, 1960); however, to mitigate this risk, survey participants were assured anonymity and confidentiality. Further research on project managers' attitudes toward change could continue to extend the change recipients' attitude toward change literature by considering factors such as locus of control (Elias, 2009), organizational

commitment, job satisfaction (Yousef, 2000b), or organizational culture (Abdul Rashid et al., 2004).

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# EXOTIC STRUCTURED PRODUCTS – THE CASE OF VICTORY CERTIFICATES

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Victory certificates, structured products, option pricing, barrier options, exotic options

## Introduction

There are a variety of structured products in the marketplace. The investor demand for these newly created securities has created a need for more elaborate options. Investors can use structured products to gain leveraged exposure to (or capital protection from) the underlying asset. The overall complexities of these securities have led regulators to publicly convey the inability for the retail investor to understand the intricacies of the investment opportunities (Ricks, 1988, Lyon, 2005, NASD, 2005, Laise 2006, Maxey, 2006, Deng, Dulaney, Husson, & McCann, 2014, ESMA, 2013). The potential for unexpected losses stemming from retail investors' lack of full understanding of the drivers of risk forced regulators into action (Renz, Kalisch, Pfister, Axford, & Williams, 2014, Woodall, 2015, Starr, 2015). In the EU, the regulatory environment has contributed to the steady decline in the volume of outstanding structured products from 2010 to 2018 cutting the total in half (€800bn in 2010 to around €400bn in 2018.) The steady decrease in volume has coincided with a steady growth in the number of contracts outstanding over the same period (ESMA, 2020).

The purpose of this paper is to present an examination of Victory Certificates (to be referred to as VC henceforth), an equity-linked structured product issued by major banks in Europe, and further the research of Hernandez et al. (2011) to study Victory Certificates and examine the pricing and profitability of issuing these certificates. The models for pricing these certificates are created by decomposing the return offered by the certificates and pricing the equivalent portfolios. Additionally, an uncapped VC issued by Sal. Oppenheim jr. & Cie. KGaA on April 21, 2005, and a capped VC issued by Commerzbank AG on May 19, 2010 are empirically examined.

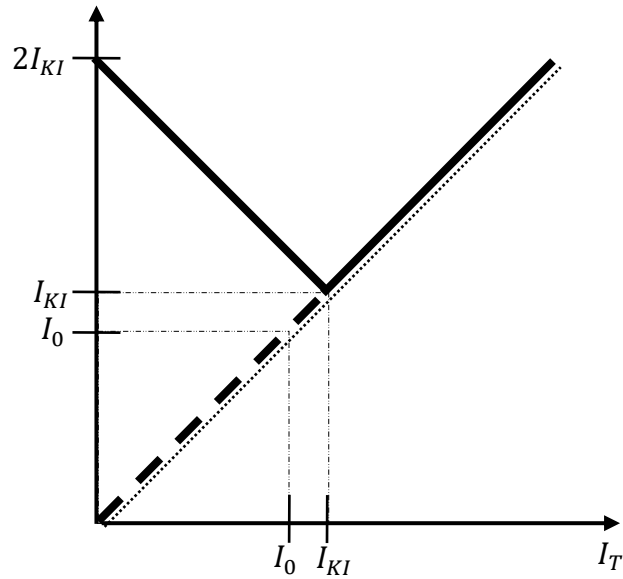
## Description of the Product

For an uncapped VC, the performance of the underlying asset over a set period determines the rate of return of the certificate. There is a level (referred to as a knock-in level) greater than the price of the underlying asset on the issue date, that if reached at any time between the issue date and the maturity date, ensures the investor in the certificate receives a minimum return, equal to the difference between the knock-in level and the initial price of the underlying asset as well as the absolute value of the difference between the price of the underlying asset at maturity and the knock-in level. The greater the movement, in either direction, the greater the return. If the price of the underlying asset fails to reach the knock-in level between the issue date and the maturity date, the return is equal to the closing price of the underlying asset at maturity. Appendix 1 includes an example of an uncapped VC.

Utilizing  $I_0$  as the underlying asset price on the fixing date,  $I_{KI}$  as the knock-in level,  $I_T$  as the valuation price, then the total value an investor will receive, for an initial investment in one VC, on the expiration date,  $V_T$ , is equal to:

$$V_T = \frac{\text{€}100}{I_0} \left\{ \begin{array}{ll} I_{KI} + |I_T - I_{KI}| & \text{if } I_t \geq I_{KI} \\ I_T & \text{otherwise} \end{array} \right\} \quad \text{for some } t \in [0, T] \quad (1)$$

The terminal value of a certificate as a function of the underlying assets price can be seen in Figure 1.



**Figure 1. The Terminal Value of an Uncapped Victory Certificate**

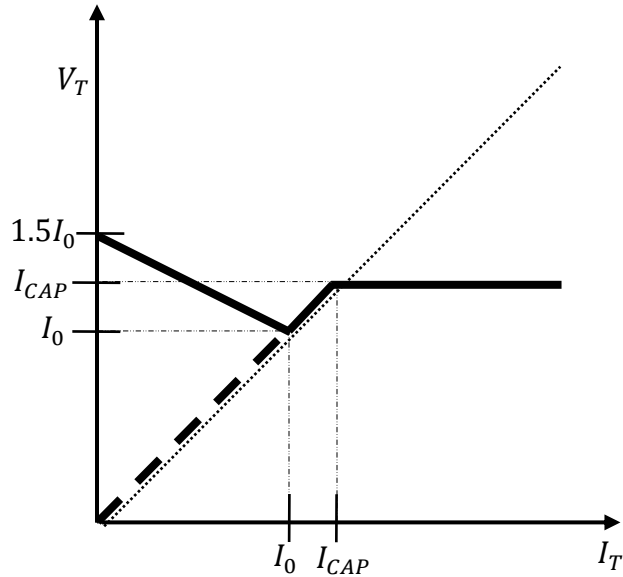
The dotted line represents the terminal value of the underlying asset on the date of maturity,  $T$ . The dashed line represents the terminal value of the certificate if the value of the underlying asset remained below the knock-in level from issuance to maturity. The solid line represents the terminal value of the certificate if the price of the underlying asset was greater than or equal to the knock-in level at any time between issuance and maturity.

In the case of the capped VC, if the price of the underlying asset at maturity is greater than the cap level, the return is equal to the capped percentage. An example of a capped VC is included in Appendix 2. If we denote  $I_{CAP}$  as the cap level, then the redemption value,  $V_T$ , for one capped victory certificate is equal to:

$$V_T = \frac{\text{€}100}{I_0} \left\{ \begin{array}{ll} I_{CAP} & \text{if } I_T > I_{CAP} \\ I_0 + \frac{(I_0 - I_T)}{2} & \text{if } I_t \geq I_{KI} \text{ for some } t \in [0, T] \text{ and } I_T \leq I_0 \\ I_T & \text{Otherwise} \end{array} \right\} \quad (2)$$

The terminal value of a capped certificate as a function of the underlying assets price can be seen in Figure 2.





**Figure 2. The Terminal Value of a Capped Victory Certificate**

The dotted line represents the terminal value of the underlying asset on the date of maturity,  $T$ . The dashed line represents the terminal value of the certificate if the knock-in level is never reached between issuance and maturity. The solid line represents the terminal value of the certificate if the knock-in level was reached at any time between issuance and maturity. The value of the certificate equals  $I_{CAP}$  for all  $I_T$  greater than  $I_{CAP}$ .

### Pricing of the Certificates

For an investment in one uncapped VC with a knock-in level  $I_{KI}$ , and term to maturity  $T$ , the terminal value from equation (1),  $V_T$ , can be expressed mathematically as:

$$V_T = \frac{\text{€}100}{I_0} I_T \quad (3)$$

when the underlying asset price has never risen to the knock-in level between the issue date and the maturity date of the certificate. And,

$$V_T = \frac{\text{€}100}{I_0} (I_{KI} + |I_{KI} - I_T|) \quad (4)$$

when the underlying asset price has risen to the knock-in level anytime between the issue date and the maturity date of the certificate. The  $I_T$  in Equation (3) is the payoff for a long position in the underlying asset. The  $I_{KI} - I_T$  in Equation (4) is the payoff for a long position in put options with the exercise price  $I_{KI}$ . The previous put option only exists if the price of the underlying asset has ever risen to the knock-in level between the issue date and the maturity date of the certificate (i.e. up-and-in put options).

The payoff of one uncapped VC can be exactly duplicated by the payoff of holding the following three positions:

1. A long position in the underlying asset. The number of shares equaling  $\frac{\text{€}100}{I_0}$ ;
2. A short position in zero coupon bonds. The face values of the bonds are the cash dividends to be paid by  $\frac{\text{€}100}{I_0}$  shares of the underlying asset and the maturity dates are the ex-dividend dates of cash dividends;
3. A long position in up-and-in put options on the underlying asset. The number of options is  $\frac{\text{€}100}{I_0}$ . The exercise price and barrier level of the options is  $I_{KI}$  and the term to expiration of the options,  $T$ , is the same as the term to maturity of the certificate.

The value of these three positions is equivalent to the fair value of the certificate. Any certificate sold above the value of these three positions represents a gain to the certificate issuer. The value of Position 1 is the price of the underlying asset on the fixing date  $I_0$ . The value of Position 2 is the present value of the cash dividends to be paid by the underlying asset, to be denoted as  $PV_D$ . The value of Position 3 is the value of  $\frac{\text{€}100}{I_0}$  shares of up-and-in put options with each option having the value of  $P_{ui}$  (Haug, 2007):

$$P_{ui} = X e^{-rT} \left(\frac{H}{S}\right)^{2\mu} N(\sigma\sqrt{T} - y_1) - S e^{-qT} \left(\frac{H}{S}\right)^{2(\mu+1)} N(-y_1) \quad (5)$$

where  $X$  is the strike price, equal to  $I_{KI}$ ,  $H$ , is the barrier price, equal to  $I_{KI}$ ,  $S$  is the price of the underlying equity, equal to  $I_0$ ,  $r$  is the risk-free rate of interest,  $T$  is the term to maturity of the certificate,  $\sigma$  is the standard deviation of the underlying asset return,  $q$  is the dividend yield of the underlying asset,

$$y_1 = \frac{\ln\left(\frac{H^2}{SX}\right)}{\sigma\sqrt{T}} + (1 + \mu)\sigma\sqrt{T} \quad (6)$$

and,

$$\mu = \frac{r - q - \frac{\sigma^2}{2}}{\sigma^2} \quad (7)$$

Therefore, the total cost,  $TC$ , for each VC is:

$$TC = \frac{\text{€}100}{I_0} [I_0 - PV_D + P_{ui}] \quad (8)$$

If  $B_0$  is the issue price of the certificate. The profit function for the issuer of the certificates is:

$$\Pi = B_0 - TC \quad (9)$$

With profitability measured as a percentage of the total cost,  $TC$ , i.e.

$$Profitability = \frac{\Pi}{TC} \quad (10)$$

In the case of the capped VC, we need to add one more possible payoff scenario at maturity.

$$V_T = \frac{\text{€}100}{I_0} I_{CAP} \quad (11)$$

when the value of the underlying asset is greater than the cap level on the maturity date of the certificate. The  $I_{CAP}$  in equation (13) is the payoff of a long position in the underlying asset combined with a short position in a call option on the underlying asset with an exercise price of  $I_{CAP}$ .

The payoff of one capped VC can be exactly duplicated by the payoff of holding the three positions for the uncapped VC plus a fourth position:

4. A short position in call options on the underlying asset. The number of options is  $\frac{\text{€}100}{I_0}$ . The exercise price is  $I_{CAP}$ , and the term to expiration of the options,  $T$ , is the same as the term to maturity of the certificate.

The value of Position 4 is the value of  $\frac{\text{€}100}{I_0}$  shares of call options with each option having the value of  $C$ :

$$C = Se^{-qT}N(d1) - Xe^{-rT}(d1 - \sigma\sqrt{T}) \quad (11)$$

where,  $S$  is the price of the underlying asset, equal to  $I_0$ ,  $X$  is the strike price, equal to  $I_{CAP}$ . Therefore, the total cost,  $TC$  for each capped VC is:

$$TC = \frac{\text{€}100}{I_0} \left( I_0 - PV_D + \frac{1}{2} P_{UI} - C \right) \quad (13)$$

The profit for the issuer can be calculated using equation (9) and equation (10) provides the profitability measured as a percentage to the total cost,  $TC$ .

## Empirical Analysis

### Uncapped Victory Certificate

In this section, a VC issued by Sal. Oppenheim jr. & Cie. KGaA on April 21, 2005, is empirically examined. This VC (ISIN DE000SAL4DK8) used the DJ EURO STOXX 50<sup>SM</sup> as the underlying asset. The facts and figures of the certificate, from which information was used for this section, are included in Appendix 1.

The certificate began selling on April 21, 2005 at a price of €100.00. The expiration date was June 18, 2010. The base price,  $I_0$ , was listed at €2,960.00. The knock-in level was set at €3,500.00. There was a 100% participation rate. In order to calculate the profit for the issuer, the following data is needed: 1) the equivalent dividend yield,  $q$ , 2) the risk-free rate of interest, 3) the volatility

of the underlying asset,  $\sigma$ . The prices, dividends, and volatility of the underlying asset are obtained from Bloomberg. Using these figures, the total cost of issuing one VC, using Equation (8), is calculated as:

$$TC = \frac{\text{€}100}{\text{€}2,960} (\text{€}2,960 - \text{€}672.17 + \text{€}180.98) = \text{€}83.41$$

Using Equation (9), the profit from issuing each VC,  $\Pi$ , is:

$$\Pi = \text{€}100.00 - \text{€}83.41 = \text{€}16.59$$

With profitability of:

$$\textit{Profitability} = \frac{\text{€}100 - \text{€}83.41}{\text{€}83.41} = 19.890\%$$

### **Capped Victory Certificate**

In this section, a capped VC issued by Commerzbank AG on May 19, 2010, is empirically examined. This VC (ISIN DE000CZ24WP0) used the EURO STOXX 50 Index as the underlying asset. The facts and figures of the certificate, from which information was used for this section, are included in Appendix 2.

The certificate began selling on May 19, 2010, at a price of €100.00. The expiration date was November 18, 2011. The knock-in rate was set at 110% of the value of the underlying asset on May 19, 2010. The cap level was set at 125% of the value of the underlying asset on May 19, 2010. The value of EURO STOXX 50 on the issue date of the certificate,  $I_0$ , was €2619.48. Using these figures, the total cost of issuing one VC, using Equation (15), is calculated as:

$$TC = \frac{\text{€}100}{\text{€}2619.48} \left( \text{€}2619.48 - \text{€}174.16 + \frac{\text{€}207.06}{2} - \text{€}136.17 \right) = \text{€}92.11$$

Using Equation (9), the profit from issuing each VC,  $\Pi$ , is:

$$\Pi = \text{€}100 - \text{€}92.11 = \text{€}7.89$$

With profitability of:

$$\textit{Profitability} = \frac{\text{€}7.89}{\text{€}92.11} = 8.57\%$$

### **Conclusion**

In this paper, Victory Certificates, a structured product issued by major banks in Europe, are introduced. Formulas are developed to price the certificates. This paper shows that a portfolio comprised of a long position in the underlying asset, a short position in zero coupon bonds, and up-and-in put options on the underlying asset duplicates the payoff of an uncapped VC and a

portfolio comprised of the previous three positions plus a call option on the underlying asset duplicates the payoff of a capped VC. The pricing models are tested with an empirical examination of a certificate issued by Sal. Oppenheim jr. & Cie. KGaA as an uncapped certificate and a certificate issued by Commerzbank AG as a capped certificate. The VCs tested reveal a profit for the issuers. The methodology applied in this paper can be extended to the examination of other structured products.

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## Appendix A:

### FACTS AND FIGURES

Issuer	Sal Oppenheim jr & KGaA
Product	VICTORY Certificate
Underlying	DJ EURO STOXX 50
Initial Sales Price	100.00 Euros
WKN • ISIN Code	SAL 4DK • DE000SAL4DK8
Base Price	2,960 Euros
Subscription Ratio	29.6:1
Reference Index Level	2,960 points
Participation	100%
Profit Level	118.24% of the base price
Repayment	If the EURO STOXX 50 Index reaches the security level at any time between April 21, 2005 and [June 18, 2010], the investor will receive the following repayment amount:

$$\text{Redemption Amount} = \left[ \frac{3,500}{\text{Base Price}} + \left| \frac{\text{Index}_{\text{End}} - 3,500}{\text{Base Price}} \right| \right] \times 100 \text{ Euro}$$

$\text{Index}_{\text{End}}$  is the index closing level of the EURO STOXX 50SM on June 18, 2010. If the EURO STOXX 50SM Index never reaches the security level between April 21, 2005 and June 18, 2010, the investor will receive the following repayment amount:

$$\text{Redemption Amount} = \left( \frac{\text{Index}_{\text{End}}}{\text{Base Price}} \right) \times 100 \text{ Euro}$$

Valuation Date • Maturity Date	June 18, 2010 • June 25, 2010
Investment Amount	1 certificate or multiple
Exchange	Stuttgart (EUWAX), Frankfurt (Smart Trading)

## Appendix B Commerzbank Europa Victory Certificate

- The certificate is a bearer bond and is not subject to deposit insurance. You bear the issuer risk of Commerzbank AG.

### Details

Issuer	Commerzbank AG	Returns
WKN	CZ2 4WP (ISIN: DE000CZ24WP0)	Exchange
Subscription Period	April 21, 2010 – May 19, 2010	Listing
Issue Date	May 19, 2010 (Value Date: May 26, 2010)	Costs
Valuation Date	November 18, 2011	
Maturity Date	November 25, 2011	
Issuer Price	€100	
Selling Price	€100 (plus max €1 sales charge)	
Underlying	EURO STOXX 50 Index	
Lock-in-Level	110% of the index level on May 19, 2010	
Observation Period	May 19, 2010 – November 18, 2011	
Cap	125% of the index level on May 19, 2010	
Redemption at the end of the term	<p>If the EURO STOXX 50 Index is listed <i>at least once at or above the lock-in level</i> during the observation period</p> <p>a) and closes at least at its start level on the valuation day, the redemption at the end of the term corresponds to the percentage index performance (maximum up to the cap).</p> <p>b) and closes below its starting level on the valuation day, the redemption is carried out at the issue price plus income. which is half of the percentage decline in the index.</p>	

*If the index is never listed at or above the lock-in level, the redemption of the certificate corresponds to the percentage index development*

Possible every trading day  
Stuttgart, Frankfurt

Upon purchase: The certificate can be subscribed to via your custodian bank (front-end load up to 1%). The sales partners also receive a placement commission of up to 0.75%, which is already included in the issue price.

In portfolio: custody account fee in accordance with the list of prices and services of the custodian bank.

In the event of a sale:

- When selling by way of a fixed price transaction through your custodian bank, all costs are included in the price.

- When selling on the stock exchange or by way of over-the-counter commission business, a commission accrues in accordance with the list of prices and services of the bank executing the order and, if applicable, a brokerage fee.

When due: none.

# HAVE KENTUCKY GOLF COURSE WEBSITES EVOLVED OVER A DECADE? A STUDY WITH RECOMMENDATIONS

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Key words:

Golf, Golf Courses, Website Usage

## Introduction

In the present study we compared the results of a 2010 study of Kentucky golf courses (Powers, R.L. & Tabibzadeh, K. 2010) to our survey of Kentucky golf courses in 2020, to examine golf course web usage. To identify the level of website utilization of 243 Kentucky golf facilities, each website was visited to measure variables such as: the number of courses with a web presence; the number of informational or promotional only websites; and comprehensive marketing websites allowing customers to make tee time reservations, schedule golf lessons, register for golf tournaments, purchase merchandise from the golf shop and/or the ability to secure customer information. This study will identify the changes in golf course website usage in a 10-year period and make recommendations for continued improvement. A significant increase, 46.85%, in the presence of websites at golf courses in Kentucky was found however, a large percentage continues to fail to take advantage of the competitive opportunities provided by a comprehensive, interactive website.

## Literature Overview

Golf originated in 15<sup>th</sup> century and was introduced in the United States in 1888 (PGA Centennial: Celebrating the History of the Golf Professional, 2015). It has created an \$84 billion industry, drives nearly 2 million golf related jobs, and draws nearly 25 million golfers a year (National Golf



Foundations, 2021). The number of people playing the game has remained stable over the last seven years (National Golf Foundation, 2021), nevertheless, Portugal, M. N., do Carmo, M., & Correia, A. (2020), and McGinnis, L. P., Gentry, J. W., & Haltom, T. M. (2021) indicate that younger generations do not seem to be as interested in playing golf as previous generations. Thus, the competition to attract and retain golfers is critical for golf professionals and/or club managers.

Sheets, B. H., Roach-Humphreys, J., & Johnston, T. (2016) provided an overview of challenges faced by the U.S golf industry and suggested solutions that could address those problems. The remedies proposed involve, increasing the role and participation of women in the game, creating social media campaigns to promote greater awareness of LPGA tour, and the use of websites to advertise golf lessons.

There were 16,165 golf courses at 14,145 facilities in the United States at the end of 2020. Examples of golfers' engagement with technology include making tee time reservations; equipment research and purchases; golf course reviews; social media; engagement with golf businesses and brands; media consumption including websites; apps for golf instruction and game improvement; digital scorekeeping and handicapping. (National Golf Foundation, 2018)

Yang, Z., Shi, Y., Wang, B., & Yan, H. (2014) indicate the increasing popularity of e-business causing different innovations to emerge with the end-purpose of gaining profit. High quality websites encourage web traffic that will affect customers' purchasing decisions. The factors affecting customer satisfaction include service quality, design, information available, process management, and ease of use. A well-designed website with e-commerce and other services plays a critical role in an organization's e-commerce strategy and can grow the profitability of golf courses.

In their study Powers, R.L. & Tabibzadeh, K. (2010) showed that fewer than half of the golf courses in Kentucky used their website for marketing or operational purposes, and most used it to provide course information with one-way applications. This demonstrated that at the time most golf courses remained unsure about what to do with the web. The expectation that the golf course industry in Kentucky would be embracing the fastest growing technology as a valuable marketing and operational asset was not fulfilled.

Afonso Dias, J., & Martinez Lopez, F. J. (2011) analyzed and compared 205 golf course websites from the Algarve (Portugal), Andalusia (Spain), and Florida (USA). They showed that IT and the development level of e-commerce of golf websites have not displayed much improvement and that online sales of golf rounds were minimal. They concluded that it will be only through offering unique services and creating a sense of customer value and loyalty that truly innovative golf courses will differentiate themselves from the others.

Daries, N., Cristobal-Fransi, E., & Ferrer-Rosell, B. (2020) evaluated golf course websites in Catalonia, Spain, and determined how they used their existing online presence. They showed that, 51.4% of the analyzed golf course websites included features such as; online payment services, secure online transactions, and interaction with the server of online golf websites. However, valuable additional functions such as information security, quality certification, and availability of a mobile version of the websites were significantly lacking.

This study set out to identify golf courses in the state of Kentucky with websites, pinpointing whether the website content was static or interactive. This study is unique as very little empirical research on website usage in specific industries, like the golf industry, is currently available.

## **Methodology**

The purpose of this study is to identify the level of web utilization as an informational or promotional tool only or a comprehensive marketing tool which includes operational tools. In our survey we set out to determine:

1. the number of golf courses that have websites
2. the number of golf course websites that are informational/promotional, providing static information only
3. the number of golf course websites that are comprehensive marketing sites, providing an interactive element, such as: allowing customers to make tee time reservations, schedule golf lessons, register for tournament, make merchandise purchases from the golf shop, as well as the ability to secure customer information.

Each of the 243 websites were visited to determine whether the golf course website was informational/promotional providing static information only or if the website was comprehensive and interactive.

The focus on current web utilization in the state of Kentucky was compared to the utilization in a 2010 study (Powers & Tabibzadeh 2010). The 2010 study, concentrated on whether the websites were: a) informational and/or promotional, or b) interactive. For this paper, an informational/promotional website includes static information only and a comprehensive marketing site is defined as a dynamic website that creates an interactive user experience involving visual elements (images and videos); a thorough description and visual presentation of facility amenities; operational elements and/or the ability to capture customer email addresses. If the website was interactive an observation of the operational nature of the site was made.

## **Results and Implications**

In 2020, each of the 243 golf facility websites in the state of Kentucky were visited to determine changes in website usage since 2010. Indicated in Table 1, of 243 golf facilities, 225 (92.59%) have websites which is a significant increase compared to 102 of 223 (45.74%) in 2010. Sixty-seven (29.78%) golf course websites have interactivity, an increase from 20 of 102 golf courses (19.6%) in 2010. In 2020, 158 (70.22%) golf courses have informational or promotional websites compared to 82 (80.39%) in 2010.

The implications for stakeholders, PGA/LPGA members, golf course managers and owners are to examine the advantages of first, having a website and second, having a website that will engage golfers who are potential customers. An interactive website gives the golf facility an opportunity to capture customer information which is valuable to customer engagement and perhaps customer retention.

2010 Kentucky Golf Facility Websites			
	#	Total	%
Golf courses that have a website	102	223	45.74%
Interactive Websites	20	102	19.61%
Informational/Promotional	82	102	80.39%

2020 Kentucky Golf Facility Websites			
	#	Total	%
Golf courses that have a website	225	243	92.59%
Interactive Websites	67	225	29.78%
Informational/Promotional	158	225	70.22%

**Table 1. Facility Website Use in Kentucky - Comparing 2010 to 2020**

## Conclusion

In comparing website utilization of Kentucky golf courses from 2010 to 2020, utilization has increased significantly. An increase of 46.85% shows that golf courses have begun to see the advantages of better website utilization.

The golf courses studied seem to present high levels of communication in categories such as location, facilities, access routes, lesson availability, and other static information. Many websites surveyed in this study performed well in terms of providing information and promotion, but their online presence often lacked effectiveness when it came to offering non-static functional information and interactivity. Golf facilities could certainly do better in terms of social media pages, links to blogs, content sharing applications, e-commerce and operational functions.

This study revealed that 92.59% of golf courses have a website, yet about 70% of them fail to take advantage of the potential offered by better designed, comprehensive, interactive websites. Having a comprehensive website that engages the consumer and through interactivity offers unique services and creates a sense of customer value and loyalty will serve to differentiate the innovative golf courses from the others.

Future research will include collecting data on operational services provided on golf course websites, as well as determining the profitability of sites that offer e-commerce. A T-test will be performed to determine the difference in facility type (public or private) and its type of website, static or interactive.

Overall, previous research enables us to understand that a well-constructed website plays a vital role in the success of golf courses. Golf courses can see growth in profits with an interactive, non-static website. A well-designed website with e-commerce and other interactive services is needed to attract traffic and play an important facilitating role in customer decision making. This study indicates that marketing strategies of the golf courses in Kentucky have indeed evolved over the past ten years but still need to have a larger scope and be much more inclusive. With the web

industry greatly growing in both scope and pace, we hope to witness substantial improvements in customer interaction with golf course websites.

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# GROWING “POLITICAL POWER” OF LARGE FIRMS AND THE DOWNWARD CASH ETR TREND

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Key words:

Effective tax rate, political power, political cost

## Introduction

Whether large firms pay less taxes than small firms is an important question for evaluating the fairness and efficiency of the tax regime. For more than 40 years, the relationship between the cash effective tax rates (ETR)<sup>1</sup> and firm size has been explained using one of the two competing

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<sup>1</sup> ETR is defined as the ratio of cash taxes paid over pretax accounting income.

theories. The “political cost” theory assumes a positive size-ETR relationship, while the “political power” theory assumes a negative relationship.

Recent anecdotal evidence blames the largest US corporations for their close-to-zero federal tax payments<sup>1</sup>, which, however, is incompatible with the conventional impression of large firms as main tax contributors. For example, in their review, Belz, von Hagen and Steffens (2019) find more evidence for the political cost theory.

It is necessary to examine if there is any change in the size-ETR relation in the recent history. Besides the policy implications of this analysis, tracing the size-ETR relation can also help understand the downward ETR trend in the last three decades. Since the tax rate overhaul in 1986, the average ETR among US corporations declined steadily. Econometrically, a growing negative relation between firm size and ETRs suggests the ETRs of large firms are declining faster relative to small firms and can drive a downward ETR trend. In this paper, we examine whether the size-ETR relation is evolving over the last three decades and test whether the evolving size-ETR relation has driven the downward ETR trend.

## Literature Overview

The prior literature has extensively studied the relationship between ETR and firm size with a continuous debate between two competing theories. The “political cost” theory suggests a positive relation between firm size and ETR, because large firms are subject to more public scrutiny and greater social pressure and are exposed to more governmental regulations (Watts and Zimmerman, 1986; Zimmerman, 1983). This theory is supported by many empirical findings in 1980s and 1990s (Omer, Molloy and Ziebart, 1993; Rego, 2003; Zimmerman, 1983).

In contrast, the “political power” theory suggests a negative relation between firm size and ETR, because large firms have greater resources with which to influence the political process in their favor, develop expertise in tax planning, and organize their activities in optimal tax saving ways (Porcano, 1986; Siegfried, 1972). Gaertner, Glover and Levine (2021) employ a long-run measure of cash ETR and document that larger firms have significantly lower cash ETRs than do smaller firms.

In summary, the empirical evidence on the size-ETR relation is far from conclusive. In a recent review, Belz et al. (2019) survey thirty-two empirical studies in the U.S. and find that 41 percent of these studies report a positive relation, 18 percent report a negative relation, and the remainder report an insignificant or inconsistent relation. In this paper, we test whether the size-ETR relation evolves through time.

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<sup>1</sup> For example, The New York Time reports “No Federal Taxes for Dozens of Big, Profitable Companies” over 2018-2020 (published April 2, 2021), and The Washington Post reports that 55 large corporations had zero federal tax liability in 2020 (published April 5, 2021).

## Methodology

Our regressions are based on the tax function from Edwards, Kubata and Shevlin (2021):

$$ETR_{i,t} = \beta_0 + \beta_{Trend} \times YEAR + \beta_{SIZE} \times SIZE_{i,t} + \sum_{\lambda=1}^N \beta_{\lambda} \times control_{\lambda,t} + \alpha_i + \varepsilon_{i,t} \quad (1)$$

where  $ETR$  is the cash effective tax rate of firm  $i$  in year  $t$ , defined as the ratio of cash taxes paid ( $TXPD$ ) to pretax income ( $PI$ ).  $YEAR$  and  $SIZE$  are the year number and firm size respectively. The control variables include other tax-related firm characteristics scaled by  $PI$ .  $\alpha_i$  and  $\varepsilon_{i,t}$  are the firm fixed effect and the residual term.  $\beta_{Trend}$  represents the ETR trend and shows a negative value in the literature (Dyreng, Hanlon, Maydew and Thornock, 2017).

However, if the coefficient on firm size also has a time trend (i.e., the size-ETR relation evolves), then the coefficient on  $SIZE \times YEAR$ ,  $\beta_{SIZE,YEAR}$ , should be significant in the following equation:

$$ETR_{i,t} = \beta_0 + \beta_{Trend,0} \times YEAR + \beta_{SIZE,YEAR} \times SIZE_{i,t} \times YEAR + \beta_{SIZE,0} \times SIZE_{i,t} + \sum_{\lambda=1}^N \beta_{\lambda} \times control_{\lambda,t} + \alpha_i + \varepsilon_{i,t} \quad (2)$$

where  $\beta_{Trend,0}$  and  $\beta_{SIZE,0}$  are the coefficients of  $YEAR$  and  $SIZE$  respectively when  $SIZE \times YEAR$  is included in the regression. A negative value of  $\beta_{SIZE,YEAR}$  would suggest that large firms are paying a lower and lower ETR relative to small firms and there is a growing tax advantage for large firms.

More importantly, a negative value of  $\beta_{SIZE,YEAR}$  also suggests a faster speed of the ETR decline among large firms relative to small firms, which would result in a downward ETR trend observed in Equation (1). The coefficient of  $YEAR$  in Equation (1),  $\beta_{Trend}$ , is decomposed into two parts in Equation (2):

$$\beta_{Trend} = \beta_{Trend,0} + \beta_{SIZE,YEAR} \times SIZE_{i,t} \quad (3)$$

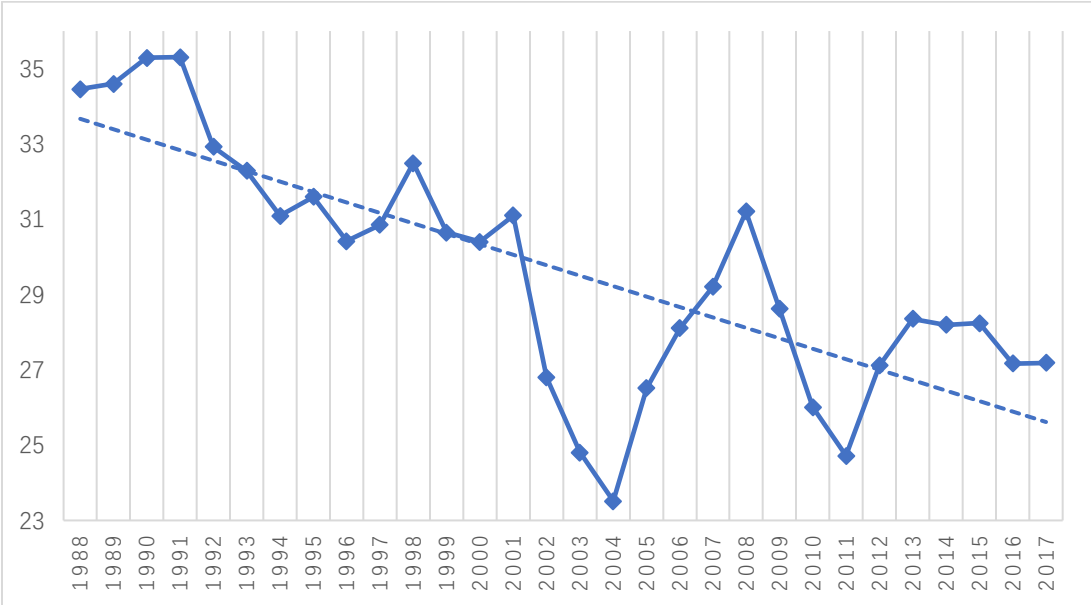
Thus, a negative value of  $\beta_{SIZE,YEAR}$  can be a reason for the downward ETR trend (making  $\beta_{Trend}$  negative).

Our sample starts with all US firms listed in COMPUSTAT from 1988 to 2017 (the period after the major reform to the US tax system—the Tax Reform Act of 1986, which took effect in mid-1987—and before the enactment of the Tax Cuts and Jobs Act of 2017). We then exclude firm-years (1) from the financial (SIC codes 6000-6999) and utilities (SIC codes 4900-4999) industries, (2) with negative pretax income or negative cash taxes paid, or (3) with missing values for the variables in Equation (1). These screenings result in a sample of 73,329 observations from 9,718 individual firms. Table 1 presents the definitions of all the variables used in the subsequent analyses.

ETR	The ratio of cash taxes paid ( <i>TXPD</i> ) to pretax income ( <i>PI</i> ) multiplied by 100, winsorized at zero and 100.
YEAR	The year number.
SIZE	The percentile of a firm's value of total assets ( <i>AT</i> ) in the Compustat annual universe.
FI	The portion of foreign income ( <i>FI</i> ) in pretax income.
1/PI	The reciprocal of pretax income.
LEV	The ratio of total debt ( <i>DLTT</i> plus <i>DLC</i> ) to pretax income.
RND	The ratio of research and development spending ( <i>XRD</i> ) to pretax income.
PPE	The ratio of total property, plants, and equipment ( <i>PPENT</i> ) to pretax income.
INTAN	The ratio of intangible assets ( <i>INTAN</i> ) to pretax income.
EQINC	The ratio of equity income in earnings, computed as the ratio of equity income in earnings ( <i>ESUB</i> ), to pretax income.
NOL	The ratio of lagged net operating loss carryforwards ( <i>TLCF</i> ) to contemporaneous pretax income.
$\Delta$ NOL	The change in a firm's net operating loss carryforwards ( <i>TLCF</i> ) divided by pretax income.
SPI	Special items, measured as special items ( <i>SPI</i> ), divided by pretax income.
CAPX	Capital expenditures ( <i>CAPX</i> ) divided by pretax income.

**Table 1. Variables**

We graph the annual average *ETR* between 1988 and 2017 in Figure 1. There is an obvious downward trend in *ETR* over the three decades. The *ETR* trend (the coefficient on time from regressing *ETR* on time) in the full sample is -0.277.



**Figure 1. The ETR trend**



## Results and Implications

In Table 2, we report the results on the changing size-ETR relationship. In all the analyses, we assume that the residual term is clustered at the firm level. In model (1), we employ Equation (1) and find that *YEAR* has a significant coefficient of -0.266 and the size-ETR relation is positive in the full sample (*SIZE* has a significant coefficient of 0.209). The coefficient before *YEAR*, which measures the ETR trend, is very similar to the ETR trend in Figure 1 (-0.277) when no controls are included. This suggests that the major portion of the ETR trend is not driven by the changes in the controlled variables (Dyreng et al., 2017).

We now examine whether it is the evolving coefficient of *SIZE* that drives the ETR trend. In model (2) we add in the interaction between *YEAR* and *SIZE* according to Equation (2). The interaction has a significant coefficient of -0.006, suggesting that the size-ETR relation is changing from positive towards negative over the last three decades.

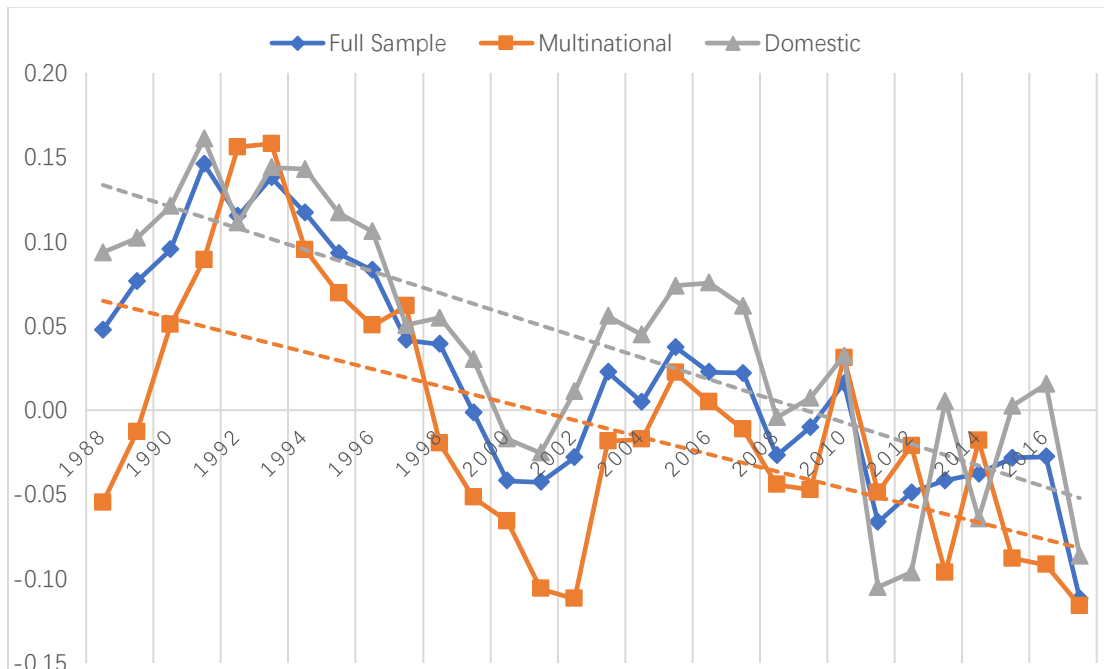
Based on Equation (3), the positive coefficient of *YEAR* ( $\beta_{Trend,0} = 0.139$ ) and the negative coefficient of  $SIZE_{i,t} \times YEAR$  ( $\beta_{SIZE,YEAR} = -0.006$ ) have two implications. First, the change in the coefficient of *SIZE* is a major reason for the downward ETR trend found in model (1). If there is no time trend in the size-ETR relationship (namely  $\beta_{SIZE,YEAR} = 0$ ), we should observe an upward ETR trend ( $\beta_{Trend,0} = 0.139$ ). Second, the correlation between firm size and ETR declines over the last three decades, suggesting that large firms have been gaining advantages in terms of tax savings relative to small firms.

	(1)	(2)
	<i>ETR</i>	<i>ETR</i>
<i>YEAR</i>	-0.266***	0.139**
	(-13.99)	(2.15)
<i>SIZE</i>	0.209***	11.710***
	(12.36)	(6.84)
<i>YEAR</i> × <i>SIZE</i>		-0.006***
		(-6.71)
<i>FI</i>	4.863***	5.005***
	(10.01)	(10.30)
<i>I/PI</i>	1.842***	2.000***
	(9.06)	(9.94)
<i>LEV</i>	0.076***	0.076***
	(4.52)	(4.55)
<i>RND</i>	1.704***	1.655***
	(11.59)	(11.23)
<i>PPE</i>	0.150***	0.146***
	(5.87)	(5.76)
<i>INTAN</i>	0.164***	0.171***
	(6.88)	(7.15)

<i>EQINC</i>	-0.050	0.153
	(-0.02)	(0.06)
<i>NOL</i>	-0.188***	-0.196***
	(-7.39)	(-7.65)
$\Delta$ <i>NOL</i>	-0.133	-0.138*
	(-1.64)	(-1.70)
<i>SPI</i>	-7.210***	-7.229***
	(-30.29)	(-30.36)
<i>CAPX</i>	0.923***	0.907***
	(8.13)	(8.06)
<i>Intercept</i>	541.505***	-268.329**
	(14.31)	(-2.07)
<i>Firm FEs</i>	Yes	Yes
<i>N</i>	73,329	73,329
<i>Adj. R<sup>2</sup></i>	0.419	0.420

**Table 2. The evolving size-ETR relation**

In Figure 2, we run annual regressions based on Equation (1) without *YEAR*, and graph the coefficients of *SIZE*. The coefficient of *SIZE* goes down from 0.048 in 1988 to -0.112 in 2017. The coefficient of *SIZE* is positive for each year up to 1998 and negative for 13 out of the 19 years after 1998. When we graph separately for domestic and multinational firms, the trend exists for both types of firms.



**Figure 2. The coefficient of *SIZE* across years**

The declining (from positive to negative) coefficient on firm size suggests a faster ETR trend among large firms. To show the different speeds of ETR declination between large and small firms,

we separate the firms in the sample into *SIZE* quartiles and then perform a trend analysis for each quartile of firms. In Table 3, we report the ETR trend for each quartile (the coefficient on *YEAR* in Equation (1) without controlling for *SIZE*). The bottom two quartiles do not have a negative ETR trend and the downward ETR trend only exists in the top two quartiles with the top quartile having the fastest downward trend (-0.337 in model 4). Thus, the downward ETR trend is driven by large firms.

(1) 1 <sup>st</sup> SIZE Quartile	(2) 2 <sup>nd</sup> SIZE Quartile	(3) 3 <sup>rd</sup> SIZE Quartile	(4) 4 <sup>th</sup> SIZE Quartile
0.539***	0.016	-0.217***	-0.337***
(3.32)	(0.25)	(-5.33)	(-13.00)

**Table 3. The ETR trend among different firm-size quartiles.**

## Conclusion

By the design of the tax codes, firm size should not covariate with ETR unless the “political power” or “political cost” takes effect. Our results show that the political cost theory is possibly giving way to the political power theory in explaining the size-ETR relationship. The changing size-ETR relationship is the dominating factor driving the observed ETR trend. Had the relative ETR of large firms stayed unchanged, there would not have been a downward ETR trend.

Our results show the need for scholars and policy makers to examine why this “political cost” appears to have been dominated by the “political power”. Have large firms been more able to influence political processes, take advantage of complicated business structures, or collude with auditors? This study calls for more research on the tax planning behavior of large firms.

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# FOUR FACTORS IN THE WNBA

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Key words:

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## Introduction

Founded in 1996, the Women's National Basketball Association (WNBA) was formed as the counterpart to the Men's NBA (History, n.d.). Dean Oliver (2003), looking at the NBA, suggested four factors that contribute to a team's success: Shooting, Turnovers, Rebounding, and Free Throws. This project examines those four factors' weights for the WNBA. In addition, the project will examine how those four factors may have changed over time for the WNBA. It seems everyone has an opinion on which league is better, but those arguments seldom have hard data as backup. While we "know" there is a difference in how the games are played, what actually makes one league different from the other? Could it be one of the four factors?

Research Question 1: Can we conclude that Oliver's relative weighting holds for the WNBA?

Research Question 2: Is the relative importance of each of the factors changing over time?

## Literature Overview

Oliver (2003) concluded four factors that contribute to a team's success (winning games). Shooting is the most important, contributing 40%. Teams need to score on every possession and prevent their opponents from scoring, Turnovers are the second most important factor, contributing 25% to a team's success. Teams need to keep control of the ball when they have it and they need to get the ball when the opponent has it. Rebounding contributes 20% to a team's success. Get the rebound if you miss a shot and get the rebound when your opponent misses. Finally, Free Throws contribute 15%. A team needs to score when fouled and they need to avoid giving opponents the opportunity to make a free throw by not fouling the opponent.

The WNBA was formed in 1996 (History, n.d.), 50 years after the NBA (This Date, n.d.). The WNBA has two divisions, the East and the West. Their first season was 1997 and they began with eight teams. By 2019, they had 12 teams.

There are several significant differences between men’s and women’s basketball (Bourne, 2010). The support for collegiate teams differs. At the professional level, women’s salaries are considerably lower. The WNBA plays 34 games in a season compared to the NBA’s 82 games. Women play with a smaller basketball (28.5 in circumference compared to the NBA’s 29.5). Women play 10-minute quarters versus the 12-minute quarters in the men’s game. Finally, the three-point line for women is 22.15 feet at its longest while it is 23.75 feet for men.

## Methodology

Data for this project was obtained from <https://www.basketball-reference.com/wnba/>. The seasons from 1997 to 2019 were examined. (The 2020 season was not used in an effort to avoid potential anomalies due to Covid.) Because there is not a single source for complete data, multiple files from the website were utilized. The website calculates the four factors for NBA teams, but not for the WNBA teams. Using formulas found at NBAstuffer (Four Factors, n.d.), each of the four factors was calculated. In reality, this is eight factors: one for defense and one for offense for each factor. To answer the first question, linear models were developed using R. The dependent variable was the number of wins in a season and the independent variables were the factors. By using standardized coefficients, it was easier to make comparisons. “All games in all seasons” was the first model. Subsequent models included only the eastern division and only the western division.

To answer the second research question, the relative importance of those four factors over time was examined. This required developing a model for each year. All teams were used in these models. Because of the number of independent variables relative to the number of data points was high (resulting in lower degrees of freedom), two-year increments were also examined.

## Results and Implications

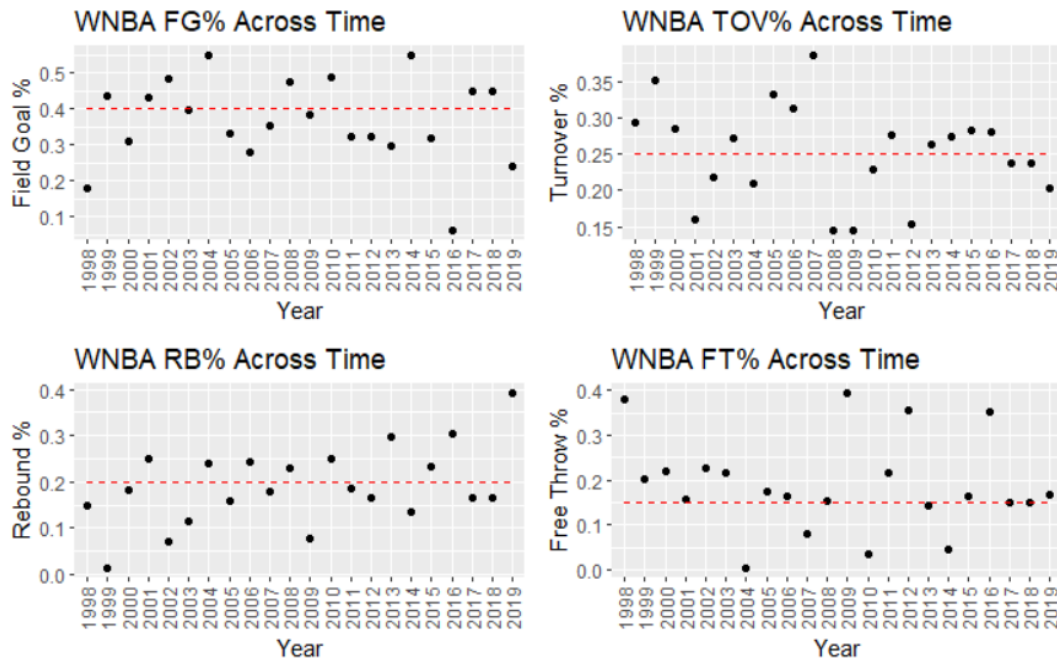
Looking at the WNBA overall (Table 1), we see the contributions of the factors hold for women as well. All variables are significant ( $p < 0.001$ ). We see there are differences in the style of games played in the two divisions. In the Western Division, field goals are more important; free throws contribute less to a team’s wins. All variables are significant ( $p < 0.001$ ).

<b>Factor (Dean’s %)</b>	<b>WNBA Overall</b>	<b>EASTERN Division</b>	<b>WESTERN Division</b>
<b>Field Goals (40%)</b>	42%	37%	45%
<b>Turnovers (25%)</b>	30%	33%	28%
<b>Rebounds (20%)</b>	17%	15%	18%
<b>Free Throws (15%)</b>	12%	14%	9%

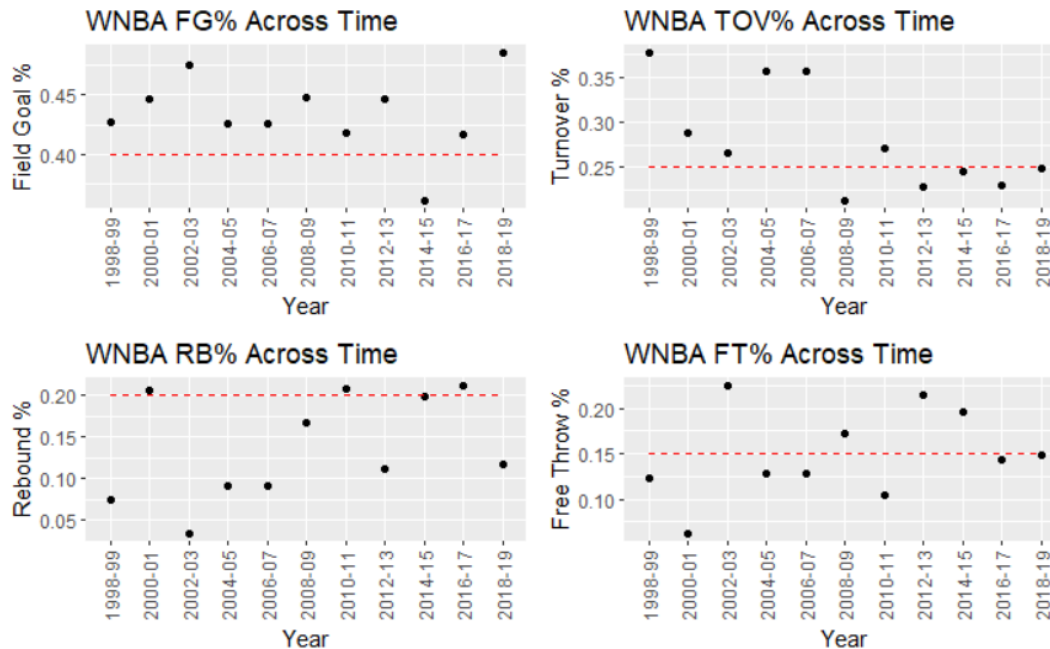
**Table 1. WNBA Four Factors**

To explore the second question, models were developed for each year and the contributions calculated. These are illustrated in Figure 1. The horizontal line in each graph represents Dean’s suggested contribution.

In order to get estimates based on more data points, each of the four factors was graphed across time using two-year increments. These are shown in Figure 2. There is a lower than predicted contribution of rebounding to successful games in the WNBA, however rebounding is becoming more important. There is a higher than predicted contribution of turnovers to winning but this has come down over the last 12 years.



**Figure 1. Graphs of Four Factors over Time in the WNBA**



**Figure 2. Graphs of Four Factors over Time using Two-year Increments**

### Conclusion

The factor's leading to a WNBA team's success are similar to the success factors in the NBA. We see that field goals make a higher contribution to the success of women's games and rebounds contribute less. In the early days of the WNBA, turnovers were more of a factor than they are today. Rebounds are becoming more important in the women's games. The relative importance of the four factors in the women's game is shifting close to that of the men's game. Future studies will continue to track this over time.

One limitation of this study is the number of data points in a season. The league began with eight teams. Although there are currently 12 teams, the 32-game season results only in 192 total games. The errors on the eight estimates are high. Combining seasons as in Table 3 causes a loss of granularity.

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# **FROM ABSTRACTION TO APPLIED EXPERIMENTATION: ENTREPRENEURIAL EDUCATION THROUGH A REAL- WORLD, REAL IMPACT SERVICE-LEARNING PROJECT**

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Entrepreneurial education, service-learning, experiential learning, simulation market

## **Introduction**

Entrepreneurial mindsets and skillsets are crucial contributors to the growth for and innovation in communities (Henton, Melville, & Walesh, 1997), policies (Obschonka & Fisch, 2018), businesses (small – (Hnatek, 2015) & large corporations – (Kuratko, Hornsby, & McKelvie, 2021), and economies (Acs, 2006). Some aspects of breakthroughs in various fields and industries can be attributed to entrepreneurial mindsets and skillsets, particularly those that seek to competitively reimagine products, services, policies, and ideas. While entrepreneurship education and training has long been difficult to pin down (Schein, 1988), many agree there needs to be a facet of entrepreneurial experiences included (see competency movement in management education (Talbot, 1997)). This paper reports on an experiential learning activity designed to help students

take complex abstract ideas and implement them; thereby enabling them to from abstract conceptual knowledge to integrated tacit knowledge.

## **Literature Overview**

### ***Entrepreneurial Mindset***

An entrepreneurial mindset focuses on the intangible aspects of the entrepreneur's attitude and disposition as well as the patterns of actions undertaken. Recent research has found that an entrepreneur's thoughts are patterned and replicable (Sarasvarthy, 2008) even in college classrooms if structured correctly (Lindberg, Bohman, Hulten, & Wilson, 2017). Entrepreneurial mindset development was enhanced by including an atmosphere or culture (Shepherd, Patzelt, & Haynie, 2010) that recognized entrepreneurial students as being enterprising individuals in the community, their personal life, and their future (Lindberg, Bohman, & Hultan, 2017).

### ***Entrepreneurial Skillset***

Entrepreneurial skillsets focus on the learned skills and tools that an entrepreneur uses in the development and implementation of their business idea. Research has shown that the combination of the lean start-up ideas with the business model canvas have been used in a recursive fashion by startup entrepreneurs (Reis, Fleury, & de Carvalho, 2021). Thus, one 'tool' in an entrepreneur's skill set would be the use of the Lean Business Model Canvas (the Canvas framework) in at a minimum a simulated business environment.

### ***Pedagogical Choice: Experiential & Application through Service Learning***

When it comes to developing an entrepreneurial mindset and skillset, researchers have pointed towards Kolb's (1984) experiential learning theory framed by the Experiential Learning Cycle (ELC) as a tool for codifying and explaining student learning and development (Neck & Greene, 2011; Perry L., 2011; Carland & Carland, 2001). Kolb's (1984) theory is based on the premise that "learning, the creation of knowledge and meaning, occurs through the active extension and grounding of ideas and experiences in the external world and through internal reflection about the attributes of these experiences and ideas" (1984, p. 53).

Service-learning is a pedagogy that has been adopted in many business and entrepreneurship programs to reframe learning and provide the opportunity for students to apply learning in real-world contexts in partnership with local community organizations (McCrea, 2009; Perry, Lahm, Schauer, & Rumble, 2017). Service-learning is based on a situational balance of community-needed service engagement and relevant in-class curriculum with an intentional focus on the central role of reflection in the learner's experience (Eyler & Giles, Jr., 1999).

## **Methodology**

We describe the use of a case study using two critical instances of the pedagogy in action: freshman-level introduction and a senior-level application. Both instances happened during the same term and used the same general deliverable.

### ***Case Design***

The final course deliverable was a service-learning approach for both a freshman-level and a senior-level course at a Regional University with just over 12,000 students. The timing for both was the first full semester back on campus after the impact of the Covid-19 pandemic. The senior class was slightly larger than the freshman class but had similar numbers of men and women. Thus, we examined similar assignments but used the different level in the university as the criteria for the different cases.

The applied projects were used by two Business college faculty members in separate courses. As a result of ongoing sensitivity related to Covid-19 and student issues with completing the assignment, an on-campus event was created to implement the strategies. Course observations, artifacts, and reflections were used as primarily sources of data to inform emergent findings and thematic content analysis (Bryman, 2011).

### ***The Marketplace Assignment Description***

An initiative developed at Regional University – The Marketplace – sought to connect students from a senior-level entrepreneurship course and an entry-level entrepreneurship course with the purpose of providing a real-world environment for student entrepreneurs to develop a product or service idea, flesh it out through the lean canvas business model, and test the market conditions with real customers and real money. The Marketplace program was designed to help students develop a useful entrepreneurial skillset and apply an entrepreneurial mindset through practice. The Lean Business Model Canvas was key for skillset development and application through the Marketplace. It was introduced in the freshman course and applied in action in the senior course. Both occurred in the bounded context of their classroom and the broader yet still bounded context of an on-campus experiment of their ideas. The Marketplace event sought to help students develop a useful entrepreneurial skillset and apply an entrepreneurial mindset through practice (See Figure 1). The Marketplace had roughly 1,000 customers with about 500 sales over two days.



**Figure 1. Key Attributes of the Marketplace**

***The freshman-class assignment set-up.*** Not all expectations of the two classes or the entirety of the assignments were the same. As an introduction to the concept of commerce and entrepreneurship, the Freshman class’ assignment was to have a single fundraising effort of a Pop-Up Thrift Store.

All students participated in the design, acquisition of items to sell and the running of the Pop-Up Thrift Store. Each student had a role in the store ranging from inventory management, salesperson, and cashier who had control over the “Square” device to accept funds from debit and credit cards.

***The senior-class assignment and set-up.*** The senior-class’ assignment was to form teams, which would find something of little to no value, improve it and/or combine it with something else to end up with a product or service to sell. This assignment was an application of Schumpeter’s Creative Destructionism (1942), which allows students to see that breaking apart resources or gathering

new resources to create something of value was part of the cycle of the use of resources by businesses. It also allowed students to create a small business idea (a limited number of products) and test it with their target market with the opportunity to modify (even in real-time) the idea and persevere even if faced with an initial failure.

Students operated in small groups of 3-5 members. They spent time ideating, creating a Business Model Canvas, and investing up to \$25/person in funds to accomplish their goals of an attractive product and facility for the 2-day event. They understood from the beginning that their “profits” and costs above \$25 each would be a donation to the non-profit partner. There was an award for the team which generated the highest profit for donation to the non-profit partner in the form of bonus points for team members. Team members would also provide peer evaluations and those evaluations would moderate the team grade for members. Each team had a member run their “store”, determine how it would be stocked and restocked, and determine how it would draw in prospective purchasers. This assignment was about 1/3 of the total points possible in the class.

In general, teams chose to spend their money on raw materials and create something to sell. Some teams provided a service where customers could create their own item and others provided the raw materials to allow students to make-their-own product (e.g., tie-dying). Many teams just sold their created products. Only one team truly picked up the spirit of recycling a previously used product and adding labor to it to make something valued by others (kitchen cutlery). All teams adjusted their selling efforts and prices so that they ended making a profit.

## Results and Implications

Both classes successfully executed the Marketplace event (See Table 1). Both the freshmen-class and the senior-class had the shade shelters provided by the university on the central campus site.

Team Product	Description & Pivot Example	Profit
Rings & Decorations	This team repurposed cutlery into jewelry and home décor. They added a second product line (home décor) on the second day.	\$119
Holiday Ornaments	This team repurposed an old cypress tree to make holiday ornaments. They sold out on the first day and introduced a new design.	\$118
Resin Keychains	This team created artfully designed resin keychains and dog tags and added a second product line, braided parachute cord day two.	\$104
Paintings & Sculpture	This team had local art pieces (paintings, sculptures, make-your-own, and milk jug bird feeders). Had the most product choices.	\$433
Stickers & Art	This team had created stickers with catchy phrases that aligned with their ideal customer. On day two they modified prices.	\$64
Tie-Dyed Shirts	This team did not engage during the first day and on day two they created a make-your-own tie-dye experience.	\$15
Pop-Up Thrift Store	This team collected 1,000's of items from 3 thrift stores in the community that were attractive to their ideal customer.	\$1,590

**Table 1. Marketplace Teams' Overview**

The students could arrive early on the day of the event to set-up. Set-up included arranging their space and adding decorations or other aspects to their booth along with their inventory that was for sale. They were responsible for scheduling sales staff to run the booth from the busy foot traffic hours of 11am–3pm. Each day had its own set-up and break down as materials were not allowed on-campus overnight. Collectively, students raised nearly \$3,000 for the non-profit partner.

***The Freshman-Class Results***

Attractive items were obtained by the students from local thrift stores who agreed to donate items in support of the non-profit charity. The instructor and students arrived early to set-up and students ran all operations for both days. Students were able to raise \$1,590.

Student learning was the primary goal and the freshmen-class students expressed learning in areas of life skills supporting many scholar’s acknowledgement that entrepreneurial skills are life skills and not just business skills (Neck, Neck, & Murray, 2021). They also addressed common business and management skills along with the targeted entrepreneurship skills (see Table 2).

***The Senior-Class Results***

There were six teams with 3-5 team members each. Students had 4 weeks to prepare. The students were expected to describe their improvement (creative destruction) process. Students had a separate “Reflective Debriefing” Assignment where they detailed what their team accomplished and what was learned.

Student learning was the primary goal in the senior-class and there was a wide range of specific skills and learning areas addressed by the students indicating that we had sufficiently customized their experiences to allow them to develop in unique ways. However, when examined, areas that multiple students addressed also address the three general areas: Life Skills, Business/Management Skills, and Entrepreneurship Skills (see Table 2). These findings are based on students’ hands-on experience applying entrepreneurial tools and mindsets for results.

During the event, several students commented on the activity and suggested that it remain a part of the senior level class content. A salient comment from a student in the senior-class noted, “this is the closest I have come to starting my own business.” This captures the spirit and purpose of the Marketplace experience.

	<b>Life Skills</b>	<b>Management Skills</b>	<b>Entrepreneurship Skills</b>
<b>Freshman-Class</b>	<ul style="list-style-type: none"> <li>•time management skills</li> <li>•developed pride in seeing their idea work</li> <li>•learned about community organizations</li> <li>•found intrinsic value in course</li> </ul>	<ul style="list-style-type: none"> <li>•teamwork and team development skills</li> <li>•the importance of contingency planning</li> <li>• recognized how some activities are more meaningful in the larger scope of things than others</li> <li>•communication approaches developed</li> </ul>	<ul style="list-style-type: none"> <li>•applied theory to their project</li> <li>• applied the Lean Business Model Canvas</li> <li>•developed a strategic plan and put it into action</li> <li>•developed an understanding of customers</li> <li>•honed value propositions that worked</li> <li>•implemented marketing and sales plans</li> </ul>

	<b>Life Skills</b>	<b>Management Skills</b>	<b>Entrepreneurship Skills</b>
<b>Senior-Class</b>	<ul style="list-style-type: none"> <li>•time management skills</li> <li>•acknowledged the need to work hard/persist along by pitching in to help</li> <li>•enhanced communications skills both interpersonal and in doing presentations</li> <li>•recognized that even if their team set a different product/service</li> <li>•they identified ways to meet the challenge to add value (e.g., developing new product lines overnight)</li> </ul>	<ul style="list-style-type: none"> <li>•acknowledged team skills including relying on and trusting others</li> <li>•development of skills to manage virtual conference calls (e.g., Zoom) for coordination</li> <li>•developed better insight into issues needed for effective team task accomplishments (delegation based on skills)</li> <li>•setting goals that are relevant and attainable</li> </ul>	<ul style="list-style-type: none"> <li>•applied elements of manufacturing/retail sales</li> <li>•honed communication skills with customers and noted occasionally that being an introvert meant they had to work harder at this skill</li> <li>•applied and improved research skills, continued learning, synthesized big data, and adapted to new trends</li> <li>•applied concepts from class</li> <li>•learned how setting achievable goals focused on meeting customer expectations determined value and feedback was critical</li> <li>•importance of planning and respecting deadlines while holding self and others accountable</li> <li>•identified value in storytelling (about product), marketing, and booth decoration impacted sales</li> <li>•value of accounting tools determining cost-of-goods-sold and profits vs. revenues</li> <li>•dealing with low inventory and responding</li> <li>•realized that innovation is not only one-time big events, but is several small changes</li> </ul>

**Table 2. Results & Impacts from the Students’ Experience**

***Faculty Insights***

Both faculty members were at the event from set up through tear down on both days. They coached students as needed in their roles during the Marketplace and encouraged them to reach out to the customers passing by and make in the moment real time decisions regarding prices, product lines, and social media marketing. They interacted with students from both classes. The senior class instructor observed the freshmen students handling each of their assigned roles with aplomb. When questions were asked about the process, they readily responded with relevant answers. The freshman class instructor recognized the care and thoughtfulness that the senior students brought to their shops and the freshman level instructor was supportive, constructive, and never let an educational moment pass them by.

**Concluding Thoughts**

It is far easier to identify what it means to have an entrepreneurial mindset and skillset than it is to develop this in student entrepreneurs. The best way to develop this disposition and toolbox is to put learners in real-world situations that require the application of the mindset and skillset that have been seen in successful entrepreneurs. Learning and reality in abstraction are great when trying to comprehend a new concept and understand a basic level of something. At some point learning must pivot from abstraction to applied experimentation. It is the foundational, abstract knowledge of entrepreneurial mindsets and skillsets that is the departure point and application and reflection that are the destination. It is these conditions, real-world applied conditions, that not only test the idea as a product or service, but it tests the entrepreneur in ways that forge and strengthen their mind and skills so that when they pivot, redesign, or start again from scratch with a new idea they will be stronger and more tuned for the challenges ahead.

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# WHAT DO EMPLOYERS WANT? HARD SKILLS + SOFT SKILLS = POWER SKILLS

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## Introduction

Employees must possess and successfully use both hard and soft skills. Hard skills are related to technical aspects of performing a job and include the knowledge attainment; whereas, soft skills focus on interpersonal skills, placing emphasis on individual conduct and handling relationships between and among others (Laker & Powell, 2011). Soft skills dictate a person's ability to collaborate in teams, communicate information, and manage a workforce.

The distinction between hard and soft skills is critical, but it can be challenging to differentiate between them. When the two skillsets complementary interweave, they become "power skills." Using both skills together, business graduates are expected to possess expertise in their specific field as well as have the ability to solve problems, communicate well, and lead others (Iyengar, 2015). These collective power skills have led to improved training, risk management, project development, and overall business success (Rainsbury et al., 2002).

The purpose of this study was to determine the critical soft skills that employers want from their employees so that business educators can promote these skills in their curriculum to improve the employability of graduating business seniors. This study replicates a 2012 study conducted by Robles.

## Literature Review

Both soft and hard skills are important for employees to demonstrate the potential and qualities they bring to promote individual and company success. Leaders, for example, demonstrate both skillsets.

## Soft Skills

Soft skills are the interpersonal, people, and behavioral skills needed to apply technical skills and knowledge in the workplace (Hendarman & Cantner, 2018). Soft skills include personality traits, attributes, attitudes, qualities, and personal behavior (Majid et al., 2019).

Communicating effectively is one of the most prevalent soft skills. Communication helps people understand others' emotions and guides the formation of social skills (Dean & East, 2019). Clear communication is required to complete daily tasks and projects promptly, correctly, and completely. Because communication is important in all careers, some professions require soft skills more than other jobs. Healthcare, for example, places equal or greater emphasis on soft skills over the more traditional clinical, technical, and business skills (Lazarus, 2013).

Effective managers require strong soft skills for operative collaboration, cooperation, and coordination (Rangnekar, 2011). Soft skills build solid relationships that improve collaboration, enhance morale, increase productivity, and expand professional networks; which in turn, helps companies grow. The research shows that soft skills ultimately have a substantial impact on the bottom line of an organization (Ibrahim et al., 2017).

## Top Ten Soft Skills

Recruiters generally give preference to four major soft skills: communication skills, problem-solving attitude or conflict solver, interpersonal skills, and teamwork, as shown in Table 1 (Mishra, 2014). Communication was mentioned in almost all the studies that the table provides, indicating that communication of all sorts (oral, written, interpersonal, listening) is a crucial skill to have in the workplace.

S. No.	Researcher	Soft Skills
1.	Oblinger <i>et al.</i> (1998)	<ul style="list-style-type: none"><li>• Persistence</li><li>• Taking initiative</li><li>• Think creatively as well as seriously on many issues</li><li>• Skill to work in team to solve issues and problems</li></ul>
2.	Harvey <i>et al.</i> (1997)	<ul style="list-style-type: none"><li>• Team spirit</li><li>• Interpersonal skills</li><li>• Communication skills</li></ul>
3.	Johnson (2006) (as cited in Seth and Seth, 2013)	<ul style="list-style-type: none"><li>• Communication</li><li>• Relationship building</li><li>• Work ethics</li><li>• Problem solving</li></ul>
4.	Mintzberg (1994)	<ul style="list-style-type: none"><li>• Communication</li><li>• Leadership</li><li>• Teamwork</li><li>• Ability to think out of the box</li></ul>
5.	Carnevale <i>et al.</i> (1990)	<ul style="list-style-type: none"><li>• Problem solving</li><li>• Personnel management</li><li>• Interpersonal skills</li><li>• Ability to conceptualize</li><li>• Organize</li><li>• Verbal thoughts</li><li>• Conflict solver</li><li>• Able to work in teams</li></ul>
6.	Bill (2004) as cited in Seth and Seth (2013)	<ul style="list-style-type: none"><li>• Communication skills</li><li>• Self-esteem</li><li>• Work ethics</li></ul>
7.	Caudrin (1999)	<ul style="list-style-type: none"><li>• Communication skill</li><li>• Interpersonal skills</li><li>• Emotional intelligence</li></ul>
8.	John (2009)	<ul style="list-style-type: none"><li>• Communication</li></ul>

**Table 1. List of Soft Skills (Mishra, 2014, p. 3)**

The ten most mentioned soft skills business employers seek are communication, teamwork, problem solving, interpersonal, leadership, listening, adaptability, organization, emotional intelligence, and general ethics. Learning (and mastering) these specific soft skills takes time and practice, but having these skills will provide employees with the necessary tools to be successful in their careers.

### ***Hard Skills***

In contrast, hard skills are job-specific in the technical knowledge required to perform various tasks (Hendarman & Cantner, 2018). Hard skills can easily be identified, tested, and monitored over time (Majid et al., 2019). Examples of hard skills include computer skills, math ability, machine operation, and sales. These skills can be taught through training, internships, job shadowing, interaction, tutorials, and handbooks. Similar to soft skills, every occupation requires hard skills.

### ***Interrelationship Between Soft Skills and Hard Skills***

Integrating soft and hard skills is extremely important in today's business. Both skills are interrelated and interconnected; both are important to help employees and the organization grow (Mishra, 2014). To communicate effectively with clients, employees need expertise in their field. However, while that hard skill is beneficial, soft skills push employees towards even more success. Soft skills enhance an employee's effective communication, team collaboration, client persuasion, negotiation, and conflict management.

Knowledge alone is not the key to a successful career; the main criterion is vision, with the critical skill being foresight (Dhopte & Sinha, 2017). Knowledge can become obsolete. The ability to adapt is also favorable. Power skills that consist of both hard and soft skills are needed, but hard skills only contribute to 15% of one's success; the remaining 85% is comprised of soft skills (Majid et al., 2019). Other research showed that 75% of long-term job success depended on people skills; only 25% was dependent on knowledge (Sharma, 2018).

A specific example is provided: candidates are invited for interviews based upon the hard skills shown on their resumé, which includes their job experience and education. If job candidates apply for a position for which they have no knowledge or experience, they are deemed not qualified for the job. Their excellent soft skills do not warrant an interview. If the hard skills indicated potential, the interview is granted; and soft skills also influence the hiring decision. Therefore, both skillsets support the criteria for hiring the candidate.

### **Methods and Procedures Used**

Business executives were asked about topics they deemed important for business graduates today. Then, the ten soft skills that were listed most often by the executives were included in a survey to be rated by level of importance. All data were collected by the end of 2021. The data are currently being analyzed.

## **Implications and Conclusions**

If educators realize the importance of interpersonal skills for business graduates, they can include soft skills in their instructional strategies to promote and enhance student interpersonal skills. Not only are soft skills critical in today's workplace; also, they are an investment (Robles, 2012). There is no question that graduates need the knowledge and technical skills of the specific task, so organizations need to train current employees to improve their soft skills or hire new college graduates with a well-rounded combination of hard and soft skills.

This presentation will discuss the progress of the current study, as well as compare it to a study by Jones et al. (2016) that had 51 recruiters from 37 different organizations rank the importance of 21 skills. Two other significant studies (Valavosiki et al., 2019; Wilson & Marnewick, 2018) will also be presented to provide detailed information regarding the importance of quality soft skills in the workplace.

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# **RETURNSHIP: AN OPPORTUNISTIC APPROACH TO THE CURRENT LABOR CRISIS**

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Returnship, employment opportunities, workforce, personnel selection

## **Introduction**

One can walk down almost any street in almost any city in the U.S. and be overwhelmed by the number of 'help wanted' signs and postings. In many cases, the COVID-19 pandemic has been either directly or indirectly considered a confounding influence. While the authors do not discount the potential impact of the pandemic on the labor force, we posit and present for consideration other more structural drivers that may be at play.

The U.S., like most of the industrial nations, is experiencing an imbalance in its labor force. The post-World War II baby boomers, which comprise a disproportionate segment of the population, have been turning 65 years of age since 2007 (Krueger, 2017). Aging often leads to a decline in workforce participation because older people tend to participate less, through retiring or leaving – either voluntarily or involuntarily (Shacklock, Fulop, & Hort, 2007). The question being examined is what can be done to help fill the void.

### **Returnship Explained**

The term “Returnship” was coined by Goldman Sachs to describe a program they designed allowing people to re-enter the workforce after a period of absence. The program’s design focused on allowing experienced “older” workers to re-enter the workforce. Often, they re-entered in a new niche, or sometimes doing something similar to what they may have done in the past. Regardless of the position, the program could result in a win-win by providing opportunities for workers to test the waters and prove their viabilities and contributions and for the employer to verify skills and competencies (Wade, 2019).

Increasingly, older individuals are pushing back retirement for a variety of reasons including financial considerations, healthcare benefit access, and just because they are living longer (Shawn et al., 2014). There is also the reciprocal benefit to the employer because such workers historically have a better attendance record, are more experienced, make good mentors to younger less experienced workers, often require little or no training costs, and seniority has become increasingly more valued (Armstrong-Stassen, 2006; Shacklock et al., 2007). Anecdotally, the 2015 movie “The Intern” has Robert De Niro portraying a 70-year-old man re-entering the working world as an intern. The movie depicts a not uncommon scenario for returnship.

For returnship to take hold there must recognition by employers that there is not necessarily a linear relationship between pre-hire experience and the hiring decision. That the decision to hire should be more encompassing than the typical norm of work experience. That a potential employee’s suitability for the role may also be enhanced by nonwork domain experiences (Wechtler, Lee, Heyden, Felps, & Lee, 2021).

Work related experience is the sum total of the individual’s exposure to the events and occurrences related to work role (Schmitt, Cortina, Ingerick, & Wiechmann, 2003; Wechtler et al., 2021) and is influenced by the degree of actual engagement in the events. The degree of engagement and subsequent exposure varies from one individual to another, thus individuals with equal tenure (time in position) may in fact have considerable differences in the content, quality, and breadth of their respective experience (De Pater, Van Vianen, Bechtoldt, & KLEHE, 2009; Wechtler et al., 2021).

In cases of returnship, discerning which life experiences serve to provide related and meaningful work-related support is an important role. Experience that provides support towards the proposed work come not only from the workplace but from education and life itself. As such, it should be incumbent upon employers to evaluate not just a potential applicant’s occupational, and general

work experience. Rather, experience gained through education and life in general should be evaluated as an integral part of the decision to hire (Sterling & Merluzzi, 2019).

Relative experience is another dimension that should be taken into consideration. This dimension can be defined as the difference between an applicant's experience and the average level of experience of other applicants for the same position. Applicants are considered over-experienced to the extent that their experience exceeds what is considered typical for the position and under-experienced when falling below the typical level of the applicant pool. Utilization of this criteria normalizes the differences between amounts of experience being appropriate for different kinds of positions (Wechtler et al., 2021).

In terms of the concept of returnship, life experience may be the more influential factor. Age brings along life experiences, as indicated above. However, perceived benefits of age are all too often offset by negative attributes ascribed to older applicants by managers and recruiters. Avolio and Barrett (1987) postulated that recruiters believed older applicants were less flexible, less promotable, and expected to have lower performance compared to their younger counterparts (Wechtler et al., 2021).

Today's reality presents a far different picture of age. In bygone days, 65 years of age would have been associated with retirement. Workers had good pensions and retirement plans providing for a continuing and comfortable lifestyle. Also, many people physically were unable to continue to perform at a suitable level. Today, 40 is considered the new 20 (Hudson, Rob and Boop, Emily, 2009). People feel younger and are able to work longer than they used to. New medicines allow people to live longer and more productive lives. The result being the ability to remain in the workforce longer (Shawn et al., 2014).

### **Why Returnship Has Merit**

The benefits of returnship extend from the previous discussion. Older employees are still healthy and capable of doing productive work. They often serve as good role models to younger workers. They often have better attendance records and are more productive than younger workers. Of note, the manufacturing industry, where one would think younger workers would have an advantage, has shown that the older worker holds their own very well. In fact, 54% of the reporting companies found no difference between younger and older worker productivity rates. That in more than one-third of the instances, thought the older worker was even more productive (Shawn et al., 2014).

Improved health care and longevity, coupled with less physically demanding work, provide an environment conducive to recruiting workers into returnship. Additionally, long retirement is no longer as satisfying as it once was. Many people are looking to rejoin the workforce for something to do that will occupy them, both intellectually and to a lesser extent physically. After all, studies have shown that people feel important when they are doing something that needs to be done. Also, for many older workers, work gets them out of the house to socialize when living a fulfilling life.

The older worker has the potential to offer great amounts of value to prospective employers. They tend towards being extremely productive, responsible, patient, and honest. As discussed earlier, they also tend to have lower absenteeism levels than younger workers.



## **Future Research Opportunities**

The concept of returnship is one that has great merit and needs further consideration. This is particularly relevant today, with so many unfilled positions in the country, with an exceedingly low unemployment rate, and more importantly an unprecedented low workforce participation rate. Employers need to fill positions, but the stream of potential new employees is insufficient to meet the demand.

The authors propose to further study the acceptance and adoption of returnship in the workplace. This will be accomplished in two ways. First, by developing a survey instrument that will be administered through the membership of the Society of Human Resources Managers (SHRM). Second, by conducting a series of interviews with hiring managers in a representative sample of organizations.

## **Conclusion**

The pool of Baby Boomers, as well as others who have left the workforce, i.e., mothers and the like, provide a rich resource of potential employees that needs to be examined and exploited to meet current and anticipated future needs. This situation is further exasperated by the fact that the absolute size generations following the ‘boomers’ is smaller in numbers. The result being fewer employees entering the workforce.

In the movie “The Intern” Ben (Robert De Niro) laments that “retirement is an ongoing, relentless effort in creativity. Yoga, cooking, classes in Mandarin”. He admits that he has tried everything and quite simply, is bored out of his mind. This is the void that can serve both sides. A returnship opportunity, even one that is unpaid, give people who have left the workforce the chance to re-enter – an opportunity to “fill the gap.” (Wade, 2019).

Additionally, returnship programs that provide viable job opportunities to a variety of people have the potential to fulfill a company’s increasing needs for diversity and talent. Employers increasingly need to recognize the wealth of knowledge and experience that this constituency can bring.

In closing, as Benn says at the end of “The Intern”, “Musicians don’t retire. They stop when there’s no more music in them. Many non-participants still have plenty of music in them and business should be happy to hear their tune (Wade, 2019).

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# **ASSOCIATION OF ELECTRONIC MEDICAL RECORDS AND OPIOID PRESCRIPTION**

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## Introduction

Controlled substances have been described as a drug or other substance strictly regulated by the government due to the risk of abuse or addiction. This regulation covers how the substance is manufactured, used, handled, stored, and disseminated. Opioids, stimulants, depressants, hallucinogens, and anabolic steroids have been identified as controlled substances (Aro, Hussain, & Bobrin, 2021). In 2019, overdoses involving opioids killed approximately 50,000 people in the U.S., with synthetic opioids accounting for 73% of those deaths. Synthetic opioids, illicitly made fentanyl, are at the heart of the overdose pandemic. Overdoses involving psychostimulants like methamphetamine are also on the rise, both with and without the use of synthetic opioids (Scholl et al., 2018). Even though controlled substances account for only 11% of all prescriptions written, they were prescribed by 90% of clinicians, making it critical to include them in e-prescribing systems (Thomas et al., 2012). The fact that different people have varying tolerance levels and require different opioid doses to achieve adequate pain relief was a challenging aspect of caring for patients with pain (D'Aunno et al. 2019)

With the implementation of Electronic Medical Record (EMR) systems, computerized order entry systems have increased for medication prescriptions, which is now more common than handwritten prescriptions. EMR can auto-populate a default number of pills prescribed, and one potential method to alter prescriber behavior is to change the default number presented via the EMR system. In addition, electronic prescribing for controlled substances has become more widely used as providers and governments combat the opioid epidemic [Chiu et al., 2018).

A Prescription Drug Monitoring Program (PDMP) is an electronic database that tracks controlled substance prescriptions in a state. PDMPs can provide health authorities timely information about prescribing and patient behaviors that contribute to the epidemic and facilitate an agile and directed response. Electronic Prescribing for Controlled Substances (EPCS) aimed to eliminate paper prescriptions by allowing clinical prescribers to write prescriptions electronically, making them digital and trackable for both the prescriber and the pharmacist and has been an essential part of any health information technology system, as well as a requirement for 'meaningful use' (Blumenthal & Tavenner, 2010). However, one of the single most difficult challenges for any prescriber was distinguishing between the legitimate prescription of controlled substances and the prescription potentially used for illegitimate purposes (Preuss et al., 2021).

To limit the likelihood of drug diversion and abuse, the DEA acknowledged the importance of ensuring that the rules regulating electronic prescriptions did not unintentionally enable diversion and abuse (Abramson et al., 2012). As a result, the DEA's Interim Final Rule on EPCS went into effect in June 2010, allowing for e-prescribing and laying out the rules for its use in the U.S. (DEA, 2010). Providers, pharmacies, prescription system application vendors, and pharmacy system vendors were all subject to the rules (Kannry, 2011).

EPCS aimed to reduce prescription opioid addiction, abuse, diversion, and death (Danovich et al., 2019). Additionally, e-prescribing could improve healthcare quality, safety, and efficiency (Kaushal et al., 2010). EPCS has enhanced patient management and reduced prescription fraud associated with paper prescriptions, which account for a small but significant proportion of opioid medications diverted for abuse (Fischer et al., 2010). EPCS gained popularity because of its ability

to detect and prevent opioid diversion by removing paper prescriptions and allowing cross-referencing PDMP databases (Gawande, 2017). Without sacrificing convenience, EPCS provided accountability and security and is a potent weapon in the fight against the nation's opioid problem (Kausha et al., 2010).

While EPCS regulations could improve patient care and provide practitioners with more data for quality improvement, they might also offer new obstacles to practitioners, facilities, and vendors (Kaldy, 2016).

EPCS mandates were in place in 23 states by September 2021, and by 2022, all controlled drugs covered by Medicare Part D must be dispensed through electronic prescribing (Imprivata., 2021). In addition, many current state and local laws aimed at better tracking controlled-substance prescriptions using e-prescribing technology, in conjunction with prescription drug monitoring programs, have aided adoption (Everson et al., 2020).

This study's research purpose was to analyze and assess the association between electronic prescribing-controlled substances and their impact on opioid prescribing.

## **Methodology**

The working hypothesis was that electronic prescribing of controlled substances using the Electronic Medical Record has led to reductions in opioid prescribing.

The conceptual framework for this research followed the research framework and process utilized the adoption of technology by Yao et al. (2010). The methodology used for this research study was a review of academic literature, involving the following steps:

### *Step 1: Literature Identification and Collection*

The electronic databases of Marshall University nursing allied health, Marshall University Digital Scholar, ProQuest, PubMed research databases, Evidence-Based Medicine, JAMA, and Cochrane were searched for the terms "Electronic Prescription Controlled substances" OR "EPCS" OR "E narcotics prescription" OR "Prescription AND "Pharmacology opioid misused" OR "OPIOIDS" OR "DRUG Abuse" "AND "The United States." Using the Preferred Reporting Items for Systematic Reviews and Meta-Analysis and PRISMA method (Moher et al., & The PRISMA Group 2009), the search identified 28 relevant articles.

### *Step 2: Formation of Inclusion Principles and Literature Analysis*

A total of 28 Articles, written in English and published from 2010-2022, with relevant information about the electronic prescribing of controlled substances that intended to reduce opioid prescribing rates by reducing fraud and experienced more significant reductions in opioid prescribing, were scrutinized and used in the presentation of the project study.

## Results

In a study done in the United States between January 2014 and March 2015, the number of pharmacies that were equipped with EPCS increased slightly, from 78% (46,711) to 79% (47,971) across the country (Gabriel et al., 2016). The degree to which a state could help its citizens varied tremendously. In March 2015, for example, state pharmacy enablement ranged from 30% to 92%. The highest rate of EPCS pharmacy facilitation was in Rhode Island (96%), and the lowest was in North Dakota (30%). Between January 2014 and March 2015, national EPCS enablement among prescribers increased by 3.7%, with more enablement in the urban areas than rural areas (Gabriel et al., 2016) (see Table 1).

Author(s)	Study	Outcome
Gabriel et al., 2016	Secondary analysis of electronic transactions of controlled substances from U.S. pharmacies using Surescripts	The highest rate of EPCS pharmacy facilitation was in Rhode Island (96%) and the lowest was in North Dakota (30%). From January 2014-March 2015 the number of pharmacies that were equipped with EPCS increased slightly from 78% (46,711) to 79% (47,791)
Cao, Monteiro, & Wills, 2020	Cross sectional survey of 92 medical directors in ACS-verified and state designated level 1 and level 2 pediatric trauma centers	Physician residents were the most common provider who supplied opioid prescriptions at discharge (79.1%), advanced practice professionals (APP, 77.6%), and attending physicians (71.6%)
Kivekäs, et al., 2016	Web-based survey done in Finland involving 269 general practitioners (GPs)	GPs' job flexibility has been boosted by electronic health records and e-prescribing
Achar, Sinha, & Norcross, 2021	Systematic review of 7 studies published between 1990-2020	Benefits of EPCS with EHR included fewer prescribing errors (from 12% to 0%), a decrease of 53% opioid prescriptions in New York after the EPCS mandate, and savings ranging from \$1.4 million to \$1.1 billion
Meisenberg et al., 2018	Evaluation of morphine milligram equivalents (MME), 44,000 clinical encounters pre and post multifocal education intervention from June 2015-April 2018 in a single setting healthcare facility	Post intervention the monthly MME per encounter was 58% lower than the average of the 6-month baseline, MME per opioid prescription per month was 34% less than the average of the baseline and the opioid prescription rate was 38% lower than the average of the baseline

Chiu et al., 2018	Pre/post study of 1447 pre intervention, 1463 post intervention procedures, with the intervention being the lowering the default opioid prescription from 30 to 12 pills prescribed after procedures	After the default change, the median number of opioid pills prescribed decreased from 30 (interquartile range, 15-30) to 20 (interquartile range, 12-30) per prescription. The percentage of prescriptions written for 30 pills decreased from 39.7% before the default change to 12.9% after the default change and the percentage of prescriptions written for 12 pills increased from 2.1% before the default change to 24.6% (after the default change).
Rasubala et al., 2015	Single site dental urgent care in New York, pre post intervention (1,464 subjects), with the intervention being a mandatory prescription drug monitoring program	For patients who were prescribed pain medications, 452 (30.6%), 190 (14.1%), and 140 (9.6%) received opioid analgesics in the three study periods respectively, signifying a statistically significant reduction in the number of opioid prescriptions after implementation of the mandatory PDMP (p<0.05). Total numbers of prescribed opioid pills in a 3-month period decreased from 5096 to 1120, signifying a 78% reduction in absolute quantity.
Dowell, Haegerich, & Chou, 2016	Meta-analysis performed by CDC on US patients	States implementing mandatory PDMP and pain clinic laws reduced the combined drug overdose death rate by -1.1 per 100,000 residents
Brandeau, Pitt, & Humphreys, 2018	U.S. population aged 12 years and older, using 11 different intervention strategies	National policy, including electronic prescribing and prescription drug monitoring led to a decrease in the illegal opioid prescription supply
García et al., 2019	EHR retrospective prescription data from 31,422 primary care providers serving approximately 17 million patients over 166 weeks using Athenahealth EHR	Overall percentage ranged from 5.2% in large central metropolitan counties to 9.6% in noncore counties. Patients in noncore counties had an 87% higher chance of receiving an opioid prescription than did patients in large central metropolitan areas during the study period.

Chua et al., 2022	Single-center retrospective study of 1107 children with forearm and elbow fractures who presented to the emergency department for evaluation and subsequent orthopedic follow-up between January 15, and September 19, 2017. The default dispensing quantity was decreased on June 1, 2016 from 30 doses to 12 doses.	Rates of opioid prescribing were similar preintervention and postintervention (61% vs 56%, $P = 0.13$ ). After the change to the default quantity, the median number of doses decreased from 18 to 12 doses, with opioid prescriptions of 30 or more doses dropping from 35% to 11%.
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**Table 1. Summary Of Studies by Study Design and Outcomes**

Physician residents were the most common kind of provider who supplied opioid prescriptions at discharge (79.1%), followed by advanced practice professionals (APP, 77.6%), and finally attending physicians (71.6%) (Cao et al., 2020). However, according to a web-based survey done in Finland involving 269 general practitioners (GPs), G.P.s' job flexibility has been boosted by electronic health records and e-prescribing (Kivekäs et al., 2016).

*Electronic prescription of controlled substances and fraud*

EPCS improved patient safety by reducing the risk of fraud and diversion observed with paper opioid prescriptions. With up to 9% of opioid paper prescriptions suspected of being forged or fraudulent, the widespread use of EPCS has influenced opioid prescribing (Achar, Sinha, & Norcross, 2021). According to the DEA, EPCS reduced the following types of prescription diversion: stealing prescription pads or printing them and writing non-legitimate paper prescriptions; altering a legitimate prescription to obtain a higher dose or more dosage units (e.g., changing a "10" to a "40"); phoning-in non-legitimate remedies late in the day when it is difficult for a pharmacy to complete a confirmation call to the practitioner's office; and altering a prescription record at the pharmacy to hide diversion from pharmacy stock (Achar et al., 2021).

*Electronic prescribing of controlled substances and the opioid crisis*

In a case study done at Anne Arundel Medical Center from April 2016 to April 2018, about 44,000 clinical contacts were documented. From a beginning level of 34.4 morphine milligram equivalents (MME) per month, the total health system MME per encounter decreased by 1.0 MME per month. The monthly MME per interaction was 58% lower after the post-intervention observation than the 6-month baseline average. From a baseline level of 428 MME per month, morphine milligram equivalents per opioid prescription declined by 8 MME per month. The MME per prescription each month was 34% lower after the 16-month post-intervention period than at the start (Meisenberg, Grover, Campbell, & Korpon, 2018). From a starting point of 11.5%, the



percentage of clinical contacts resulting in an opioid prescription was lowered by 0.2% each month. As a result, the opioid prescription rate was 38% lower at the end of the 16-month post-intervention period than at the start (Meisenberg et al., 2018).

A case study done at Yale-New Haven Health System from February 2017 to August 2017 revealed that the median number of opioid pills prescribed per surgery reduced from about 30 pills before the prescription default modification to about 20 pills following the change in the prescription default (Chiu et al., 2018). Prescriptions issued for 30 pills reduced from 39.7% (554 of 1397) before the EPCS to 12.9% (183 of 1420) after the EPCS, while prescriptions written for 12 pills rose from 2.1% (29 of 1397) before EPCS to 24.6% (349 of 1420) after EPCS. The number of prescriptions written for 20 tablets increased significantly from 12.2% (171 of 1397) before EPCS to 19.6% (278 of 1420) after EPCS. After acquiring EPCS, the total opioid prescription was reduced by 34.41 MME (Chiu et al., 2018).

In a study done at a dental facility in New York from over three months before the required Prescription Drug Monitoring Programs (PDMP), and from December 1, 2013, and February 28, 2014, after PDMP implementation, the most prescribed opioid analgesics were hydrocodone, codeine, and oxycodone (Rasubala et al., 2015). Ibuprofen and acetaminophen were the most prescribed non-opioid analgesics. Following the mandated PDMP's introduction, there was a general trend toward fewer opioid prescriptions and more non-opioid analgesic prescriptions by the end of the trial, the total number of opioid analgesics prescribed over three months dropped from 5096 to 1120 pills, a 78% decrease in absolute numbers (Rasubala et al., 2015).

States implementing mandatory PDMP and pain clinic laws reduced the combined drug overdose death rate by -1.1 per 100,000 residents (Dowell et al., 2016). In addition, combining mandatory provider reviews of state-run prescription drug monitoring program data with pain clinic regulations reduced opioid prescription volumes by 8% and prescription opioid overdose death rates by 12% (Brandeau et al., 2018).

Concerns that lowering opioid prescribing rates may lead to more patients experiencing unmanaged pain. Chua et al. (2022) found this is not a valid concern. These researchers evaluated opioid prescriptions for 1107 patients in a single site emergency department and discovered that a reduction in opioid prescriptions of 30 or more doses from 35% to 11% led to no significant change in reported pain management for the patients (Chua et al., 2022).

Interestingly and most concerning to Appalachia, researchers have found that opioid prescribing by primary care providers have been much higher in rural than in urban counties due to that population abusing opioids at a younger age, and /or because rural areas tend to have a large elderly population who have been coping with chronic pain (García et al. (2019).

#### *Cost of implementation of electronic prescribing for controlled substances.*

The cost of implementing an advanced system with alarms, reminders, and system integration was \$29,000 per physician the first year and \$4,000 per physician each year after that (Hahn & Lovett, 2014).

## **Discussion**

EPCS has been an essential tool in healthcare facilities. It facilitated the monitoring of prescribed controlled substances, curbing prescription errors and abuses that might occur. In addition, EPCS provides a complete record of controlled substance prescription; both physicians and patients can be monitored through it. These are particularly important for public health and law enforcement initiatives like the DEA addressing misuse and diversion of opioid medications.

The clinical response to the opioid crisis demands an obligation from health systems and their physician leaders. They employ or contract with many clinicians both in hospitals and in the community, propose and carry out quality improvement, have a mission to improve and protect the public's health, and existing channels of communication to educate and inform the public and patients about opioid risks and alternatives.

The CDC issued the CDC Guideline for Prescribing Opioids for Chronic Pain in 2018 to supply recommendations for prescribing opioid pain drugs for patients 18 and older in primary care settings, and on February 10, 2022, it released a draft revision to its 2018 opioid prescribing guideline. If observed by pharmacy chains, health insurance companies, and policymakers, this new guideline supplies a way to withdraw unplanned prescribing thresholds, correct balance, and sustain complete, compassionate treatment.

Physicians have been prescribing fewer opioid painkillers as the medical system deals with the current opioid epidemic. The emphasis has been on primary care doctors treating chronic or acute pain, but every patient who receives anesthesia receives fentanyl, an IV opioid more potent than heroin. As a result, coming up with alternatives is problematic. Nothing treats pain like opioids, but it is possible to use a mixture of pre-and post-surgery methods, like nerve blocks, drugs equivalent to Novocain, and even Tylenol to get the desired effect. However, those alternatives have been slow to catch on.

## **Practical Implication**

Opioid-related instruction has been being acknowledged as an essential topic, but its adoption in many medical schools has been limited by a lack of time available in medical education and promising strategies for assessing students' learning

The practical suggestion resulting from this literature and case study must be evaluated in the future analysis, including consideration of outcome for the control of opioids epidemic nationwide after implementing Electronic Prescription Controlled substances effect achieving scale. Adopting EPCS widely might improve overall safety efficacy, quality, and control of the opioid crisis. Further research using a meta-analysis design is advised to measure the effect size of EPCS.

These implications are enormous with the current opioid crisis in Appalachia, particularly in West Virginia, Kentucky, and southern Ohio. Reducing the availability of opioid prescriptions and tracking prescriptions may enable clinicians, social services, law enforcement, and substance abuse treatment professionals to work together to decrease opioid abuse and addiction.

## Conclusion

This review has shown that the utilization of the EMR and electronic prescribing has had the potential to detect and prevent opioid diversion by eliminating paper prescriptions and improving healthcare quality, safety, and efficiency while also lowering drug costs. Therefore, providers who have been prescribing controlled medications should use electronic prescribing that reduces or prevent adverse effects from avoiding misuse.

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