ASSOCIATION OF BUSINESS INFORMATION SYSTEMS

2021 REFEREED PROCEEDINGS

FEDERATION OF BUSINESS DISCIPLINES

March 2021
Virtual Conference

Association of Business Information Systems
ABIS/ABC-SW Joint 2021 Virtual Conference

Welcome to the ABIS/ABC-SW FBD 2021 Virtual conference! Due to COVID19 this year our conference looks very different. Our entire conference will take place virtually using MICROSOFT TEAMS. Teams gives you several ways to participate and network during the conference. The links provided below are the "meeting room" links. You can click on the link for that meeting room in order to join the ongoing meeting for that presentation. In addition to the meeting links, you will see the general room that will be open for the duration of the conference. This is a place you can pop in to say hi, and where we will hold the social hour we hope you will attend.

Microsoft Teams also allows for an ongoing text chat, not unlike SMS messages. Using the email address you provided at registration, you've been added to a Microsoft Team *ABC-ABIS 2021 VIRTUAL CONFERENCE.* You can access Microsoft Teams via the web link or for a better experience download Microsoft Teams using this link.

The following channels exist in the Microsoft Team:

GENERAL - This is the general channel where you can chat. This channel will also hold the opening session, coffee breaks, and the social hour.
CONFERENCE QUESTIONS – This text only channel can be used for questions you have about the conference. Both the ABC and ABIS chairs will monitor this room and try to assist.
FILE ROOM-SCHEDULE – This room will house a copy of all the presentations for the moderators to use, as well as a copy of this schedule and the ABC Schedule.
PRESENTATION ROOM 1-4 – These are the "breakout" rooms. ABIS in Room 1, ABC in 2 and 3, and the board/business meetings schedule in room 4.
PRESENTATIONS Q &A – This room is for the presenters to answer questions that may be asked by participants after the fact. Presenters, keep an eye on this room to see if you have questions.
PRESENTERS CHANNEL – This room is for the presenters to work out bugs and test using the platform.

We look forward to your participation and hope this is a fun experience! –Eddie Horton, Program Chair

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CONGRATULATIONS!

**Recipients of the ABIS 2021 Federation of Business Disciplines
Distinguished Paper Award**

*Faculty Perceptions of Technology Challenges in a University's 100
Percent Virtual Instruction Environment during a Pandemic*

Sherry Rodrigue
Nicholls State University

Lori Soule
Nicholls State University

Betty Kleen
Nicholls State University

ABIS 2021 Program Overview

Thursday March 18, 2021

7:30 a.m. – 8:00 a.m.　　**General Channel Open/Help/Questions/Explore the Platform**
http://bit.ly/3uXgzAa (TEAMS CHANNEL: GENERAL)

8:00 a.m. – 8:30 a.m.　　**ABIS/ABC Joint Session – Introduction and Keynote**
http://bit.ly/3uXgzAa (TEAMS CHANNEL: GENERAL)

8:30 a.m. – 9:30 a.m.　　**ABIS/ABC Joint Session – Best Papers**
http://bit.ly/38bsIrx (TEAMS CHANNEL: ROOM 1)

9:30 a.m. – 9:45 a.m.　　**Coffee Break** (grab some brew and come chat in the GENERAL channel)
http://bit.ly/3uXgzAa (TEAMS CHANNEL: GENERAL)

9:45 a.m. – 11:15 a.m.　　**SESSION 1**
http://bit.ly/38bsIrx (TEAMS CHANNEL: ROOM 1)

11:15 a.m. – 12:30 p.m.　　**SESSION 2**
http://bit.ly/38bsIrx (TEAMS CHANNEL: ROOM 1)

12:30 p.m. – 1:30 p.m.　　**Lunch on your own** (grab some food and come chat in the GENERAL channel)
http://bit.ly/3uXgzAa (TEAMS CHANNEL: GENERAL)

12:45 p.m. – 1:30 p.m.　　**ABIS Board Meeting**
http://bit.ly/3c0Rmw7 (TEAMS CHANNEL: ROOM 4)

1:30 p.m. – 3:00 p.m.　　**SESSION3**
http://bit.ly/38bsIrx (TEAMS CHANNEL: ROOM 1)

6:00 p.m. – 7:00 p.m.　　**SOCIAL HOUR** (join us in the GENERAL channel to meet your colleagues)
http://bit.ly/3uXgzAa (TEAMS CHANNEL: GENERAL)

Friday March 19, 2021

8:00 a.m. – 9:30 a.m.　　SESSION 4
http://bit.ly/38bsIrx (TEAMS CHANNEL: ROOM 1)

9:30 a.m. – 9:45 a.m.　　**Coffee Break** (grab some brew and come chat in the GENERAL channel)
http://bit.ly/3uXgzAa (TEAMS CHANNEL: GENERAL)

9:45 a.m. – 11:15 a.m.　　SESSION 5
http://bit.ly/38bsIrx (TEAMS CHANNEL: ROOM 1)

11:15 a.m. – 12:30 p.m.　　SESSION 6
http://bit.ly/38bsIrx (TEAMS CHANNEL: ROOM 1)

12:30 p.m. – 1:45 p.m.　　**Lunch on your own** (grab some food and come chat in the GENERAL channel)
http://bit.ly/3uXgzAa (TEAMS CHANNEL: GENERAL)

1:45 p.m. – 3:15 p.m.　　Closing Session/Joint Panel Discussion
http://bit.ly/38bsIrx (TEAMS CHANNEL: ROOM 1)

March 18, 2021
(Thursday)

8:00 a.m. – 8:30 a.m. (TEAMS CHANNEL: GENERAL)
http://bit.ly/3uXgzAa

ABC – SWUS and ABIS Presidential Remarks and Welcome/Keynote

All ABC-SWUS and ABIS presenters and members are invited to attend the welcoming reception.

8:30 a.m. – 9:30 a.m. (TEAMS CHANNEL: ROOM1)
http://bit.ly/38bsIrx

ABC-SWUS and ABIS Joint Session: Best Papers

Co-Session Chairs/Association Vice Presidents and Conference Chairs:
Eddie Horton, Northwestern State University
Leslie Ramos Salazar, West Texas A&M University

ABC-SWUS Best Paper: *A Qualitative Analysis of Top-Performing Franchise Brands' Email Communication Used in the Franchise Sales Process*
Laura Lott Valenti, laura.valentini@nicholls.edu, Nicholls State University
Stavros Sindakis, ssindakis@sharjah.ac.ae, University of Sharjah

ABIS Best Paper: *Faculty Perceptions of Technology Challenges in a University's 100% Virtual Instruction Environment During a Pandemic*
Sherry Rodrigue, sherry.rodrigue@nicholls.edu, Nicholls State University
Lori Soule, lori.soule@nicholls.edu, Nicholls State University
Betty Kleen, betty.kleen@nicholls.edu, Nicholls State University

9:30 a.m. – 9:45 a.m. (TEAMS CHANNEL: GENERAL)
http://bit.ly/3uXgzAa

Coffee Break

9:45 a.m. – 11:15 a.m. (TEAMS CHANNEL: ROOM1)
http://bit.ly/38bsIrx

SESSION 1
Session Chair: Jason Powell, Northwestern State University

Student Self-Regulation: A Closer Look at Differences in Time Management Practices of Computer Information Systems, Accounting, and Business Majors Across Age and Gender
Lily Pharris, pharrisl@nsula.edu, Northwestern State University
Marcia Hardy, hardym@nsula.edu, Northwestern State University
Jason Powell, powellja@nsula.edu, Northwestern State University

Examining Business Math Courses' Effect on Undergraduate Business Students' Math Anxiety and Self-Efficacy
Leslie Ramos-Salazar, lsalazar@wtamu.edu, West Texas A&M University
Audrey Meador, ameador@wtamu.edu, West Texas A&M University

An Examination of Undergraduate Business Students' Self-Efficacy with Excel Skills
Nesrin Bakir, nbakir@ilstu.edu, Illinois State University
Leslie Ramos-Salazar, lsalazar@wtamu.edu, West Texas A&M University

11:15 a.m. – 12:30 p.m. (TEAMS CHANNEL: ROOM1)
http://bit.ly/38bsIrx

SESSION 2
Session Chair: Marcia Hardy, Northwestern State University

The Impact of Digital Hoarding
Marcel Robles, marcel.robles@eku.edu, Eastern Kentucky University
Alex Martin, marcel.larsgaard@gmail.com, Eastern Kentucky University

Using Tech Tools to Increase Student Connectivity and Engagement in Online Classes
Ashley Hall, hallaa@sfasu.edu, Stephen F. Austin University

Redesigning the Graduate MIS Course: The Challenges, the Result and Student Reactions
Kimberly Merritt, kimberly.merritt@oc.edu, Oklahoma Christian University
David Smith, davids@cameron.edu, Cameron University

12:30 p.m. – 1:30 p.m. (TEAMS CHANNEL: GENERAL)
http://bit.ly/3uXgzAa

Lunch Break

12:45 p.m. – 1:30 p.m. (TEAMS CHANNEL: ROOM 4)
http://bit.ly/3c0Rmw7

ABIS BOARD MEETING
(Board members Required, ABIS Members Optional)

1:30 p.m. – 3:00 p.m.   (TEAMS CHANNEL: ROOM1)
http://bit.ly/38bsIrx

SESSION 3
Session Chair: Marcia Hardy, Northwestern State University

Faculty/Student Communication during COVID
Daniel Gordy, gordyd@nsula.edu, Northwestern State University
Eddie Horton, ehorton@nsula.edu, Northwestern State University
Danny Upshaw, upshawd@nsula.edu, Northwestern State University

Multicommunicating in a Pandemic: A Preliminary Report
Lamar Reinsch, lamar.reinsch@lcu.edu, Lubbock Christian University
Jeanine Turner, Jeanine.turner@georgetown.edu, Georgetown University

The Effects of the Pandemic on Higher Education Resource allocation and Students Response
Aurore, Kamssu, akamssu@tnstate.edu, Tennessee State University
Marlon, Douglas, Tennessee State University
Cedric Duncan, Tennessee State University
Megan Wu, Tennessee State University

6:00 p.m. – 7:00 p.m. (TEAMS CHANNEL: GENERAL)
http://bit.ly/3uXgzAa

ABC/ABIS HAPPY HOUR

Come meet your colleagues in the general channel!

Keynote**: Dr. Sky Marsen**, Finders University
Defining the "Professional" in Business Communication

March 19, 2021
(Friday)

8:00 a.m. – 9:30 a.m. (TEAMS CHANNEL: ROOM 1)
http://bit.ly/38bsIrx

SESSION 4
Session Chair: Lily Pharris, Northwestern State University

The Shift in Company's Resources in Era of COVID-19
Aurore Kamssu, akamssu@tnstate.edu, Tennessee State University
Marlon Douglas, Tennessee State University
Cedric Duncan, Tennessee State University
Megan Wu, Tennessee State University

Investigating Curricula: A Comparison Analysis of Computer Information System Programs Across the Country versus a Regional University
Carmella Parker, parkerc@nsula.edu, Northwestern State University
Lily Pharris, pharrisl@nsula.edu, Northwestern State University
Eddie Horton, ehorton@nsula.edu, Northwestern State University
Qwontice McDowell, mcdowellq@nsula.edu, Northwestern State University

Online Retail Systems in COVID-19
Nickia Sauls, nsauls@twu.edu, Texas Women's University
Mahesh Raisinghani, mraisinghani@twu.edu, Texas Women's University
Jorge Medina, jmedina@twu.edu, Texas Women's University
Efosa, Idemudia, efoidemudia@hotmail.com, Arkansas Tech University
Timothy Zhang, tzhang@twu.edu, Texas Women's University

9:30 a.m. – 9:45 a.m. (TEAMS CHANNEL: GENERAL)
http://bit.ly/3uXgzAa

Coffee Break

9:45 a.m. – 11:15 a.m. (TEAMS CHANNEL: ROOM 1)
http://bit.ly/38bsIrx

SESSION 5
Session Chair: Mary Beth Tarver, Northwestern State University

Data in the Age of COVID: Case-Based Assignments for Business Analysis and Business Communication
Traci Austin, tla016@shsu.edu, Sam Houston State University
Ashton Mouton, amm099@shsu.edu, Sam Houston State University
Danica Scheiber, dscheiber@shsu.edu, Sam Houston State University

STEM Education-Career Pathway for Emerging Forensics Analytics
Joselina Cheng, jcheng@uco.edu, University of Central Oklahoma
Alexia Benson, alexia.benson@okstate.edu, University of Central Oklahoma

1:45pm – 3:15 (TEAMS CHANNEL: ROOM1)
http://bit.ly/38bsIrx

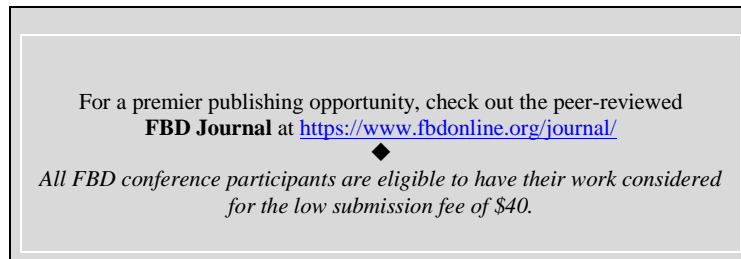**Joint Closing Session/Panel Discussion**

Session Chair: Eddie Horton, Northwestern State University

Effects of COVID19 for Face-to-Face Students During the Spring 2020 Semester
Ronnie Abukhalaf, abukhalafr@nsula.edu, Northwestern State University
Weiwen Laio, laiow@nsula.edu, Northwestern State University
Jason Powell, powellja@nsula.edu, Northwestern State University

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for the low submission fee of $40.*

Thank you for taking part in our very first virtual conference. We look forward to seeing you again in person next year in New Orleans!

A very special thanks to the technical moderators who are helping run this conference: Jason Powell, Begona Perez-Mira, Marcia Hardy, Lily Pharris, Mary Beth Tarver, and Carmella Parker.

Association of Business
Information Systems

TABLE OF CONTENTS

(Click on the title below to view the paper)

FACULTY PERCEPTIONS OF TECHNOLOGY CHALLENGES IN A UNIVERSITY'S 100 PERCENT VIRTUAL INSTRUCTION ENVIRONMENT DURING A PANDEMIC

Sherry Rodrigue, Nicholls State University, sherry.rodrigue@nicholls.edu
Lori Soule, Nicholls State University, lori.soule@nicholls.edu
Betty Kleen, Nicholls State University, betty.kleen@nicholls.edu

ABSTRACT

In this research, the authors investigate faculty perceptions of the technology challenges presented in a rapid conversion to 100 percent virtual education to complete the spring term of 2020, during the Covid-19 pandemic. Previously published research has addressed various challenges presented in online instruction as it evolved over the past several decades. The authors questioned what additional challenges had emerged with a critically short conversion time and the entire organization's switch to virtual instruction. This project reports findings from a survey of faculty at the authors' institution, specifically looking at faculty confidence levels and what challenges they faced. With only a week to convert any face-to-face class into a synchronous online format, what were faculty perceptions of confidence levels in communicating with students, engaging students, delivering content, and assessing student learning for the remainder of the spring 2020 term? Which aspects did they find most challenging? Additionally, what were their personal stress levels in doing so and how much extra time was required? Faculty also reported what technology tools they used to accomplish the online instruction. Some statistical differences were identified in responses based on the independent variables of gender, college in which faculty reside, and years of teaching.

Key Words: Online learning, faculty perceptions, delivery of instruction, student motivation, student engagement, educational technology

INTRODUCTION

March 2020 may have changed the format of higher education as we know it. In what appeared to be overnight, thousands of college campuses switched from traditional brick and mortar instruction to completely online as institutions sent students home during the Covid-19 pandemic. At the authors' university, this online conversion required, among other adjustments, online synchronous lectures for those courses that had previously been face-to-face. Faculty had one week to restructure for 100 percent virtual instruction. Faculty and students alike had little time to adapt, and many did not have the resources they needed to be successful in such an environment. Some faculty had never experienced teaching online courses; some students had never expected to be cut off from in-person instruction and were unprepared for succeeding in a 100 percent virtual environment. Universities scrambled to provide support for faculty and students to ensure the completion of the spring semester. Faculty were challenged to maintain effective communication with students, maintain student engagement, provide effective delivery of instruction, and complete online assessment of learning, all the while doing everything possible to ensure student success.

STATEMENT OF THE PROBLEM

This paper provides an overview of what faculty at a mid-sized public university in the south perceived to be the more challenging aspects of completing the semester in a completely online format. Although the University worked hard to provide some faculty support through training, some additional software, and some office technology moved to home offices, the researchers questioned what the faculty experienced during the completion of the term. A survey was designed by the authors and approved by the University's Human Subjects Institutional Review Board. Specific questions in the survey asked faculty opinions to gather the following concerning completion of spring semester 2020 in a 100 percent virtual environment.

- What was the faculty confidence level in ability to deliver classes in an online setting?
- What was the faculty confidence level in communicating with students?
- What was the faculty confidence level in engaging students?
- What was the faculty confidence level in delivering course content?
- What was the faculty confidence level in assessing student learning?
- Which of the above was the most challenging aspect of Spring 2020 semester?
- What was the faculty perception of the amount of extra time required to handle online instruction?
- What was the faculty perception of personal stress level?
- What technology did faculty use in their virtual instruction in spring 2020? What do they plan for fall 2020?

- Are there statistical differences in responses based on gender, college in which the faculty teach, and years of teaching experience?

REVIEW OF THE LITERATURE

Distance education is not a new concept. Baum and McPherson (2019) provided a history of how it has evolved over the past 100 years. In the mid 1920s, broadcast radio was seen as a tool to distribute instruction on a vast scale at a very low cost. It was once called a 'super radio university' that could provide each home with broadcasts from Carnegie Hall to Harvard. Several universities created radio stations on their campuses to broadcast radio education to the masses. However, in reality the concept was short lived and only reached a small geographic area. In the late 1950's, educational television picked up where radio universities left off, offering information, instruction, and visuals in various fields of study. While both educational radio and television are still in existence today, neither have revolutionized college education.

The format on distance education changed again in the late 1990's with the introduction of personal computers and the Internet. The information delivered by radio and television was in one direction; there was no interaction between the source and the receiver. Personal computers and the Internet changed that format. Students now had the flexibility to receive in-depth lessons, from any location, and at any time that was convenient for them. Additional tools such a MOOCs allowed for student–teacher and student-student interactions, thus making higher education more attainable and more engaging to many students.

However, the development of an effective online course takes time. In the early stages of online education, many junior-level and tenure-track faculty did not have the time to step aside from their other academic responsibilities to develop such courses, and were often discouraged from doing so (Brouw, 2001). Still twenty years after the introduction of online education at most universities, some faculty members have never developed an online course or taught in an online formation. While many universities today offer a strong mix of both traditional, face-to-face courses and plenty of online courses as well, not all Universities were in such position in March 2020. For example, in March of 2020, prior to the university shutdown, Rice University only offered three for-credit online courses. In a matter of days, they had to train 487 professors how to setup and deliver online courses; most of whom had never taught online before (Silverman, 2020).

Creating a successful online course takes time and planning. Research has shown that students retain information and have a better understanding of the material when they actively work with the material, compared to simply listening to recorded lectures. One research article gave the example of teaching someone to drive a stick-shift car from a lecture (Baum and McPherson, 2019). Research has also shown that successful online courses have both asynchronous and synchronous components (Singh and Pan, 2004). Asynchronous aspects such as recorded lectures, discussion threads, and virtual labs allow students the opportunity to work at their own pace, on their own time, and review the material as much as needed. Synchronous aspects such as live chats, group meetings, and interactive projects give the student real-time feedback and a sense of community in the course.

How can faculty that have never taught online, successfully go from a traditional classroom setting to completely online in a matter of days? Research by Terenko and Ogienko (2020) shows that a majority of faculty surveyed expressed concerns with the transition. Some of those concerns included: complete transition to online delivery (91%), distance learning and learning management tools (48%), lack of well-designed web-based curriculum resource (41%), proper level of IT competence of teachers (33%), and student motivation (69%). The conclusion of their study was that online training requires empathy, understanding, and active communication between all participants of the learning process.

As reported in the Chronicle of Higher Education (Nelson, 2020), surveys of faculty during and immediately after the Spring 2020 semester showed a variety of reactions. Many felt the social distancing and remote work environment left a feeling of exhaustion on a daily basis. According to Times Higher Education, which surveyed business, management, and economic faculty, many of which had already had some form of online delivery, seventy-six percent of faculty felt that online teaching was more time-consuming to prepare and deliver, and forty percent felt online grading took up more time. The research also showed that this varied between junior faculty, who felt a larger increase in time required for teaching and assessment, than senior faculty, who reported they were still able to allot adequate time for research. This was especially felt by female faculty, who in addition to teaching in an online environment, also found themselves with additional home responsibilities such as childcare and home schooling.

Terenko and Ogienko (2020) also surveyed students who addressed initial concerns of unstable Internet access (21%), lack of self-study skills (31%), and lack of live communications (47%). In the conclusion of the semester, eighty-seven percent of students in that study were satisfied with the learning outcomes but addressed problems of technical issues (43%). Similarly, in a survey from Visual Objects, fifty-one percent of high school and college students reported not having consistent access to high-speed internet and WiFi, and thirty-one percent remain uncomfortable with remote learning (Kelly, 2020).

Online, remote education has shown to create more challenges and gaps in student success than the traditional delivery, stemming from demographic, technological, economic, and societal pressures (Houlden and Veletsianos, 2019). Students with weaker academic backgrounds need more personal contact with faculty and other students. Holden and Veletsianos report studies of community college students by the Community College Research Center (CCRC); those studies show that males, students with lower GPAs, and black students have more difficulty adjusting to online learning. First generation students and those who attended weaker high schools, may have trouble developing good study stills. In contrast, students with more access and exposure to technology, with strong time-management and self-directed learning skills, perform better in online learning (Baum and McPherson, 2019). Baum and McPherson also note that hybrid courses, those with some in-person and some online components, or those with some asynchronous and synchronous components appear to have better student outcomes than those completely online and/or completely asynchronous.

So as the Fall 2020 semester approaches, what does Higher Education look like? According to a July 27, 2020, article from the National Conference of State Legislatures (Smalley, 2020), the Chronicle of Higher Education estimates that roughly sixty percent of schools were planning on in-person instruction, while twenty-four percent planned to operate in a hybrid model, and nine percent planned to operate online-only. To assist students with issues in accessing technology, even online universities planned to open libraries on a limited basis and provide mobile hotspots. Smalley further reports that some universities have even modified their grading systems from letter grades to pass/fail to help students with the stress and limitations of this new format.

Universities have also spent thousands of dollars to purchase equipment, online resources, and training for their faculty. In a survey of over 800 colleges and university educators conducted by TopHat, an active learning platform for in-class and online interactions, seventy-one percent of those surveyed stated that they would have either completely online (31%) or some form of hybrid/hyflex delivery (40%) for Fall 2020. While sixty-three percent of the faculty received at least 20 hours of online training this summer, 42% of which received over 40 hours, fifty percent of those still reported feeling uncertain about the upcoming academic term. Some of their concerns included the following: ensuring students stay motivated (81%), students having the access to the Internet (64%) and the technology/computers they needed (61%), meeting needs of students who are at risk of dropping or failing a course based on course-delivery format (54%), and providing opportunities for experiential or hands-on learning (49%).

Survey results in the same TopHat research (2020) show that after the training they received, faculty felt confident (34%) or very confident (32%) in their ability to support the learning tools they will implement in their approach to learning for the Fall 2020 semester. However, their confidence decreased when asked if they felt students would see the value of their education and if they felt their students will be successful learners in the announced course format(s).

Although the delivery of distance education has changed numerous times over the decades as technological advancements have emerged, the fact remains that developing online courses takes time, and issues such as effective faculty-student communication, motivation of students, delivery of content, and assessment of learn remain challenges even with today's sophisticated technology. Another sobering reality is that not all students are well equipped to learn successfully in a virtual environment. Very recent surveys conducted about the switch to virtual delivery of instruction during the Covid-19 pandemic provide evidence of some of the challenges reported by faculty and students. The analysis of findings from a faculty survey reported in the remainder of this paper provide information related to faculty perceptions at the authors' university to add to the literature of online education.

RESEARCH METHODOLOGY

During the 2020 summer semester, the authors designed a survey to be administered to faculty in all disciplines within their university, which is classified as a mid-sized public university in the south. The University's Human Subjects Institutional Review Board reviewed the study plan and survey design and granted approval to proceed with the dissemination of the survey. In early Fall 2020, faculty were emailed a link to the survey created in Qualtrics. In addition to capturing demographics of faculty participants to facilitate analysis, this survey addressed issues such as faculty confidence levels in dealing with communicating with students, engaging students, delivering content to students, and assessing student learning from the spring semester and their predictions about the fall semester. Overall, perceptions of stress levels and time commitment for the spring semester were captured, as well as their choice of technology tools for both the spring and fall semesters.

DATA ANALYSIS

Of the 277 full-time faculty members at the researchers' university, 134 responded to the survey for a response rate of 48.3%. Gender, college, and years teaching were used as independent variables for the study. Characteristics of the survey respondents are summarized in Figure 1 below. Not all survey respondents answered all classification items. For gender, 117 faculty responded; for college, 117 faculty responded; for years of teaching experience, 118 faculty responded.
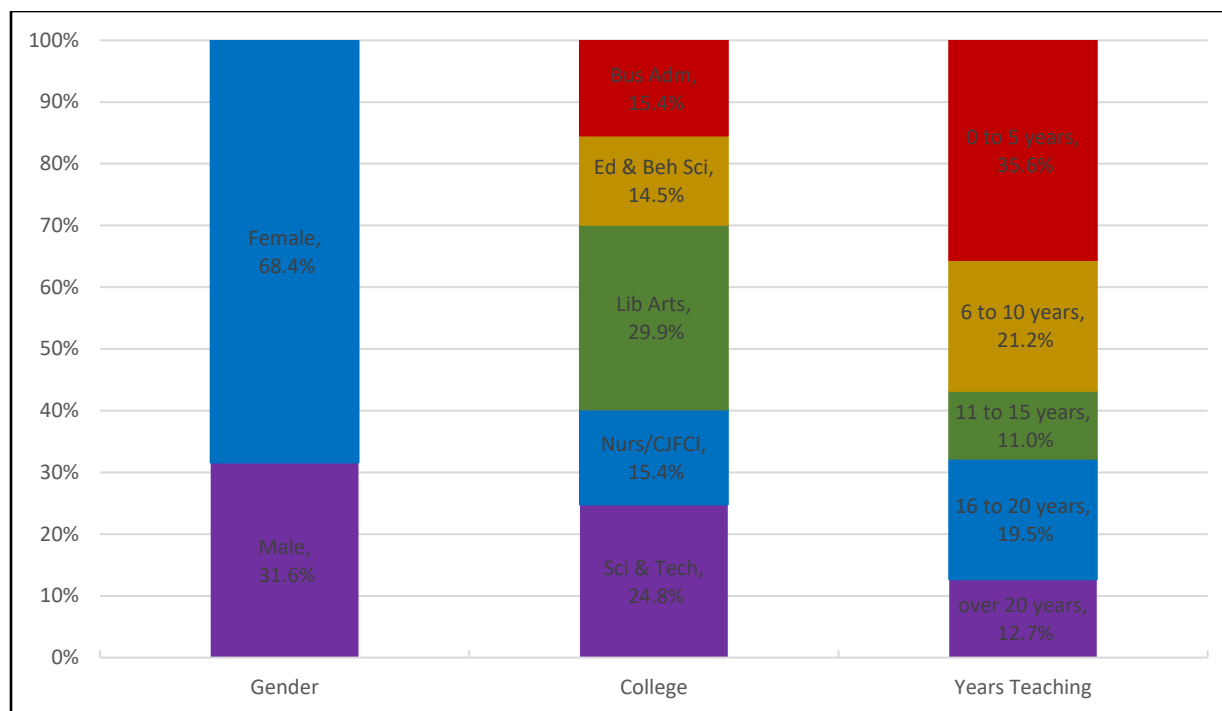
Figure 1. Summary of Responding Faculty Characteristics

In summary, most of the respondents are female (68.2%), Liberal Arts faculty (29.9%), and have been teaching for 0 to 5 years (35.6%). The second largest years teaching group to respond were those with 6 to 10 years. The Science and Technology faculty are the second largest group to respond (24.8%), followed by Business Administration faculty (15.4%). The College of Nursing faculty was combined with the faculty from the Chef John Folse Culinary Institute (CJFCI) due to small numbers in both faculty groups. This combination resulted in representation of 15.4%, also. The smallest responding groups included the College of Education and Behavioral Sciences (14.5%) and those faculty with the "most teaching experience," over 20 years at 12.7%.

The mean and standard deviation for each of the dependent variables were computed (see Table 1 at the end of the manuscript). Questions 1 through 6 used a five-point Likert scale (not confident at all, slightly confident, somewhat confident, fairly confident, completely confident) for answer choices. Question 7 (extra time required) used a five-point Likert scale (0 to 2 hours, 3 to 5 hours, 6 to 9 hours, 10 to 15 hours, more than 15 hours) for answer choices. Questions 8 (faculty stress level) used a five-point Likert scale (no stress, mild stress, moderate stress, much stress, extreme stress for answer choices. Questions 9 through 13 (most challenging aspect) used a five-point Likert scale (strongly disagree, disagree, no opinion, agree, strongly agree) for answer choices.

Of the 13 questions, "*What was your confidence level during the second half of the Spring 2020 semester when dealing with communicating with students?*" had the highest mean ($M = 4.05$, $SD = .950$) while the dependent variable "*Using technology was the most challenging aspect of the Spring 2020 semester.*" had the lowest ($M = 2.75$, $SD = 1.149$).

Independent Samples t-tests and Analysis of Variance

Independent samples t-tests were conducted using the independent variable, **Gender**. All tests were conducted to the .05 level of significance. Relating to the 13 questions on the survey, hypotheses (H1-H13) were formulated about the differences in the mean of the dependent variables by gender. Two hypotheses in this grouping were found to be statistically significant. The first hypothesis was do male faculty feel the same about the statement "*What was your overall stress level for the Spring 2020 semester?*" as female faculty members? There was a significant difference in the means for males ($M = 3.46$, $SD = 1.070$) and females ($M = 3.91$, $SD = 1.021$); $t(115) = -2.198$, $p = 0.030$. These results suggest the female faculty members had an overall higher stress level than the male faculty members during the Spring 2020 semester.

The second hypothesis was do male faculty feel the same about the statement "*The time commitment needed was the most challenging aspect of the Spring 2020 semester.*" as female faculty members? There was a significant difference in the means for males ($M = 3.27$, $SD = 1.146$) and females ($M = 3.85$, $SD = 1.099$); $t(115) = -2.604$, $p = 0.010$. Here again, the results suggest the female faculty members felt the time commitment needed was the most challenging aspect of the Spring 2020 semester in comparison to the male faculty members. The two statistically significant results can be seen in Table 2 at the end of the manuscript.

Using the independent variable **College**, 13 ANOVA tests were established, where the Likert-type statements were the factors and **College** was the variable. All tests were conducted to the .05 level of significance.

Three of these thirteen hypotheses were found to be statistically significant and can be viewed in Table 3 at the end of the manuscript.

For the statement, "*What was your confidence level during the second half of the Spring 2020 semester when <u>dealing with communicating with students?</u>*", there was a statistically significant difference between groups as determined by one-way ANOVA ($F (4,111) = 3.054$, $p = .020$). Because of unequal group sizes, Fisher's LSD post hoc test was used to determine the nature of the difference between members of each **College**; this analysis revealed that there was a statistically significant difference between the mean of the College of Education and Behavioral Sciences faculty ($M = 4.59$, $SD = .795$) and the mean of the College of Liberal Arts faculty ($M = 4.03$, $SD = 1.029$). In addition, analysis revealed that there was a statistically significant difference between the mean of the College of Education and Behavioral Sciences faculty ($M = 4.59$, $SD = .795$) and the mean of the College of Nursing/CJFCI faculty ($M = 3.50$, $SD = .985$). The analysis also revealed that there was a statistically significant difference between the mean of the College of Nursing/CJFCI faculty ($M = 3.50$, $SD = .985$) and the mean of the College of Sciences and Technology faculty ($M = 4.07$, $SD = .842$).

For the statement, "*What was your confidence level during the second half of the Spring 2020 semester when <u>dealing with engaging the students?</u>*", there was a statistically significant difference between groups as determined by one-way ANOVA ($F (4,111) = 2.728$, $p = .033$). Because of unequal group sizes, Fisher's LSD post hoc test was used to determine the nature of the difference between members of each **College**; this analysis revealed that there

was a statistically significant difference between the mean of the College of Education and Behavioral Sciences faculty (*M* = 3.82, *SD* = .883) and the mean of the College of Nursing/CJFCI faculty (*M* = 2.89, *SD* = 1.132). In addition, analysis revealed that there was a statistically significant difference between the mean of the College of Education and Behavioral Sciences faculty (*M* = 3.82, *SD* = .883) and the mean of the College of Sciences and Technology faculty (*M* = 3.03, *SD* = .865). The analysis also revealed that there was a statistically significant difference between the mean of the College of Liberal Arts faculty (*M* = 3.50, *SD* = 1.108) and the mean of the College of Nursing/CJFCI faculty (*M* = 2.89, *SD* = 1.132).

For the statement, "*What was your confidence level during the second half of the Spring 2020 semester when dealing with delivering the content?*", there was a statistically significant difference between groups as determined by one-way ANOVA (*F* (4,111) = 3.099, *p* = .018). Because of unequal group sizes, Fisher's LSD post hoc test was used to determine the nature of the difference between members of each **College**; this analysis revealed that there was a statistically significant difference between the mean of the College of Education and Behavioral Sciences faculty (*M* = 4.24, *SD* = .562) and the mean of the College of Nursing/CJFCI faculty (*M* = 3.39, *SD* = 1.243). The analysis also revealed that there was a statistically significant difference between the mean College of Liberal Arts faculty (*M* = 3.97, *SD* = 1.114) and the mean of the College of Nursing/CJFCI faculty (*M* = 3.39, *SD* = 1.243). In addition, analysis revealed that there was a statistically significant difference between the mean of the College of Liberal Arts faculty (*M* = 3.97, *SD* = 1.114) and the mean of the College of

Sciences and Technology faculty (*M* = 3.45, *SD* = .910).

Another 13 ANOVA tests were established using **Years Teaching** for the variable and the Likert-type statements as the factors. None of these 13 hypotheses were found to be statistically significant.

Prior Online Teaching Experience

The authors included a question on the survey to determine what prior teaching experience the faculty had in terms of online teaching prior to March 16, 2020. Of the 114 responses to this question, 61.6% reported prior asynchronous experience, 27.5% reported no prior experience, and only 10.9% reported prior synchronous experience. (See Figure 2.)
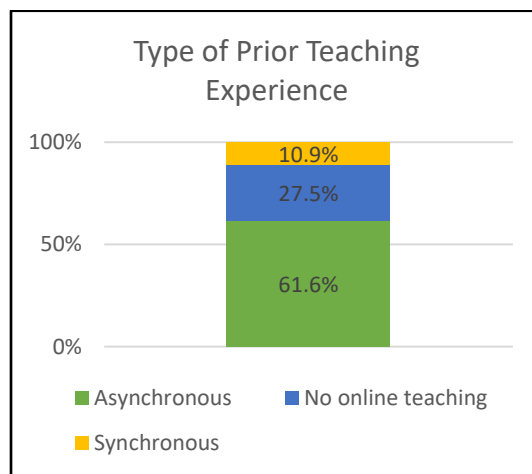

Figure 2. Prior Online Teaching Experience

Technology Usage

The survey also captured the types of technology used in certain situations. The first question, "*Which tools did you use in Spring 2020 to assist in your online meetings (check all that apply)?*" As reported in Figure 3, Zoom was overwhelming the most popular tool with 67.9% of the faculty reporting usage. Microsoft Teams received the smallest
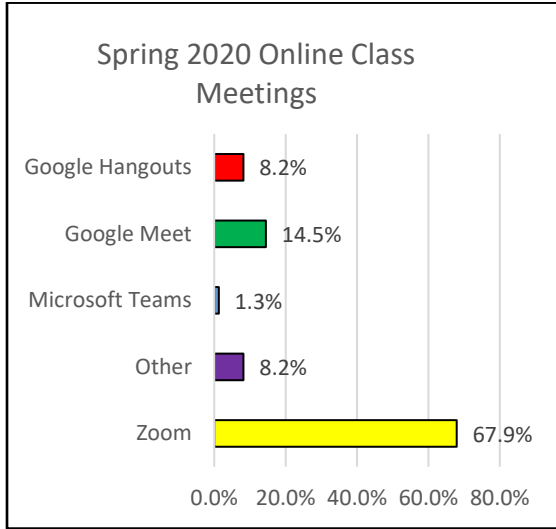
percentage of support at 1.3%.

Figure 3. Spring 2020 Online Class Meetings

A similar question was posed for the fall semester. "Which tools will you be using in Fall 2020 to assist in your online class meetings (check all that apply)?" In comparison, Zoom usage is predicted to increase to 74.5% for Fall 2020. The technology receiving the smallest percentages of votes was "other" at 5.5%. Microsoft Teams was not reported as possibly being used during the fall. A complete reporting can be found in Figure 4.
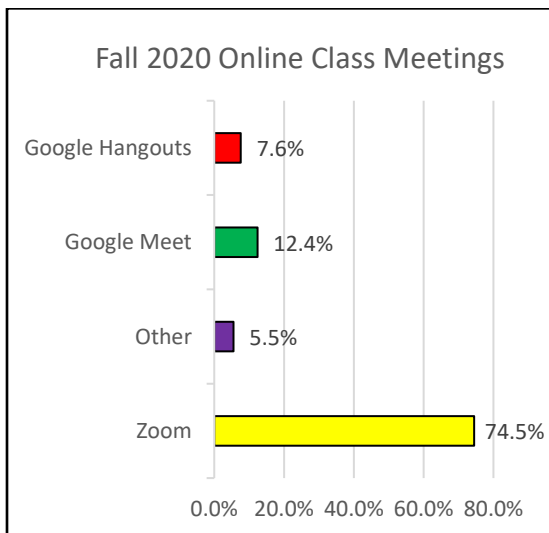

Figure 4. Fall 2020 Online Class Meetings

The second technology question asked, "Which tools did you use in Spring 2020 to assist in your recordings of lectures (check all that apply)?" Zoom had the highest percentage of usage at 50.0%, while the smallest reported usage was Google Meet at 3.3%. A complete reporting of percentage can be viewed in Figure 5.
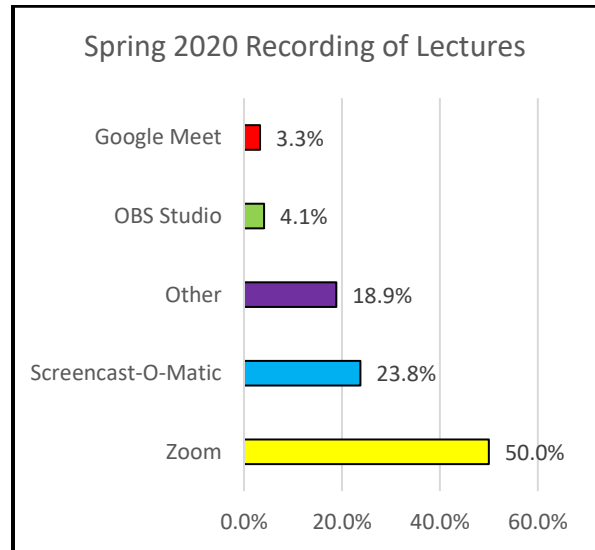
Figure 5. Spring 2020 Recording of Lectures

A similar question was posed for the fall semester. "Which tools will you be using in Fall 2020 to assist in your recording of lectures (check all that apply)?" As reported in Figure 6, the predicted usage of Zoom increased to 56.3%. Google Meet and OBS Studio were tied for the lowest predicted usage at 2.8% each.

The third technology question asked, "Which tools did you use in Spring 2020 to assist in your capturing of screenshots (check all that apply)?" As depicted in Figure 7, receiving the largest percentage of votes, 36.4%, was "other" which included using built-in screen capturing/screenshots in the operating systems of Windows and Mac OS. The smallest percentage of

reported usage was ScreenHunter at 1.5%.

Fall 2020 Recording of Lectures

Google Meet	2.8%
OBS Studio	2.8%
Other	12.5%
Screencastify	1.4%
Screencast-O-Matic	24.3%
Zoom	56.3%

Figure 6. Fall 2020 Recording of Lectures

Spring 2020 Screenshot Capture

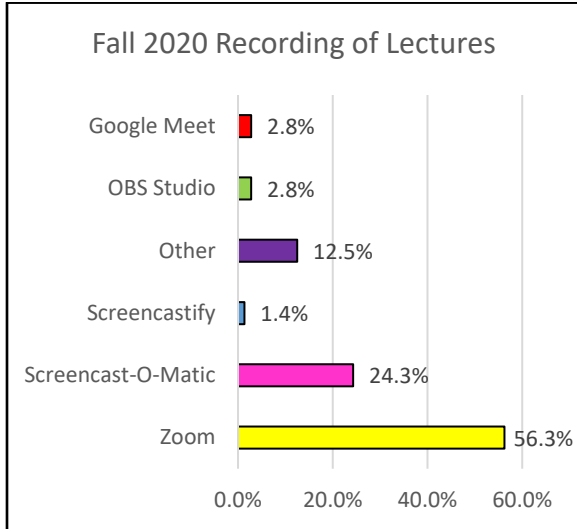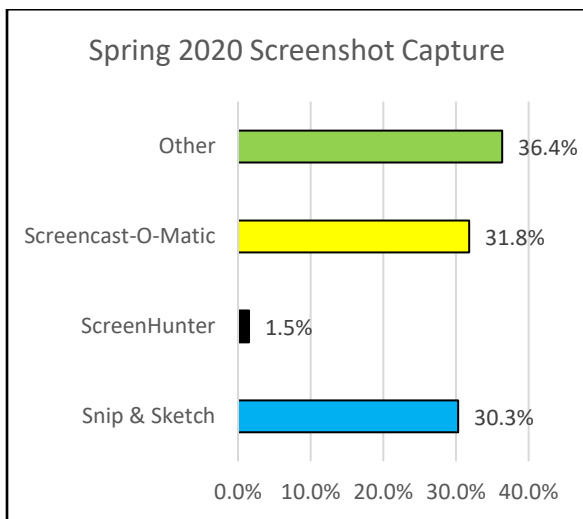|	
Other	36.4%
Screencast-O-Matic	31.8%
ScreenHunter	1.5%
Snip & Sketch	30.3%

Figure 7. Spring 2020 Capturing of Screenshots

A similar question was posed for the fall semester. "Which tools will you be using in Fall 2020 to assist in your capturing of screenshots (check all that apply)?" Both "other" and Screencast-O-Matic had a predicted usage of 43.2% while Snip & Sketch had the lowest predicted usage of 13.5%. Screenhunter use was abandoned. (See Figure 8.)
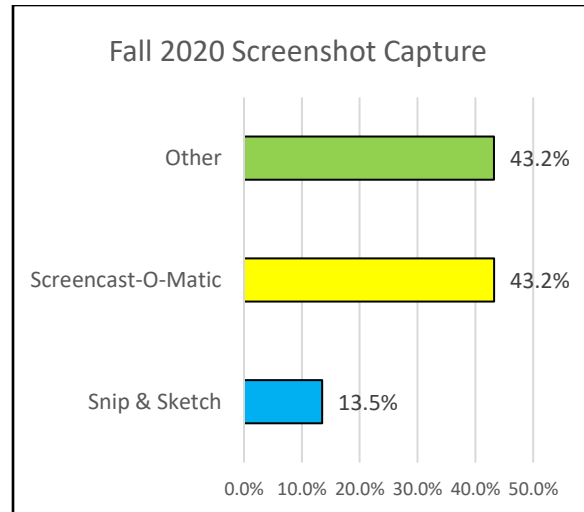
Fall 2020 Screenshot Capture

Other	43.2%
Screencast-O-Matic	43.2%
Snip & Sketch	13.5%

Figure 8. Fall 2020 Capturing of Screenshots

The authors were not surprised by the popularity of Zoom and Screencast-O-Matic as tools of choice by faculty. During the summer of 2020, university administration hosted a three-week professional development course on using the teaching method of Hyflex for fall classes. Both Zoom and Screencast-O-Matic were presented in multiple sessions.

Overall, faculty used a variety of technology, with Zoom being the most frequent choice for delivery and recording of lectures, both in spring 2020 and fall 2020. Screencast-O-Matic and built-in screen capturing/screenshots in the operating systems of Windows and Mac OS were the most predominant tools identified for screen captures.

CONCLUSIONS AND IMPLICATIONS

While distance learning has changed drastically since the early form described by Baum and McPherson (2019), research over the past two decades focused on modern online learning reports challenges in course design, content delivery, motivation of students, and assessment of student learning. Challenges routinely exist for both faculty

and students, as not all students are equipped to complete online courses successfully. The other reality is that not all faculty want to teach online courses, nor had all faculty done so prior to spring 2020. The Covid-19 pandemic forced thousands of institutions to very rapidly move their entire course offerings to a virtual environment while spring semester students were sent home to complete the work of the term virtually.

The current study reports the findings from a faculty survey at a mid-sized public institution in the south. Of the faculty responding, 27.5% had not previously taught online, an another 10.9% of respondents had only taught online using an asynchronous structure. Findings show that faculty overall have gained confidence in their ability to deliver instruction between the spring 2020 online conversion and the beginning of fall term 2020. When asked to consider instructional components including communicating with students, delivering content, engaging students, and assessing student learning, faculty were most confident in their ability to communicate with students, but least confident in their ability to engage students. Engaging students was also the bigger challenge in directly working with students, in line with findings reported by Nelson (2020). Faculty reported an average of six to nine extra hours a week necessary to handle their virtual semester, and the time commitment was the biggest overall challenge of all those presented in the survey. Faculty stress level averaged 3.78 on a five-point scale. These results are in line with those reported by Terenko and Ogienko (2020) and the Chronicle of Higher Education (Nelson, 2020).

Female faculty responses were statistically higher than males regarding extra time per week and the challenge level of that extra time, supporting research reported by TopHat (2020). Statistically, Education and Behavioral Science faculty were more confident than Nursing and Culinary faculty in delivering content. Those same Educational and Behavioral Science faculty were also statistically more confident in their ability to communicate with students than faculty in Liberal Arts and more confident in their ability to engage students than Nursing faculty and Science and Technology faculty. However, the current study revealed no significant differences in survey items when analyzed by years of teaching experience.

Faculty reported Zoom as the predominant tool for delivering online synchronous classes, as well as for recording lectures for later posting online. Screencast-O-Matic and built-in screen capturing/screenshots in the operating systems of Windows and Mac OS were the most predominant tools identified for screen captures. Very little switching of technology was found in the fall 2020 technology the faculty reported they would use.

The researchers plan to share findings with academic administrators at their institution. Findings from studies discussed in the literature review show the same types of faculty challenges at other schools when delivering instruction online. While the University made numerous efforts in the spring to rapidly add software capabilities, address additional equipment needed, and provide some virtual training both in the spring and over the summer, the findings from this study may help guide decisions on additional training and other types of support the university can provide to faculty in the future. Ultimately, the goal is more engaged students, more successful delivery of instruction, and less stress for faculty.

Adding these survey findings to the body of literature about online learning provides additional support of the challenges that faculty continue to face when presenting curricula in a 100% virtual environment.

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Table 1. Mean and standard deviation of dependent variables

Question	N	Mean	Std. Dev.
1. How confident were you in your ability to deliver your classes in an online setting when we left campus on March 16, 2020?	128	3.44	1.155
2. How confident are you in your ability to deliver your classes in an online setting for Fall 2020?	130	4.03	0.835
3. What was your confidence level during the second half of the Spring 2020 semester when dealing with communicating with students?	118	4.05	0.950
4. What was your confidence level during the second half of the Spring 2020 semester when dealing with engaging the students?	118	3.33	1.046
5. What was your confidence level during the second half of the Spring 2020 semester when dealing with delivering the content?	118	3.79	0.994
6. What was your confidence level during the second half of the Spring 2020 semester when dealing with assessing material presented?	118	3.76	0.976
7. After we left campus on March 16, 2020, how much extra time did you spend each week working with your classes?	117	3.32	1.236
8. What was your overall stress level for the Spring 2020 semester?	118	3.78	1.055
9. Using technology was the most challenging aspect of the Spring 2020 semester.	118	2.75	1.149
10. Communicating with students was the most challenging aspect of the Spring 2020 semester.	118	2.81	1.054
11. Engaging students was the most challenging aspect of the Spring 2020 semester.	118	3.49	1.107
12. Keeping students on task was the most challenging aspect of the Spring 2020 semester.	117	3.43	1.085
13. The time commitment needed was the most challenging aspect of the Spring 2020 semester.	117	3.68	1.143

Table 2. Independent Samples *t*-test

	Males		Females		
	M	SD	M	SD	*t*-test
What was your overall stress level for the Spring 2020 semester?	3.46	1.070	3.91	1.021	-2.198
The time commitment needed was the most challenging aspect of the Spring 2020 semester.	3.27	1.146	3.85	1.099	-2.604

Table 3. Significant Analysis of Variance (ANOVA)

What was your confidence level during the second half of the Spring 2020 semester when dealing with communicating with students?

Source	*df*	*SS*	*MS*	*F*	*p*
Between groups	4	10.39	2.587	3.054	0.020
Within groups	11	94.40	0.850		
Total	115	104.78			

What was your confidence level during the second half of the Spring 2020 semester when dealing with engaging the students?

Source	*df*	*SS*	*MS*	*F*	*p*
Between groups	4	11.21	2.802	2.728	0.033
Within groups	11	113.99	1.027		
Total	115	125.20			

What was your confidence level during the second half of the Spring 2020 semester when dealing with delivering the content?

Source	*df*	*SS*	*MS*	*F*	*p*
Between groups	4	9.39	2.348	2.054	0.018
Within groups	11	126.91	1.143		
Total	115	136.30			

THE IMPACT OF DIGITAL HOARDING

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Alex Martin; Eastern Kentucky University

ABSTRACT

Digital hoarding occurs when massive amounts of unnecessary data are stored and never deleted. Digital hoarding can cause various issues, including security risks, additional costs, and increased anxiety. Some possible solutions to digital hoarding issues can include creating a schedule to routinely delete unnecessary data, to better organize large clusters of data, and to possibly limit the amount of available storage to enforce deletion of invaluable data. Additionally, organizations can implement certain data retention policies or training programs to better equip employees with knowledge about digital hoarding. Organized file structures can be created to help keep better track of large quantities of data, and disposal of unwanted data can be achieved by scheduling routine data checks.

INTRODUCTION

Digital hoarding is defined as the "excessive acquisition and reluctance to delete electronic material no longer valuable to the user" ("Digital hoarding," 2019). Electronic media can be in the form of pictures, text messages, emails, Word documents, Excel spreadsheets, etc. Many people have too much of some form of data, and some people have far more than others.

While digital hoarding can cause many issues, some solutions are available that can counteract those issues. Having the ability to limit storage capacity instead of acquiring more storage can help control how much data can be stored. Organizing stored-up data can help reduce anxiety and possibly reduce time costs when looking for a certain document in a clutter of files. Creating a schedule to routinely clean up data can also help reduce unwanted data and even help organize data over time.

Organizations can suffer greatly from having too much data, but they can use preventive measures to help combat digital hoarding practices. Training programs can include explanations and examples of digital hoarding and how employees should properly store data. Data retention policies can also help prevent damage caused by digital hoarding.

Digital hoarding exists because of the struggle of handling massive amounts of data and/or because people want to keep everything. Whatever the reasons, hoarding large quantities of data can be harmful not only to oneself, but also to someone else without even realizing it.

STATEMENT OF THE PROBLEM

The purpose of this study was to identify some of the issues, solutions, and preventive practices of digital hoarding. The paper answers the following research questions:

1. What issues arise from digital hoarding?
2. How can issues caused by digital hoarding be resolved?
3. What can organizations do to prevent digital hoarding practices?

METHODS AND PROCEDURES

The data for this study were collected by e-mailing surveys to employees in the Information Technology Department at a local university. Twenty-three (n=23) respondents voluntarily participated in the study. The responses were then coded and themed to determine similarities and differences in responses.

A review of the literature noted common trends about digital hoarding, which were then compared with the primary research results.

DATA FINDINGS AND ANALYSIS

The data findings and analysis section has been grouped into the following three categories: (a) issues caused from digital hoarding, (b) solutions to digital hoarding, and (c) prevention methods for digital hoarding.

Issues Caused from Digital Hoarding

Digital hoarding can have many disadvantages, as shown in Figure 1. Hoarding more data means having less storage that might be needed in the future. Security becomes a risk when servers or computers perform slowly because of too much data storage. Digital hoarding can also cause anxiety when users have to deal with so much data. Additionally, more data being hoarded can lead to more costs in different areas.
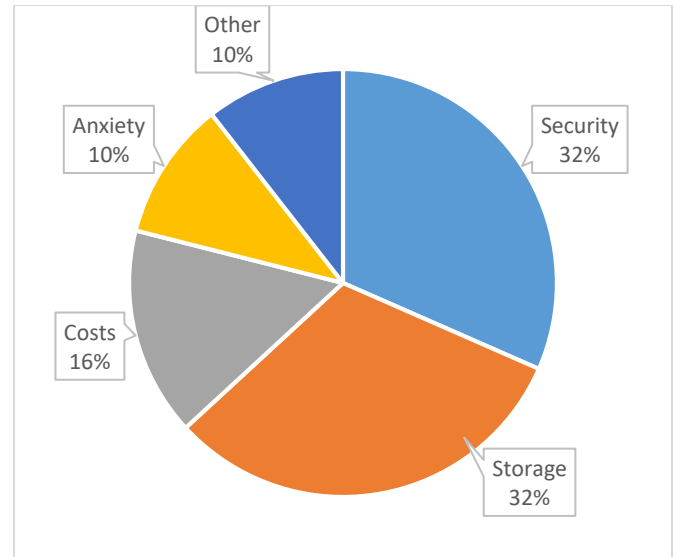

Figure 1. Issues Caused from Digital Hoarding

Thirty-two percent (32%) of survey respondents stated that storage is an issue caused from digital hoarding. The more data that are stored, the less storage will be available in the future. Storage could mean personal storage or shared storage within an organization. For example, if an employee in an organization or a family member is using most of a shared storage space to hoard pictures or files, then that habit can cause tension and/or conflict between co-workers or family (Beck, 2012). Even though people in today's digital age can gain access to multiple storage spaces, using a lot of storage for hoarding invaluable data can still cause issues in different areas. One of these areas includes the security of a server or computer where the data can be stored.

Thirty-two percent (32%) of the respondents to the study's survey said that another important issue caused from digital hoarding is security. Security refers to the safety of data in a server or computer. Servers and computers base their security on how fast the machines are, and having more data stored means slower speeds; and therefore, a greater risk for hackers to breach the

machines and steal data. Security is a major issue for organizations since typically they store a lot more sensitive and confidential information than individuals do (e.g., universities store thousands of people's financial information for payroll). The risk of losing security from hoarding more data can lead to the issue of spending costs for more storage or spending costs for faster servers or computers.

Sixteen percent (16%) of the survey respondents cited that digital hoarding could cause issues regarding costs. Costs can refer to buying more storage or buying faster servers or computers to keep up with the amount of data being stored. Storage and speed costs can add up quickly over time. Emotional, social, and/or psychological costs pertaining to the health of the person who is digital hoarding, or their family, can also be considered a cost (Neave et al., 2017; Thorpe et al., 2019).

Finally, 10 percent (10%) of the respondents stated that anxiety is an important issue from digital hoarding. Anxiety might be caused from trying to deal with too much data and by not finding what is needed at the time. Also, anxiety can be caused from being emotionally attached to data that are being hoarded. Schiele and Ucok (2013) did a study on people's pinning habits on Pinterest, and found that people become so attached to their data, that it becomes just as hard to dispose of images as it would be to dispose of a physical object because of how valuable those images have become. Anxiety caused from digital hoarding is summed up nicely by van Bennekom and others stating that "digital hoarding is the accumulation of digital files to the point of loss of perspective, which eventually results in stress and disorganization" (2015, p. 1).

Solutions to Digital Hoarding

Many solutions can be implemented to combat digital hoarding, as shown in Figure 2. Scheduling a routine "checkup" of stored data and cleaning out unwanted data are consistent methods. Limiting storage space is an effective way to ensure smaller amounts of digital hoarding. In addition, organizing hoarded data can help resolve anxiety and cost issues.

Forty-one percent (41%) of those surveyed suggested creating a schedule to resolve digital hoarding issues. Scheduling calendar reminders every two weeks to clean up data can help reduce the amount of stored data. Regularly checking data and determining what data are not necessary to keep anymore can help reduce digital hoarding little by little over time. If a schedule is not created on a regular basis, then data will be forgotten and will cause more issues to appear, such as less available storage.
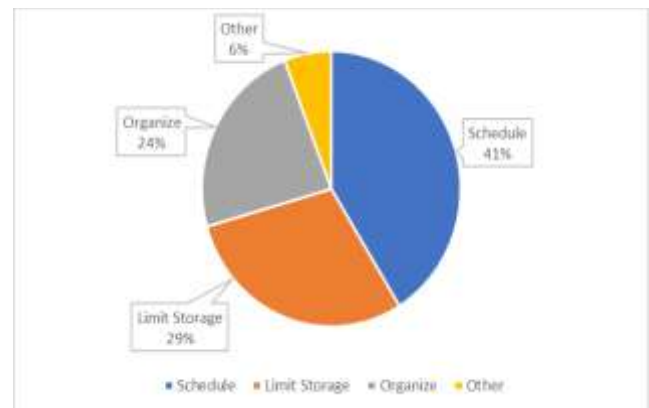

Figure 2. Solutions to Digital Hoarding

Twenty-nine percent (29%) of the respondents mentioned that limiting the amount of available storage is a good solution to digital hoarding. Basically, not buying or not having access to additional storage can help force a person to clean up data to free more storage (Vitale et al., 2018). Castelluccio mentioned how old,

long rolls of film "would only allow you 36 chances (exposures) for a great photo, unlike conventional digital cameras (now mostly smartphones)" (2014, p. 60). Setting a limit on storage helps to moderate how much data need to be kept and how much data need to be deleted, as well as what data are most important. Organizing data during the process of cleaning up data to free more space is also a good solution to digital hoarding.

Finally, twenty-four percent (24%) of the survey respondents said that organizations can help resolve digital hoarding issues. Organizing data cannot only help the user find data easier, but also can also help reduce anxiety associated with finding data and associated mental costs. When it comes to organizing data, the more details the better. Vague folder or file names (e.g., "Spring 2021" or "Brother's Wedding") will not be as effective as more detailed names to help distinguish different data (Gulotta et al., 2013). Little attention to detail in storing and organizing data can cause the hoarding of "dark data," which refers to data not carefully indexed and stored, so it becomes nearly invisible to potential users and therefore is more likely to remain underutilized and eventually lost (Douglass et al., 2014; Heidorn, 2008; Oravec, 2017). However, some organizational methods may not be best for certain people. For example, in the study Whittaker and Sidner (1996) did about email overload, "automatic filing" emails from the inbox into different folders was not a method that all participants agreed with since some of the participant in the study preferred to see an email in their inbox before it was filed away and possibly forgotten about. Again, organizing data can be applied to both personal and organizational digital hoarding.

Prevention Methods for Digital Hoarding

Organizations can use multiple methods to help prevent digital hoarding practices, as shown in Figure 3. Policies should be put into place to reduce digital hoarding from occurring in the first place. Organizations can create training for employees on methods to avoid hoarding data in the workplace.

Twenty-nine percent (29%) of the respondents suggested implementing certain policies to help prevent digital hoarding practices. The policy mentioned the most in the survey's responses was a data retention policy. A data retention policy is when certain data is deleted after so many days (e.g., all emails in the deleted folder are erased every 60 days). Data retention policies are an easy way to clean up data automatically and prevent data hoarding situations from happening too often. Not only can policies like data retention help clear unwanted data, but policies can also help shared storage become more accessible and sharable throughout an organization (Gormley & Gormley, 2012). Policies created for the sole purpose of preventing digital hoarding can be explained in some form of training given to employees of an organization.
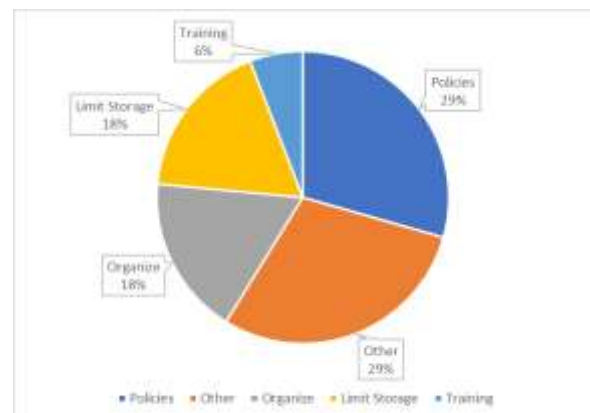

Figure 3. Methods to Prevent Digital Hoarding

Additionally, six percent (6%) of the survey respondents stated that some form of training could help reduce or prevent digital hoarding practices. Training could include how to manage digital life or could include what data carries more value to the organization. Cushing (2013) explained how certain "digital possessions" can acquire unnecessary value depending on the person's feelings or emotions towards the certain data. Digital hoarding prevention training can address how not to get caught up in becoming attached to unnecessary data. Chen stated "the call for 'early intervention,' the practice of educating the digital public about archives-friendly organizational practices while its members are still creating and managing their own digital records, has emerged as an urgent chorus in the archival literature" (2014, p. 128). Being able to alert people early about digital hoarding can help prevent the issues caused by digital hoarding.

SUMMARY

Overall, digital hoarding might not really be noticed until enough attention is put on it. Storing too much data can lead to less available storage space. If less storage is available, then the popular option is to buy more storage, which can be expensive over time and cause more issues. If buying more storage is not an option and less and less storage is becoming available, then the greatest risks become hackers and slower machines having to carry the excessive amounts of data. Moreover, being more at risk to hackers starts to cause more anxiety along with the anxiety of trying to find certain files in the cluster of data that becomes overwhelming.

Scheduling a routine "data cleaning" can reduce data slowly but surely. Organizing all or some sections of data can help reduce the anxiety of trying to find certain data and save time finding data as well. Also, attempting to limit the storage that is available can enforce the need to delete unwanted data in response to needing more storage from what is available.

Finally, organizations can be a forefront in attempting to prevent further damages caused from digital hoarding. Enacting data retention policies can ensure that unwanted data will be wiped after a certain period. The issues and solutions involved with digital hoarding can be explained in a training program that can help prevent digital hoarding practices.

CONCLUSIONS

The following conclusions are based upon the data findings and analysis of digital hoarding:

1. Storage, security, costs, and anxiety are some of the issues caused from digital hoarding. Having less available storage can lead to more costs or less security, and less storage can lead to more anxiety when trying to find certain files through a massive amount of stored data.
2. A retention schedule or routine to regularly clean up data and organize all the stored data can help resolve issues caused from digital hoarding. Plus, limiting the amount of available storage that can be used is a way to reduce digital hoarding problems.
3. Organizations can implement certain policies, such as data retention, to prevent digital hoarding practices from starting within the organization. Training employees on digital hoarding and the repercussions it can have

is also a way to prevent digital hoarding.

RECOMMENDATIONS

Based upon the results of the study, the following recommendations are made:
1. The user should create an organized file structure to better store whatever data is deemed important. The more detailed the information, the more organized the data will be.
2. The user should have a routine or scheduled calendar reminder to look over data files that are unnecessary and delete them. Cleaning up data on a regular basis will help further damage caused by digital hoarding.
3. Organizations should have a training program that will inform employees about digital hoarding and its consequences. The more that people are aware of digital hoarding, the better off the organization will be.

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EXAMINING BUSINESS MATH COURSES' EFFECT ON UNDERGRADUATE BUSINESS STUDENTS' MATH ANXIETY AND SELF-EFFICACY

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PROBLEM AND OBJECTIVES

Math anxiety is one of the major problems in many American college students (Young, Wu, & Menon, 2012). Prior studies have documented that students often deal with high levels of anxiety when taking mathematics courses (Kazelskis, 1998); however, no study to date has examined business major students who complete pre-requisite math courses, prior to taking business statistics courses. Colleges in the United States typically require business students to take at least one year of mathematical pre-requisite courses, which includes Business Math I and II, prior to taking business statistics. A recurrent problem has been that students report suffering from high levels of anxiety, and this places them at risk for performing poorly in their classes and their college career (Ashcraft & Kirk, 2001). However, in order to cope with anxiety, math self-efficacy, or the degree of confidence in solving mathematics problems can help students cope with this anxiety in order to perform better in their math courses (Lee, 2009; Zeldin, Britner, & Pajares, 2008). Thus, the first objective of this study was to examine the differences of students' math anxiety and math self-efficacy when completing business mathematics courses using a pre-test/post-test approach. The second objective was to examine the correlations between students perceptions of math anxiety and math self-efficacy, and the last objective was to examine the differences in math anxiety and math self-efficacy based on gender, ethnicity, and expected course grade.

METHODS

After removing outliers and participants with missing values, a total of 59 students enrolled in Business Math 1324 and Business Math 1325 participated in a pre-test/post-test questionnaire in the beginning and toward the end of the semester. There were 19 students from Math 1324 and 40 students from Math 1325. The sample included 40 males and 19 females. The age range was between 18 to 27 years of age. The expected course grade included 26 with an A, 24 with a B, and 4 with a C. In regards to major, there were 10.2% in accounting, 16.9% in finance, 8.5% in computer information systems, 11.9% management, 8.5% marketing, 20.3% general business, and 23.7% other.

RESULTS

The first finding revealed a positive correlation between the pre-test and post-test of math self-efficacy ($r = .31$, $p < .05$). The second pre-test finding revealed a strong and inverse correlation between math self-efficacy and math anxiety, ($r = -.73$, $p < .01$). Additionally, when examining the post-test results, there was a strong and inverse correlation between math self-efficacy and math anxiety ($r = -.77$, $p < .01$). Additional findings revealed paired t-test differences between pre and post math anxiety levels ($t = 3.44$, $p < .001$). However, there were no differences between pre and post math self-efficacy levels ($t = -.02$, $p = .98$). Also, there was no support of difference between Business Math 1324 and Business Math 1325 based on math anxiety nor math self-

efficacy. There was also no support for gender or ethnic differences on math anxiety nor math-self efficacy. However, a one-way ANOVA revealed that the pre/post-test difference of math self-efficacy varied based on the expected course grade, $F(3,44)$, 10.52, $p < .001$. Those with high grade expectations also had higher math self-efficacy levels.

IMPLICATIONS

The first implication is that the results showed that even though students complete pre-requisite courses, it does not improve their math self-efficacy nor their math anxiety. This suggests that students that enroll in business statistics courses may still feel unprepared to complete mathematical problems and they may also feel anxious about solving mathematics problems. As such, business analytics and statistics educators may need to be aware of the additional support needed by these students, without making the assumption that students are prepared in their courses to take on advanced statistical problems. The second implication is that demographic characteristics did not differ based on either math anxiety or math self-efficacy, and as such, educators need to understand that these issues are faced across students. Lastly, students who hold higher grade expectations may feel more confident about their ability to solve mathematical problems in comparison to those with lower course grade expectations.

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AN EXAMINATION OF UNDERGRADUATE BUSINESS STUDENTS' SELF-EFFICACY WITH EXCEL SKILLS

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INTRODUCTION

Microsoft Office: Excel is an important skill to learn especially for College of Business students. The Department of Computer Information and Decision Management at a College of Business in Texas currently offers two courses: CIDM 3330 (Management Information Systems) and CIDM 2342 (Statistics for Business and Economics), to enable students to learn about Microsoft Office: Excel. As a part of both courses' learning outcomes, students learn how to use Excel to conduct business analytics computations and to develop charts and graphs. However, without examining students' self-efficacy, it can be challenging to identify the different confidence levels students have when using Excel. Bandura (1986) defined self-efficacy as "people's judgments of their capabilities to organize and execute courses of action required attaining designated types of performances" (p. 391). Self-efficacy "is concerned with people's beliefs in their capabilities to produce given attainments" (Bandura, 2006, p. 307). Using Bandura's self-efficacy theory (Bandura, 1997) and the literature from learning styles theory will provide educators with the insights necessary to teach Excel skills more effectively to undergraduate business students. The main purpose of this pilot study is to understand how self-efficacy affects students' learning when using Microsoft Office: Excel.

More specifically, this study examines sex differences in self-perceived Excel skills, the differences in class modality (i.e., online vs. F2F) in students' self-perceived Excel skills, and the positive relationship between Excel skill rate, Excel job-related skills, and Excel use self-efficacy. This research is important because the findings from this study will help us understand and assess how these technical skills can be best integrated into the curriculum, improve our efforts as instructors, and the experiences of future students who will be enrolled in these classes in order to satisfy the course requirements successfully.

METHOD AND PARTICIPANTS

Participants included students from business courses such as Management of Information Systems ($N = 62$) and Statistics for Business and Economics ($N = 49$) courses. A total of 113 students were enrolled in the online sections of both courses. There were 68 females and 45 males. Participants' ages ranged between 19 and 57 ($M = 25.94$, $SD = 7.39$). The study included 21 sophomores, 67 juniors, and 25 seniors. In regards to major, the study included 14.2% pre-business, 10.6% marketing, 25.7% management, 18.6% finance, 11.5% accounting, 8.8% CIS, 0.9% small business/enterprise, and international business, 7.1% economics, and 1.8% other. The average GPA was 3.19. Participants completed two online questionnaires using Google Docs. The first questionnaire was the learning style survey which asked students about their preference for learning. The second questionnaire focused on students' Excel skills and their perceived self-efficacy in using Excel to create charts, calculate values, and perform functions.

Both of the questionnaires were administered prior to Excel training.

ANALYSIS & FINDINGS

Analyses were conducted using SPSS 22.0. Independent sample t-tests were conducted to examine gender differences and Excel skills. Findings showed that male and female students differed in their perceived skill rate in using Excel, in that males rated themselves higher than females did. However, male and female students did not differ in their Excel skill training or job-related Excel skills. When examining online and face-to-face differences among courses using independent sample t-tests, students in online courses indicated higher degrees of Excel training, skill rate, and job-related skills than did students in face-to-face courses. Multiple regression analyses were also conducted, and it was found that Excel skill rate positively relates to Excel job-related skills, students' self-efficacy in creating charts such as pie charts, and conducing calculations with Excel such as sum and standard deviation, even after controlling for online modality, gender, and age.

IMPLICATIONS & CONCLUSION

Implications for educators may be derived from this pilot study. First, males rated their Excel skill rate to a higher extent than females did. Because females rated their Excel risk rate to be lower than the males, educators may need to ensure females in the course are prepared by providing additional Excel learning resources. Second, educators who teach Excel functions in both their face-to-face and online courses need to be aware about the different characteristics of their students based on Excel training, skill rate, and job-related skills. For instance, some students that enroll in online courses might be non-traditional working professionals, and might be more willing to learn the different functions of Excel. Additionally, online students might receive the benefit of learning Excel through videos that they may replay as needed; whereas, face-to-face students might only benefit from "hands-on" exercises and "live" demonstrations of Excel functions. Third, students' perceived Excel skill rate is positively related to students' self-efficacy in using Excel features such as graphs and calculations. This finding has theoretical implications for educators because educators need to continue to develop the skillset of their students through their online and face-to-face instruction methods, to ensure that they feel confident in their ability to create charts and conduct calculations using Excel.

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THE SHIFT IN COMPANY'S RESOURCES IN ERA OF COVID-19

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ABSTRACT

The Covid-19 pandemic has disrupted daily businesses' operations and forced many companies to abruptly transition their workforce on line. The massive shift to remote workforce has led to the shift of resources and the adjustment of technology decisions, real estate holdings, and human resources combination. Companies are now analyzing the efficacy of remote work in many sectors of the economy. The current paper examines the trends the Pandemic has created and how businesses have swiftly adapted. First, companies increased their technology usage for remote workforces and managing customers in a remote setting. Second, they reduced their real estate assets in the forms of office space to the benefit of delivery space. Third, companies have changed the composition of their human resources, hiring more information technology and automation professionals to meet the demand of the market.

Keywords: Covid-19, Pandemic, Business Performance, Company Resources, Information Technology, Information Systems, Teleworking, Remote working

INTRODUCTION

The tendency towards remote work has grown in the business world for many years. Gallup's Annual Work and Education poll reported that in 1995, only 9 percent of US teleworkers worked from home using a computer, as opposed to 37 percent in 2015 (Jones, 2015). As the pandemic restricted employees' access to their work-place and the technology has advanced, remote working has been established as a viable way to conduct business. Telework may in some cases be more productive than working in the office. Gorlick (2020) reports that an experiment exposed that employees working from home during a nine-month period increased their performance by 13 percent and decreased employees' quit rates by 50 percent. However, working from home may not ideal for every company. For instance, after experiencing 20 consecutive quarters of falling revenue, IBM, wanted to improve collaboration and accelerate the pace of work; therefore, thousands of remote workers in the U.S. were given the option to either relocate to a regional office or leave the company (Simons, 2017). Despite the conflicting opinions about working from home, companies have been forced to embrace the practice and operate remotely due to the Covid-19 pandemic.

As the pandemic led to widespread remote working, between October 2019 and August 2020, the number of US workers who reported ever telecommuting jumped from 42% to 49%; and the number of remote workdays more than doubled from 5.8 days to 11.9 days per month (Jones, 2020). There seems to be a shift in employees' preferences and a need to reallocated companies' resources as some employees want to keep working from home after the pandemic is over. This option is getting some merits as company leaders are recognizing its potential benefits and supporting that some form of remote working should be part of the long-term

workplace strategies (Bacevice, Mack, Tehrani, & Triebner, 2020). To remain competitive and survive the pandemic, companies are readjusting their resource strategies. The current paper analyzes the effect of the pandemic on companies' resources allocations in key areas such as information technology, Real Estate, and Human Resources. The analysis focused on two companies as their reaction to the pandemic have been very different. Amazon shipping, which prioritized profit over workers well-being and Microsoft headquarters which quickly enacted changes to its workplace to ensure employees' safety.

OVERVIEW OF THE PANDEMIC

On March 13, 2020, the United States declared the Covid-19 pandemic a national emergency (Taylor, 2020). Companies like Google, following the recommendation of public health officials, Google suggested in early March 2020, that their Seattle employees work from home (Mukherjee & Bera, 2020). Similarly, Microsoft, based in Washington State's King County, recommended in early March 2020 that its remote employees work from home (Stewart, 2020). Facebook also shut down its Seattle office in March, after a contractor tested positive for Covid-19 (Mukherjee & Bera, 2020). Since then, the three companies have given their employees the option to work from home until mid-2021. These Seattle-area companies' quick decisions to institutionalize remote working for their employees, set a tone for the nation, as other companies across the US encouraged working from home.

As time progressed, companies and businesses began to reopen, the effects of the pandemic on different industries is still being assessed. McKinsey Global Survey reports that in a few months, the COVID-19 crisis had brought about years of changes in all sectors of the economy (Seiler, LaBerge, O'Toole, Schneider, & Smaje, 2020). For instance, in the financial institutions sectors, where changes usually occur very slowly, the pandemic had forced customers to master the technology for digital banking speedily; therefore, reducing the time to shift to remote banking to a few weeks (Gamble, 2020). In any cases, the pandemic has created a shift in the work-place, has caused an adjustment in companies' real estate assets, and has changed the employees needed skill sets as it shifted the technology requirements.

Changes in Companies Real Estate assets

The pandemic created real estate shift in different industries; from the financial services to the retail industries. The financial services industry which had already initiated the change when banks and credit unions invested in Interactive Teller Machines (ITMs) and digital technology including online banking, chatbots, predictive technology. The adoption of technology has been reinforced by the move to online banking during the pandemic as the bank branches were temporary closed. The founder and CEO of Black Swan Branch Recovery, Brian Nesgoda, predicted that the pandemic will lead to the creation of fewer, smaller, more technology-enabled bank branches (Gamble, 2020). In the retail industry, there has been an increase in online food ordering and a proliferation of virtual kitchens or ghost kitchens replacing the traditional dining facilities. Virtual kitchens on the one hand, cut operating costs, by having fewer employees and less overhead as many restaurants operate from the same ghost kitchen, either working from the same facility or breaking the space into separate areas (Morgan, 2020). Retail beauty stores, on the other hand, use omni distribution-channels to reach online customers, letting

them choose from a variety of delivery methods including in store pick-up, contactless drive-thru service, and shipping. Therefore, priority is placed on available parking space and configurations that make pick-up easier, when opening new store (Cosgrove, 2020). The pandemic has accelerated trends in categorizing space-as-a-service (Cirillo, 2020).

When employees work from home, companies devote less space for offices, which can translate into financial savings, as companies can reduce long-term commercial real estate costs (Bacevice, Mack, Tehrani, & Triebner, 2020). The cost saving can potentially be substantial as real estate is usually the largest cost category outside of compensation for many organizations especially when it includes rent, capital costs, facilities operations, maintenance, and management (Boland, De Smet, Palter, & Sanghvi, 2020). As companies integrate remote work to their strategies to survive the pandemic, they are electing to minimize their office space and investing in information technology to support their business and customers who have adapted to remote services. McKinsey research predict that the number of people working from home is expected to rise from 20% of work time to 27% due to the pandemic (Boland, De Smet, Palter, & Sanghvi, 2020). Prediction is also that post-pandemic, about 82% of employees would want to keep the option of working from home (Bacevice, Mack, Tehrani, & Triebner, 2020). An organization could eliminate its real estate costs by going completely virtual (Boland, De Smet, Palter, & Sanghvi, 2020). Using advanced technology, businesses adjusted remain competitive in the face of the Covid-19 pandemic. These adjustments are geared toward the reduction of office space which are achieved by the expansion of remote work from home, the increase of co-working spaces, and the shift from campus structures

to satellite offices. However, although employees can work remotely, not everyone wants or can work effectively in a home setting (Conerly, 2020); either because they lack the space, or the technology required to fully be functional at home. Which gave room to the creation of remote alternative to the office namely co-working space.

The notion of co-working spaces began prior to the pandemic, as individuals and businesses needed to rent shared spaces by the hour. Prediction was, in May 2019, that the use of co-working spaces would reach around 2.2 million, however, the Covid-19 pandemic has slowed the demand of co-working as sharing desk every day with different people, became less appealing (Roepe, 2020). However, it is anticipated that co-working will surge after the pandemic as businesses will need to accommodate part-time remote-working. Co-working would be a viable alternative as big organizations attempt to safely provide space for their employees to work and meet customers. As companies increase the number of remote workdays per week, keeping designated conference area will seem expensive and companies could benefit from co-working location (Conerly, 2020). Some companies are also exploring a variant requiring a shift from large campuses to smaller satellite offices or hubs often seen in technology companies (Hartmans, 2020). There, seems to be a move toward decentralization or a streamlining of real estate as companies shift from assigned desks to free addresses.

In the short-term working from home may result into real estate property losing their values around the world as it has already been reported that the pandemic has caused a 10% decrease in office real estate values in central London (Sidders, 2020); and a 25% down turn in the leasing volume in Manhattan (Berry, 2020). In the long run,

the economy will adjust as companies shift their resources from one sector to another as companies invest in information technology tools to keep their business running efficiently during the current pandemic.

The Increase in IT Investment

The COVID-19 Pandemic caused individual and companies to change the way they conduct business while remaining safe. Companies leaders have increased the use of technology to reach their customers confined at home. They restructured their business strategies to focus on customers' safety and employees' security. With the many lockdowns due to the pandemic, several retail businesses made their position as middleman very lucrative. They bought products in bulk creating a shortage, then resale them at retail with a higher than usual profit (Donthu, 2020). Companies have adjusted their supply chain structure to account for the shortage and hyperinflation (Sheth, 2020). Throughout the United States, customers also engaged in impulse buying as they purchased and hoarded products (Ahmed, Streimikiene, Rolle, Duc 2020). Beside impulse buying, consumers have also embraced digital technology (Sheth, 2020).

As access to business, such as parks and recreation, movies, and entertainment, were temporary denied inaccessible (Sheth, 2020), consumers could feel lonely, which can lead to negative actions, depressions and sensitivity. These negative behaviors will increase the use of social media (Donthu, 2020). The decrease in social interaction during the pandemic has increased technology use as people try to stay safe, observe physical distancing and remain connected. In-home delivery has been the primary method used by consumers to purchase products, including groceries, to avoid personal interactions. This requires

companies to adjust their advertisement strategies based on consumers' behavior (Sheth, 2020). Many Companies have changed their strategies and update their personalization platforms to keep up with the trends of the consumers (Daugherty, Carrel-Billard, & Biltz, 2020). Companies also adjusted their IT cost structures to meet new demands of online services and shift their budgets to include better technology and software tools (Baig, Hall, Jenkins, Lamarre, & McCarthy, 2020). Companies must ensure that they have the proper framework to handle on-line orders and find ways to reach customers by subscribing to the same digital technology and platforms. Businesses analyzed costumers new spending habits and learned where they are spending their money. Companies are adapting and growing (Gutentag, 2020) or risk failing. The total effect of the pandemic is felt differently by small businesses and larger businesses.

To deal with the adversity of the pandemic, small companies are adjusting their product lines, reexamine their strengths and weaknesses and brainstorm innovative ways to gain new customers (Haimerl, 2020); larger companies on the other hand, are shifting to remote-work in effort to cut costs. Companies should build the standard and culture of being flexible to ensure a work-life balance that complies with new government policies. (Sheth, 2020). The new structure includes implementing business analytics and initiatives involving artificial intelligence. One feature of advanced technology most companies need to embrace is digital personalization which is fueled by Artificial Intelligence, robotics, and other technology innovations. The pandemic created challenges that can be addressed by Artificial Intelligence (AI) (Steinmann, Zant, & Sterling, 2020). Many industries have adopted AI as an integral part of their workforces. The report by

McKinsey & Company found that 85% of companies accelerated their digitalization and 67% boosted automation and AI due to the crisis (Gilchri

st, 2020). Innovation helps ensure organizations flexibility and future success. To adjust to the shift in technology, companies must have a strong agile organization of leadership and systems that can continue to change over time (Steinmann, Zant, & Sterling, 2020). As a result, human Resources skills requirements have changed in in many industries.

The Shift in Human Resources Skill Requirements

Businesses are working to keep their employees safe. In offices where employees sat in cubicles, shared desks or documents, there is a shift to a much healthier environment that encourage working in open freestanding architectural structures designed to facilitate distancing and enhanced airflow (King, 2020). Workspaces have shift from being about convenience to being about protection. Therefore, Human resources teams are looking for the best ways to accommodate workers in the pandemic workspace (McMillin, 2020). Contrary to 2015, where most employees who worked primarily from home were at relatively higher wage jobs (Bloom, Liang, Roberts, & Zhichun, 2015), all categories of employees high and low wage working remotely. Employees requiring teamwork are encouraged to collaborate with colleagues living near (Bacevice, Mack, Tehrani, & Triebner, 2020) or through video

conferencing. In addition, human resources skills have shifted from person-to-person interactions to the use of technology to support different functions in companies. HR departments are improving company's workflow using Application Programming Interfaces to navigate from one software another (Ferreira, 2020).

To Facilitate the transition to the new technology driven environment, Human resource departments are hiring high quality tech professionals to support their workforce in switching to remote working. The departments are also changing job descriptions to ensure the applicants meet the new technology requirement. However, they are concerned with new hiring demands as well as the effort to maintain current employees healthy and productive. The teams can track employee's performance through research, surveys, and data, and implement changes to improve their overall experience in a company. New technology platforms allow employers to identify poorly performing employees and top performers and develop strategies for training and retaining (Ferreira, 2020). Technology and digitalization also help HR professionals meet the needs of the employees in tasks such as daily conference calls, hiring over the phone or through video chat (Gutentag, 2020). Employers are under pressure with keeping up with the changing work environment with the increase of lay-offs or furloughed-workers (Lewis, 2020). The aim for most businesses is to engaged and motivated current employees to adapt to the new normal.
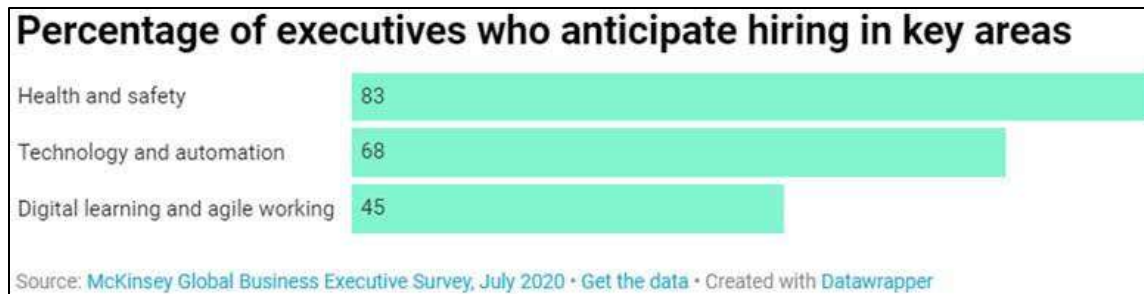
Figure 1. Percentage of executives who anticipate hiring in key areas

With more employees working remotely, companies are assessing their IT infrastructures and reviewing how things have changed. McKinsey & Company studied the areas where executives are hiring in response to the COVID-19 Pandemic; beside health and safety at about 83% hiring rate, technology and automation was another area many executives expressed the need of professionals, at 68% (Gilchrist, 2020). The increase in hiring workers in the technology and automation fields shows that companies are adjusting by strengthening their technology department. A job search firm, Dice, reported that the demand for technology professionals and experts has increased since the beginning of pandemic (Perry, 2020). We will examine two companies with very different methods of handling their workforce during the pandemic.

ANALYSIS OF COMPANIES RESPONSE TO THE COVID-19 PANDEMIC

The two companies selected emphasize the role information systems play on the composition of human resources during the pandemic. We will first examine Amazon's shipping line, which requires workers to be onsite; then we will look at Microsoft headquarter with employees working remotely.

Amazon's Shipping Line

Amazon is one of the largest companies in the world, with a one stop online shop for everything. During the pandemic lockdown, amazon experienced heavy demand in their warehouses, requiring them to hire more workers to supplement their current employees. But employees were reluctant to report to work as they were concerned about their safety at work; especially since there was still a lot of mystery on how the virus spreads and what precautions to take. Workers reported that Amazon failed to notify them on time about infections and to conduct adequate cleaning which caused the virus to spread to 50 out of Amazon's 500 facilities by mid-April 2020 (Matsakis, 2020). Like in most companies, Amazon was not prepared to handle the pandemic and lacked proper safety which at the time outraged many United States senators including Bernie Sanders, Cory Booker, Sherrod Brown. The negative publicity and the complaints of employees lead the company to raise wages, adding in "hazard pay" and making major changes on sites to help protect workers. Some of the changes made by Amazon included distributing face masks to all staff, instituting social-distancing protocols, modifying shift start times, and increasing space between workstations (Matsakis, 2020).

Amazon employees expressed their dilemma between staying with the company or

looking for a new job. But in the middle of the pandemic there were not many options for them because other companies were facing the same problems and worst, Amazon was one of the few businesses that still have work and lots of it. Since Amazon services were in high demand due to the pandemic managers try to keep customer satisfied. As a result, workers sometime felt as if the company's management did not take the virus seriously. Moreover, at home, the workers were considered as high-risk to their own family. An Amazon delivery driver in South Carolina said that he still loves his job, even during the pandemic, but referred to having to go out to work during a pandemic, leaving at home 2 children, a wife and 4 grand-kids as being very scary (Matsakis, 2020). As employees at Amazon have tested positive at some point or had co-workers in their departments test positive for coronavirus. These have been the difficulties with onsite working during the pandemic. Companies want to increase sales and productivity, but they often do it at the risk to health and safety of employees and their close relatives.

Microsoft Headquarters

Microsoft took a different approach during the pandemic. With its headquartered near Seattle Washington and it being an IT business, Microsoft was able to quickly transition many of its employees to remote working from home during the pandemic. The quick move of Microsoft's employees to remove work was primarily due to the headquarters' location; as the state of Washington was affected very early by Covid-19, especially a nursing home facility 10 miles away from the Microsoft campus. When the company's executives were notified that 50 nursing-home residents had contracted the virus, the company acted immediately. Microsoft's chief executive officer (CEO), Satya Nadella, especially

took it personal, because he has a child suffering from cerebral palsy (Weise, 2020). Within a week, the company told tens of thousands of their employees they could start working from home. Microsoft campus went from having about 40,000 people on site every day to about having around 5,000. They advised their branches around the world to follow the local guidelines and health advisers placing them among the first of the major companies to make this transition.

Microsoft's move to remote-work had some benefits as well as its share of problems. On a good note, Microsoft beat Wall Street expectations during the height of the pandemic as it posted revenue of $38 billion in the April-June period, and increase of 13% from the previous year (The Associated Press, 2020). Setting aside the great revenue, Nadella worries about the mental health of his employees as they work at home. He questions how much community and interaction they are missing remote-working and what might be the negative impact on employees' work-life balance (Kolakowski, 2020). As it is to the right of each employee to choose what is best for him, Microsoft plans to extend its work from home efforts even with its concern of decrease in social interaction. Therefore, Microsoft announced in October of 2020 that it is now allowing more employees to work from home permanently as it shifts toward a hybrid workplace (Brown, 2020). Microsoft upper management have understood that the pandemic allows employees manage their life as they see fit and remain highly productive. Flexibility is seen by Microsoft Executives as an asset as they recognize that there is no one-size-fits-all solution given the variety of roles, work requirements and business needs of each employee. Moving to a hybrid workplace is very encouraging since it gives employees some freedom. With all the changes during

the pandemic, employees can enjoy the opportunity to decide whether to remain safe home or come back to the office under COVID-19 guidelines if they need workplace socialization.

Amazon and Microsoft are good examples of companies that strived during the pandemic although their decisions about employees' location for work were completely opposite. Both companies show what happen when companies act fast or take too long to take executive action in a pandemic. Microsoft clearly promote worker safety while Amazon did not take the required precautions and safety measures at first. Like Microsoft, Amazon increased their profits during the pandemic since people ordered online during the lockdown and their profits increased by 40% during the lockdown months compared to the same months in 2019 (Dastin & Rana, 2020). The Executive decisions to respect the lockdown guidelines reveal how companies value their employees' well-being and their safety; emphasizing the role of human resources and information systems as part of companies' emergency response protocol.

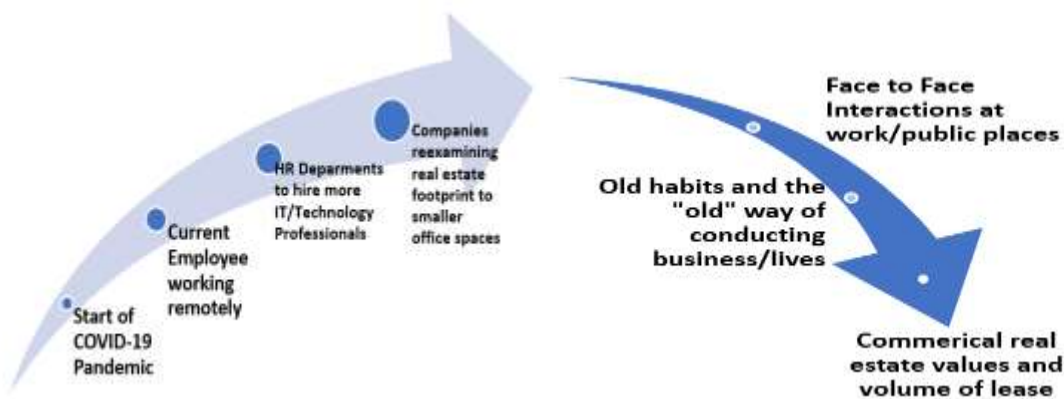### RESEARCH ANALYSIS

Companies are also forced to shift their strategies, especially those that are losing money due to the pandemic. Re-examining real estate footprint can help decrease costs, as many employees are efficiently working from home. New company strategies can include downsizing and redistributing space to satellite offices. Companies' investments should consider remote collaboration tools, mobile cybersecurity tech, accessible human resource tools, and workforce training programs (CBINSIGHTS, 2020). Top executives making the decisions regarding office-space expect a 19% decline in the time spent in the company main office and a 9% decline in the time spent in satellite offices causing companies to spend more resources into technology rather than on offices (Boland, De Smet, Palter, & Aditya, 2020). Since many organizations spent the bulk of their money on office space, real estate budget is usually a large portion of companies costs and it can include rent, capital costs, facilities operations, maintenance, and management. Companies' real estate cost can be reduced by 30 percent if businesses were to rethink how to efficiently use their office space. Business could increase organizational resilience and reduce the level of risk by having employees work home or in different locations" (Boland, De Smet, Palter, & Aditya, 2020).

Figure 2. Shift in Technology, Real Estate, and Human Resources for Companies due to the COVID-19 Pandemic.

Consumer expectations and behaviors are driving the market, and companies must adapt to changing tastes and demands. Consumers are establishing habits based on the new, virtual, way of doing things, and learning new skills. The current research suggests that the new consumer habits and adoption will remain and impact businesses even after the pandemic. Companies must also adjust to consumers' changing tastes and switch to online strategies. Consumers have developed different tastes after spending more time at home, and demand has increased for home improvement, hobbies, cleaning products, and groceries. Consumers are also increasingly turning to online shopping for products and services. These habits may have started as a safety measure against Covid-19, but many consumers have become accustomed to online purchasing habits, and companies had adjusted and kept up with customers' requests using robust online strategies. Consumers increasingly demand accuracy and speed in delivery. As they engage into impulse buying online, they expect immediate gratification from their purchase.

Customers are also learning new skills such as online banking and food and grocery ordering, which are changing the scope of what can be purchase online. These trends created during the pandemic will impact many businesses especially they investment into real estate. Banks are bracing for fewer brick and mortar and encourage online banking. The food service industry may pool costs in the form of ghost kitchens, where multiple restaurants share the same space to cook food and deliver from a central location. The retail industry invests in omni-channel-enabled stores, so customers have multiple ways of receiving products. The trends set in motion by consumer expectations impact small and large businesses differently: small businesses must be creative to get their products to

customers while larger companies have more capital but must navigate tough situations to achieve their goal. Due in part to the increase in online ordering, in 2020, 14,454 retail stores closed, compared with only 9,879 closing in 2019 (Loeb, 2020). Yelp found that in September 60% of stores (97,966) which were temporarily closed earlier in 2020, have permanently shut down (Sundaram, 2020).

Many employees already had the option of working from home, although it is being publicized because of the pandemic. Some companies are resourceful by allowing employees take turn coming to the office for few days at the time. Some employers have considered adding a new shift or spacing shifts to reduce traffic during shift changes. Others are combining telework 3 or 4 days a week with onsite work 1 or 2 days per week (Seyfarth Shaw L.L.P., 2020). If employees can be as efficient at home as they are in the office, many companies will opt for their employees not to come to work 5 days a week post-pandemic. Though more employees will be working from home they will have to balance working and their private life. People may sometimes get depressed and sad from staying home too much. The European Foundation for the Improvement of Living and Working Conditions reported that 41 percent of remote employees experienced higher levels of stress compared with just 25 percent of their counterparts working in the office (Vermes, 2020).

Decision makers are looking for ways to help their employees avoid loneliness or depression associated with working from home. Suggestions include calling and talking to friends, making time to think, and creating a daily schedule for oneself which can all reduce stress of being home (Vermes, 2020). Even during a pandemic companies' executives are looking for ways to engage

their staff, accomplish work, build profits, and work towards the future. The key is for humans to adapt to life during the pandemic and post-pandemic, with technology and resources available. Human resources, real estate, and technology can be interchanged to accommodate the social healthcare crisis. Further emphasizing the importance of having departments, managers, and staff dedicated to data, software and tech development is crucial.

CONCLUSION

In conclusion, the pandemic has expedited some trend's in businesses. Although the long-term impact of Covid-19 on remote work and business remains unclear, the new habits and skills acquired by employees, companies, and customers are here to stay. The pandemic has given companies new lease and push to change their existing spending structure. Companies are making measurable changes by updating their budget to increase technology spending and investing in their future by hiring more information technology and automation professionals. Businesses are reconsidering strategies with no emphasis on the face-to-face, and businesses are scaling back on real estate after seeing first-hand the benefits flexibility of remote work, as employees continue to get work done remotely. Customer-servicing businesses don't want to go back to brick and mortar, as they notice customers adapt to online services. Businesses have also adapted to managing remote work-forces. Human resources departments are becoming more metrics and data-driven and to identify and help struggling employees and improving employees' experience and safety especially in companies that cannot sustain remote working. Businesses' creativity and flexibility during the pandemic put innovative ideas into practice more often than before as companies are forced to

adapt. And the change in technology implemented may be permanent.

Understanding how these new habits change the minds and thoughts of the consumer is vital to the success of a company. Now the 3 major drivers of consumer behavior are: new public policy, technology, and changing demographics. With this new wave of habits, managers must have a flexible mindset to a changing consumer environment, understand how to match the supply and demand, and truly get a grasp on if the consumer go back to the old habits or if the technological way of doing things will become more relevant. These things and more will help a company succeed and companies should understand consumer behavior and their new habits (Sheth, 2020). Further research to this topic could include the long-term effects of the Covid-19 pandemic on Information Technology, Real Estate, and Human Resources. It would be interesting to see which trends and business strategies temporary measures were due to the pandemic, and which ones continue after the pandemic has passed.

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THE EFFECTS OF THE PANDEMIC ON HIGHER EDUCATION RESOURCE ALLOCATION AND STUDENTS' RESPONSE

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ABSTRACT

The uncertainty created by the Covid-19 pandemic has anguished both college students and university administrators around the world. Awaiting college students are not certain when their universities will reopen or how they will pay, given the current financial unpredictability. Many students are opting to defer their enrollment or re-evaluate their first-choice institution. Universities are also under financial pressure, as students' enrollments have dropped, while they are incurring new cost to keep students and employees safe on campus; in addition, to investing in IT solutions for distance education, online program management platforms and other tools that focus on students' online experience and on data collection; as classes are moved online.

Keywords: Covid-19, Pandemic, Higher Educating, Information Technology, Distance Learning, Remote Learning, University digitalization.

INTRODUCTION

Technology is an essential tool for higher education, especially today that to remain competitive, universities have to offer courses online. University's online presence range from offering few hybrid courses, to launching entire online programs, to establishing themselves as complete online universities. Before the pandemic, traditional higher education institutions developed online programs to attract students from broader locations. Since 2020, online learning has become the norm at higher education institutions (DeVaney, Shimshon, Rascoff, & Maggioncalda, 2020). As a result, students and universities administrators are reassessing the need of the traditional immersive college experience. Its impact on students' finances and choice of universities, as well as its effects on university budgets. Universities' digitalization has grown immensely, and digital technology has become an integral part of higher education.

This study analyzes the effects of the pandemic on higher education institutions, especially when it comes to their allocation of resources. The research also examines how students react to the shift in funds. The study also examines the many ways college decisions are affected by the COVID-19 and whether this effect is different depending on the ranking of the school, whether the school is public or private and how far the institution is from the student's hometown.

LITERATURE REVIEW

Since the start of the COVID-19 Pandemic, higher education has been a big concern across the United States. Colleges and universities had to make a rapid transition to remote teaching and learning. Remote learning requires adjustments in time and effort from professors and university administrations to effectively plan teaching in a full online environment. Institutions' main concerns were that moving too quickly to remote learning could negatively affect

the reputation of online education (Kim, 2020). As the pandemic triggered shifts to remote learning, colleges and universities are forced to change their strategy and adjust their day-to-day operations. Schools are now trying to understand how online delivery method of academic education affect the overall college experience. Some questioned if student should not benefit for price the reductions for online instructions.

IMPACTS OF THE PANDEMIC ON STUDENT

The main concern is that when students to campus learning, it will be very difficult to reverting to a higher price as students, parents, and event legislators could question the premium placed on campus experience (Freidman & Hurley, 2020). A preview of campus experience is a deciding factor of college selection and it is accessible using technology. Prospective students can now to take virtual campus tours, connect to current students through social media sites, and have video calls with alumni to have more information about their selected of universities (Shulman, 2020). International students are faced with more challenges than their domestic counterpart. Their biggest dilemma is the fact that they must decide whether to pay for expensive accommodations in the US or stay in their country of origin since classes are online (Beckstein, 2020). The high cost and location presently dictate the choice of colleges.

American Students

Students graduating in 2020 ended their high school years in a very different environment than prior generation due to the Covid-19 pandemic. The effects of Covid-19 on college campuses and students' family

situations, have altered the class of 2020 choices for colleges. High school seniors were questioned by Art & Science Group LLC (2020) in March and April 2020 about how their college decisions were impacted by the pandemic. The survey showed that 65% of students expressed concerns about the ability to attend their first-choice school due to affordability, although they were still planning to enroll in a 4-year program; 17% of students had changed their plans to take a gap year, enroll part time for a semester or two, or attend community college and transfer to the college of their choice later. Korn (2020) also stated that many students who alter their plan because of the pandemic, have in mind to transfer back to their dream schools or apply to other schools. However, research show that many high school graduates who put off college often never go back and only 13% of community college students end-up in a 4-year university (Marcus, 2020).

Students are therefore expression uncertainty about their next steps. Simpson Scarborough (2020) reports that 40% of incoming freshmen say they were likely or highly likely to change their switch the schools they settled for due to the pandemic. Korn (2020) reported that a student, admitted at UC Berkeley decided to cut on expenses by remaining home for the semester the classes are offered online and will move on campus if needed the following year. There seems to be a tendency of students to be opting from out-of-state institutions to in-state public schools closer to home. Figure 1 presents the students first-choice of institutions before and after the pandemic and their change from their first-choice before and after COVID-19. It is very apparent the students are changing their first-choice of university due to cost and location.
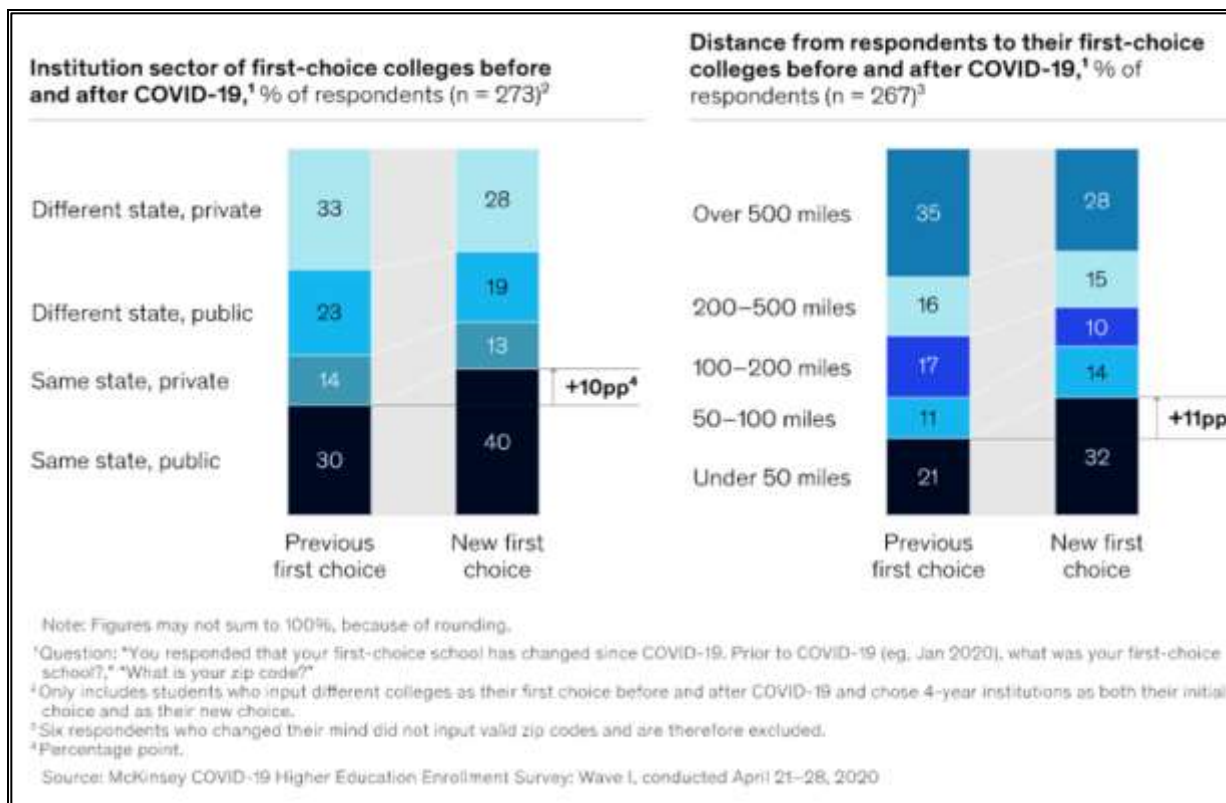
Figure 1. Students are changing their first-choice due to cost and location (Kim, Krishnan, Law, & Rounsaville, 2020)

The first cause of enrollment decline is deferment. The decrease in enrollment at top-tier private school in 2020 has mainly been due to the increases of enrollment deferment. In August 2020, the Boston Globe report that 20% of Harvard first-year students are opting to defer their admission and take a gap year rather than start their elite education online amid the COVID-19 pandemic; by the same token, MIT deferment rate for first year students went from 1% pre-pandemic to 8% in 2020 (Krantz & Fernandes, 2020). In contrast, public schools experienced only smaller percentage of deferments; for instance, the University of Massachusetts deferment was only at 1.2%.

The second reason for enrollment decline is the fact that students are changing students first-choice college. Some students ended-

up deciding not to attend their first-choice of college. Korn (2020) reported that a senior from California, who originally wanted a big, out-of-state university with a lot of school spirit, and therefore had for dream school. the University of Oregon; with the pandemic, began to rethink and realized that the big-school experience probably would not happen this year. She then though about the $53,000 for probable online schooling and therefore changed her mind and decided to go to a community college near her hometown for a fraction of that price. Private institutions are expecting to have fewer students enroll. Harvard administration expect enrollment to decrease by about 1470 students which is ¼ of the usual undergraduate student body (Krantz & Fernandes, 2020). Stanford reported admitting fewer students than its targeted, even after accepting waitlisted students

(Ehsan, 2020). Public schools on the other hand, are seeing the reverse trend as the University of Massachusetts saw a 10% increase in first-year deposits. The University of Tennessee at Knoxville (UTK), a public largely in-state school, saw a 4.9% increase in number of first-time freshmen enrolled in 2020 (OIR UTK, 2020).
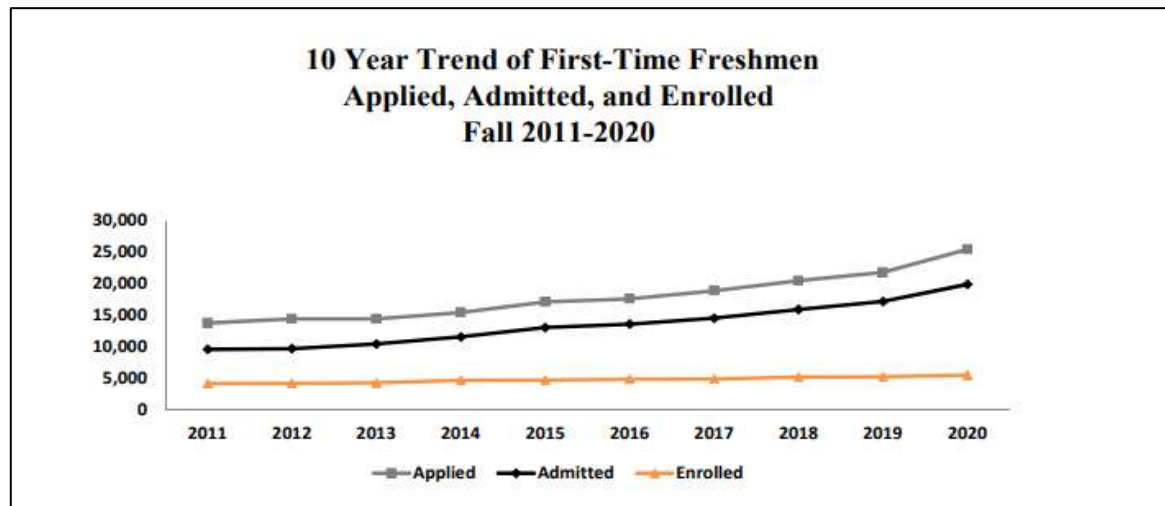

Figure 2. University of Tennessee, Knoxville, a public university, sees a large rate increase of applications in 2020 (OIR UTK, 2020).

Moreover, UTK's 10-year admissions data presented on figure 2 shows that the application rate rose about 16.8% in 2020, compared with 6.3% in 2019. The 2020 application rate increase is the highest in 8 years, with average year-over-year admissions increasing at a rate of 5.94%, excluding 2020 (OIR UTK, 2020). Smaller private schools are also seeing this trend. The National Student Clearinghouse data suggests that, contrary to student reports, enrollment at community college and public universities are down, but enrollment numbers are up by about 3% compared to 2019, for for-profit online four-year colleges (Sedmak, 2020). In addition, students seem to behave differently toward top-tier private, small private, in-state public and out-of-state public schools' admissions. Locations seems to matter today more than ever before. Local news reported small private schools in Tennessee including Lipscomb University, Fisk University and Cumberland University, had record enrollment growth in 2020, due to their strategic location to student homes (Davis, 2020). McKinsey & Company study found that, since January 2020, about 1/5 of students have changed their first-choice school because of to cost and location (Kim, Krishnan, Law, & Rounsaville, 2020).

Student Location (COVID-19 and International Students)

According to the Institute of International Education, the number of international students attending college in the United States grow from the academic year 2010-11 to 2018-19 by 3.5% to about 1.1 million international students (Kelly & Columbus, 2020). As Higher Education Institutions have restructured their daily operations to survive the COVID-19 Pandemic, recruiting and handling international students have been a challenge. International students already encounter problems such as obtaining a visa before they apply and travel to the college of their choice; now they must overcome bigger hurtle than US residents.

International students that were already in school must decide whether to travel back home and finish school or stay in the US although classes are online. Those international students who choose to stay in the US would also have to then find a place to stay if they were in the dormitories as campuses were closed due to COVID-19. Moving out of the dorms could be very expensive for those students and their families abroad. There a many other factors according to Dr. Stephine Chong, that international students are dealing with, including uncertainties and increased level of isolation, due to COVID-19. All these factors are affecting mental health of many international students in addition to the culture and language barriers. With colleges and universities shifting to the on-line learning experience, many international students have found the on-line learning more of a challenge than helpful. Dr Chong explained that remote learning can add more stress for international students as they could potential struggle due to language barriers, struggle on important social cues that are hard to view on the screen (Beckstein, 2020).

In addition, the Department of Homeland Security temporarily changed the visa rules to accommodate international students during the pandemic. This change allows for foreign students under visas to stay and finish their classes on-line. But the extension from the Department of Homeland Security does not discuss the students who may have gone to their home countries to safely attend their class online (Gale, 2020). In that regard, the Department of Homeland Security also adjusted their visas to allow the foreign students who went back to their-countries to take keep their student visas as long as they are online classes from their current US university. Current high school students must factor the pandemic, the travel restrictions and the immigration rules before

considering applying for universities in the US; which will affect international students' enrollments in colleges and universities in the US for the coming years. The choice of college is proving more complicated with international students. In any case, whether international or domestic, high school seniors are now carefully considering their college decisions factoring in the potential changes in their families' financial situations due to the pandemic.

The pandemic may have a long-term negative effect on this generation as many students are putting off college for a year or more, and other opting for community college and planning to transfer to a 4-year college later. Students' choice of college is one of the major decisions that would dictate their income and affect the rest of their lives. On average, over their lifetime, college graduates earn more than twice as much as typical high school graduates (Hershbein & Kearney, 2014). In addition, education also lead to life choices that promote better health, less reliance on social safety net programs, and less encounter with the criminal justice system (Oreopoulos & Salvanes, 2011; Acton, 2020).

RESTRUCTURING OF UNIVERSITY RESOURCES DUE TO THE PANDEMIC

Pandemic on University Policies and Human Relations

With the pandemic, interaction between students, faculty, and staff is mostly done through technology. It is very crucial that higher education institutions perform random COVID test of all individuals visiting the university. A study of colleges with more than 5,000 undergraduates, holding in-person classes show that only 25% conduct mass-screening or random-testing of students and only 6% routinely

test all students (Nadworny and McMinn, 2020). Testing and pandemic control is very difficult at universities. A lot of it comes from a lack of funding for the tests and supplies. Universities are already facing an increase in spending and IT adjustments due to more zoom and video classes, adding constant Covid testing may put a sting on school's budget. Colleges estimate they are spending around $1 million for coronavirus testing with the kits ranging from 10 to $100 dollars. The implications of the cheap vs. expensive coronavirus testing kits can drastically impact the how many students are tested and how often. Testing students can be a complex task especially on a voluntarily base. The University of Mississippi invited its 18,000 students for voluntary COVID-19 test; only 394 students participated. (Nadworny and McMinn, 2020). In addition to not volunteering for test students are likely to take risk. For instance, college campus securities have broken-up parties and other campus gatherings to help decrease the spread of the virus, and not much seems to work to deter these students.

Effects of the COVID-19 Pandemic on College Major

The pandemic brought a lot of changes to universities especially the use of information technology in all functions. The technology department is expected to facilitate everyday activities including, setting up student software accounts, video calls, phone calls and emails as classes are taught virtually. This increase in information technology jobs at universities is shared by other companies as employees around the world are working remotely due to the pandemic. IT degrees holders are earning more, with the average salary at $61,000.00 per year, for a person with a Bachelor of Science in Information Technology (PayScale, 2020). There is a high demand and rapid change in the IT

world and universities and other education program are working to supply the industry with the needed talents. For example, Fortune Magazine reported that the push for technology companies such as Google Fiber and Amazon was the driving for in building the city of Nashville, Tennessee, as it was named the country's second fastest-growing market for tech jobs from December 2013 to December 2014, increasing the number of IT jobs by 24% from the previous year (Beacon Hill Marketing Team, 2015). Nashville succeeded through the Tennessee RECONNECT program which allow Tennessee residents to attend Tennessee community college for free and by putting an emphasis on technology-based education programs and making it easier to access the education programs for IT and computer science. The program helps students get a foundation in technology-oriented programs and enable Tennessee to move towards more computer friendly environment; which is a requirement for surviving the Covid-19 pandemic.

Covid-19 Impacts on University Finances

Colleges and universities have reacted differently to the effect of the pandemic on their finances. Some colleges are adjusting their selectivity rounding-out their freshman classes and ensure they have funding. The change is selectivity for top tier institutions, such as Brown, Columbia, Dartmouth, Harvard, MIT, Penn, and Yale, is the result of them receiving fewer applications for class of 2024 than for class of 2023 (Termont, 2020). In response to lower number of applicants, colleges are admitting a higher percentage of students or drawing from their wait list. For instance, in 2020, Stanford's admission rate increased for the first year, from 4.34% to 5.19% since 2004 (Ehsan, 2020). However, not all universities have changed admission tendencies in the pandemic. The University of Pennsylvania,

states that they have not increased admission percentage of waitlisted students (Singh, 2020). Regardless of admission rules, university funding is further affected as students are re-evaluating their decisions and sometime opting for deferment. The overall undergraduate enrollment is now running 4% below last year's level (Sedmak, 2020). The changing plans of students due to the pandemic have ripple effects across the university system.

A decrease in enrollments created budgetary problems and greatly affect higher education institutions. With the pandemic, institutions could not measure the numbers of prospective students through paid deposits, which was pushed from May to June. Even after making the deposit, 12% of students no longer planned to attend a 4-year college full time, which forfeit the deposit as a reliable gauge of students' commitment (Art & Science Group LLC, 2020). As Presented in figure 3, in the 2017-2018 academic year, tuition and fees made about 20% of public schools' revenues, 31% of private non-profit schools' revenues, and 94% of private for-profit schools' revenues (National Center for Education Statistics, 2020). Moreover, about 30% of public or private universities were operating on deficits (Quintana, 2020), and lead over 86% of college presidents to place fall or summer enrollment numbers as a priority, as 4-year universities are predicted to lose between $7 billion and $19 billion due to lower enrollment numbers in 2020 (Kim, Krishnan, Law, & Rounsaville, 2020).
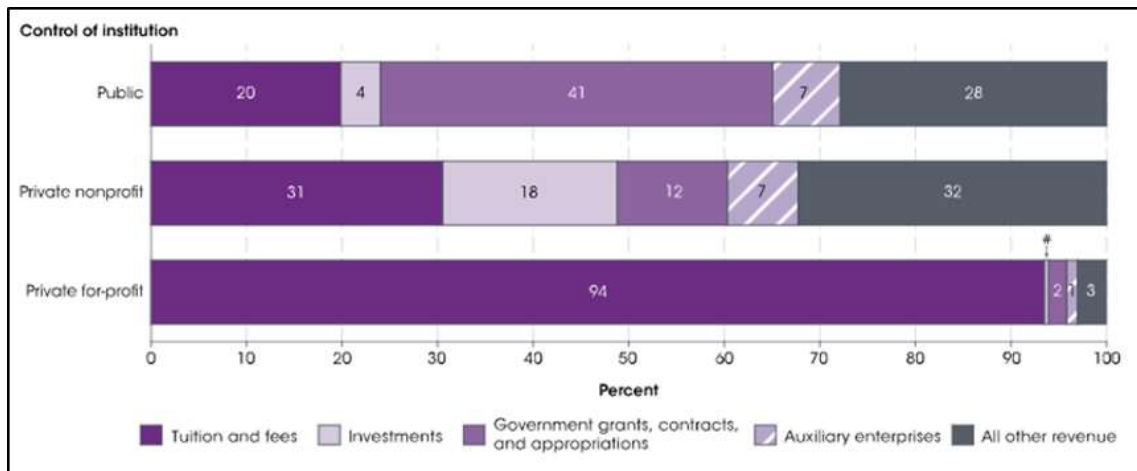

Figure 3. Percentage of Revenues from tuition & fees at Universities. (National Center for Education Statistics, 2020)

In addition, to lower enrollment, universities budgets are impacted by unexpected expenses related to Covid-19 such as dorms cleaning and pro-rated room & board refunds (Smalley, 2020). Those financial constraints create and uncertainty about faculty and staff jobs and benefits including health care coverage. For instance, the University of Memphis announced plans to cut jobs in October in area including but not limited to facilities management and support services, housing, parking and transportation services, mail services, dining services (Connolly, 2020). Most higher education institutions are going towards a period of financial issues which causes them to have hiring freezes and furloughs (Kelly & Columbus, 2020). This clearly puts the priority of the financial outlook not to go towards technology advancement and

college experience.

How has Covid-19 Affected the College Experience

The COVID-19 pandemic has changed the way incoming freshman decision-making process of picking higher education institutions. With the colleges and universities closed, students don't have the opportunity to take on-campus tours or over-night events to get the full experience. Student can only learn from the internet and their high school counselors. The director of admission at Williams College, stated that in addition of their admissions counselors continuing to answer students' phone questions, their website now includes profiles and emails of current students with diverse interests, for prospective students can communicate with (Shulman, 2020). Colleges and Universities are making good use of social platforms to reach their prospective students to answer questions, comments or concerns. Do students truly get an on-campus experience from those communications? Moreover, do they absolutely need the full four year on-campus experience? (Govindarajan & Srivastava, 2020).

As colleges shifting to an online learning; which do not require students to be on campus. Students would miss out on the social aspect of attending a college or university, such as joining clubs and various student organizations, making new friends with different backgrounds and cultures, and mainly learning who they are themselves. Schultz and Hibee (2007) list of why to go to college includes: gaining knowledge and intellectual interest, having more flexible views, becoming more future oriented and efficient in saving money, making better investments. Colleges and Universities are now forced to examine their online learning experience. Using technology, institutions

can provide content to large classes at low cost and would not have to worry about face-to-face interactions, social experiences especially for basic general education classes. (Govindarajan & Srivastava, 2020). The restriction of on-campus experience and the creation of on-line learning experience can free-up resources for colleges to design social networks, field-based projects, and global learning experiences. Which is a collective cost reduction for the university and the students.

DELIVERING ACADEMIC EDUCATION

As colleges and universities continue to adjust to the pandemic, the distance learning has intensified. Smart technology and digital information allow universities to automate some tasks as they mobilize instructional designers, trainers, and coaches to ensure student learning and course completion (Williamson, 2020). To this end, higher education institutions must secure a strong IT infrastructure, IT support staff, faculty and staff experienced in online instructions. Most colleges can to assess their training methods and analyze what is required to provide a smooth experience as students must assume that there is a learning curve with adjusting to the digital world.

Online Program Managers (OPMs) are important they help institutions bring the courses to a wider market. A partnership with an OPM would provide services such as student recruitment and enrollment, student and graduate retention, market research, course design and technology platforms (Hodge, 2020). Hodge (2020) further points that 86% of institutions ranked system integration as the most important factor, with 77% expecting OPMs to use data analytics to inform their strategy. Requiring an investment in advanced technology to make various systems

communicate with each other strengthens the outlook of that college or university. Data integration is vital during the pandemic as it is unpredictable how long higher education would remain online.

Higher education trail behind other industries when it comes to digital driven, outcome focused business model as education is one of the least digitalized sectors. There is an opportunity for technology be a leading force in the higher education world. With remote learning and distance education becoming common, new platforms and new technologies such as, Coursera and EdX Leverage Data, have emerged. Technologically driven institutions like the University of Illinois are affecting graduate degree market using technology that reduce faculty labor, scaling programs to thousands of students at a discounted cost leading to retirement of traditional residential programs (Gallagher & Palmer, 2020). Other universities are using Machine learning, and Artificial Intelligence (AI) to offer blended learning experiences through AI-based chatbots that assist students with questions and support. The shift to a digital world for higher education institution affects the learning experience as well as the on-campus life as digital tools are installed in the dorms to assist with a customer centric experience. Universities are investing in analytics that are predictive derived from online learning activities but rely on outside consulting experts and datasets (Gallagher & Palmer, 2020).

CONCLUSION

The Covid-19 pandemic has far reaching effects on education. The rate of undergraduate enrollment has dropped 4% since last year, including enrollment decreases in community colleges, private non-profit universities, and public

universities, while only rates in for-profit private universities and online institutions have increased. Students who decide to defer, attend community colleges, or not attend school in 2020 may not ever go back to their original plans, resulting in a potential for lost earnings had they attended a four-year institution. In addition, the effect on students is unevenly distributed: 2020 enrollment data shows that the student groups that decreased enrollment in greatest numbers in 2020 were American Indian and Native Alaskan, at -10.7% and black students at -7.9%. This was followed by White, Hispanic, and then Asian students. Undergraduate International students experienced a double-digit drop at -13.7% (Sedmak, 2020).

Universities also face challenges. Due to the decreased enrollment, some universities are forced to be less selective to round out their freshman class. Others were not able to reach the target number of students which lower the revenue from students. Universities that have reopened faced increased spending in their medical and health departments to keep the student body safe. They also increased spending in IT departments to ensure that instructions are carried smoothly. Because of the benefits that IT can offer to students, some universities and states are encouraging IT-related majors so that their workforce can be highly effective in a post-COVID world. Universities are also rethinking the experiences they offer, as they are not able to offer the traditional experience where students can socialize and network. Instead, colleges are focusing on the online experience and are turning to online program management tools (OPMs) to better deliver online content, collect data, and monitor student engagement. Universities are learning to pivot by freeing up resources that would otherwise have been distributed to the on-campus experience, shifting these

resources to tech platforms to contribute to the online experience, and taking advantage of the benefits of online learning to scale up the volume and reach of their programs.

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ONLINE RETAIL SYSTEMS IN COVID-19

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ABSTRACT

This paper focuses on the adaptations to changes made by retailers through their online retail systems in response to the COVID-19 pandemic of 2020. Beginning with the benefits of online retail then explaining the differences between thriving and failing businesses. These changes are derived from CDC recommendations and guidelines which drove businesses to implement new marketing and business techniques as well as resort to online sales. Also discussed are the challenges of online retail systems such as security and fraud, customer loyalty and trust, inventory management, and malfunctions of online retail infrastructure. These challenges lead this paper into the complications of any business which failed to adapt to the pandemic. Furthermore, we will highlight implications for theory and research. Finally, we will present our conclusion as to how businesses are adapting to this worldwide predicament.

Keywords: COVID-19, adaptations, online retail systems, CDC recommendations, customer loyalty, trust, inventory management

INTRODUCTION

What are Online Retail Systems?

As humans become more dependent on commodities that ease survival and sustenance, they look for more convenient ways of obtaining such items. The old ways of going out into nature and living off the land is over for much of the population. Convenience has become a way of life that sells and generates revenue. After all, work smarter not harder right? Technology has helped grow convenience exponentially. It has not only afforded survival and sustenance to the population, but also luxuries right to our feet with relatively low cost. No need to risk your life or health hunting for your next meal, or even spend hours of labor manufacturing your own household items. Online retail systems are a software medium used both by the retailer and the consumer for the facilitation of trade via the internet. Online retail systems make it easier for the retailer and consumer to complete a transaction for the purpose of obtaining goods while eliminating the necessity to be present at the store.

The Impact of COVID-19 on Retailers

Pandemics are not new to society, the last Federal quarantine in the United States was in the 1960s against a suspected smallpox outbreak (Macfarquhar, 2020). However, much of the population has never experienced a shelter-in-place order or to practice social distancing for months at a time. This is new for both retailers and consumers. Success and failure are differentiated by mere adaptation to current circumstances. "Many smaller retailers, of course, still don't have a web shop, often due to either the cost or logistics of setting one up. To that end, the City of Toronto and the Toronto Association of Business Improvement Areas is offering a program

called Digital Main Street to help businesses develop their online footprint through one-on-one consultations." (McLeod, 2020).

CHANGES COVID -19 HAS BROUGHT UPON RETAILERS

Essential Online Shopping

Not many saw this pandemic coming, which of course meant mass hysteria and chaos especially when it came to obtaining essential household items. This demanded changes for both retailer and consumer. CDC Guidelines stated "Order food and other items online for home delivery or curbside pickup (if possible). Only visit the grocery store, or other stores selling household essentials, in person when you absolutely need to. This will limit your potential exposure to others and the virus that causes COVID-19." (CDC 2020). These guidelines forced consumers to shop online. As a result, online sales for consumer packaged goods grew 56%, "U.S. online sales of consumer packaged goods (CPG)—the kinds of items typically sold in grocery stores—grew 56% for the one week ending April 18, compared to the same period a year earlier, according to data from research and polling firm Nielsen and Rakuten Intelligence." (Melton, Evans, Crets, & Bloomberg News, 2020). The main reason for these guidelines and online shopping was to reduce exposure.

Contactless Delivery

To reduce exposure, many retailers resorted to curbside pickup once the online order was in place. This required many retailers to hire more workers to keep up with online order fulfilment. Curbside pickup and in store pickup require different packing and delivery to the consumer. Retailers are also adding the option of "contactless delivery"

via their websites and mobile applications. Target is one of the many retailers adapting to the contactless delivery method, and as we learned from our 7th edition textbook, organizational strategies must change in accordance with information systems strategies for the framework to work as a whole "In March, Target's online sales of items like food and beverage and health and beauty essentials have soared, requiring operational changes to meet that demand. The retailer is adapting in several ways, a spokesman says. Changes at Target (No. 12 in the 2020 Digital Commerce 360 Top 1000), include redeploying store team members to pick, pack and ship orders to meet the increased demand for shipping orders to customers' homes, he says." (Melton, Evans, Crets, & Bloomberg News, 2020).

Marketing Strategies

Once again, adaptation takes the reigns when it comes to success. Marketing strategies must change and have changed to reach each and every consumer in their home. Online presence is more important than ever and is crucial for the survival of a business. It is not only important to have a business website, marketing must be done through high traffic online platforms and social networking sites. Everyone is home either on their phone or watching TV. A large part of the U.S. population has some streaming service, whether it is Netflix, Hulu, Amazon Prime, Etc. It is much easier to reach your audience through one of these than it is by marketing on a billboard or at some bus stop bench. If you're the owner of a small business, you are most likely not making much money. Therefore, you must use your advertising budget wisely. Business2community.com recommends you do not stop posting on social media "Even if you have to completely shutter your

business for the time being, stay active online. In addition to tools like Google My Business, customers look to your Facebook, LinkedIn, Twitter and Instagram channels for the most up-to-date news. It looks really bad to have outdated posts or information languishing on your social media pages." (Friesen). Most social media marketing is low cost, relative to other marketing avenues.

Infrastructure

There are challenges that must be addressed by retailers during this pandemic. Retailers are needing more space to store their goods. "The market to store and position goods for distribution remains volatile, with business shutdowns curbing activity among some operators while others scramble for additional warehouse capacity." (Smith, 2020). These storing challenges only amplify when there are returns on orders. These returns can be caused by not being able to see or touch the actual item you are purchasing which is buyer error, maybe they misread the item description, or it is not what they expected. These of course are expected consequences especially for people who are not accustomed to online shopping. "The challenges — such as trying to resell returned merchandise and simply finding enough workers to help process returns in distribution centers — could end up hurting department store chains and apparel retailers the most." (Thomas, 2020). Some retailers have suspended returns overall, "In other cases, returns have been suspended or canceled altogether — mainly due to public health. Retailers were doing their best to "flatten the curve" and limit the coronavirus's spread. Thus, not recirculating returns made sense." (Roggio, 2020). This makes complete sense on behalf of retailers to avoid contamination. Order fulfillment is another major issue, with retailers attempting to prioritize essential orders, many items cannot be purchased or are being shipped at a later date.

BENEFITS OF USING ONLINE RETAIL SYSTEMS

Brick and mortar businesses are often reliant on "foot traffic to generate business", and with all the closures as a result of this pandemic, many people are not "perusing the wares at mom-and-pop shops" due to either them not going outside or due to layoffs as a result of the pandemic (Loh, 2020). With less people shopping outside physically, stores are not generating sales in person and continue to struggle. Online retailers, however, can find ways around it as there are many benefits to using an online retail system in this COVID-19 pandemic that have allowed many of them to succeed in spite of the economic tolls of the disease.

Constant Accessibility

One of the challenges in this time that many retailers face currently has to do with whether it is worth it to pay all operating costs despite potentially getting less customers than usual. Online retailers do not face such issues, for they are always accessible and available. They do not need to "pay employees for the night shift" nor do they need to "keep the lights on" (Mercer, 2016). Right off the bat, online retailers avoid the burden of many operating costs that in-person retailers have.

Online retailers being "always open" not only allows businesses to continuously operate, for it also allows customers to continuously buy. Customers can buy any product at any time they want. For instance, a cook could be buying a crockpot at 7:00 AM, or an athlete could be purchasing new sneakers at 12:00 PM, or a procrastinating

undergraduate student could be purchasing an e-textbook at 3:00 AM for an exam at 5:00 AM. Such "added convenience makes customers more likely to make a purchase" (Mercer, 2016). Convenience is a factor in the decisions of many customers that is sneakily yet rapidly on the rise. In a survey done by the National Retail Federation (NRF) on what consumers felt mattered most when shopping, while "most convenient option" trailed behind "highest quality item" and "lowest price" with 13% of the vote (lowest price had 30% and highest quality had 32%), 97% of participants in the same survey mentioned that they backed out of a purchase due to the fact that such purchase was inconvenient to them (National Retail Federation, 2020). At the same time 83% felt that convenience while shopping was more convenient than 5 years ago, and the data also indicated that 52% answered that "half or more of their purchases" were "influenced by convenience" while 66% were using at least one delivery service (National Retail Federation, 2020). The NRF mentioned in its report that these numbers were due to the busy lives of these shoppers with "over one third" of participants feeling that they now have less time than they did five years ago (National Retail Federation, 2020). With consumers having less time than ever, convenience has become more of an attractive trait. By being so accessibly convenient, online retailers are able to leverage the growth of convenience, especially in COVID-19.

Less Overhead During Pandemic

Brick and mortar retailers, as a result of the current pandemic, are being forced to change the way they operate from a traditional manner to a more technological one, creating more overhead than before. For instance, with COVID-19 causing an

uproarious panic for consumers, many businesses, particularly brick and mortar stores, have to transition from being places that focused on "on creating fun, entertainment, and engagement" to ones that value cleanliness and spaciousness with customers feeling safe about not having to touch contaminated surfaces and being in an environment large enough for social distancing (Roggeveen and Sethuraman, 2020). Online retailers, especially pure online retailers like Amazon and eBay, do not need to worry about such upkeep these brick and mortar stores do, and in addition they now become popular not only due to convenience but also due to safety issues. They have less overhead and more popularity. Granted, such retailers may need to perform safety-related tasks in shipping warehouses, but so do many brick and mortar stores, and plus these warehouses are often not, if not never, occupied by customers so the customer safety issue is handled in that regard.

Technological Innovations

Another advantage for online retailers in the time of COVID-19 is the leverage of technological innovations in operations. Such innovations mainly include "artificial intelligence (AI), machine learning (ML) and data science" of which are used "to improve performance in a variety of areas, including marketing, customer support and inventory management", allowing retailers to "unearth a multitude of insights such as which shoppers will most likely buy high value items or which products will sell in the next seven days" (Staff, 2020). Online retailers have such tools at their disposal that allow them to figure out what is popular currently. For instance, right before the pandemic, the top searched products were phone cases, phone chargers, and Legos, but when COVID-19 arrived, such products

"were knocked off the charts in just a few days" to be replaced by "toilet paper, face masks, hand sanitizer, paper towels, Lysol spray, Clorox wipes, mask, Lysol, masks for germ protection, and N95 mask" (Heaven, 2020). The machine learning Amazon uses, allows it to find out which products are popular and emphasize those products which in this case are hygiene and germ protection equipment.

CHALLENGES OF USING ONLINE RETAIL SYSTEMS

While online retailers certainly have their advantages during events such as COVID-19, especially when compared to those who are traditionally brick and mortar, there are certainly challenges they face. Such challenges are circulating the news and give consumers the notion that despite being virtually safer, online retailers do pose some concern. Such consumers wind up being afraid of both shopping methods.

Fraudulent Shopping

Retailers online face troubling complaints from many consumers with regards to some of the products either not arriving or arriving in bad quality. This is a major occurrence with COVID-19 related products. For instance, on eBay, a woman in Georgia "smuggled an illegal pesticide into the United States and tried to sell it under the claim that it would protect people against the coronavirus" (Burns, 2020). Companies like eBay allow people to go on and sell their own products. This can sometimes unintentionally allow those to cheat customers, especially in a vulnerable time like a pandemic. In this pandemic, "online purchases are more common than ever, creating even more opportunity for scammers selling counterfeit or fake masks, sanitation items and health products"

(Gaines, 2020). Such products are in need and are often selling out quickly at many places to the point where people are desperate for them. They become desperate enough to think only about how quickly (and sometimes frugally) they can obtain these health products and often do not think about the authenticity of their purchases. As a result, COVID-19 has opened the doors for con-artists. Organizations like Amazon and eBay who allow independent sellers need to focus on how to crack down on fraudulent sellers to prevent such sellers from sewing a distrust between consumers and online retailers to where not only could consumers exhibit less trust towards particular online firms, but they could also lose trust in the concept of online retail.

Keeping Employees Safe

While online retailers make the environment safer for customers, making it safer for employees is much more difficult. Retailers, namely Amazon, are facing complaints internally and externally. Despite being "praised for their fearlessness in continuing to go to work during a crisis", many of these workers are actually in fear, "a dozen Amazon workers told CNBC that they're terrified to go to work during the pandemic, while others have expressed frustration over how their employer has responded to the threat of the coronavirus at their workplaces" (Palmer, 2020). In addition, "facilities remain crowded and run at full speed", and "at some warehouses, sanitation supplies are scarce or nowhere to be found, while some employees come to work sick", and to add more on top, employees are not allotted paid time off unless they test positive (Palmer, 2020). In an era of social media, these complaints are spreading outside the company quite possibly faster than COVID itself. Now Amazon is in a well-publicized lawsuit from employees for

its "lack of COVID-19 protections" while "pressuring employees to report to work under unsafe conditions" (Fung, 2020). In addition, Amazon is also getting some flack for lack of transparency with its COVID-19 figures. In spite of "numerous confirmed cases at Amazon warehouses across the country, and around the world, the e-commerce giant has downplayed the significance of releasing site or aggregate data, making it difficult to get a clear picture of overall infections at its sites" (O'Brien, 2020). Perceptual apathetic treatment of its employees and transparency evasion give Amazon bad publicity and make it look bad in public light as it faces well-documented and well-shared backlash. Online retailers, for the sake of not only their employees, have a challenge to protect their employees, especially those that perform shipping in environments such as warehouses or shipping docks where the virus is easily spread. Not doing so can make employees feel unsafe and cause backlash that could hurt sales due to consumer distrust of the firm with regards to safety of employees or even safety of what is shipped.

Inventory and Traffic

Last but not least, despite and due to an increase in orders, online retailers are now facing extremely heavy traffic with regards to inventory as well as logistics. In an article about challenges to the retail industry, one of the many challenges has to do with customer expectations. Affording customers the ability to purchase online is not enough, for "retailers will need to be able to source locally and outside of their regions when applicable, and deliver the products as promised", meaning that retailers need to have the right supply chain and logistics to get the orders to customers on time (Alexander, 2020). With online orders on the rise faster than before, online retailers

must find a way to fulfill the demands of the customers in a timely manner as customers constantly expect them to. Customers are "impatient" and do not allow for much time before they become "dissatisfied" (Alexander, 2020). They need to also "develop and communicate realistic delivery strategies and practices" as well as "set customer expectations" (Alexander, 2020). If a company is unable to ship the products in a quick fashion, then the company needs to at least communicate to the customer to not expect the product quickly. If a company promises a golden goose but ships the orders to the customers later than expected, the customers will not be as trusting to that company. This is further complicated by the subject of inventory. In the era of COVID-19, "retailers are scrambling to get inventory, and track, and manage stock" in order to meet high customer expectations, especially for items such as "groceries, medications, and priority items" (Alexander, 2020). Looking at the big picture, retailers, being heavily relied on by customers in the pandemic, are being pressured to fulfill the impatient orders of the customers who expect the product to be at their doorsteps as soon as possible. Meanwhile, the inventory of many products, especially popular ones in this situation, are incredibly difficult to fill.

Amazon, arguably the most successful online business in the world, is even vulnerable to this challenge despite being used to millions of orders daily as it "continues to deal with delivery delays caused by bottlenecks in its logistics network", for its shipping methods that are usually swift, are now dealing with "strained capacity" which is "making it harder for Amazon to quickly transfer inventory from one fulfillment center to another" (Palmer, 2020b). As a result, customers that use one day and two day delivery become "frustrated" (Palmer, 2020b). Customers are

ordering more from Amazon than before due to brick and mortar stores being closed or perceived to be unsafe. As a result, while sales may be on the rise, Amazon is required to fulfill the amount of orders increased by the pandemic with the resources that are decreased by the pandemic. Online retailers are to view COVID-19 as a double-edged sword. While more consumers shop online, such rise in patronage increases the difficulty of satisfying those consumers.

Failure to Adapt

The COVID-19 pandemic has been terrible and frightening. Unfortunately, there have been many retailers that have refused to evolve. Many luxury brands rely on personal shopping experiences and have yet to fully embrace e-commerce. Coronavirus has taken a toll on luxury brands showing a 35% decline in Chinese luxury spending in the first quarter. On the other hand, many small retailers don't have the cost and logistics to develop a web shop. Without an online presence, some retailers will have to wait weeks or maybe even longer before getting back to business. Therefore resulting in lots of layoffs and temporary store closures. This is not good for retailers that were struggling prior to the pandemic. They might not ever reopen. "Retail continues to be under pressure as shoppers head online and increasingly demand products that cater to their specific tastes. Amid these challenges, bankruptcies and store closures continue to rattle the industry, as retailers try to whittle away expensive leases that now weigh more heavily on stalling sales." (Hirsch). Some retailers that haven't adapted to an online retail system have found other ways to try and keep business afloat. For instance, small businesses in Asheville are participating in a website called Asheville Strong where customers can purchase gift cards from local businesses to use at a later

date. This will give business owners a temporary influx of cash. This is only a temporary fix assuming that retail will eventually go back to normal. I understand that businesses may be thinking that the coronavirus pandemic will be temporary, and therefore that it doesn't make sense to make any overly-permanent changes but as a business owner it is important to evolve and adapt.

IMPLICATIONS FOR RESEARCH

As COVID-19 alters the world economy and retail as we know it, it is inevitable that it will also alter how retail is researched, establishing a new normal for that as well. New trends and concepts within online retail that were once hardly noticed and barely studied will become more prominent in research emphasis. The pandemic has brought many new changes to retail whether they are new types of services, consumers, and methods, and they are here to stay from here on out. As a result, they need to be investigated. Each alteration to the concept of retail will match with an alteration to the study of retail.

Researching Newer Online Retail Trends

For instance, with restaurants closing, online food and beverage delivery is becoming more leveraged than before. According to a journal on COVID-19 in Russia, prior to March 2020, "the market of online ordering and delivery of food to home was less than 1% of the food market", but one month, after it was all of the sudden predicted to grow up to 10-20% in Moscow (Berezin, 2020). This also goes for other major economic nations such as Italy and UK where "e-commerce for food was either virtually nonexistent or at a low level before the crisis", but now they must make many quick hires to accommodate "unexpected

peaks" (Pantano, Pizzi, Scarpi, & Dennis, 2020). Before the pandemic, most people with time would sit in at restaurants or food trucks while those on the go would grab to go in person. With the pandemic causing many to be concerned about social distancing, people are now staying home and want food from their favorite places. Food delivery is then on the rise, and as a result, its research will likely be on the rise. Researchers from both industrial and academic standpoints may need to investigate topics regarding food e-commerce. For example, it is possible to work for firms that provide food who may want to research techniques that make food delivery faster or handle traffic. Academic researchers may look into the various techniques deployed by the companies when attempting to improve food e-commerce.

Consumer Behavior Study

Another major contribution COVID-19 is making to the online retail industry has to do with the change in consumer behavior. Consumer behavior is widely researched in retail studies, especially for the purpose of figuring out what types of products consumers desire. As COVID-19 changes the norms of society, it changes the studies of those norms. In the wake of COVID-19, "People have started to nest, develop new skills, and take better care of where they live", partaking in activities such as learning how to bake, getting more fit, doing puzzles, or reading more" (Donthu & Gustafsson, 2020). This has led to trends such as "an increase in purchases of cleaning products" as well as increased trash recycling activity as well as contradicting trends such as "eating more junk food" and less focus on personal hygiene (Donthu & Gustafsson, 2020). Consumers here are exhibiting extremely contrasting and bipolar behavior. Some are cleaning themselves up and some

are not. Some are eating healthier and working out while others are at home munching on chips and candy. When it comes to pandemics or any society-altering events, human behavior as society knows it changes. As a result, researchers in this space must continually evolve and be ready to change the emphasis of what they study. Perhaps, they could look into methods on how to adapt their work to reflect volatile and polarizing consumer behavior.

Impact on Marketing Strategy

Also prevalent in the research of online retail system space is one that is impacting all types of firms indiscriminately which is the change in the study of marketing strategy. Like other economic concepts, marketing strategy is changing right now and will be quite different post pandemic. For instance, the definition of the vision statement is likely going to evolve. Traditionally, vision statements have been "long-run and not subject to the vagaries of environmental blips" (He & Harris, 2020). In that same piece written by Hongwei He and Lloyd Harris, it is acknowledged that COVID-19 is much more long term than a blip and stressed that "organizations reflecting on the post-pandemic world will need to re-evaluate their visions, missions, and their objectives to account for the changes to their customers, competitors, amongst other shifts", meaning that there needs to be "goals and objectives" that "incorporate long-term survival", "strategic agility", and "meaningful social responsibility" that would be "possibly centered on a societal marketing orientation" (He & Harris, 2020). Those who perform marketing research, especially those working in online retail firms, will need to look into this evolvement of how marketing is done by their respective firms to understand how their firms should reshape

their vision statements to show consumers that they theoretically and practically prioritize safety and hygiene in the face of germs and illnesses.

In addition to suggesting change in marketing strategy, there is likely going to be a rise in research on innovation on the end of online retail firms. Despite being physically grounded during the pandemic, many organizations have "found previously hidden or untapped sources of entrepreneurial and innovative spirit that saw inventiveness and sheer gumptiosness triumph in the face of adversity", leading marketing strategy scholars to "indubitably desire to explore such new-found agility and embed such flexibility in their strategic processes" (He & Harris, 2020). In other words, in the face of a terrible situation such as this pandemic, a silver lining of newer ideas is being brought to the table. Many of these ideas are likely created for the sake of health and safety. As a result, this creates an alteration in the innovation research that is being done by online retailers where researchers, like marketing strategy scholars, look into the drive behind the rise of innovations in such a time and maybe find out what patterns lie in each instance. There can even be collaboration between the two.

Human Resource Research

Lastly, the most critical evidence of research impact on online retail systems during this pandemic has to do with the handling of personnel which comes from the human resource perspective. For the safety of employees and those they reside with, companies are partaking in less personal more virtual mediums of recruitment and onboarding. According to a journal article on COVID-19 and HRM, as these firms practice these new methods, "it will become increasingly important to understand how

these practices will impact the future fabric of an organization's values and culture, as these new practices could certainly attract and retain individuals differently than traditional face-to-face approaches" (Carnevale & Hatak, 2020). The article subsequently elaborates that "research is needed to understand the impact that COVID-19 has on employees' ability to navigate the job search process, how the transition to virtual recruitment affects their ability to develop and assess perceptions of fit regarding potential employment situations, and the efficacy of virtual assessment centers and training programs" (Carnevale & Hatak, 2020). Organizations such as Amazon and Ali Baba know that the coronavirus is already impacting recruitment and other personnel handling procedures. Now, they may need to look further into the results of such changes. There exists a need to figure out the results of the new recruitment mediums, positive consequences from them, challenges they pose, and how to circumvent those challenges. Will virtual interviews and remote training take away from an effective workforce? Should the answer be yes, then they likely will need to find out ways to make prospective and new employees understand the situation they are getting into and any knowledge they must retain. Should the answer be no, research is warranted to find ways to leverage the new recruitment and onboarding tactics or to perhaps figure out creative ways to make them advantageous. Whether the answer is yes or no, the online retail research as a practice will change as more studies are being conducted on new trends and activities such as socially distant human resource practices.

CONCLUSION

Retail is changing significantly in this pandemic. Whether it is for better or for

worse, change is needed at every firm. The greatest adjustment needed is digitalization as people are not crowding large in-person stores like before and are shopping through more remote means. Therefore, retailers following the online retail system have an upper hand with convenience, less physical overhead that cuts costs and keeps customers safe, as well as the opportunity to leverage technological advantages. At the same time, they face their fair share of pandemic challenges such as the door opening to fraudulent sales, distribution employee safety issues, and inventory and traffic issues that impact logistics. This goes to show that even those retailers who are digitized need to realize being on the web is not enough, for they must also operate efficiently and swiftly to where customer expectations are fulfilled realistically. In any case, adaptation is needed, for there are consequences for not doing so be it defaults, layoffs, and permanent closures. Adapting means not only being online, but it also means operating successfully to where customers feel the convenience of it.

Adaptation is not only needed by the competing retail firms in business practice. It is also needed in business research, for online retail and even retail as a whole. Such changes compel firms and observing organizations to look into and investigate the newly grown trends. This includes rising trends such as the rise in food e-commerce as well as newer demographics using online retail after being forced by COVID-19 to do so. The changes in consumer behavior during the pandemic also change what is being studied with regards to it. This also goes for changes in firms in the online retail system market and portray themselves, setting up potential collaborations with those in marketing studies. COVID-19, by causing the need to socially distance, is also impacting human resource methods,

requiring a need to investigate the impact to those changes on the future of personnel management.

The main takeaway from those examples is that research on any concept or trend must always be up to date through all events such a concept passes through, and pandemic events are no exception. As a result, in the space of retail, the impact of COVID-19 is a chain of causation. COVID-19 impacts the online retail activities, and in turn, this impact causes another in the studies done on these activities. Online retailers are already required to operate and research proactively in nature, but during and after COVID-19, such proactive behavior needs to be faster and much more alert than ever, leaving a new normal is much faster and much more furious.

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