CONTROLLING DISRUPTIVE TECHNOLOGY: A BUSINESS SCHOOL'S STRATEGIC APPROACH TO CHATGPT

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ABSTRACT

Colleges face a host of challenges post Covid, the most severe of which might be the disruptive innovation of ChatGPT. Generative Artificial Intelligence in general, and ChatGPT, in particular, is seen by some to not only be leading to the loss of jobs at universities but the obsolescence of higher education in general (Anft, 2023). This paper examines ChatGPT as a disruptive innovation, explores how one major research university's business school is utilizing the tool and offers a potential framework for creating programming and policies designed to manage the application going forward.

INTRODUCTION

Colleges face an unprecedented number of challenges in today's post-Covid world. As problematic as business school tuition rates rising 5.2% from February 2020 to February 2023 (BLS, 2023) and the enrollment "cliff" indicating a 15% decrease by 2025 (Drozdowski, 2023) for college age students are, nothing garners as much attention and concern in colleges and universities as ChatGPT. University administrators face pressures about the legalities and ethics surrounding the tool, college faculty worry about loss of their intellectual property when students use it for creating assignments, and employees stress over whether the chatbot could replace them (Anft, 2023). In short, ChatGPT is a disruptive technology, and it is incumbent upon universities to establish some guidelines for its use --Guidelines so the artificial intelligence software application is a tool for use in education and not an obstacle.

A recent research brief published by *The Chronicle of Higher Education* (Anft, 2023), details many of the concerns and opportunities surrounding the use of generative AI in higher education. In the survey of 404 college officials, there is substantial agreement that the biggest area of college operations that will be impacted by generative AI is teaching (57% of respondents), with the next highest being research (14%), and the third highest, admissions (8%). However, there is less agreement on whether that impact will be negative or positive. In fact, across two separate questions described in the research brief, respondents see both the potential for positive impact on teaching (selected by 69% of respondents) and negative impact on teaching (selected by 60% of respondents). Another area of wide agreement among respondents was a belief that institutions "should teach students the basics of artificial-intelligence ethics and literacy" (p. 15). The report does not include any information on how many schools are implementing such training. Another area of concern addressed in the report is a concern about jobs disappearing due to the use of generative AI. The top 4 areas identified by respondents as being at risk for downsizing due to the impact of generative AI were: admissions and enrollment (62%), academic advisors and other academic affairs staff (57%), libraries (54%), and research support (51%). However, the report also highlights a general belief that it is unlikely many jobs will actually be lost. Rather, generative AI can be used for greater efficiencies in areas currently understaffed, allowing humans to be freed up from doing jobs AI can handle, allowing those humans to focus on tasks AI cannot do/

Similarly, recent scholarly research on generative AI has identified concerns and benefits related to the use of generative AI in educational contexts, both in the practice of education and in scholarly research (Chan and Hu, 2023; Dwivedi et al, 2023; Jauhiainen & Guerra, 2023; Susarla et al, 2023). In a study on university students' perceptions of the use of generative AI, Chan and Hu (2023) used both qualitative and quantitative tools to assess students' AI perceptions. Students saw value in the use of generative AI in that it could provide personalized feedback and provide learning support any time of the day or night, can help with student brainstorming efforts, help with analysis of research, help with visualization and production of multi-media, and help with "tedious administrative work" (p. 10). However, students were also wary of the use of generative AI. Students expressed concerns about the accuracy of information generated through AI as well as the transparency (or lack thereof) of AI generated content. Students recognized there are potential ethical issues surrounding the use of generative AI, as it might violate people's privacy and contribute to plagiarized content. Additionally, students recognized that if there is too much reliance on the use of generative AI, it can inhibit learning and intellectual development. While limited in breadth of

study, Jauhiainen and Guerra (2023) found by using ChatGPT instructors were able "to personalize and customize learning material so that it would match the knowledge and learning skills of pupils with different levels of knowledge." (p. 19). The authors found that ChatGPT was able to effectively evaluate pupils' prior knowledge (sorting them into basic, intermediate, and advanced groups) of a subject, assess their initial interest in a topic, and then develop learning aids based on students' prior knowledge levels and interest. ChatGPT could then be used to "adjust the learning material accordingly both before and during the lesson" (p. 18). The authors conclude that generative AI has immense potential for use in the design of learning materials to increase learning engagement and create deeper understanding of content (Jauhiainen & Guerra, 2023). Lastly, Susarla et al (2023) and Dwivedi et al (2023) discuss the implications, positive and challenging, associated with the use of generative AI in scholarly research. The research by Dwivedi et al (2023) is a multidisciplinary analysis, incorporating authors, seventy-three in total, from a wide range of backgrounds and countries. There is general agreement that there are productivity benefits of using generative AI across various stages of the research process but that the potential for abuse and ethical concerns also exist for scholars in the use of generative AI tools (Dwivedi et al, 2023; Susarla et al, 2023).

This paper utilizes a research-based framework for assessing disruptive innovation ex ante. Multiple case study examples from the University of Pittsburgh Business School are presented and then analyzed using the dimensions of the framework. The authors submit that monitoring the core factors of the disruptive innovation model in real time will help guide decision making by all parties impacted by ChatGPT. The parties can then create clear plans, policies, processes and procedures at various levels and with various stakeholders such that artificial intelligence applications like ChatGPT can be tools and not obstacles in higher education.

THE CONCEPT OF DISRUPTIVE INNOVATION

Upon hearing the term "ChatGPT" most higher education stakeholders will launch into a discussion of how the technology is so disruptive that it will radically alter not only the structure of education as we know it but likely the content as well. While ChatGPT has raised issues and obstacles to traditional education from a university, college employee and student perspective the dire warnings of the new technology's imminent likelihood of destroying the institution of education have been premature. Reactions such as banning the use of the application in the collegiate setting, while made with the best intentions, have been shortsighted in their ability to fully weigh the entirety of the situations created by the easily accessible technology. Similarly, complete embracing of the technology has led to problematic outcomes for students and even some institutions (Anft, 2023).

This paper suggests that taking a measured, research-based approach to generative artificial intelligence in real time may offer some insight as to how best to utilize and benefit from the technology. To begin that approach, it is important to first raise the question of whether generative artificial intelligence (AI) in general, and ChatGPT in particular, are examples of "disruptive innovation".

Clayton Christensen (Bower and Christensen, 1995) introduces the term "disruptive innovation" to describe a process by which companies unwittingly allow a new population of consumers at the bottom of a market, access to a product or service that previously was only accessible to those consumers with great skill and resources. Christensen and Raynor (2003) provided examples of such disruptive innovations in the marketplace: discount stores as disruptors to full-service department stores, personal computers disrupting mainframe computers, and community colleges disrupting four-year institutions, among others. In each case, the process took hold, through simple application in the bottom of the market, and moved up the market, sometimes to the point of almost completely replacing the original top of market item (think how many residences no longer have a fixed line phone because a cellular phone has replaced it).

Though Christensen focused on cases of technological innovations in products and services in his original work, in the roughly three decades since the concept was introduced, disruptive innovation has been examined for its impact on companies (Momeni and Rost, 2016; Rayna and Striukova, 2016), markets (Vecchiato, 2017), administration (van den Broek and van Veenstra, 2018), and society (Feder, 2018). However, as Guo, Pan, Guo, Gu and Kuusisto (2019) note, such analysis has been largely ex post assessment. Limited work on the ex-ante impacts of emerging technologies has been done. The researchers credit such a void to the fact that the characteristics of disruptive innovations often lack quantitative measurement. In analyzing preceding work on disruptive innovation, Guo et. al. note that such innovation is multi-dimensional.
Accordingly, Guo et. al. examined three categories of studies focused upon measuring disruptive innovation: scoring and analysis models, economic models, and scenario and situational models. The resulting framework presents ten indicators in three categories.

IMAGE 1
GUO, PAN, GUO, GU & KUUSISTO (2019)
MODEL FOR MEASURING DISRUPTIVE INNOVATIONS
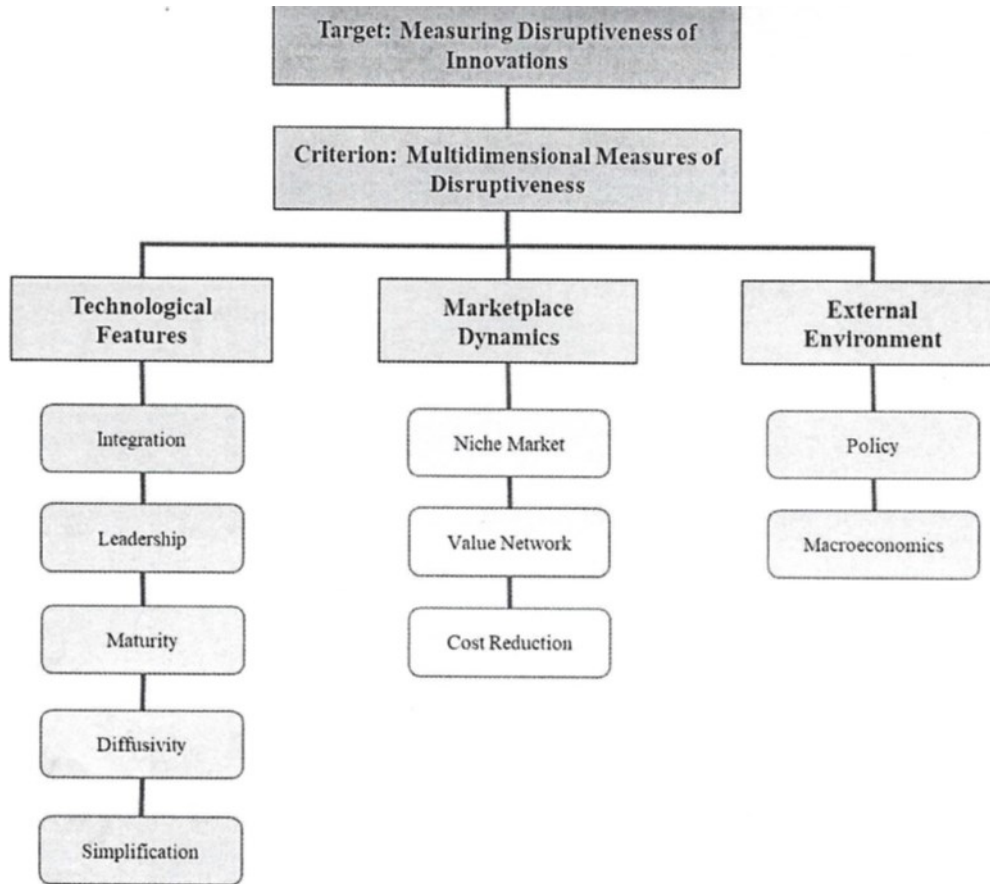
Technology has long been a focus of research in the disruptive innovation area. Five indicators have been identified for this dimension: integration, leadership, maturity, diffusivity, and simplification. Table 1 presents Guo et. al.'s definition of each dimension. Also included in Table 1 are the indicators for the marketplace category (niche, value and cost reduction) as well as the third category's (External Environment) indicators (policy and macroeconomics).

TABLE 1
GUO ET. AL. MODEL OF DISRUPTIVE INNOVATION FACTORS

Guo et. al. Factor	Factor Definition
Technology-Based Factors	
Integration	Degree that innovation merges with existing paradigms
Leadership	Potential of leading related technology developments, deployments and applications
Maturity	A timing measure where maturing and reliability of supporting technologies are present
Diffusivity	Ease of diffusing the innovation among the target audience
Simplification	Use does not require complicated operations and makes for simple use of the technology
Market-based Factors	
Niche market	Seizes a new market and creates value for the market
Value network	A measure of the profitability of the innovation and not its attack on the established network
Cost reduction	Low end innovation with similar characteristics of existing technology
External Environment Factors	
Policy	Scale of policy related impact on the development of the innovation from both a positive and negative perspective
Macroeconomics	

USING THE GUO ET. AL. MODEL

The importance of being able to identify a disruptive innovation can not be understated as such innovation can radically unsettle and alter the status quo within any organization. In Christensen's research in the product market, disruptive innovation created new markets and made existing competitors obsolete (Bower and Christensen, 1995). So, merely reacting to or ignoring such innovation can lead to obvious problems for an organization. On the other hand, recognizing and proactively using the innovation can lead to opportunities for a spectrum of stakeholders within that organization.

This paper will use the Guo, Pan, Guo, Gu and Kuusisto (2019) model for assessment, addressing the question, "Is ChatGPT a disruptive innovation as it is used in a university?". That model is grounded in assessing technology and market elements to determine disruptive innovation. While arguments can be made to use a model based on social innovation, the authors have chosen the former foundation. Higher education is a competitive business with measurable products created with and through technology and marketed accordingly. The impact on the nature of the product produced, the processes to arrive at that final product, and manner in which that product is delivered can be dramatically altered by disruptive innovation in Christensen's definition. As such that is the focus of analysis in this paper.

Assessing the Guo et. al. factors of disruptive innovation in Table 1 above vis a vis the generative artificial intelligence product, ChatGPT, leads to the conclusion that ChatGPT is disruptive innovation. For each of the twelve indicators, ChatGPT was determined to be a disruptive innovation. Table 2 offers some examples of how model factors present as disruptive innovation in a higher education setting.

TABLE 2
IS CHATGPT A DISRUPTIVE INNOVATION ACCORDING TO THE GUO ET. AL. MODEL?

Guo et. al. Factor	Definition of Factor	ChatGPT Assessment on Factor	Disruptive?
Technology-Based Factors			
Integration	Degree that innovation merges with existing paradigms	Multi-factor, multi-method education content delivery was in existence prior to introduction of ChatGPT. ChatGPT just extends that. Infrastructure for an application such as ChatGPT already in place and merging new with existing was easy. Conclusion: integration degree high	Disruptive
Leadership	Potential of leading related technology developments, deployments and applications	ChatGPT has multiple updates since its inception and has spawned competitors like Google Bard. Conclusion: leadership degree high	Disruptive
Maturity	A timing measure where maturing and reliability of supporting technologies are present	The university's infrastructure and supporting technologies were well developed for the introduction of a technology such as ChatGPT. Conclusion: maturity degree high	Disruptive
Diffusivity	Ease of diffusing the innovation among the target audience	Gaining a foothold in a target audience of college students was easy as university students always like "free". In addition, university students have a desire to use the latest innovations and be first users. Conclusion: diffusivity degree high.	Disruptive
Simplification	Use does not require complicated operations and makes for simple use of the technology	ChatGPT is easy to access, easy to use, and it is easy to get output from the application. In short, there are no complicated operations involved with the tool. Conclusion: simplification degree high.	Disruptive

(Continued)

Market-based Factors			
Niche market	Seizes a new market and creates value for the market	ChatGPT seized the college student market when introduced. Within weeks usage on college campuses increased contributing to ChatGPT becoming the fastest growing consumer software application in history. Conclusion: Niche market strongly established.	Disruptive
Value network	A measure of the profitability of the innovation and not its attack on the established network	Value was added to ChatGPT as its usage increased dramatically from its introduction date, but also added value to students if one looks at what a ChatGPT aided assignment could add in the value area. Conclusion: Value network expanded.	Disruptive
Cost reduction	Low end innovation with similar characteristics of existing technology	College students are at the lower end of the user market due to their limited budgets. So, when ChatGPT was introduced as a free product while presenting services that higher end users in the market had previously more exclusively enjoyed, the product usage grew. Conclusion: Cost reduction entry satisfied.	Disruptive
External Environment Factors			
Policy	Scale of policy related impact on the development of the innovation from both a positive and negative perspective	There are both positive and negative policy impacts surrounding ChatGPT. Of special note is the ethicality of the application's use given intellectual property and university integrity concerns. Conclusion: Policy adoption impact satisfied.	Disruptive

(Continued)

Macroeconomics		The economic impact of ChatGPT in the university context is the factor with the least clarity in the ex-ante scenario. There are obvious concerns about the potential replacement of some university employees by generative artificial intelligence applications. Conclusion: Macroeconomics impact is likely best measured as an ex-post item.	Potentially Disruptive

Guo et. al's Pearson correlation analyses (2019) suggest that multiple linkages occur between the factors of integration, leadership, maturity, diffusivity, simplification, niche market, and value network. [A detailed presentation of Guo et. al.'s linkages is offered in Appendix 1].   Examining these connections in the context of ChatGPT as a disruptive innovation in a university setting, suggests that the accessibility of ChatGPT must be recognized when dealing with the application (Integration-leadership; Integration-simplification linkages). The fact that the application is free and that universities have extensive pre-existing infrastructure networks to make such access fast and reliable, must be addressed when guiding ChatGPT usage (Integration-cost reduction). Related to the easy accessibility is the need to address the nature of usage by stakeholders to ensure that use of the application provides value to both the individual and the organization (Leadership-value network linkage). At the same time, the easy accessibility must be recognized as offering potential legal, integrity and ethics concerns (Leadership-diffusivity linkage).

An understanding of not only the general factors of ChatGPT as a disruptive innovation but of how those factors might specifically present in a university setting is important in being able to responsibly develop programs, plans, procedures, and processes using the tool. Further, being familiar with the usage and outcomes of ChatGPT offers an opportunity to develop administrative policies that will assist in addressing the challenges disruptive innovation presents.

Philosophically institutions of higher education can choose to embrace the disruptive innovation of ChatGPT or ban its usage. The business school at the University of Pittsburgh has embraced the use of the technology. Four case studies of the use of ChatGPT: one from a strategic initiative task force, one which incorporates ChatGPT into class assignments, one which incorporates generative AI to enhance study habits, and one from a business school administrative marketing project are highlighted below. The information from each of the case studies is then examined in the context of nature of usage, accessibility, integrity/legality, value added, and security derived from the Guo et. al. linkages noted earlier.

CASE STUDIES OF UNIVERSITY USAGE OF CHATGPT

Case Study 1: Using Generative AI to Support Strategic Planning
As members of a Strategic Partnerships Task Force for Pitt Business, the task force was charged with the following:

> The Strategic Partnerships Task Force will review the school's industry collaborations and make recommendations that will enhance our educational and research programs through stronger partnerships. Recommendations should include, but are not limited to, opportunities to strengthen the school's portfolio of collaborations and partnerships, a school-wide value proposition for external partners, and ways to deepen and consistently manage the school's most important corporate partnerships.

The task force was divided into three subcommittees, collaborating with each other, but independently responsible for different elements of the charge. One subcommittee, which has been using generative AI to support their work, is the "Value Proposition, Persona, and Segmentation" (VPPS) subcommittee. The VPPS subcommittee is charged with developing a value proposition, based on internal and external input. Additionally, identifying personas related to different potential strategic partners. Lastly, creating a segmentation plan for the identified personas.

The VPPS subcommittee started its value proposition work by using generative AI to create a generic value proposition for a business school. Then the VPPS subcommittee can edit and refine the value proposition to meet the specific strengths and opportunities of the Business School. The generic value proposition for a business school, generated by ChatGPT, was:

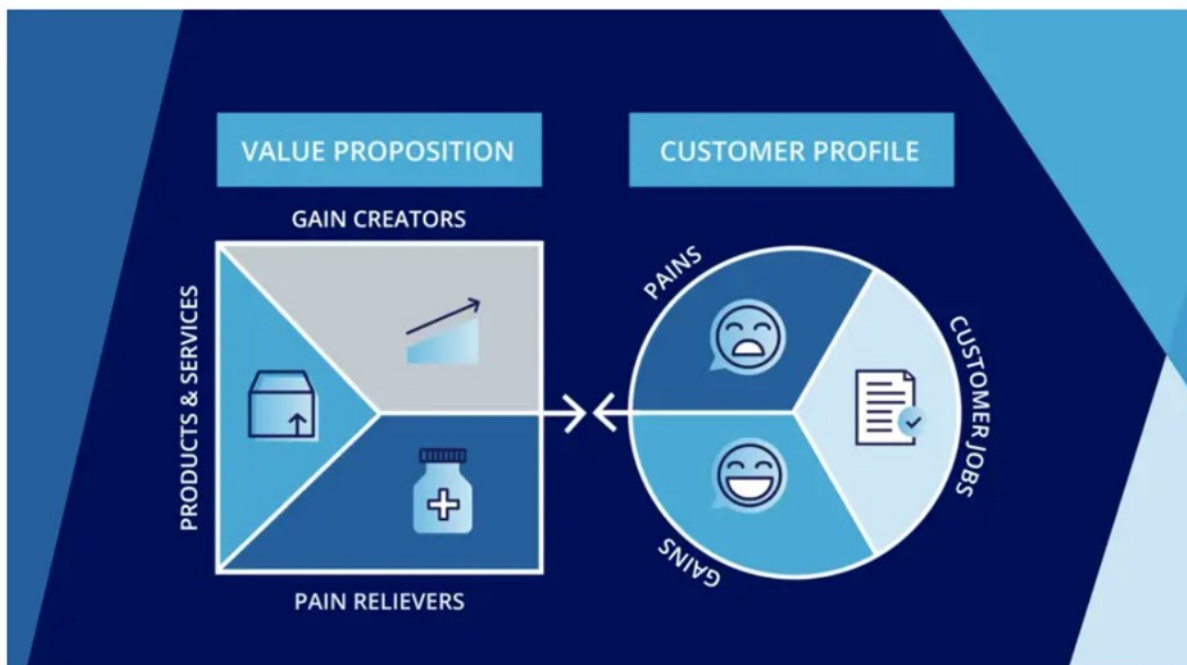Unlocking Opportunities for Strategic Partnerships and Business Excellence

Partner with [University Name] School of Business for a mutually beneficial collaboration that redefines success in the business world. Our commitment to excellence, innovation, and the pursuit of knowledge makes us the ideal partner for organizations like yours.

Why Partner with Us?

1. Access to Top Talent: Gain access to a pool of highly motivated and skilled students and graduates who are equipped with the latest business knowledge, innovative thinking, and a global perspective. Our students are ready to contribute to your organization's growth and success.
2. Cutting-Edge Research: Tap into our faculty's groundbreaking research in various business domains. Collaborate on research projects that can address your industry's challenges and drive innovation.
3. Customized Executive Education: Elevate your leadership team's skills with tailored executive education programs designed to meet your organization's unique needs. Enhance leadership capabilities, foster innovation, and stay ahead of industry trends.
4. Strategic Partnerships: Leverage our extensive network of industry connections and alumni to form strategic partnerships, gain market insights, and explore new business opportunities.
5. Innovation Hub: Engage with our innovation centers and labs, where creativity thrives. Collaborate on cutting-edge projects, access entrepreneurial resources, and stay at the forefront of industry innovation.
6. Global Reach: Expand your global reach and impact. Join us in our mission to shape the future of business on a global scale, with access to our international partnerships and initiatives.
7. Social Responsibility: Align your organization with our commitment to social responsibility and sustainability. Work together on initiatives that make a positive impact on society and the environment.
8. Reputation and Credibility: Partnering with [University Name] School of Business enhances your organization's reputation and credibility. Benefit from our standing as a world-renowned institution dedicated to excellence.

Together, we can drive innovation, foster growth, and make a lasting impact on the business landscape. Partner with [University Name] School of Business and seize the opportunities that lie ahead.

IMAGE 2
B2B INTERNATIONAL, 2023
VALUE PROPOSITION CANVAS

The VPPS subcommittee felt this value proposition was a good starting point as it helped the subcommittee to identify likely areas our strategic partners would find valuable as engagement opportunities with Pitt Business. The subcommittee's next step is to refine this value proposition using input from internal and external stakeholders of Pitt Business. The VPPS subcommittee is currently involved in collecting input from internal stakeholders.

The VPPS subcommittee identified a value proposition framework, the Value Proposition Canvas (B2B International, 2023), which the VPPS subcommittee determined is an ideal framework for the subcommittee to categorize input from these internal and external stakeholders, thus allowing us to refine and customize a Pitt Business strategic partnerships value proposition.

The plan is first to solicit input from internal stakeholders: faculty, staff, centers, students, and executives-in-residence. That input will allow the VPPS subcommittee to make an initial refinement of the ChatGPT generated generic business school value proposition. The VPPS subcommittee will then take the refined/customized value proposition and seek validation and further refinement with our external stakeholders: corporate partners, foundations, and community partners.

Using the Value Proposition Canvas (B2B International, 2023), the VPPS subcommittee needs to identify gains, pains, and customer jobs for our strategic partners. We need to match these with gain creators, pain relievers, and products (goods and services) offered through Pitt Business. During the collection of input from internal stakeholders, further use of generative AI is planned. Interviews and focus groups with internal stakeholders will be conducted and recorded via Zoom, with auto-captions enabled. These auto-caption transcripts will then be fed through ChatGPT to distill the main ideas. While this phase of the data collection has not yet been completed, an initial test of this process was conducted during a VPPS subcommittee meeting. During the meeting, held via Zoom, auto-captioning was enabled. The auto-caption transcript was fed through ChatGPT to distill a summary of the meeting. The process worked well, but one constraint was identified. The generated transcript was too long to be fed into ChatGPT in its entirety. As such, the transcript was broken down into sections and each section was fed into ChatGPT separately. Given this constraint, the VPPS subcommittee plans to break down our interview and focus group discussions into identifiable sections that should be easy to identify on each transcript. The identifiable sections will be around the key elements of the Value Proposition Canvas: gains, pains, customer jobs, gain creators, pain relievers, and products. The subcommittee can then take each section and feed it through ChatGPT independently. The use of generative AI in this way will save tremendous time and effort in this important process.

In summary, the VPPS subcommittee has incorporated generative AI during an initial stage in the development of a strategic partnership value proposition. ChatGPT was used to create a generic business school value proposition. This generic value proposition serves as a starting point for a refined and customized Pitt Business strategic partnership value proposition. The VPPS subcommittee has tested the process and plans to further use ChatGPT to distill transcripts of interviews and focus groups with our internal stakeholders. Using ChatGPT for this transcript analysis will greatly reduce the time and effort involved in gaining insights from these internal stakeholders.

Case Study 2: Using Generative AI to Support Learning in the Classroom

The human resource management major in the undergraduate program of Pitt Business features a Society of Human Resource Management (SHRM) aligned curriculum. One of the aligned courses is Human Resources Staffing where students, through a group experience-based learning activity, create a strategic staffing plan for corporate partners of Pitt Business. Mentors from the corporate partners help students on a weekly basis on a variety of staffing activities such as:

- job description development
- recruiting source choice (i.e., job fair, recruiting agency, college campus recruiting, etc.)
    - communication channel selection
    - messaging presented through the channel
- selection activities
    - interviewing
    - personality assessment and testing

During the course, three experiential learning activities have utilized generative AI in the form of ChatGPT. The first was in the creation of a job description for an open position offered by the corporate partner mentor. The mentor assumed the *line of business manager* role with each group indicating what the nature of the tasks to be completed in the job was, as well as offering some guidance on competencies needed in carrying out such tasks and responsibilities. Students in each group were then asked to write a job description from a meeting held with the corporate mentor, to produce a second job description by using a search engine to identify a job description with the same job title, and a third job description by putting parameters into ChatGPT. The groups then critically analyzed the three different job descriptions, looking for the benefits and costs of each

method and the overall value of each of the created job descriptions. The groups also provided a rank ordering the job descriptions with an accompanying rationale for their ranking decision.

The second experience-based learning activity involving ChatGPT involved the development of a recruiting strategy, identifying specific recruiting sources with accompanying identification of the communication channel and message for presentation. Student groups were asked to complete the recruiting strategy by group effort and when finished, to create a recruiting strategy for the same job using ChatGPT. Again, analysis of the two different strategies was incorporated to assess which approach was more strategically aligned with the firm's needs. As similar to the previous activity, students had to provide the rationale behind their choice.

The final experience-based learning activity using ChatGPT was the development of resumes for the same job described in the two previous activities. Resumes generated by individual group members, using ChatGPT, were shared with members of a different group in the class. Each AI-generated candidate was assessed as to whether group members would consider interviewing them or not, with rationale as to what triggered an interview invite or what led to a failure to get an invitation.

Though the aforementioned project is ongoing at the time this paper is written, preliminary surveys and anecdotal comments indicate that 62% of students feel ChatGPT is a viable starting point for each of the staffing activities mentioned. However, 93.75% feel that personal interaction with company representatives is necessary for overall staffing effectiveness (quality of candidate hired and timeliness of hire). Anecdotally, students expressed concern and surprise at the number of inaccuracies ChatGPT presented in the job descriptions and resumes.

Case Study 3: Using Generative AI to Support Study Habits

The Managing in Complex Environment course is part of the core curriculum for the BSBA degree for any major in the undergraduate program at Pitt Business. The course introduces students to the structure of businesses and the nature of decision making and other processes that facilitate the interaction between functions within the business. The design of the course interweaves technical business content with related processes that will assist a first-year business student in managing course curriculum and personal growth and development. One such tool examined is how to effectively study for an exam in the course.

Exams in this course require students to read an assigned Harvard Business Case and then respond to a prompt provided by the professor and based upon the Harvard case on the day of the exam. The course professor is aware of student access to case analyses for purchase or generated by artificial intelligence tools tied to the chosen case, as well as for-purchase analyses produced by former students. To encourage enrolled students to avoid these options and prepare their own case analyses, the course professor developed a study guide and sample case analysis using a variety of artificial intelligence tools: ChatGPT, Google Bard, and Microsoft Bing. The output of each generative AI tool becomes the focus of class discussion as students compare the responses generated by the three generative AI tools. What is common and different between the three generated outputs is discussed. Additionally, the discussion includes identification of correct and incorrect information generated by the three AI tools. This allows students to understand the value and the risk of using generative AI tools.

Specific steps in this lesson involved:

- Assigning the practice/sample case study "*A Viral Hot Sauce Is Going Viral Again...But for the Wrong Reason*" (The ChatGPT generated case is found in Appendix 2) The sample case study depicts a real-world situation (based on Chef Pii and Pink Sauce) in which two specific decision-makers (Olivia and Elaine) face competing pressures related to trying to balance attention to the commercial success and viability of the hot sauce in relation to the sudden negative social media attention and serious safety concerns.
- Request students to generate a response using ChatGPT that asks, "What is the problem in "A Viral Hot Sauce is Going Viral Again..."?
- Discuss the likely ChatGPT response: "I'm sorry. I do not have any specific information on "A Viral Hot Sauce Is Going Viral Again...But for the Wrong Reason". It is possible this is a hypothetical situation. If you add additional information on the situation, I will be happy to assist you further."
- Discuss additional facts about the case that might be added to provide context. Then talk about how you can continue to re-shape questions, so the ChatGPT response improves the "answer".
- Repeat the exercise using Google Bard and then Bing AI Chat. As the students read the resulting responses from AI, they are reviewing relevant information in the case that can be used in writing a response to the prompt

provided during exam day. In short, the students have used artificial intelligence tools to generate a study guide for the exam.

Case Study 4: Using Generative AI to Create Business School Marketing and Communication Materials

The Assistant Director of Student Engagement in Pitt Business prepares promotional materials advertising school sponsored events as well as communicating important information to all Pitt Business undergraduate students. Recognizing that students are selective about the number and types of media posts they read, but wanting to ensure that all relevant information is readily available to them, the assistant director has begun using ChatGPT in preparing much of the school's communication.

For social media-based recruiting materials, word choice is vital to engage students to open a post. Analysis of survey data from prospective applicants to the business school indicates that job placement rate is a key area of interest. So, the word choices placed in a Facebook post that entice a 17-year-old high school senior to click on a Pitt Business application have great import and impact. Being able to query ChatGPT with a prompt that asks "how to present this to college students" offers a host of new options for consideration.

In addition to strategically determining word choice in promotional materials, conciseness is necessary when delivering the message to students, so the ordering of thoughts and words also must be monitored. Having a tool like ChatGPT helps to organize the message, making it easier for the intended audience to read and understand.

Using ChatGPT has its downsides as well, when creating communication pieces. There are instances where words are changed from those initially included in the prompt and the ChatGPT version output. Such changes in word choices sometimes changes the overall meaning of the communication created. When a change in meaning occurs through the use of ChatGPT, the writer is then forced to re-write the communication again. This concern requires oversight by a human, to ensure the intended meaning stays the same, rather than blindly accepting the output generated by ChatGPT. In short, use of the tool can increase communication effectiveness, but can also produce inefficiency in a process because the material needs to go through an additional human-based revision to make it correct.

BUILDING A STRATEGY TO MANAGE GENERATIVE ARTIFICIAL INTELLIGENCE

A recent research brief from the *Chronicle of Higher Education*, "Perspectives on Generative AI" (2023) suggested that the teaching process, student integrity and campus functions are three areas impacted by generative AI in its current form. Coupled with the Guo et. Al. assessment of disruptive innovation and quantitative measurement framework development (2019), it becomes clear that disruptive innovation is a multi-dimensional concept that requires management attention.

Accordingly, a systematic approach for a business school to utilize in managing the use of a generative artificial intelligence applications like ChatGPT, needs to be developed to ensure appropriate levels of scope and consistency are maintained when addressing each dimension in impacted business school areas. Reflecting the aforementioned research brief (Anft, 2023) and quantitatively derived framework (Guo et. Al., 2019), a strategy framework is proffered for use in developing programming, procedures, and policies in the business school. Each previously described case scenario is examined in relation to the model's elements.

The quantitatively derived linkages between factors in disruptive innovation (Guo et. al., 2019) coupled with the survey results noted in the *Chronicle of Higher Education's* report (2023) suggest six key areas need to be addressed when preparing materials for use in teaching, setting strategic directions for a program, or producing material for use in operations. These areas are accessibility, cost, nature of usage, integrity, value added, and security. These six areas reflect factors that raised concerns about the use of ChatGPT by respondents to the *Chronicle's* survey.

Given the analysis of the cases and frameworks described in this paper, the authors have created a scale of "Generative AI Management Control" over any process using generative AI tools (Table 3). This scale indicates the level of control to be exerted over various processes which might incorporate the use of generative AI. This "Generative AI Management Control" scale contributes to evolving practice and thought regarding the use of generative AI in management processes.

TABLE 3
GENERATIVE AI MANAGEMENT CONTROL SCALE

Level	Measurement Label	Measurement Description
1	Acknowledge	Make note of or recognize the use of ChatGPT. At this level the impact of the tool on the process or program only requires continued monitoring
2	Address	At this level, the impact of ChatGPT needs to be addressed in such a manner that parameters are being placed on the use of the tool
3	Control	At this level, there are measurable impacts to usage of ChatGPT. To prevent deleterious effects, specific prohibition on some aspects or types of use of ChatGPT may be put into place.

Table 4 offers a qualitative first pass at establishing a coherent strategic approach to the management of a disruptive innovation, using the six factors identified in the Guo et. al. (2019) paper, the four case studies presented in this paper, and applying the Generative AI Management Control scale. The approach is simple but establishes a foundation upon which more detailed approaches can be built.

TABLE 4
ACTIONS TO MANAGE CHATGPT IMPACTS

Factor	Impacted Group	AI Control Level (from Table 3)	Case Study of Focus	Explanation
Accessibility	Faculty	Address	Support Learning Case	ChatGPT is already widely used by students at universities; university network access makes the tool widely available. Conclusion: Place a statement in syllabus that that authorizes use of ChatGPT in this class for assignment output ONLY for this assignment
Costs	Faculty	Acknowledge	Support Learning Case	Reduction in time preparing materials. In the example provided, the students generated the resumes that were evaluated. Previously instructor time was required for preparation of multiple resumes to address the same objectives in this lesson. That said there is somewhat of a learning curve with the application for those who have not used the tool yet. Conclusion: Encourage faculty use in meetings and via emails highlighting the personal resource savings for faculty.
	Student	Acknowledge and Address	Support Learning Case and Study Habits Case	Use of ChatGPT in assignment preparation is extremely low cost for students and may even provide cost reductions if the use of the tool in a course replaces the purchase of cases or simulations. That said, the use of this tool may not fit well into an individual student's learning style. Conclusion: Ensure the output of ChatGPT is examined under circumstances with a faculty member or tutor such that learning goals are not solely realized by the tool.

(Continued)

Nature of Usage	Faculty	Control	Support Learning Case and Study Habits Case	Students often learn best by developing their personal skill sets which can be achieved through assignments or exams. Material shared by students in exams must be material derived from the student's intellectual property not derived from generative artificial intelligence. Clear prohibitions on use of generative AI are the prerogative of faculty in making assignments and giving exams. Faculty must document in syllabi and elsewhere their clear expectations for when AI usage is permitted and when prohibited. Conclusion: All faculty syllabi should have clear statements regarding the usage of AI in the respective course.
Integrity	Staff	Address	Marketing and Communication Case	The recognition of creativity in material and ensuring proper credit is afforded those who produced it is key in using AI in developing marketing and other communication material. Universities are paying marketing people for their ideas and it is thus incumbent upon the staff members to ensure that what they are offering as material they have personally produced, is indeed material that they have produced and is not material generated by a host of unnamed contributors. Conclusion: Clear parameters must be established by universities to ensure that all communication material produced credits those involved in the production.
Value Added	Faculty, Staff	Acknowledge	Strategic Planning Case	Structure and form can be created using AI where no such format was previously established. The use of ChatGPT by committees to establish initial starting points for a general charge is the foundation for a value-added approach to play out. As the AI-generated value proposition is reviewed by other groups, their value-added thoughts are shared.
Security	Staff	Address	Marketing and Communication Case	Staff use of university material or data for AI generation of output must be closely monitored and clearly labelled for use. Private information (i.e., student information) and proprietary information must be protected and restricted. Conclusion: Data must be clearly identified as private or proprietary and approvals are needed to reinforce data usage with AI. In short, clear parameters must be established.

ChatGPT is a disruptive innovation that threatens the foundational tenets of higher education, so waiting to react risks losing an opportunity to respond at all. Using the case studies featured in this paper provides a first look at how pockets of the university are using the generative artificial intelligence tool. The tool is designed to offer some core factors that must be

addressed when managing the disruptive innovation. It is posited that managing these core factors affords faculty, staff, and students a coherent approach to a multi-dimensional concept. For example, addressing each of these core factors in the development of a policy to manage the use of ChatGPT by faculty in their classrooms, should ensure the creation of a viable, workable policy. That said, disruptive innovation is dynamic, so the policy will need to be adapted to reflect changes in the environment. Such revisions should be easily completed as the core factors in what makes ChatGPT disruptive are already incorporated into the document. In short, this simple model offers a first attempt at managing one of the most disruptive innovations of all time.

Takeaways

Managers must consider a variety of items when dealing with generative AI like ChatGPT. Areas for consideration include:

Communication: ChatGPT is not going to go away, and it cannot be ignored. It is therefore incumbent on any university to recognize the tool and its possible implications. Early reactions noted in the Chronicle report (Anft, 2023) can create perceptions that can rise to the level of reality without being properly addressed. For instance, instructors are not going to be replaced by artificial intelligence tomorrow, but some adjuncts may be experiencing stress over the matter. Hold information sessions. Write guidelines for AI usage. Recognize formally that an issue exists. Addressing such issues and managing them can only begin once open communication begins on the matter.

Train employees: Open accessibility is a hallmark of ChatGPT, but not everyone uses it and not everyone uses it at the same frequency, level, or depth. Consider therefore, holding training sessions that introduce the tool and offer ideas about how to use it. Periodically continue such training either via meetings or in written form. Either way, make sure your students and employees have the same opportunity to interact with the tool within the confines of your institution's guidelines on such use.

Legality: Recognition of the tool's potential and drawbacks is necessary but special recognition needs to be made regarding regulation and legalities of its usage. Each university can set its own boundaries for use, but all such guidelines and rules should be documented and formally shared with students, faculty, and staff. Intellectual property and its relationship to generative AI use is especially important to clarify, but equal attention must be paid to the handling of private personal or proprietary information.

Ethics: Closely related to the legality of how information is handled by students, faculty, and staff in relation to generative AI is the ethicality of such actions. Again, a policy or guidelines clearly communicated to all relevant stakeholders is necessary.
Flexibility: Generative AI is rapidly evolving. Recent announcements have suggested federal legislation or, at minimum, guidance on how to deal with the tool may be forthcoming. Regardless of how quickly such regulation and/or guidelines develop, the changes both to the product and the environments in which it is being applied are dynamic. As such, given how quickly generative AI tools are likely to move forward to new levels, the guidance offered may be obsolete before fully implemented. It is thus imperative that universities constantly monitor and be at the ready to act. Preparation for such action may even permit proactive behavior in response to issues or items with generative AI. Even if the action is not proactive, the reaction will be more immediate and more effective if preparation is in place. In short, universities need to be flexible and quickly adapt as the need arises.

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APPENDIX 1
GUO, PAN, GUO, GU & KUUSISTO (2019)
LINKAGES BETWEEN DISRUPTIVE INNOVATION INDICATORS
(PEARSON CORRELATION COEFFICIENT)

Linkage	Pearson Correlation Coefficient[1]
Integration-Leadership	0.57
Integration-Simplification	0.47
Integration-Value Network	0.46
Integration-Cost Reduction	0.40
Leadership-Diffusivity	0.55
Leadership-Value Network	0.56
Leadership-Cost Reduction	0.47
Maturity-Cost Reduction	0.44
Diffusivity-Simplification	0.49
Diffusivity-Value Network	0.50
Diffusivity-Cost Reduction	0.56
Simplification-Cost Reduction	0.49
Niche Market-Value Network	0.52
Niche Market-Cost Reduction	0.41
Value Network-Cost Reduction	0.52

[1]Guo, Pan, Guo, Gu, & Kuusisto. (2019). Measurement Framework for Assessing Disruptive Innovations, *Technological Forecasting & Social Change*, 139, 250-265.

APPENDIX 2
SAMPLE CHATGPT ITEM USED IN CREATING STUDY GUIDE

A VIRAL HOT SAUCE IS GOING VIRAL AGAIN……BUT FOR THE WRONG REASON

Written by ChatGPT (based on Olivia Lingard and Elaine Ding's Assignment #1 Papers on Pink Sauce)

Olivia Ding, Director of Digital Marketing at SuperstoreX, is faced with a major crisis, as a scathing YouTube video was released showing one of the retailer's most popular online products, *Chef Rage Owns Atomic Fire Hot Sauce*, causing people to get violently ill.

Chef Rage Owns Atomic Fire Hot Sauce was a phenomenon. Made by reclusive chef, Chef Rage Owns, the hot sauce quickly gained a cult following among food critics and spicy food enthusiasts. Chef Rage Owns has become a hot sauce legend by using the hottest peppers in the world, including ghost peppers, Carolina Reaper peppers, Naga Viper peppers, and Red Savina habanero peppers, in a mix of olive oil, eggs and milk, to create his unique blend of fire and flavor.

The hot sauce was sold by Elaine Lingard, a savvy entrepreneur who saw the potential in Chef Rage Owns's creations. She worked tirelessly to get them into the hands of the public. Her first step was to secure a deal with SuperstoreX to feature the hot sauce in their stores and online, and soon it became one of the retailer's top-selling products.

What made the hot sauce go viral was the excitement and buzz that surrounded it. People were eager to try the "*hottest hot sauce in the world*" and share their experiences with friends and family. Social media was abuzz with videos and photos of people taking the "*Atomic Fire Challenge*" and daring each other to try a spoonful of the scorching sauce.

Food bloggers and influencers raved about the hot sauce, calling it a must-try for anyone who loved spicy food. The hashtag #AtomicFire was trending on Instagram, and the hot sauce was even featured on popular cooking shows and in food magazines.

As the popularity of the hot sauce grew, so did its reach. People from all over the world were ordering *Chef Rage Owns Atomic Fire Hot Sauce* online, and it was being sold in over 4,000 SuperstoreX stores in just over 6 months, generating nearly $1,500,000 in sales.

It seemed like nothing could stop the rise of *Chef Rage Owns Atomic Fire Hot Sauce*, until the scandal video was released, revealing the dark side of this popular product. The video, which had already been viewed over 2,000,000 times and generated hundreds of comments, was damaging to the retailer's reputation and could potentially harm their brand. Olivia Ding is concerned about the impact that the video could have on SuperstoreX and knows that she needs to act quickly to respond to the situation.

Olivia has called a meeting with Elaine Lingard, the entrepreneur who was selling the hot sauce through SuperstoreX. Elaine Lingard is shocked by the video and is obviously concerned about the impact it could have on her business. How can they possibly respond to this?