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## Chapter 1

1) What are the top 3 skills that today's managers need that weren't required a decade ago?

Explain through citing material from your textbook in addition to other high- quality sources.

The evolving business world requires managers to develop new skills that were not critical a decade ago based on technological advancements. Technological skills have become required in many job positions globally but require additional key knowledge elements to succeed within competing markets. Change arises from technologies such as A.I. and Cloud Computing, requiring managers to transition into the digital age (*Gallaughner, 2022*). Analytics and artificial intelligence are now being used as primary sources for decision-making, and use will continue to grow as tech continues to innovate. According to Fortune Brainstorm Films, the depth of experience required for managers in technological skills is now extremely high, which demands a continuous cycle of learning to avoid job displacement. Managers must possess critical thinking and adaptability skills to enact effective change in their field. Technological skills are becoming more necessary as remote working has become more popular and we move toward the metaverse- the next generation of the internet (*CBS Interactive, 2021*). Managers should have a solid basis for understanding primary software used in efficient and effective company operations. Companies such as Google, Apple, and Facebook began to decline sharply.

However, after utilizing basic modern technology skills, they became some of the most profitable companies in the world (*Gallaugher, 2022*).

Technological and adaptability skills are not significant on their own for managers to excel in their positions. Creativity, originality, social/ emotional intelligence, problem-solving, and social skills must accompany technological skills for a manager to succeed optimistically (*Oppenheimer & Fitz, 2019*). Creativity is one of the top three demanded skills because innovation stems from creative thoughts and ideas. The creative skill set includes expertise in social media, search engine marketing (SEM), search engine optimization (SEO), and customer relationship management (CRM) (*Gallaugher, 2022*). According to the Wall Street Journal, the highest skill gaps of today's employees are oral communication, leadership, and time management, all of which can be improved with technological, creative, and adaptability skills. Managers should develop hybrid working skills, which, after the COVID-19 pandemic, are essential in many job fields across the globe. In the United States, there will be a 21% growth in hybrid jobs in the next year, which require all the above skills to obtain positions (*Dow Jones & Company, 2019*).

Managers should also practice a mindset of transparency when making technological and business decisions. Primary duties should include making all performance measures available for staff to review and having proper communication channels to distribute changes to regulations internally and externally. Today's technology has transformed information instantly, so companies that do not disclose information to their employees risk the spread of facts, whether truthful or not, being spread digitally through outlets such as social media (*UAB, 2022*). Transparency is an ethical dilemma that produces serious problems for big organizations. For example, countries have chosen to investigate Google and Apple for suspected unethical

practices due to a lack of full transparency with their employees and the public (*Gallaughier, 2022*). Managers should strive to produce the highest amount of clarity to avoid, which will help stop unethical practices from occurring or continuing within their organizations.

2) Describe ways in which technology was strategically utilized in your industry during the COVID-19 pandemic. Evaluate which methods have been successful and which have not, and explain your reasoning utilizing course material and other scholarly sources.

Technology completely changed the higher education industry during the COVID-19 pandemic. Online learning platforms became the new norm for educational distribution. Virtual classrooms, video meetings, and online learning management tools allowed instructors to continue to teach and interact with students in real-time so that students would stay caught up during lockdown. Communication became 100% virtual, which led to the further adaptation of cloud computing software such as Microsoft Outlook. Outlook became one of the primary forms of communication as students were kept from meeting with professors in person. Zoom was also highly used as universities purchased packages for students to continue meeting with their classes, peers, and instructors virtually. The higher education industry needed to incorporate technology into their operation, communication, distribution, marketing, and many other sectors.

A study conducted by McKinsey & Company in 2021 evaluated eight dimensions of focus for higher educational institutions to engage their publics better. The eight dimensions of focus can be condensed into three broad ideas, seamless journey, engaging teaching approach, and caring network (*McKinsey & Company, 2022*). Seamless journey refers to the adaptability of technology to create a clear road map and seamless connections. The University of Louisiana at

Lafayette uses Moodle, an online learning platform for students to have a seamless journey for all the new technology distributed during the pandemic. Seamless journeys could have been improved if the Universities allowed students to automatically connect their Moodle courses to Outlook and other outside calendars to keep better track of due dates and times or virtual meetings. The engaging teaching approach refers to the range of learning formats offered to students, captivating experiences, adaptive learning, and real-world application skills. Adaptive learning was and is used on platforms such as Wiley Plus, McGraw Hill Connect, and Flatworld. Students can use these technologies to get immediate feedback on assignments and use the platforms for guided learning exercises. The University's weaknesses were in captivating experiences. The pandemic made class distribution extremely difficult when looking at the engaging sector. Instructors may use Zoom but cannot know if students are engaged in the lesson. A caring network refers to timely support and a strong community, which is challenging to establish solely online. Communities may choose to establish networks through social media and take advantage of websites such as Facebook, which can reach 3 billion people worldwide (*Gallaugh, 2022*). Social media campaigns to increase reactions between stakeholders were used, such as having competitions for students to show their at-home workspace.

Technology was used in operations, such as incorporating virtual methods for students to change course schedules online, and tech is now at the center of operations for all organizations (*Gallaugh, 2022*). Making changes to course schedules, such as adding or dropping a class after a specific date, was traditionally performed in a physical office. After the pandemic protocols became used, students could make these changes via email. Using email to make changes showed some success. However, universities could have explored other software to make immediate changes that could organize student requests so that none of the emails were

overlooked. Suggested changes include incorporating cloud computing software forms such as Microsoft Forms that automatically produce an Excel sheet to create better levels of organization. The University may have also considered incorporating Asana, a web service and work management platform that helps teams and organizations track, manage, and organize their work (*Asana, 2023*).

The biggest failure during the incorporation of technology into higher education after the pandemic was adequate training of students, instructors, and staff to use integrated information and communication technology (ITC) successfully. Successfully using ITC increases consumer satisfaction and increases the likelihood of desired outcomes (*Cervo et al., 2020*). The sudden pandemic did not allow for proper training methods to occur. Faculty and Staff were tasked with learning how to distribute systems independently while teaching students how to use these systems. Proper planning for crises may have prevented some complications, but not much could have been done to further help with training methods.

## Chapter 5

3) Describe in detail your own creative idea for how Netflix could leverage crowdsourcing in the future.

Netflix compiles data from users that are used to make recommendations to their profiles regarding titles that relate to previously watched and voted-on movies and shows (*Gallaughier, 2022*). Netflix could use the recommendations to allow users to create their own recommendations list in a "playlist" style form similar to Spotify. Users could share these playlists to help add a social element to the platform. A recommender system is needed because today's users are equipped with limitless options due to the creation of the internet (*Reedy, 2020*).

The recommender system would have the ability to be used by the film industry to future decide which genres will yield the highest profitability. Netflix already uses crowdsourcing to improve its recommendation engine by 10%, so the likelihood that using crowdsourcing in other aspects would further increase its system is high (*Fisher, 2015*).

Netflix is just one of over 100 streaming devices that risk being closed if they cannot keep pace with technological advancements (*Gallaugh, 2022*). Netflix could expand its reach and surpass competitors by creating a community platform for creators that would house ideas for user-generated content and recommendations and create a group of brand ambassadors to extend their reach onto other social platforms. The idea of a community creator platform is similar to YouTube's Business Model. YouTube is based on community-created content, and if a user gains enough interactions, they are eligible for financial rewards (*Khurram, 2018*). Netflix has already become one of the only examples of a firm that has surpassed technological challenges and thrived and now has the opportunity to further develop with new improvements (*Gallaugh, 2022*). The idea of Netflix incorporating a social element through crowdsourcing would allow the company to reduce its churn rate. A Netflix social platform will only change the company's marginal or fixed costs if it rewards creators based on interactions.

## Chapter 14

4) Explain the difference between hardware and software, and provide examples of both hardware and software that are currently being used in your organization.

Hardware defines the physical items of information technology, and software defines programs that direct the technology to do its job (*Gallaughner, 2022*). Hardware and software used in higher education are comprehensive. Hardware and software help higher educational institutions thrive, especially after the COVID-19 Pandemic. Hardware includes computers, projectors, keyboards, telephones, calculators, speakers, monitors, printers, networking equipment, interactive whiteboards, tablets, etc. Software includes operating systems, applications, servers, distributing computing, and databases. At UL Lafayette, server-distributing computing saves materials through the M-Drive and remote VPNs. Remote VPNs allow users to view their computer screen, which may be in a different location, in real time. Higher educational institutions also use learning management software such as Moodle, Canva, and Blackboard. Moodle, used at UL Lafayette, manages courses, delivers content, tracks student progress, and communicates with instructors and peers (*Moodle, 2023*).

Desktop software in higher education is essential for students, faculty, and staff. UL Lafayette has a subscription to Office Suite available to anyone with a UL ID that allows clients to download apps such as Excel, Word, and PowerPoint to their hardware. Microsoft Office Suite is an example of enterprise resource planning software integrating multiple company operations into one application for concise and efficient use (*Gallaughner, 2022*). Higher educational institutions may also use CRM, customer relationship management, and software to further stakeholder productivity and engagement (*Element, 2022*).

5) According to the textbook and high-quality research, what can a manager do to influence employees to effectively utilize the technology the organization has invested in?

Effective use of technology in organizations is based on understanding, acceptance, and adaptability to change. Technology changes daily, and while organizations should not make daily changes, updates should occur frequently. A manager's influence and attitude towards change are essential to the company's development. A manager should implement adequate training sessions with frequent meetings/discussions to motivate employees to use the new systems and present an opportunity for workers to present questions/concerns (*Gallaugher, 2022*). Employees' technology skills can vary highly, so it is of high importance to offer essential training with the goal of mass understanding and use. Training is best distributed in small steps rather than presenting the new skill as a whole (*Council, 2018*). Breaking down the process into small, manageable steps helps to ensure that all employees share a mutual understanding before moving on to more significant details.

Managers may also increase influence by adopting a qualitative assessment approach to establish if knowledge transfer is effective (*Goh, 2002*). Qualitative assessment may include surveys or feedback forms that can be assessed at an individual, departmental, or organizational level. A valuable tool to examine technology implementation is the technology acceptance model (TAM) which assists managers in developing a model of determinates, testing the proposed model, and presenting research on potential interventions that may enhance employee use of the new technology (*Venkatesh & Bala, 2008*). Managers should also choose an effective database management system (DBMS). A DBMS consistent with a firm's technological format allows an organization to manage its value chain (*Gallaugher, 2022*). DBMS works in conjunction with other organizational systems such as customer relationship management (CRM), supply chain management (SCM), and business intelligence (B.I.) systems (*Gallaugher, 2022*).



6) Define an ERP in your own words using the textbook, and explain its purpose in an organization.

Enterprise resource planning (ERP) is software that effectively manages and combines organizational processes to coordinate between departments (*Gallaugher, 2022*). ERP is offered through third-party companies and combines organizational functions such as human resources, manufacturing, inventory, sales, purchasing, order tracking, and decision support (*Gallaugher, 2022*). ERP can be delivered through the cloud, maximizing efficiency between different business locations. One of the primary purposes of an ERP is to read data that is embedded into multiple systems in the most efficient manner. The goal of an ERP is to create a system that is accurate and up-to-date with important information used for decision-making, customer relations, and operations (*Beheshti, 2006*). ERPs allow multiple organizational actions to be performed simultaneously without the risk of inaccurate results. Using an ERP is a wise investment because it reduces inaccuracies, prevents companies from having to develop their software, and maximizes time management, saving the company valuable dollars. Purchasing an ERP system is one of a manager's most important decisions (*Beheshti, 2006*). Implementing an ERP system requires organizational change and creates a responsibility for managers to effectively use and teach employees how to use the new system.

7) Summarize a news story describing a business that either successfully or unsuccessfully implemented an ERP, and explain the impact it had on the organization.

Mission Produce is a leader in producing, sourcing, and distributing avocados to retailers, wholesalers, and food service customers (*Mission Produce, 2023*). The company operates in two segments- marketing/ distribution and international farming. In 2021, Mission Produce

experienced major operational issues when attempting to implement its new ERP system (Salgado, 2022). The ERP system failed to predict accurate statistics regarding inventory the company had on hand that should have been available to purchase. Mission Produces' ERP system could not share the correct data between different organizational programs (Gallaughier, 2022). The company needed to be made aware of the amount of produce in its inventory and the freshness of the stored produce. Inaccuracies in visibility require the company to purchase products from third-party distributors to meet their current demand. Company CEO Stephen Barnard reported that operating expenses rose \$4.1 million due to problems with the new ERP system (Jones, 2022). Customer invoices in the sales department could not be filled promptly with simply the amount of actual inventory in stock. Mission Produce needed to prepare to implement the new ERP systems and take the measures required regarding testing and training procedures. The company faced challenges from a fragmented digital ecosystem that needed to create an integrated experience between customers, employees, and partners (Walker, 2021).

## Chapters 6

8) Explain the advantages of using computing to simulate an automobile crash test as opposed to actually staging a crash, utilizing external sources to support your assertions. Moreover, provide a similar example of how computer simulations could be utilized in the industry you currently work or the industry in which you plan to work and discuss the advantages it would provide in that specific industry.

Technology's innovation, supercomputing, and artificial intelligence have made hypothetical tests possible without using as many physical elements. Automobile sensors and

microprocessors make computing that stimulates automobile crash tests now possible. Supercomputers make lab testing possible by using algorithms to develop results produced in given conditions and scenarios (*Gallaugher, 2022*). The technique of massively parallel would allow for multiple auto companies and regulation agencies to use numerous microprocessors that would work simultaneously to solve problems, such as when U.S. national labs, the National Science Foundation, and NASA worked together to target problems during the pandemic (*Gallaugher, 2022*). Using computing to simulate an automobile crash would benefit public safety, costs, and data acquisition. Costs would decrease because the crash would not require physical items to be damaged, and data from the crash could be analyzed immediately, reducing time, again saving dollars.

Moore's law is a significant advantage in simulation scenarios, as noted that the technology we have today will double in approximately one to two years (*Gallaugher, 2022*). Moore's law shows that crash scenarios need to be tested frequently, and technology would allow the test to be completed at any moment without outside resources. Finite Element Analysis (FEM) has been used by the Federal Highway Administration and Lawrence Livermore National Laboratory to help develop roadside hardware for crash test simulation (*Atahan, 2009*). The FEM model can determine the geometrical and material details of given structures and requires a specific representation of mechanisms for the analysis to be successful, with results showing less complex arrangements that contribute to the cause and result of the crash (*Witold et al., 2011*).

In the higher education industry, games and simulations can be used to prepare students for future professional endeavors. The efficient use of games and simulations to achieve learning objectives is already in use. Video games, virtual worlds, and Massive Multi-Player Online Games (MMPOGs) are expanding and becoming an interest to educational policy creators

(*Buckless, 2014*). Simulations are used in education to create a scenario-based environment where students are challenged with using their acquired skills to solve real-world problems and allowing instructors to accurately measure the student's understanding of topics (*Andreu-Andres & Garcia-Casas, 2011*). The advantages of using simulations included the development of interpersonal communication skills, establishing leadership, exploring teamwork, stress management, and task prioritizing. Simulations help engage students in an interactive, authentic, and self-driven knowledge exchange, while games deliver, support, and enhance teaching methods and evaluations (*McLoughlin & Lee, 2008*). As technology advances, institutions that do not use new simulations, games, and systems strategically will be destroyed unless managers and decision-makers choose to study trends and recognize upcoming opportunities (*Gallaughier, 2022*).

9) If you were the new CIO of Disney, and the CEO wanted you to expand the use of new technologies (such as the MagicBand technology) in Disney World and Disneyland, describe in detail how you would implement innovative technologies to further enhance the customer experience. Cite material from your textbook in addition to high-quality external sources.

Disney World is highly innovative in its technology, from operations to sales, advertising, and beyond. Patrons of Disney World can use their Magic Bands to access hotel rooms, virtual theme parks, and tickets as a form of payment while visiting their parks (*Disney.Com, 2023*). The bands were previously mailed to customers before they arrived at the park, are now available on smartphones, and will allow them to have personalized greetings, access photos, and be located (*Gallaughier, 2022*). In addition to the multiple features of the magic band, Disney might consider adding instant language translation to assist customers who are traveling internally or those who do not consider English their primary language. Instant

language translation can be used similarly to how we see language translation through social media networks and offer suggestions. Machine language translation resources eliminate the need for human translators, which may only be available to some users based on financial stability (*Jones, 2008*).

Disney may also want to explore AR-enhanced experiences using A.R. glasses or smartphone apps to digitally overlay content on the physical world. A.R. systems recognize a space, element, face, object, or person through a camera lens and digitally overlay media such as video, images, or text (*Amin & Govilkar, 2015*). A.R. systems use electronic devices' accelerometers, compasses, and location data to position the virtual elements in the physical world (*Bocato, 2012*). The MyDisneyExperience service could incorporate the A.R. virtual system into the presently produced mobile app. A.R. systems could use present sensors, such as those used in the Be Our Guest Restaurant, which show where guests are seated in the building (*Gallaugh, 2022*). The MyDisneyExperience app is already used as a way to entertain guests. At the same time, they wait in lines, and adding an A.R. world might pique the interest of even more customers, especially those with impatient children (*Gallaugh, 2022*).

## Chapter 7

10) Define blockchain technology in your own words using the textbook, and describe how it could be utilized in your industry in the future.

Blockchain technology is a distributed and immutable ledger technology that securely records and verifies transactions across a network of computers (*Gallaugh, 2022*). Blockchains are composed of data blocks that hold a list of transactions, linked chronologically to create a chain. Blockchain technology eliminates the need for intermediaries such as a bank (*Gallaugh,*

2022). Blockchain technology has moved beyond monetary needs, such as Bitcoin, and is now used for fields such as organizing sensitive data (*Salah, 2020*).

In higher education, blockchains can secure credential verification and store information such as degrees, transcripts, academic records, and certificates. Security and privacy breaches increase yearly in higher education with risks of fraud, safe storage, and reduced budgets for digital transactions (*Raimundo & Rosario, 2021*). Blockchains can reduce costs with immediate interactions, eliminating transaction fees (*Gallaughner, 2022*). Eliminating a third party to verify documents reduces the time needed for students to enter contracts with given institutions and creates a more trustworthy system. Blockchains can build new knowledge systems that combine with smart contracts to create effective and efficient processes for student and higher education institutions (*Lam & Dongol, 2020*). The technology allows learners to securely move their documents to different platforms, and institutions can upload secure documents to the chain for learners to access.

11) What are the benefits of organizations in your industry using cryptocurrencies?

Cryptocurrency is a form of financial payment using blockchain to transfer and verify assets (*Gallaughner, 2022*) securely. Cryptocurrency is especially useful in international transactions. International transactions in a higher educational institution frequently occur from tuition payments to conference fees. A passkey used in the transaction makes tampering or altering doubtful (*Gallaughner, 2022*). Access to the global market would increase, allowing institutions to accept payments from students and partners worldwide, expanding their reach and interactions with future customers. Funding and scholarships may also be able to use cryptocurrency to distribute allocated rewards securely, reducing fraud and ensuring that funds

are distributed to eligible recipients. Cryptocurrencies typically have lower transactional fees, allowing a higher percentage of the funds to be used for academic support (*Cochan, 2017*). Higher educational institutions can use cryptocurrencies for educational innovation by fostering innovation in digital credentials, decentralized learning platforms, and student reward systems (*Mougayer, 2016*). Students benefit from instructors teaching courses on cryptocurrencies because they can use the elements in all industries with the continued globalization of technology.

12) Define and describe how 3D printers work. Explain one innovative way 3D printers are currently being used in an industry related to yours.

3D printing is a disruptive technology currently used for minor projects such as plastic trinkets, with high-end printers being extremely costly (*Gallaughner, 2022*). The use of 3D printing technology in higher education can be broken down into six categories: (1) teaching 3D printing to students, (2) teaching educators about 3D printing, (3) a support tool for classrooms, (4) producing artifacts that aid learning, (5) create assistive technologies, and (6) support outreach activities (*Minshall, 2019*). 3D printing is commonly used for anatomical modeling for medical and healthcare instruction. The 3D models provide students with a hands-on experience that allows for exploring highly detailed structures in the human anatomy. This technology has transformed how medical students and future healthcare professionals learn and practice, offering a more interactive and tangible experience (*Schizas et al., 2021*). 3D models can create test figures for lab experiments that mimic the human body. Students can better understand overall anatomy through visualization made possible by 3D printing technology.

13) Define artificial intelligence in your own words using the textbook, and describe how it could be utilized in your industry in the future.

Artificial intelligence is a technological software that mimics human intelligence to improve given functions through detailed open-source algorithms (*Gallaugh, 2022*). Artificial intelligence has been implemented into businesses of many varieties with more outstanding efficiency ratings. Some universities have also added it to aid with admissions, website navigation, or student aid. It is impossible to predict how A.I. will affect higher education going forward accurately, yet it will be more prevalent shortly and beyond. Everyone directly or indirectly involved with Artificial Intelligence programs in higher education needs to be wary of what functions these programs perform. With the growing use of A.I., students will not need to gather information themselves; therefore, the overall level of knowledge may decrease (*Robbins, 2023*). The job market will promote strong experience, so job seekers can display their skills and proficiencies. Internships will become an essential function of higher education.

Higher educational institutions will begin to use A.I. as an experiential tool for students to participate in simulations relating directly to their professional field. A.I. could be used with virtual reality to produce real-life scenarios based on student decision-making (*Krucken, 2003*). The access to vast amounts of information and real-time feedback enhances comprehension and fosters a deeper engagement with course materials.

A survey by GraceAnn Carroll at the University of Louisiana at Lafayette examined how students enrolled in business courses value A.I. in their educational pursuits. The survey predictions were acquired from 114 responses. The results showed that 99% of respondents were familiar with A.I., and 39% believed their course grades would increase if A.I. were used in



course distribution. In comparison, only 32% of respondents reported using A.I. in their current and past courses. The biggest hurdle students perceived when incorporating A.I. into higher education was knowledge, followed by fear. Based on these results, predictions conclude that A.I. will be used at a higher rate in higher education after training of faculty, staff, and students takes place, and stigmas are broken regarding A.I. being used negatively in courses. Artificial Intelligence can be perceived as a complex tool that some users may only grasp or understand.

Many universities have been quick to neglect A.I. because of programs like ChatGPT. This Artificial Intelligence program can spit out any answer or even write papers for students, causing teachers to look the other way and be closed-minded to other forms of A.I. Universities have already started embedding Artificial Intelligence programs into their systems to aid students. Saint Louis University has implemented devices into its dorm rooms to help students answer a range of questions concerning facility hours and the location of a classroom or office (*Selingo, 2023*). A.I. can be used in the future for personalized learning through algorithms that will analyze individual students' learning patterns and tailor educational content to meet specific needs (*Aleman et al., 2017*). A.I. can analyze student data to help predict areas students may struggle to learn and determine which students are at risk of leaving the institution. Instructors may choose in the future to use A.I. in developing a curriculum that is up-to-date with industry trends and can even be translated into multiple languages to assist students whose first language is not English (*Johnson et al., 2015*). Overall, the future of A.I. in higher education is diverse and will impact every segment of the institution, from administrative efficiency to classroom procedures.

14) Is data a source of competitive advantage? Explain through citing material from your textbook in addition to other high-quality sources.

Data is a huge source of competitive advantage, especially for companies such as Walmart, which used data-sourcing efforts to reach the top of the Fortune 500 list (*Gallaughier, 2022*). Data is most valuable when it is genuinely accurate, lacking imperfections. Data can assist companies in lowering costs, increasing customer service, and boosting performance (*Gallaughier, 2022*). Many companies need to use their acquired data to their maximum advantage. However, with tools such as business intelligence, analytics, and machine learning, companies can use their resources to make the most advances in their field (*Gallaughier, 2022*). Humans use data daily through smartphones, social media, smartwatches, and other items in the Internet of Things. Companies constantly collect customer data to relay their products better to increase profits or awareness. Data is organized using database management systems (DBMS), which produces the most advantageous form of the resource collected (*Gallaughier, 2022*).

Companies that use transaction processing systems can gain customer insights every time a purchase, service, or transaction is performed (*Gallaughier, 2022*). The system helps track customers' interactions with the firm to predict buying preferences. Organizations may also collect data through enterprise software, including customer relationship management systems, enterprise resource planning, and supply chain management. The data collected from these sources is only valid if managers understand how the data can be helpful, or else the collection is just research that serves little purpose (*Gallaughier, 2022*). Managers must also decide what data type will give the organization a competitive advantage. Publicly sourced data will likely only be beneficial as some organizations and firms will have access to the results.

Data quality is a trustworthy source of competitive advantage. Inaccurate data can cost companies financially by implementing the wrong strategies, creating a source of mistrust, and making costly decisions (*Redman, 1995*). Data derived from tested analytical sources should also

be relative to the company's industry. For example, in the higher education industry in the North, data on concert tickets in the South would not be relevant and would not create a competitive advantage. If all data acquisition and usefulness conditions are met, advantages encompass areas like customer understanding, operational efficiency, innovation, and strategic adaptability.

15) Describe a situation in which data might be a source for sustainable competitive advantage in your organization or industry.

In higher education, Universities and Colleges continuously seek ways to gain the highest reach in attracting and retaining students currently enrolled. New ideas of Big Data are causing institutions to reevaluate how they use and process data collected with innovative tools and technology (*Gallaugh, 2022*). Data makes predictions such as which students are more likely to enroll in courses, which students will graduate, and which students will pursue a second degree. By collecting and analyzing strategically sourced data regarding current and prospective students, an institution can alter its strategies to optimize enrollment and student experience (*Bean, 2014*). Data may be sourced from a company's website, social media, emails, or phone calls to gauge different levels of engagement. Student engagement may be determined from data collection through support services, participation in clubs and other campus organizations, and overall academic performance (*Perna, 2013*). The two data sets yield a competitive advantage by guiding targeted marketing efforts based on location, offering recommendations for personalized support services, and suggesting strategies to ensure that currently enrolled students can gain the most from their course participation (*Vardi, 2012*).

Data brings a competitive advantage to higher education when it is used to optimize recruitment efforts, increase retention rates, and enhance the overall student experience.

Institutions should be able to use data to adapt to the changing needs of students and market conditions to ensure long-term success. Data inconsistent and incompatible with current software methods does not produce value for an organization, so data acquisition should be constant (Gallaughier, 2022).

16) In what situations might data *not* yield a sustainable advantage in your organization or industry?

Data can be instrumental in higher education but also poses challenges for an organization when resources are corrupted and consistent. To ensure data is acquired, an institution needs adequate systems to store values for future use. Organizations that retrieve data from public or legacy systems may not find a competitive advantage since the information is widely available. Public and legacy systems often need to be kept up to date, frequently result in missing or invalid information, and are incompatible with newer technology systems (Gallaughier, 2022). Universities might also need help using data to competitive advantage if they use transactional data. Transactional data is less valuable because to serve a purpose and to be analyzed, it must first be ported to a data warehouse (Gallaughier, 2022).

Educational institutions may also not find a sustainable advantage with their data if they do not use a data mart. A data mart is a database that addresses specific issues related to the organization, such as increasing enrollment numbers, improving the quality of education for students, or increasing retention rates (Gallaughier, 2022). Higher educational institutions must also know how to analyze their data, so using a processing base is necessary for the data to be valuable. Online analytical processing helps summarize data into subgroups called data cubes (Gallaughier, 2022). Insights from analytical processing and data cubes will determine which

outlets to explore, creating a sustainable competitive advantage. In higher education, data collection can be cumbersome; analytics helps break results into themes that will serve an actual purpose.

Data can help universities and colleges thrive, but knowing how to use the data makes the collection more varied. Having a professional analytics staff member will help sustain the competitive advantage. As an institution, the overall goal is to spread knowledge to as many individuals as possible. The organization will fail to reach its target scope if systems are not built to house quality information that can be transformed and analyzed to make predictions and suggestions. If the University or college is not educated on how and when to use data, then other competitors will take the opportunity to fill gaps and increase their student base.

## Chapters 19

17) Research the data breach at Equifax *or* Target Corporation in the textbook and online. What weaknesses in security did the hackers exploit?

Equifax is a leading company whose job is to monitor the creditworthiness of adults in the United States and abroad (*Gallaugh, 2022*). In the summer of 2017, Equifax was a victim of one of the most significant data breaches. Hackers exploited 143 million customers, stealing addresses, social security numbers, tax IDs, driver's licenses, and credit card numbers (*Gallaugh, 2022*). Equifax exposed their companies to hackers by failing to complete essential security duties that should have been performed regularly. The information stolen allows hackers to use consumers' data to take out loans, purchase cars, and even claim the customer's children as their dependents (*Oliver, 2017*). Equifax formerly experienced operational problems,

such as when a consumer reported receiving over 300 credit reports when she used the site that was not her own but was all delivered to her mailing address (*Biddeford, 2015*).

One of their most significant security weaknesses was failing to keep their web application software, Apache Struts, up to date. Apache Struts released a statement to the public saying that they notified Equifax of updates that could have prevented the company from having a vulnerable organization. However, the organization should have acknowledged its alerts (*Newman, 2017*). In the same period, the U.S. Department of Homeland Security warned Equifax of possible vulnerabilities, and the company still chose to ignore the recommendations (*Bernard et al., 2017*). The breach was not located until around four months later when the information security department found suspicious activity. After the breach occurred, communication weakness arose in that it took the company around six weeks to announce to make a statement to the public, and even then, they claimed that high-level executives, including the CFO, were not aware of the potential problems (*Oliver, 2017*). Equifax claimed they became aware of the breach on July 29, 2017, but CEO Rick Smith made a public statement on September 7, 2017 (*Oliver, 2017*).

Security weaknesses became an ethical dilemma when, right after the breach was discovered, three executives sold an estimated \$2 million in stock before the hack was made public (*Gallaugh, 2022*). Equifax chose to shut down its online systems, but the damage was already too far gone. Millions of consumers were stripped of their privacy due to the company's negligence, ignoring warnings from Apache Struts. The company also opened itself to attacks because it did not protect its domain names. Hackers frequently created websites that acted like Equifax, collecting consumer concerns, but in reality, this was an act of phishing (*Oliver, 2017*). Equifax tweeted links to these fake websites, advertising their vulnerabilities to the public.

Overall, security weaknesses were a problem of the company needing to do their due diligence to protect the private information of their customer base.

18) Describe the most effective methods to protect your organization from hackers, according to the textbook and high-quality external sources.

In higher education, security is of high concern for physical safety and electronic privacy. The University of Louisiana at Lafayette offers programs for employees to learn about cyber security. Training is offered regarding smart surfing, the practice of analyzing links and requests before visiting the site (*Gallaughier, 2022*). Higher educational institutions in Louisiana also use multi-factor identification through Microsoft to ensure safe and correct logins. An organization that serves thousands of consumers may choose to use firewalls, a system that explores network traffic and blocks unauthorized use (*Gallaughier, 2022*). Firewalls prevent potential problems while still allowing approved communication to pass through. Network monitoring includes firewalls as well as honeypots. Honeypots are decoys set for hackers, and information gained from their use allows firms to gather information on a hacker's tendencies, which can prevent fraudulent actions from occurring in the future (*Gallaughier, 2022*). Intrusion detection can help send immediate alerts for fraud or hacking actions to keep concise communication throughout the organization.

Organizations can also be protected by frequently conducting audits and enforcing any changes that need to be made after the audit. The University of Louisiana at Lafayette sends test emails to employees that monitor if individuals can detect phishing. If the employee does click on the link in the email, the institution requires employees to complete training modules as an added level of protection. Training and education help to prevent attacks where anti-virus

software can not (Goldman, 2009). Technical solutions such as patches, network lockdowns, partner lockdowns, and contingency planning can be used daily to prevent hacking.

Patching describes keeping software up to date (*Gallaughar, 2022*). Backlists and whitelists can also block specific I.P. addresses or allow only approved communication entries.

An organization should develop a crisis or contingency plan if hacking is not prevented. While a firm may make all possible efforts to prevent attacks, there is no way to be 100% protected. Hackers are consistently finding new ways to acquire data. Security monitoring must be constant, and technical tools should be constantly updated. Awareness is one of the most efficient ways a firm can prevent security breaches.

## Chapter 20

19) What did Google do differently than its competitors to succeed in a competitive market?

Google is one of the most successful and profitable tech companies due to several key strategies and innovations that set it apart from its competitors. The search algorithm used by Google is recognized as highly effective and efficient. Compared to other search engines at the time, Google provided more accurate and relevant search results because of the PageRank algorithm created by Larry Page and Sergey Brin (*Gallaughar, 2022*). Mobile devices challenged Google's market dominance and business model, but the company excelled ahead of its rivals (*Gallaughar, 2022*). Over 95% of all mobile searches in the U.S. are completed through Google (*Siddiqui, 2020*). Online advertising, Google's primary revenue source (56% of total revenue), has allowed the company to generate substantial revenue streams (*Gallaughar, 2022*). When Google directs a customer to a particular website, Google receives a cut of the revenue if the



website is visited. Google uses various algorithms and techniques to choose which advertising appears higher on its home page.

With AdWords, a platform for pay-per-click advertising for companies, and AdSense, a program for website publishers to display adverts, Google changed Internet advertising. These ad networks helped Google generate a sizable amount of money and efficiently monetize the internet. Google created an ad ranking formula that uses three metrics to reward top-ranking ads: maximum CPS an advertiser is willing to pay, quality score, and expected impact (*Gallaughier, 2022*). Google was able to build new products, target advertising with extreme accuracy, and improve search results thanks to its capacity to gather and analyze enormous volumes of data. They gained a competitive edge thanks to this data-driven strategy. Google made significant investments in the infrastructure and services of the cloud, where it competes with firms like Amazon and Microsoft. Their scalable, performant, and cutting-edge cloud services have grown in popularity. Google now has sixteen global server farm campuses for backup and to increase scalability (*Gallaughier, 2022*).

Google began as a search engine, but it has since grown to include several other services and products, including Gmail, Google Maps, Google Docs, Android, YouTube, and more. By diversifying its product line, Google expanded its user base and strengthened its ecosystem. An estimated 20% of Google's total revenue is produced from ads shown on websites now owned by the company (*Gallaughier, 2022*). Google also plans to stay ahead of the competition through a list of moonshot products. Moonshot products are high investments that pose significant risks for the company. Google is pursuing moonshot projects such as driverless cars, smart contact lenses, and world-wrapping satellite networks (*Gallaughier, 2022*).

20) Watch the news video *Google Duplex* and then answer the following questions:

A. Would Google Duplex be considered Artificial Intelligence (A.I.)? Explain why or why not.

Use your textbook and high-quality external sources.

Google Duplex qualifies as an example of artificial intelligence (A.I.). With the aid of A.I. and natural language processing (NLP), Google Duplex enables automated systems to converse with people in a manner that is as conversational as possible. It was created to complete user activities, such as making restaurant reservations or arranging appointments (*CBS News, 2018*). Google Duplex uses deep learning, a machine learning type that can identify patterns and make predictions. Deep learning is applied to speech recognition, image recognition, and computer vision (*Gallaugh, 2022*). The system learns from interactions and refines results based on user input. Google Duplex employs voice recognition technology, a key component of A.I. It can transcribe and understand spoken words, enabling it to interact with users over the phone. The system can understand and respond appropriately to follow-up questions or requests, a hallmark of A.I. systems capable of contextual understanding (*Gallaugh, 2022*).

B. Describe ways in which your organization could use the Google Duplex technology.

Google Duplex technology can be leveraged in higher education to improve various aspects of administrative tasks, communication, and student services. Google Duplex could assist students in scheduling advising appointments with academic advisors, career counselors, or financial aid advisors. The service could send automated reminders to students about upcoming registration deadlines, exam dates, or important academic events. Google Duplex could help

students navigate the course registration process, check class availability, and register for classes. The notification factor could alert students when spots open up in their preferred courses and assist with enrolling in waitlisted classes. Virtual campus tours could be completed using Google Duplex, which also could answer common questions about the campus during the event. Google Duplex could be used in many other sectors, including financial aid and billing, library services, event management, language support, administrative support, accessibility services, and data and analytics.

C. Describe some potential issues with your customers and employees adopting this technology. What would you do to overcome these issues? Cite your textbook and high-quality external sources.

When adopting Google Duplex or any AI-based technology in higher education, several potential issues may arise with customers (students, parents, etc.) and employees (faculty, staff, administrators). Privacy is an issue of concern because users may worry that the data collected during interactions with Google Duplex is stored and used for alternative purposes. Any operations completed on a company's hardware can be monitored, which raises privacy issues concerning employees (*Gallaughier, 2022*). Privacy issues are overcome by using security measures outside of what Google provides to keep employees safe. Another issue of concern is use. Staff may need to be trained on the technological use of Google Duplex. Overall, A.I. systems are used to make recommendations, and management should make the final decision (*Gallaughier, 2022*). Humans must learn to use A.I. before it becomes an assistive and effective tool.

21) Conduct research on an innovative Google technology (such as Google Glass). Describe one example of how the product is currently being used (in any industry), and describe one way in which you think it could be creatively implemented in your industry.

In 2022, Google announced the release of a new product- Google augmented reality translation glasses. The new translation glasses are a separate product from Google Glass in which translation glasses demonstrate the practicality of digital overlays (*Wan, 2023*). The product resembles regular eyeglasses but with the benefits of today's technology. The glasses assist individuals by translating languages in real-time between two people during a conversation. The new technology is still being tested, and the expected release date to the public is sometime in 2024 (*Wilson, 2023*). The glasses are part of Google's Universal Speech Model, which plans to use A.I. systems to translate 1,000 different languages. Google's auto-translation technology is currently used on YouTube to generate captions in sixteen languages.

The project originated when Google released the commonly known Google Translate in 2006, which supports around 133 languages and is still progressing (*Turovsky, 2016*). The system cannot only translate formal language but can be used with phrases and local idioms. The Google Translate glasses are being developed to advance past competitors like ChatGPT and Apple. Testing of prototypes, which includes in-lens displays, microphones, and cameras, began in July of 2022 and was distributed to Google employees and a select few trusted testers (*Payne, 2022*). Testing is limited to the United States and Canada in private in-lab settings. Testers are not allowed to use the glasses while driving and are trained in the rigorous device and safety protocols.

Once the translation glasses are released to the public, they will benefit higher educational institutions. Students from international countries or whose first language is not

English can wear glasses during classes to prevent the risk of misunderstanding instruction due to language barriers. Translation glasses will make classrooms more inclusive, especially in a university setting. Language majors and minors will also be able to use the glasses to assist them in their studies and give them a better and more innovative way to practice real-life conversations. Students majoring in a specific language can enhance their language skills and cultural knowledge by translating texts from and into the target language. The glasses can be used by students who participate in study abroad, enabling them to understand and learn more efficiently. The glasses can be used for administrative purposes when visitors tour the campus and lower the need for human translators, reducing costs for institutions in every aspect. Campus diversity will be improved by promoting multilingualism by offering translation classes for students and faculty who want to understand and communicate in multiple languages. By incorporating language translation glasses into higher education, students can develop valuable skills, contribute to preserving languages and cultures, and prepare for careers in a globalized world. Google technology is tailored to students' needs and interests and can broadly impact various disciplines and industries.

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