FORTÉ RISING STARS

THE 21ST CENTURY PROFESSIONAL–

HARNESSING TECHNOLOGY

FOR BETTER BUSINESS OUTCOMES

Forté
More Women Leading

What does it mean to be employable in today's faster-than-ever changing job market, where technology is a key factor in nearly all innovation?

The goal of this primer is to help prepare you to excel in the workplace of the future – a workplace where technological transformations and innovations are having a huge impact on business. In fact, according to Change Magazine,

> Data science and analytics have become vital to everything from understanding the spread of disease to curating museums.[1]

To be a leader or a key participant, it is important to understand data – the sources and quality – and how to use it to inform key decisions. The 21st Century professional does not need to be an expert at all things, but will need to bring a foundation of business acumen and technological understanding to any job.

And while we would love to teach you the specific skills required to combine business thinking with technological solutions, the market dynamics and business landscape are changing so rapidly, it would be outdated as soon as we went to print. We know the technical skills required today will not be the same technical skills required in the future, but we can offer you an understanding of how data and technology are influencing the face of business today. These insights will provide leverage to remain on the leading edge no matter how quickly the landscape changes.

This industry snapshot was developed with the support of: EY Building a better working world

> Organizations need leaders who understand the impact digital tech can have on their businesses. They understand what is and isn't possible today and, more important, sense what will be possible in the future.[2]

To underscore this point, below are a few statistics that illustrate the speed of change and the need to be technologically savvy:

- **70% of newly created jobs require technology knowledge, and 70% of those jobs are not in the tech industry,**[3] so regardless of your functional focus, understanding technology is required in almost all industries.

- **43% of business leaders say a lack of digital skills is a key barrier to transformation.**[4] And, while a majority of executives are planning to invest in artificial intelligence in the next few years, only 3% plan to increase investment in training programs.[5]

- **82% of companies surveyed testify that machine learning-enabled processes will help them find solutions to unsolved problems through data that they couldn't previously tap into.**[6]

In addition, new technologies are creating new business models and new customer experiences while blurring traditional industry boundaries. Many industries have already been changed by technology – just think about the impact of Uber in the transportation industry, Grubhub for the restaurant industry, Venmo in the payments industry, Amazon in the retail industry, and Netflix in the media & entertainment industry.

Disruption in these industries has been and will continue to be driven by analytics, artificial intelligence, blockchain, cloud computing, user experience/user interface (UX/UI), robotics, virtual reality, cybersecurity concerns, and future yet-to-be-developed technologies. These new technologies will offer companies new sources of revenue, better customer insights, and different, more efficient business operations.

As you can see, we are on the verge of another era of process change: the first change came in 1913 with the assembly line, which increased manufacturing productivity; the second change came in the 1990s when the desktop computer allowed businesses to increase efficiency and lower costs; and now, in the 2000s, we are seeing an abundance of data, along with meaningful ways to interpret and use it, which is improving the speed and accuracy of problem solving.

To compete in this environment, businesses will need to identify and quickly implement innovations and leverage available technological solutions. They will also need to employ a tech-savvy workforce with strong business skills.

In this primer, we will show you how a technological mindset and business acumen intersect. We encourage you to use this primer to learn about current (and future) technological trends and their business implications and discover the areas that excite you for additional research and skill building.

[1]Change Magazine, The Broad Application of Data Science and Analytics: Essential Tools for the Liberal Arts Graduate, July 2015 [2]EY 2017 Global Leadership Forecast: https://www.ey.com/gl/en/services/people-advisory-services/ey-the-global-leadership-forecast [3]US News & World Report Conference (2018) [4]https://www.accenture.com/t20160113T204412__w__/us-en/_acnmedia/PDF-4/Accenture-Strategy-Digital-Workforce-Future-of-Work.pdf [5]https://www.forbes.com/sites/forbeshumanresourcescouncil/2018/06/14/why-your-organization-needs-to-adopt-a-learning-mindset/#36c6ca7b6c3b [6]https://www.accenture.com/us-en/insight-process-reimagined

DATA-DRIVEN AND DEEPLY DISCERNING–

WHAT IT TAKES TO BE A TOP 21ST CENTURY CANDIDATE

What are employers seeking from candidates who will be tomorrow's workforce? The workplace of the future is not fully known, but companies are rapidly seeing that a key to success is the combination skill set of business acumen and technological savvy.

Seeking to generate powerful and innovative approaches to competing in business, companies must create more parity between men and women in leadership roles.[7] One report from the Peterson Institute for International Economics found that 30% female representation on boards added up to six percentage points to a company's net margin. Another report from EY shows that in the software and IT services industry, only 27% of all hires are women, and even fewer women, only 19%, are in leadership roles.[8] Companies need female talent to create sustainable and inclusive innovation. In the 21st century,

> "Employers from all sectors seek data-enabled professionals who possess a deep understanding of – and are current on analytical methods relevant to – their disciplines; are familiar with technology; and can interact, analyze, communicate and work with people from other disciplines and cultures."
>
> *– Change Magazine, The Broad Application of Data Science and Analytics: Essential Tools for the Liberal Arts Graduate, July 2015.*

[7] World Economic Forum Global Gender Gap report: it will take 217 years to achieve economic parity between women and men.
[8] https://www.ey.com/en_gl/workforce/are-we-coding-gender-bias-into-our-future and World Economic Forum, LinkedIn data from Global Gender Gap Report 2017

Specifically, employees with the following attributes will be sought after:

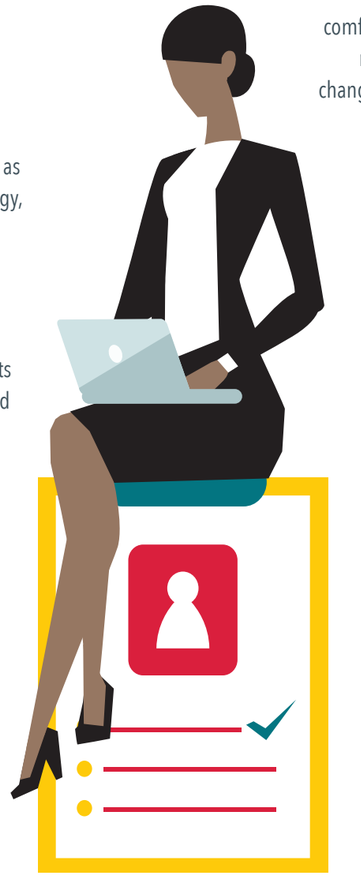
BUSINESS APTITUDE
comfort with business processes, terminology and project management

DOMAIN KNOWLEDGE
ability to apply business concepts, such as marketing, finance, operations or strategy, to challenges facing an organization

DIGITAL FOUNDATION
ability to manage and protect data; understand technological advancements and innovations, learn new systems, and configure/customize them

EXECUTIVE PRESENCE
comfort presenting information in a persuasive way and influencing others

COLLABORATION
ability to trust others and work across function, geography and culture



CURIOSITY
comfort with uncertainty and ambiguity, resiliency and change; ability to see change as an opportunity and contribute to cultures of change

ANALYTIC MINDSET
ability to use data-driven analysis rather than subjective analysis; ability to interpret, visualize and communicate data as well as to partner with digital solutions

INNOVATION
creativity and ability to see connections and possibilities in order to solve problems; leveraging human-centric design-thinking

COMMUNICATION
ability to explain complex concepts in an easy-to-understand manner; ability to influence and persuade

Having a combination of critical thinking and communication skills, along with business process and data analysis knowledge, will pay dividends as your career advances.

We know this may seem overwhelming now, but we also know you have the ability to build the foundation to excel in each of these areas. And, remember, it is not expected that you embody all of these attributes today. Instead, seek to develop them throughout your academic and extracurricular experiences.

NEED-TO-KNOW TECHNOLOGICAL TRENDS

ANALYTICS (OR "BIG DATA")

is the systematic computational analysis of data or statistics enabling organizations to apply analytics to describe, predict and improve business performance. In other words, this is the ability to understand, manipulate, and tell stories using the large amounts of data generated by businesses today. Organizations, regardless of size, are relying on data to drive transformations.

In order to leverage this technological trend, you need to understand how data moves from different systems within the organization, through the various transformation processes, to where it is ultimately used by decision-makers. To do this effectively, you will likely need to do one or more of the following:

- Ask the right questions and identify what data is required to answer those business questions
- Gather the data from multiple sources; extract, transform and format it to be consistent and usable
- Apply appropriate analytic techniques to evaluate data
- Interpret and share recommendations with key stakeholders

Currently, employees will use tools including spreadsheet software like Excel, visualization software like Tableau and/or analytical packages like SQL or Python to analyze data. Given both the increasing amounts of data available and the constant innovation in this space, we are certain that there will be additional tools developed in the coming years.

ARTIFICIAL INTELLIGENCE (AI)

is the theory and development of computer systems to perform tasks that previously required human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages. Within AI, there are several different technologies, including machine learning, deep learning, natural language processing, and computer vision.

AI offers increased or new capabilities, faster completion of work, and improved quality and accuracy of work. You will need to understand the ways these technologies can align with broader business priorities and the potential for transformation. To do this effectively, you will likely need to do one or more of the following:

- Identify and quantify opportunities that leverage AI to produce competitive advantages and create value; figure out what problem or opportunity you want AI to tackle
- Understand how the machine reaches a decision so you can trust its decisions; maintain expertise and control over tasks and processes even if you are not executing them
- Determine the data you need to collect to provide AI with the information to build algorithms and make decisions
- Monitor decisions made through AI – recalibrating them against your own experience, insight and intuition

For the above, you will need to understand the following about data science: probability (likelihood of an event happening), regression (relationships among variables), data wrangling (making data valuable) and data visualization (making data usable).

BLOCKCHAIN,

originally designed for cryptocurrencies, is a distributed ledger that is decentralized and public. It records transactions and cannot be amended without all parties to the transaction being aware of amendments. Because all transactions are shared, and there is no need for a "leader," blockchain is being explored to create value in many different businesses. It is believed to have the potential to remove technical inefficiencies, simplify business processes, improve customer experiences, and achieve costs savings while reducing risks.

There is a lot of potential growth in this area, as Gartner Inc. projects that blockchain's business value-add will grow to $176 billion by 2025. As a start, in 2016 and 2017, AirBnB, Daimler, Rakuten, and several other corporations acquired blockchain-related startups, while the investment arms of Jaguar Land Rover, JetBlue, Verizon, and others made blockchain-related strategic investments.

However, as of early 2019, there are still many obstacles to overcome including the level of speed, scalability, security, and privacy required; making decisions about the use of private or public blockchains; and determining the value of a consortium. Answering these questions and identifying the right use for blockchain platforms will be critical to the success of this technology.

CYBERSECURITY & RISK MANAGEMENT

are ways companies are seeking to protect themselves (and their customers) against the criminal or unauthorized use of their hardware, software, or electronic data. With new trends in the Internet of Things (connectivity of data), Cloud Computing (accessibility and lack of ownership), and Big Data (more data), it is critical for companies to focus on cybersecurity and creating and implementing risk management protocols to reduce the chance of lost sales and reputational damage.

Companies will need to know where their data is, who has access to it and how it's being used. This impacts all functions within the company, for example:

- **Corporate training** must educate staff on security awareness and appropriate use of data.
- **Product Management** must predict potential cybersecurity risks associated with launching a new product feature or service and build in digital trust.
- **Engineering** must develop secure code for capturing and storing customer data.
- **Human Resources** must follow security protocols with regard to employee access to data.
- **Sales** needs to understand how customer data is managed and needs to reassure customers of the company's security protocols.
- **Management** needs to address any vulnerability and have a plan for mitigating a potential attack.

Security is a people issue, not just a technology issue. At work, you will likely need to be able to do one or more of the following:

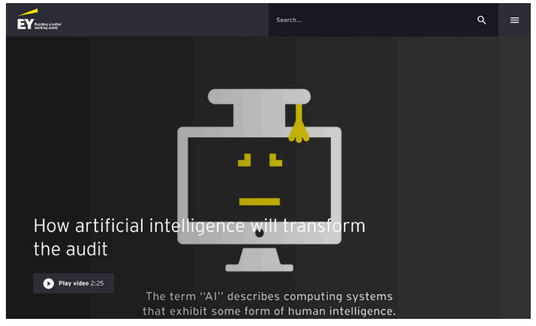
- Understand the data you have access to and how it is stored and secured
- Consider the type of data collected and stored with the creation of new products and services
- Follow company protocols and raise concerns, if necessary, about the use and storage of data
- Evaluate company protocols and help raise the bar for cybersecurity oversight

We know that it is almost impossible for every person to be a skilled accountant, master finance professional, expert coder, cyber security specialist, and AI data scientist, but we want you to be prepared to take advantage of the possibilities these technologies offer regardless of all the possibilities that these technologies will bring no matter where you work or what you do. Whether you are an expert in one or several of these areas and/or managing a diverse team of experts, understanding these technological advancements will allow you to drive cultural change, ask thought-provoking questions and develop solutions that meet business needs.

SEE THE REAL-WORLD APPLICATIONS

How do these technology approaches and tools help businesses compete, add value, and connect with customers?

New business models, products, services and approaches to serving customers have been envisioned by employees who understood how technological tools can satisfy previously unmet needs and drive revenue growth. None of these innovations would have been possible without the cross-pollination of technology and business.



*Check out this video from EY at **go.ey.com/2C1e2Ob***

ANALYTICS

Warby Parker mines data and uses algorithms to continually innovate and personalize offers and messaging to improve customer experiences, thus turning its customers into its biggest champions. The core team includes a head data scientist who leads the "Consumer Insights" and "Customer Experience" teams.

Nordstrom uses its credit card and rewards program to collect extensive data on customer purchases and preferences, which is then analyzed and interpreted to improve marketing and product design, and optimize ad spend.

Avis Budget yielded hundreds of millions in additional revenue and improved customer loyalty by analyzing data to determine the lifetime value of its customers, segmenting them and developing a marketing campaign that offered tiered incentives. It is also using data analytics to forecast regional demand for cars and ensure appropriate placement of its fleet.

ARTIFICIAL INTELLIGENCE

Apple's Siri helps us organize our lives by finding information, giving directions and adding events to our calendars – services we managed without for years, but now, can't imagine living without.

The Nest, using behavioral algorithms to predictively learn as you heat and cool your home, anticipates, and adjusts the temperature to meet your needs.

Facebook uses AI to automatically highlight faces and suggest friends to tag after you have uploaded a new photo.

Major banks allow you to deposit checks through a smartphone app, which uses AI to decipher and convert handwriting on checks to text; thus, eliminating the need for you to physically deliver a check to the bank.

Amazon uses algorithms from previous search data to quickly return a list of the most relevant products related to your search; thus influencing what you buy.

BLOCKCHAIN

Mining giant **BHP Billiton** has used blockchain to record resource samples on a single ledger, replacing paper and spreadsheets in the process. The transparency of blockchain and the simplified process will help in demonstrating compliance to regulators.

Volkswagen Financial Services and Renault tested the viability of blockchain with vehicle tracking. They captured a vehicle's mileage data, engine usage history, and repair and maintenance history on the blockchain so that manufacturers, dealers, buyers and insurance companies know a vehicle's history and activity with accuracy.

DeBeers announced investments in a blockchain-based diamond tracking platform to augment supply chain transparency and diamond traceability to avoid conflict diamonds.

ShipChain, a blockchain-based platform, used smart contracts to eliminate the need for freight brokers. Their technology reduced costs by automatically tracking and verifying each stage of the complex shipping and logistics process.

MIT Media Lab and Beth Israel Deaconess Medical Center developed MedRec, which aims to unify electronic health records and give patients access to their complete medical history across all providers. Blockchain solutions in healthcare offer a way to remove data fragmentation, provide more accurate and timely access to patient data and ensure more data security.

VIRTUAL REALITY (VR)

Mountain Dew brought its Dew Tour to fans all over the world with the help of some custom branded headsets, which allowed the brand to combine its virtual world with incredible 360-degree footage from some of world's most amazing extreme sports athletes. Mountain Dew is leveraging VR for influencer marketing and to grow the brand through athletes.

TOMS, known for matching every pair of shoes purchased with a new pair of shoes for a child in need, used a VR experience to allow viewers to tag along on one of its charitable initiatives in Peru. This shows how VR can increase the emotional connection a brand has with its customers.

Walmart announced VR would play an integral part in training more than 140,000 associates each year. Associates log in to a virtual store space to learn how to interact with customers. Walmart reports that retention rates are higher for associates who go through VR training versus those who continued on through traditional training methods.

Boeing and Airbus both extensively use simulated digital spaces to design and test new features and models in a more efficient manner.

Lowe's Home Improvement customers can design their perfect bathroom or kitchen and then, using VR, walk into the finished space and experience it. Customers can share the designed room with others by exporting it to YouTube 360.

ROBOTICS

Intuitive Surgical makes the da Vinci Surgical System, with which surgeons use robotic "arms" and "hands" instead of their own hands to perform surgeries. This system allows for more precise, controlled movements and better surgical outcomes.

Best Buy tested a product-retrieving robot named Chloe at its store in Manhattan's Chelsea neighborhood. The robot retrieves small items like CDs and headphones in seconds after customers order via a touchscreen.

Nestle uses SoftBank's Pepper robots to answer customer queries and to sell Dolce Gusto coffee pods and machines in 1,000 department stores in Japan.

Zara's parent company, **Inditex**, operates 14 automated factories in Spain staffed by scores of robots. The machines work so fast, Zara can get a product from the design stage to the sales floor in as little as 10 days.

IN-DEPTH CASE STUDIES

Below are three robust case studies provided by EY that illustrate how the use of analytics and AI, along with core business principles, improved outcomes.

CASE STUDY 1

Large Cruise Ship Company

Seized the upside of disruption and used analytics and AI to enhance guest experience

This firm's business was strong, with every cabin booked, but the company wondered where and how it could create more value for customers. The question was particularly pressing because the cruise industry was showing signs of digital disruption and moving into the future with unsettling speed.

Looking at the situation from a customer-centric perspective, the company was able to use analytics and AI to improve the customer experience and enhance customer loyalty.

Analytics: Consultants rebuilt the 25+ databases of guest data into one consolidated database. With easy access to all the data in one place, consultants could begin analyzing and interpreting it. With those efforts, the company discovered ways to better meet the needs of its guests and to increase revenue. For example, the firm realized that guests who love physical activity were more likely to pay extra for off-shore excursions, so they started a more targeted marketing approach for promoting those excursions to activity-loving guests.

AI: The firm evaluated every component of the customer experience--from boarding the ship to getting around the ship and engaging in ship activities. Through this analysis, it identified ways to reduce the hassles associated with these experiences. For example, guests can now take a selfie using their smart phones, which is then displayed on their digital boarding passes. Now, during boarding, guests simply walk through a scanner that uses facial recognition technology to automatically check them in. No standing in long lines!

Understanding the customer experience and their unmet needs, as well as the ways technology can solve problems, consultants were able to implement solutions that made customers happier and drove revenue increases for the company. A win-win.

CASE STUDY 2

Large Global Asset Management Firm

Transformed investment processes and created a competitive advantage by leveraging AI

Recognizing that the digital revolution is transforming the asset management industry, firms in the space know they need to adapt their approach. In this specific case, a global asset manager (a company where portfolio managers direct the investment of a client's or institution's money) had already begun collecting huge amounts of data and was using analytics to build key investment insights, but wanted a better ways to use this data to serve clients.

Since AI needs massive amounts of data in order to "learn" and develop insights, the project of analyze 10 years of financial statements for dozens of companies was a perfect learning opportunity.

AI: The firm reviewed its research and portfolio management processes to identify areas where the use of AI could augment human performance (and save hours of research analysts' time). The outcome of the AI analysis was alerts for the portfolio managers of potential stock or market risks. With this information, the asset management firm designed new processes around its investment approach to reduce the likelihood that decisions would be made that lose money for their clients.

While humans are still the decision makers in asset management firms, an investment in AI brings much closer to reality the possibility that a fully digital portfolio manager can deliver sizeable returns.

CASE STUDY 3

Regulators & the Mutual Fund Industry

Enhancing mutual fund sales oversight with data analytics

Both the Financial Industry Regulatory Authority (FINRA) and the U.S. Securities and Exchange Commission (SEC) use sophisticated data analytics techniques to uncover fraud and better protect investors and the stock market as a whole. Mutual fund companies that invest in the stock market are also using these techniques.

Analytics:

- SEC and FINRA established new divisions entirely devoted to data and analytics where employees with PhDs and others with extensive backgrounds in mathematics, statistics, physics and computer science examine trading firms and investment companies using algorithmic functions.
- The SEC's analytics arm integrates financial economics and rigorous data analytics to create policies and examine the current regulatory environment and enforcement actions. At FINRA they use cutting-edge analytics technology to process between 50 billion and 75 billion investment transactions per day and monitor for malicious activity.
- Use of data analytics in mutual fund companies allows them to better detect and prevent potential illegal trades and other violations. It also offers the opportunity to better match the client's investment objective, risk tolerance, and financial needs with the investment approaches the company is recommending.

Analytics efforts at mutual funds enhanced the customer experience and strengthened processes for monitoring compliance, allowing firms to identify and report investment trends to senior management in an effective manner and protect client assets and firm reputation.

As you can see, it is an exciting time with lots of opportunity to influence how business will be conducted in the future. Your knowledge and understanding of technology, along with business insight and acumen, will allow you to harness technological advancements to create new business models, improve processes and customer service, develop new products and drive revenue growth, and ultimately transform the business landscape.

CAREER EXPLORATION IN A COMPLEX WORLD

Which functions within a company will afford you the opportunity to use this skill set? How can you drive the impact of these innovations forward?

In the 21st Century, jobs that are "complex" (demand the aforementioned mix of business and technical skills) are growing quickly across all domains of business; these roles offer higher salaries and are more immune to elimination due to automation. Business-focused jobs like Marketing Managers or Business Analysts now require technical knowledge such as computer programming, digital development, digital security and data management, whereas tech/data-enabled jobs like Data Analysts or System Analysts are now requiring business skills such as creativity, teamwork, problem-solving, research and writing.

Burning Glass consultants analyzed the required skills in a variety of job descriptions and found that in 2012, only 16 occupations--including Systems Analyst, Business Analyst, Database Administrator, and Software Developer--required "analysis" as a skill. However, by 2018, they found that 35 occupations--including HR Specialist, Product Manager, and even Retail Store Manager--now require analytical skills.

This means that if you are seeking roles where you can leverage technological advancements to make an impact on business processes, there is no one right function, industry or type of company to join. You can apply your digital mindset and technological solutions to solve challenges facing anyone, such as: clients of professional services firms (investment banking or consulting), constituents at non-profits and/or customers at corporations.

Below is a sampling of how several functions, at both tech and non-tech companies, are leveraging technological advancements to improve their business operations.

STRATEGY

Strategic planning professionals help answer questions around technology like: how much should our investment be, what are the right products, what are our biggest business challenges, how can new technologies create viable solutions, and how can we implement these new innovations and manage the cultural transformation required for effective adoption? Employees in this function will help the organization define specific business outcomes and then understand the costs, potential unintended impact and talent implications.

Depending on the industry, type of business, and structure of the company, specific projects will vary, but will always enable the company to better compete in the marketplace. While these new ways of conducting business are exciting, the positive impact from this technology has not yet been fully realized. This is where your digital mindset, customer-centric focus, cultural adaptability and curiosity will add value to your employer.

PRODUCT DEVELOPMENT

In collaboration with one another, the scientists and business people in product development are asking questions to understand how the team can use these new technologies to effectively and efficiently collect and analyze more data and automate processes. These changes will improve the design of the product, get it to the market faster and, most importantly, better meet customer needs. Right now, using AI and analytics, employees can identify the right data in real time, reduce research and development timelines and establish new product development processes.

MARKETING

Successful product managers, advertisers and marketing managers demonstrate a combination of right brain (creative design) and left brain (analytics) skills. More specifically, having a wide range of skills such as design, user experience, coding, data analysis and business acumen will enable marketing professionals to understand the complexity of their customers, engage with them and improve the customer experience.

At companies like Amazon, Sephora, Under Amour and Pinterest, marketing professionals may use technological advancements to:

- Create more efficient large pay-per-click (PPC) ad campaigns that can automatically analyze, manage and optimize the paid ad campaigns.
- Enhance the user experience (UX) with improvements such as displaying the best-fitting offers and content or pushing notifications to specific users.
- Develop content that reads like it was written by a human; insights and style will depend on the rules created to meet the brand standards of your audience.
- Improve personalization by sending curated emails to customers based on their reading patterns, topics of interest and so forth.
- Segment customers for the purposes of customizing marketing campaigns; creating customer "personas" based on data points such as purchase behaviors, past communication and on-site interactions.

Sample Job Titles: Marketing Assistant, Brand Manager, Digital Marketing Manager, Social Media Analyst, Product Manager, SEO Manager, Content Marketing Manager, Web Content Marketing Specialist, and Digital Content Specialist.

INFORMATION TECHNOLOGY (IT)

IT professionals help their companies avoid cybercrime by creating a strategic plan for the deployment of information security technologies and programs, developing corporate security policies, and monitoring security vulnerabilities. With the potential for cybercrime to cause serious disruption, it is critical this function works collaboratively with senior leaders and their other functional partners across the organization to set an overall information technology security strategy, to increase employee security awareness and to develop an incident response process.

HUMAN RESOURCES

The results of a 2017 PwC survey of human resource executives across multiple industries found that 72% of respondents believe that artificial intelligence (AI) will provide a significant business advantage in the near future. Below are some ways AI and analytics are helping HR professionals remove inefficiencies and biases from the HR function at companies like Hilton, Humana and Five Guys Burgers.

- Improved process efficiency by offering faster and more convenient scheduling options for the first interview; introduced on-demand video and voice interviewing as a screening tool.
- Reduced gender and ethnicity bias through deployment of chatbots that screen only for role-required attributes, ignoring the candidates' background or programs that edit job descriptions to remove text that would discourage a diversity of applicants.
- Streamlined new hire onboarding by using virtual assistants to answer basic policy and salary questions.
- Increased learning opportunities for staff members with online tools, coaching and practice for specific skill development.
- Improved employee retention by identifying key drivers of employee turnover; predicting, on an individual level, which employees were most likely to leave; and confidentially assigning specially trained managers to "at risk" employees.

Sample Job Titles: Human Resource Generalist, Benefits Specialist, Human Resource Specialist, Recruiter, Talent Acquisition Specialist, Training Manager and Learning & Development Specialist.

FUNCTIONAL FITNESS FOR THE FUTURE

How can you develop these skills required for the future? How are you going to know what the next "big thing" is and where to start developing your knowledge and skills? What will be cutting edge in 5 or 10 years? How do you select reputable methods of learning these skills?

The digital era is fast-paced, and leaders in this arena are constantly uncovering new ways to learn the most leading-edge concepts and technologies. The way to continue to compete in this ever changing future is to devote yourself to being a lifelong learner, spending at least some time every week enhancing your skills.

We recommend looking at both traditional and non-traditional places to acquire emerging skills and cutting-edge knowledge. Take advantage of the cross-disciplinary efforts at your school:

If you are a business major, you might need to look outside the business school to find courses, clubs and opportunities to stretch your skillset and acquire more technology insights.

If you are a STEM student, you might need to do the same – identify courses, clubs and opportunities that can help you build your business acumen.

And if you are a liberal arts major – you might identify on-campus activities and or experiences that allow you to apply your critical thinking and communication skills in a business/technology environment.

Within your course work, seek out hands-on experiences including practicums, research assignments or internships that give you real-world exposure to building skills and to the business and technology experts who implement technology solutions.

TRADITIONAL LEARNING

may take the form of college courses (as mentioned above, perhaps electives outside of your major), university research centers, on-the-job training or consulting firm white papers. Many schools have (or are creating) research centers to investigate these topics. For example:

Wharton and the School of Engineering at the University of Pennsylvania just launched the Ripple Project to support academic research, technical development, and innovation in blockchain, cryptocurrency, and distributed ledger technology.

MIT Sloan has the Artificial Intelligence and Business Strategy initiative, which explores the growing use of artificial intelligence in the business landscape in conjunction with the Boston Consulting Group. The exploration looks specifically at how AI is affecting the development and execution of strategy in organizations.

Carnegie Mellon launched a Block Center to examine the societal impact of emerging technologies on economic, organizational and public policy.

The University of Illinois and Synchrony opened the Synchrony Emerging Technology Center, which will focus on advancing Synchrony's finance and technology capabilities as well as providing real-world skills for students in artificial intelligence, data science, human-centered design and other emerging technologies.

Columbia Business School has added courses in its Analytics curriculum that enable students to speak the language of coders and technicians. They have launched a dozen electives, including Introduction to Programming in Python and Intro to Databases for Business Analytics, with the goal of graduating business leaders who have an understanding and appreciation of technology, given that it is central to every company today.

NON-TRADITIONAL LEARNING

may include taking online courses, following key influencers on LinkedIn, reading blogs and business publications, participating in hack-a-thons or public-private partnership initiatives.

Here are some current examples:

Blockchain University *blockchainu.co/upcoming*
Consensys *consensys.net/academy/enterprise*
EQUALS *equals.org*
Fast Company *fastcompany.com*
Learn with Google *ai.google/about* and *ai.google/education*
LinkedIn Learning *linkedin.com/premium/plan/learning*
MOOCs *mooc-list.com*
Coursera *coursera.org*
EdX *edx.org*
STEM Advantage *csc.csudh.edu/stem-advantage-scholarship-mentorship-and-paid-internship*
TechRepublic *techrepublic.com*
Wall Street Prep *wallstreetprep.com*
Wall Street Journal *wsj.com*

Additionally, you can be at the forefront of the next trend by paying attention to where companies invest their money, what start-ups are being purchased by large companies and/or where top performers are placed for enhanced development and exposure opportunities.

Finally, it is not expected that you become an expert at everything! Instead you need to develop a baseline of knowledge in all areas and then specialize in either the technology details or business applications of these technology solutions. Teams are comprised of both business and technical experts who work in collaboration with one another, so figure out what content excites you most, and then identify the best roles for you.

UNDERSTAND THE KEY TERMINOLOGY

VOCAB CHEAT SHEET

Analytics
The systematic computational analysis of data or statistics. Analytics has changed many functions within a corporation – marketing, operations, risk management – as it allows you to better understand your customer.

Artificial Intelligence (AI)
A constellation of technologies–from machine learning to natural language processing–that allows machines to sense, comprehend, act and learn.

Big Data
Extremely large data sets that may be analyzed computationally to reveal patterns, trends, and associations, especially relating to human behavior and interactions.

Blockchain
A digitized, decentralized, public ledger of transactions.

Computer vision
The ability to extract meaning from visual elements, characters or images; used for facial recognition such as when iPhoneX owners log into their device by looking into the camera.

Cloud
A global network of servers, each with a unique function. The cloud is not a physical entity, but instead is a vast network of remote servers around the globe that are hooked together and meant to operate as a single ecosystem.

Cloud Computing
The delivery of on-demand computing services -- from applications to storage and processing power. Amazon Web Services was a big disrupter in this space.

Cybersecurity
The state of being protected against the criminal or unauthorized use of electronic data, or the measures taken to achieve this.

Data visualization
A way to help people understand the significance of data by placing it in a visual context (turning spreadsheets or reports into charts and graphs that can be easily understood).

Deep learning
A subset of machine learning based on a conceptual model of the human brain; it is useful when analyzing complex multidimensional data such as images, speech or video.

Fintech
computer programs and other technology used to support or enable banking and financial services.

HCI (human-computer interaction)
The study of how people interact with computers and to what extent computers are or are not developed for successful interaction with human beings)

Internet of Things
The interconnection via the Internet of computing devices embedded in everyday objects, enabling them to send and receive data.

Machine Learning
A subset of artificial intelligence in the field of computer science that often uses statistical techniques to give computers the ability to "learn" with data, without being explicitly programmed.

Natural language processing (NLP)
The ability to generate meaning from text; this powers voice-based interfaces and can be used to query data sets.

Predictive Technology
A body of tools capable of discovering and analyzing patterns in data so that past behavior can be used to forecast likely future behavior.

Robotics Process Automation (RPA)
Use of software with artificial intelligence and machine learning capabilities to handle high-volume, repeatable tasks that previously required humans to perform. These tasks can include queries, calculations and maintenance of records and transactions.

SQL
An abbreviation for structured query language, and pronounced either see-kwell or as separate letters. SQL is a standardized query language for requesting information from a database.

Tableau
A business intelligence software that helps people see and understand their data.

User Experience (UX)
Specialists do a lot of research and testing to consider every element of how the user will interact with the company and website, coordinating with developers and UI designers.

User Interface (UI)
The experience of a user engaging with websites and apps; the goal is to make it visually appealing and easy to navigate.

Virtual Reality
The computer-generated simulation of a three-dimensional image or environment that can be interacted with in a seemingly real or physical way by a person using special electronic equipment, such as a helmet with a screen inside or gloves fitted with sensors.

The digital transformation will impact businesses across all industries; thus, the ability to adapt to these changes in the 21st Century is critical. While many solutions will involve identifying the best technologies to maximize outcomes, technology alone will not suffice. Business solutions require skilled and diverse users who can apply their human expertise and experience.

Employers need candidates with savvy technical skills and core business knowledge– accounting, finance, operations, marketing or strategy– as well as a mindset for the future. With the right exposure, planning and learning, you can be one of those candidates.

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NOTES

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