

CHAPTER **1**

**Accounting
Disrupted**

COPYRIGHTED MATERIAL
<http://www.pbookshop.com>

If you don't have the ability to navigate a new technology paradigm, you're not even going to be present for the future.¹

—Satya Nadella, CEO, Microsoft

Unilever, the Anglo-Dutch owner of brands like Marmite, Ben & Jerry's, Dove, and Hellmann's, spends 14% of its revenues on brand and marketing. It recognizes the rapid change in its customers who are becoming more digitally savvy and exhibiting different values from past generations. Consumers who are technophiles and are especially concerned about the company's social and environmental impact are on the rise. Campaigns have to resonate with the changing habits and values of the customer base. To achieve this, the company leverages machine learning tools to segment consumers in terms of their preferences and based on this, uses programmatic, data-driven marketing to send them relevant messages via digital channels. Sensors are also embedded in every machine and building in order to provide digital representations of every process. This data is mined, and insights from AI systems and advanced analytics make possible predictions about quality concerns, malfunctions, and sustainability focused process issues. These automated systems enable Unilever to reach more customers in a targeted way, while reducing costs and freeing up employee resources to focus on other growth activities.

Alan Jope, Unilever's chief executive, notes that "the constraint is not money . . . but that the ability to manage the content-driven, highly targeted, data-led campaigns needs new people with new skills."² To ensure that there is full understanding of how resources, information, and customer changes are weaved into the digitalization drive, Unilever runs a long-term bonus scheme for senior executives with new metrics such as a "sustainability progress index" linked with "responsible digital marketing." Aside from cost savings and staying close to new generations of customers, digitally connecting marketing and production has allowed the company to launch new products much faster than it ever could in the past. Few issues tied to Unilever going digital remain outside the domain of finance.

Accountants believe that there is no business situation that accounting cannot report on. This is especially so when accounting reports integrate financial with nonfinancial information. From cost determinations to auditing, to taxation, to financial analyses, accounting information enables us to assess financial performance and to make business decisions. But accounting now faces a crunch – it needs to reshape itself from the core. The field has focused on reporting present and past economic transactions and business outcomes. Several disruptive trends are now in play that point to significant fissures in modern accounting expertise. For one, accounting information must start to speak to what will take place rather than on financial activities that have occurred. Also, executive action can increasingly be on autopilot such that financial objectives are pursued as if people were making decisions but where in fact there is no human input. So not only are forms and intents of accounting information changing but so are its readers. Further, although accounting usually reports on products passing through the value chain, we're seeing more and more situations where accounting itself becomes part of the products being reported on. Accounting is, in other words, becoming a whole lot more complex, and digitization is at the heart of the ongoing disruption.

What do digital technologies do? They enable businesses to convert physical (analog) text into *digitized* formats. As a consequence, enterprises alter their business models and work activities by *digitizing* their processes. *Digital transformations* move enterprises into new realms of operating where all areas of business integrate digital technologies and a novel managerial culture takes effect. While accounting reports have always been about helping business decision-making, digitalization is unleashing a massive alteration as to what accounting now needs to achieve. This is because digital technologies have the power to self-transform and branch out to other sectors of the economy where productivity also increases. Technology hasn't always demonstrated such power. In fact, rarely so. We've only seen this happen three times before. The printing press did that about 600 years ago. So did the steam engine 300 years ago and the electric generator 200 years ago. Today, digital technologies are upending business philosophies, models, and thinking because they can self-transform. The pace and scale at which this is happening have no equal in history, and

there's no technological U-turn. Accounting cannot afford to stand still. This book is about how accounting is being disrupted by digital technologies and the steps the field must take.

While digital technologies are impacting how we experience and consume things, the digital trajectories within business defy tradition in their capacity to supercharge economic growth. How has this come about? It is widely accepted that the First Industrial Revolution introduced mechanization about 250 years ago. Then, 150 years later, this was followed by electrification and mass production. Electronics and automation started a third revolution around 60 years ago. The ongoing and aptly termed Fourth Industrial Revolution sees our physical and virtual worlds converging. But this time it's different in that with the first three revolutions, few people understood the magnitude of changes taking place. However, today people are aware of the tectonic shifts that are impacting the way we produce, consume, move, communicate, and experience things. And we know businesses must act.

But there remains an unknown. In the past, managers introducing radical changes in their operations fully appreciated what they were seeking. It may have been an investment to increase productivity or to rebrand the product; or perhaps they sought to implement flexible work practices to enhance production flexibility and customer service. Or possibly, they desired a merger to acquire knowledge and mobilize new revenue streams. The paths advanced by decision makers could be deliberate, purposeful, and directive, leading to defined business outcomes. A digital transformation, however, can only offer a limited vision of what the end state might be. There exists no methodology to put into effect a digital maneuver that leads to a specific enduring outcome. In the digital world, the African fable must be heeded: Every morning a gazelle wakes up knowing it must run faster than the fastest lion or it will be killed and, every morning a lion wakes up knowing it must outrun the slowest gazelle or it will starve to death. Likewise, digitization begets digitization, following novel trajectories in the making. Any hindrance puts growth, if not survival, at risk. Where digital technologies are deployed, they alter processes, all the while triggering further changes that become essential but impossible to predict at the outset. While we are aware that we are living in a

time of extreme economic renewal, we also know that undertaking fast iterative change is perforce the only approach that can be adopted. We cannot entirely fathom where digital paths will take us, but we know we have to react and be proactive, continually challenging the status quo. The question for us is what accounting now needs to do so we can forge effective advances given the extreme ruptures the digital economy is bringing. To better appreciate how accounting must be rethought, it is essential to ponder some wider global forces of change that businesses generally must address.

GLOBAL FORCES RESHAPING THE DIGITAL ECONOMY

In the next decade, the world's population will grow by a sixth. The United States population will rise by a meager 7.5% and that of Europe will decline by 2%. Moreover, 97% of the global population growth will be from the developing world and *Easterization* – the influencing habits and customs of fast-developing Asian countries – will march with high velocity. Of essence is that a third of Americans living in 2030 will have been born in the analog era. In the developing world, by contrast, 1.25 billion people will join the existing 6 billion and all will have been “born digital”! If digitization comes to equate with advancement, then Western developed nations will form a very tiny portion of tomorrow's advanced world.

Consider this: China and the United States are now the world's two largest economies. While China is called a *developing economy*, the United States is among the most advanced economies in the world. Put together, the two countries account for 90% of the market capitalization of the world's biggest digital platforms. They produce three-quarters of the world's patents tied to blockchain technologies and public cloud computing, and they account for half of the globe's Internet-of-Things expenditures. We may now speak of developing versus advanced economies, but digital technologies pay little heed to this differentiation. What matters is not where we've been but where we go from here. As such, China has more than 80% of its consumers using mobile payment systems, whereas in the United States, mobile payment apps have less than 10% adoption rates.³ Digital systems are defining economic growth while discarding lead positions. Their

usage seems neither aided nor hindered by how industrial history has shaped a nation. Managing as if yesterday mattered has no place in the digital world we have entered.

What does the ongoing technological shift not infiltrate? It turns out: very little. National programs of change and growth deeply entail digital transformations within every level of societal activity. It is anticipated that 70% of world economic value created in the next decade will have come from digitally enabled platforms.⁴ Across the sustainable development goals (SDGs) supported by most nations as guides to the next decade's targets for peace and prosperity for people and the planet, digital developments will impact "virtually all the SDGs, and affect all countries, sectors and stakeholders," according to the UNCTAD's Digital Economy Report.⁵

It is, however, critical to understand that while the digital economy covers the globe, it does not do so in a consistent manner. Many emerging-market regions that have been slow to invest in complex industrial structures have hyper-digitalized economic segments that are leapfrogging advanced economy sectors. If there's little from the past to dismantle, then change can come about very swiftly. Antiquated systems in the advanced world prevail because it's difficult to justify replacing them with digitized systems. A case in point is M-Pesa, the mobile phone-based money transfer system developed in Kenya in 2007. M-Pesa has more registered accounts than Kenya has inhabitants, and the system moves over 50% of the country's GDP.⁶ Conversely, in the West, mobile money movements on the scale of M-Pesa would be counter to institutionalized financial services founded on deeply established regulatory and governance structures. The excessive complexity of legacy systems, the lack of shared platforms, the extensive grip over consumers that credit cards enjoy, and the hardware cost hurdles to sellers all reduce the advent of mobile money. Inroads made by apps, such as Apple Pay, Google Pay, Samsung Pay, PayPal, Venmo, Square Cash, and Zelle, among others, dwarf similar systems in developing nations. This is because less well-grounded habits tied to the industrial economy help mobilize the transition over to digital products faster.

The relevance of demographic structures in the digital world extends much beyond just the significance of location and population

size. While economic power will see alterations tied to population changes because of their nation-specific digital proclivities, so will the values and predilections of people by age group. We can expect that digitalization will entirely rewrite the social contract between people and business. This is happening already at an accelerated pace. But the reformulation of the social contract differs across age cohorts, where some are born digital versus analog. As a consequence, thought must be given to who defines accounting controls and for whom.

Consider that the next 10 years will see *Generation Xers* (usually classified as those born between 1960 and 1979) in the last third of their working life and looking to retirement. They grew up witnessing the rise of capitalism and systems of meritocracy and they benefited from opportunities not available to the previous generation. Competitiveness and individualism characterizes their mindset. Their predilection is for management systems that capture performance achievement within defined incentives and reward structures. Generation Xers who have succeeded veer toward the consumption of status labels, branded goods, and luxury articles. They tend to be the ones at the top of organizational hierarchies, setting the parameters by which enterprises operate. They will, for now, define the occupational experiences of *millennials* (those born roughly between 1980 and 1994) who are entering the 2020s at the ages of 25–40. This generation will have seen periods of general economic stability, the rise of globalization, and of course, the internet. Millennials have tended to be self-focused, thriving on experiences, interactions, experimentation, and travel. Their choices are not founded on lifelong loyalties or a desire for permanency of any sort. Management systems they react to are ones that are quick and clear about how positive performance is tied to immediate returns.

A good proportion of *Generation Zers* (born between 1995–2010) are today just entering the workforce. Their perspective is shaped by an era of mobility and wide social networks. They are the true digital natives, perceiving the analog world at best as quaint but in fact incomprehensible. They desire uniqueness, which they like to communicate to large communities of people, and they subscribe to a citizenship of ethics and analytical legitimacy that favors authenticity, acceptance, and openness to different kinds of people and ways of

being. For them, self-expression trumps the desire to fit in. Their forte lies in the evaluation of large amounts of information, which makes them *identity nomads*.⁷ Having only narrow stakeholder representation is not something Generation Zers support. They will not tolerate businesses that lean toward any element of machoism or that discriminate on the grounds of difference. They favor ones that treat products more as services that connect consumers. In the digital age, Zers require unique enterprise strategies and financial assessments that differ from those that industrial organizations nurtured. Greater fragmentation of channels, increased connectivity between individuals and firms, and a respect for truthfulness as well as plurality of ideals all make for altered approaches to the management of Generation Z workers. A clash of perspectives between those who celebrate Industrial Age values and those who exhibit digitally grounded propensities can hinder business growth. Financial controls deployed in enterprises need to align with the groupings of culture within the workforce, especially as people live and work longer.

Another key element of changing demographics is the increasing participation of women in workplaces. In developed economies, women play a far from equal but still rapidly growing role as workers across all industrial sectors. While gender disparities continue to exist, the proportion of women in technology and startups is increasing apace. This is positively changing business and the functioning of organizations. Digital transformations open new avenues for the economic empowerment of women with digital platforms, mobile phones, and digital financial services enabling *leapfrogging* possibilities for women to increase their employment opportunities, and access knowledge and general information.⁸ Accounting systems will need to adjust, not simply in identifying and monitoring inclusivity, but also in adjusting to alternative directions and business model innovations that contrast with male-oriented enterprise control structures. In the developing world, the expected population increase of women digital natives in the next decade will exceed 3.6 billion. The World Bank reports that digital technologies and new online platforms will create opportunities for women to bypass traditional work and trade barriers, expand their entrepreneurial skills, and, where social-cultural norms dictate, enable them to develop flexible careers allowing work and household

responsibilities to be better managed.⁹ A study across 30 countries reveals a growing number of women enrolling in higher education institutions across the Muslim world where traditionally, women representation suffered extensively.¹⁰ Evidence is mounting that women in all nations are leveraging opportunities and the flexibility offered by digital technologies both as workers and as consumers. Women's educational adeptness combined with the potential digital technologies offer combined with the global drive to balance gender inequities will inevitably alter the workings of business. Accounting systems will have to concurrently revise the premise of their own workings.

What takes place in business enterprises is influenced by the education employees have received. But to what extent is formal business education preparing us for the digitally transformed organization? Business academics regrettably remain, in the main, largely in the dark as to what is appropriate management education for the digital era. When the world's first business school was set up over 200 years ago in France, agricultural work was shifting to industrial production activities. In the United States, Wharton began teaching business 140 years ago and Harvard established the world's first MBA program in 1907. At the time, the largest industrial structures the world had ever seen were being mounted. Initially, business education was grounded in practice. Industrialists and functional managers were interviewed and the detailed accounts of what they did were transformed into case studies for discussion by business students. This worked well until the 1960s when business school professors felt the desire for academic distinction in the eyes of other scholars. This was a time that saw the rise of digital processes via semiconductors, computing and later the internet. But business schools eschewed practice-focused professional management training, opting instead for the scientific model espoused by academia.¹¹ Present-day business school professors have not moved far from economic theorizing that piggybacks on scientific principles, which they purport define effective management education.

We're now seeing the deployment of robotics, miniature sensors, artificial intelligence, genetic sequencing, and 4D printing, which demand an altered understanding of their business potential, while business school educators remain wedded to advancing academic research founded on ideas about management education that are six

decades old. Does this matter? It matters a great deal! As digitalization moves literally at the speed of light, accounting practices will need to meet the needs of decision makers who seek business-grounded solutions. Both accounting information and the analysis of such information will have to be suitable for executive needs that we have not seen before. Digitalization may be blind to how we define economic development, but it won't be subservient to educational lacunas.

WHAT DO BUSINESSES WANT?

What business would not want to benefit from greater productivity, a larger range of diverse products and services, heightened quality, and reduced costs? Business objectives such as these are ingrained in the psyche of industrial era managers. Digitalization goes beyond this. As we progress into a digitally transformed business world, the question needs to be asked: Should we limit pursued outcomes to only those that correspond to our current understanding of how businesses operate? Traditionally, we have regarded the existence of predictable repetitive tasks as a reason for investing in automation and digital technologies so that the efficiency of production can be enhanced. While the reduction of costs is laudable, this objective is dwarfed by the value to be derived from a significantly different strategic direction, which digitalization helps maneuver a business into. The capacity to understand and leverage what digital technologies can bring is essential but also markedly different from Industrial Age managerial pursuits.

How confident are enterprises that they can navigate the digital era whilst following their existing modus operandi? In one survey of 2,000 companies, 92% believed themselves to have business models that would not be economically viable as digitalization takes hold. Half of finance leaders believe their expertise does not have the right mix of capabilities to meet future priorities.¹² While fundamental economic logic must prevail, the mechanics of how this logic plays out in the face of digital technology usage is not well understood. If we assume that digitalization offers just operational change possibilities, we will have missed the point about its value in connecting and

propelling more grounded and continuous engagements between people and structures. Digital processes enable and require a different form of analytics that is at variance with accounting's conventional reporting. Predictive engagement of a type not accessible before is part of the digital circuitry. An executive mindset that comprehends evolved business models that eschew traditional business trade-offs has become essential.

Decision makers have to tackle difficult new questions that have cropped up. Business executives recognize that demand and supply always need to be understood to work out the price at which transactions clear. But given that fixed costs have altered markedly and marginal costs are close to zero and that many cross-connections are in place, what cost management fundamentals should one resort to? And where digital exchanges can help make sense of what customers seek before any financial exchanges take place, how do we account for the growth in value for firms that better match product offerings to customer desires in the absence of economic transactions? We know also that digital products can consolidate product offerings into solo devices where traditionally a multitude of separate products would have been the norm. A smartphone is a camera, a map, a thesaurus, a game console, and more. How do we then deal with market sales points where traditional industry product boundaries are crossed? Simply looking for the point of price clearance according to conventional management folklore can no longer work. Grasping a wider vision of the potential of digitalization requires transcending the confines we've placed around industrial firm logic.

Applying a digital management mindset necessitates a fundamental change in our decision-making approaches. Sound executive action used to imply that small incremental changes should be pursued and feedback obtained to analyze the impact. Such feedback would then inform the next iteration within a steady path of action. In current digital contexts, the only safe path is one that is radical and transformational. What would have been regarded as a strategically effective move to be undertaken over a protracted time frame conventionally would today more likely have to be swift action that triggers further near-term deep action.

WITH GREAT DATA POWER COMES GREAT RESPONSIBILITY

All enterprises today are, to a degree, tech companies. Data can power their growth in whatever sector they may be in. In fact, information processing capacity has its place alongside other core competitive strengths within organizations to feed through performance. In essence, all companies must seek to develop capabilities to process and extract intelligence from data to advance their evolving business models. But many factors impinge on the process through which data is capable of effectively driving decisions and value creation. Maintaining the sanctity of data is essential. Data risk across the global business community is rising and cyber-breaches are on a growth path. The 2019 CEO Imperative Study that surveyed 200 CEOs from the Americas, Europe, the Middle East, Africa, and the Asia-Pacific region identified cybersecurity breaches as the biggest threat to the global economy.¹³ Information that has high decision usefulness is also subject to very high levels of risk. Educating workers as to sound digital habits is important for enterprises as human errors and the nonobservance of security protocols result in expensive system failure costs. Moreover, valuable data can require input from humans who are dispersed. Information drawn from different places can be particularly useful but dispersion of data collection also increases the potential of breaches.

The focus of accounting systems has conventionally been premised on controls associated with recording economic transactions. Such controls provide assurance about the information collected. But where data of relevance is not captured through conventional financial records, information system controls must evolve to provide the same level of assurance. This enhances the need for awareness by the finance function as to data sources which are outside the usual parameters of control. Finance professionals need to expand their conception of enterprise control in firms that go digital. Security and assurance is essential in a world of growing business digitalization where cyber-resilience is of supreme importance.

Aside from information security and assurance requirements, regulatory limits are being placed about what data may be accessed by firms and their applicable uses. There is a shift away from the extraction

and ownership of data to an environment where data is entrusted by those who produce it and is “borrowed” temporarily. As more widespread data regulations and compliance requirements take effect, accounting practices will have to continuously reflect legal framework changes. Digital data usage departs from the simplicity of recording and examining financial transactions-derived data that are unproblematically captured and owned by enterprises. As data analyses and processes lead to enterprise action that extends the scope for customer personalization, novel modes of trust and security compliance are emerging. For instance, new systems of reviews and ratings are coming into existence. Such emerging information sources will increasingly need to be part of accounting reports. Additionally, where audit and independent verifications are essential, the scope of evidence will have to widen significantly to encompass different sources of data. The finance function will need to invest into understanding the role of digital technologies that both produce different information types to investigate and that also help in verification protocols to aid compliance.

WHY DATA IS GROWING

Over 40 years ago, Bill Gates wanted to see a computer on every desk in every home. This produced a lot of data – much of which remained within devices. With music, games, movies, and files becoming digital, data transfers grew. Initially, much of the transfers were in one direction, but then exchanges could take place, creating more data. Today, digital devices enable value to be created through interfacing networks and the widening of connections. Such connections are, to some extent, triggered by people using those devices. But much more so, smart devices exponentially increase data exchanges through interconnections between devices. For instance, *citizen-to-citizen* data stems from social media and communications via devices that already connect half the world’s population. *Business-to-consumer* channels also create data via media, services, and consumer activities. *Business-to-business* interfacing growingly expands global value chain processes and enterprise activities, including personnel and financial data operations. Another growing source of data is also *government-to-citizen* services. All these connections are producing data at an accelerating

pace. In the next five years, three-quarters of the world's population will be digitally connected and will therefore create avalanches of data.

Where in the world is data growing most? As noted earlier, population growth will largely accrue to the developing world going forward. Five years ago, the United States, China, Europe, the Middle East, and Africa were about at par in terms of digital data production. By 2025, the United States' share will be much smaller than that of China, Europe, and the Asia-Pacific (including Japan but excluding China). During that time, the world will see a fourfold increase in data produced!

While people using devices create data, the biggest source of data production today comes from embedded devices that enable machine-to-machine exchanges. The internet of things (IoT) comprises the network of physical devices, machines, vehicles, and a myriad of other items with embedded sensors like RFID readers, chip cards, smart meters, medical implants, security cameras, cellular networks, traffic grids, and others that invoke interactions that continuously produce growing swathes of data. Such data, if effectively harnessed, can provide avenues that allow businesses to produce greater value. Intelligent systems that may be under the purview of the finance function can give insights into trends and possibilities, generate adaptive responses, customize user experiences in real time, and deliver deep analytics. Harnessing and analyzing data generated by connectivities can offer intelligence never before accessible, which can feed continuously into decision-making processes.

New data forms can further permeate the wider supply chain of processes and quickly point to new strategic possibilities. As noted, this is a result of digital technologies being able to self-transform and extend to other segments of the economy where productivity increases results. In this sense, more data leads to more data creation. The finance function, as we'll see in later chapters, will add to this by producing data about data. Such digital data can be used and reformatted for further use and can be moved, processed, and copied quickly and cheaply, thereby enabling decisions that could not be pondered before, and help design new products and pursue alternative courses of business action. Very importantly, data is not just a product but also a byproduct whose utility can be extracted.

The rise of digital data is growing across several dimensions. The *volume* of data growth far exceeds what could be produced by

the number of digital devices on the planet because interconnections between these devices and other digital mechanisms propel data growth exponentially. But the speed at which data is produced is also rising. Partly, speed of not just growth but also of exchanges and access increases the possibilities for data's use. The increased *velocity* of data production can be of particular value say for efficient traffic flow management, especially where vehicles are becoming "smarter." Prioritizing traffic pathways for emergency response vehicles, directing real-time fraud detection through facial recognition as security mechanisms, medical diagnostics processes, and so on, all benefit from the speed of data transfers. By 2025, a quarter of the world's data will be accessed and used to add real-time value, and most of it will come from IoT devices. One in five human activities will then rely critically on data exchanges taking place once every 18 seconds per person.¹⁴ Within industry, production processes will also rely on data exchanges. For instance, predictive maintenance can be enabled through IoT technologies whereby sensors track the condition of machines and facilities, continuously sending data to a cloud application using communication networks. This triggers assessments of maintenance requirements, which ensure shorter downtimes, greater production efficiency, and lower production costs.

Data is only structured if steps are taken to make it so. But much data utility derives from semi-structured and unstructured forms of data that can be processed for managerial purposes. The quality of data being analyzed needs to be high to ensure its usefulness. Data made into information that is meaningful and valuable must encompass *veracity* before being fed into trust-reliant activities such as safety measure warnings, medical condition tracking, and so on. We'll see in later chapters that finance professionals need to understand issues of variety, quality, and speed, aside from volume impact tied to digital data growth and usage.

IF FINANCE STANDS STILL

In a world of changing risks, growing data, enhanced digitization, and increased regulations, no finance leader can afford to stand still. Digital technologies are impacting the way finance operates, what it reports

on, and how it helps the organization. The automation and standardization of accounting activities across enterprises has been ongoing for a long time and is continuing. Today robotic-based process automation is taking the lead within finance operations to enhance error-free work, produce faster reports, and ensure verifiability – all at a lower cost. This does replace humans engaged in repetitive tasks with technologies that can perform better and faster at lower costs. Additionally, software-as-a-service and cloud-based systems likewise continue to enable financial management processes to maintain currency and remain effective at a lower cost. Capital expenditures tend to convert into operating expenses which alter the structure of financial statements. Such technologies can help ensure enterprises remain flexible and sensitive to innovations but require the right digital technology skills in the workforce and cyber-resilience and security systems being invested into.

More fundamental changes than automation in the finance function relate to the application of advanced analytics. Organizations need to process and analyze large amounts of structured and unstructured data to extract forward-looking insights. Big data platforms can be interrogated via machine-learning tools, and patterns and trends can be assessed to track through developments that present market opportunities or rising risks or evolving customer preferences, and so on. As Vincent dell'Anno of EY notes: “. . . you want to facilitate analytics as close to the source of data as possible, you want to be able to drive streaming analytics where possible that are relevant to the business problem.”¹⁵ Additionally, artificial intelligence (AI) can help detect new patterns and adapt to emerging conditions, including altered accounting reporting standards and changing tax rates and regulations and offer recommendations or support advice developed by accountants. Blockchains (discussed in Chapter 2) will likewise assist with contracts, enhance security and increase value chain efficacy.

So what must finance executives do differently with the changes these digital technologies are bringing? It must be accepted that organizations require keeping a focus on accounting reports, budgetary controls, and funds flow reporting. This is unlikely to change. However, these processes will be supplemented by new ones and in time, possibly diminish in scope. When organizations make investments, kneejerk controls kick in. Projects have to be justified on the

basis of costs and revenues or savings. Where insights derive from a wider array of data that is analyzed part by humans and part digital systems including accountants and AI agents, indicators may point to the need for funds to be allocated based on trends that are not reliant solely on economic transactions, but on evolving ones. The input of accounting information into organizational processes will, for now, retain elements of what has conventionally been asked of the finance function, but digitalization will make it necessary that the work of accountants also evolves.

Enterprise growth has always depended on an ability to differentiate a business from the competition. This will be a mounting requirement as markets become increasingly digitized. The ability to merely understand what produces data and their different forms will not suffice for accounting executives to deliver value. An understanding of novel business models, made possible by digital technologies and knowing how to capture insights and hidden knowledge about the organizational environment, including intelligence on competitors, suppliers, customers, and structural market changes, must feature as evolving competitive strengths if the profession is to survive. The time is now for the finance function to bring to decision makers an understanding of the disruption that digital technologies are causing and the many opportunities they open up. The production of relevant information has always been part of accounting work, and accounting executives will have to learn to play a role in enabling embedded analytics whereby machine agents capture and organize data within business activities that require informed human input. In the emerging digital economy, the accountant will have to nurture the capacity for information production from data sources to positively engage business. If the finance professional does not take this on, accounting's usefulness will dwindle into insignificance in the years to come.

NOTES

1. Nadella, S., and Eucher, J. 2018. *Navigating Digital Transformation*. Research-Technology Management 61 (4): p. 11–15.
2. Spanier, G. 2019. *Unilever saves €500m as in-housing is 'more efficient' than agencies*. <https://www.campaignlive.co.uk/article/unilever-saves-%E2%82%AC500m-in-housing-more-efficient-agencies/1578798>

3. Toit, G., Bradley, K., Swinton, S., Murns, M., and Gooyer, C. 2018. *In Search of Customers Who Love their Bank*.
4. World Economic Forum. 2020. Shaping the future of digital economy and new value creation. <https://www.weforum.org/platforms/shaping-the-future-of-digital-economy-and-new-value-creation>
5. World Economic Forum. 2019. Our shared digital future: Responsible digital transformation – board briefing. White paper (February 6). <https://www.weforum.org/whitepapers/our-shared-digital-future-responsible-digital-transformation-board-briefing-9ddf729993>
6. Rolfe, A. 2019. *Mobile money transaction equivalent of half of Kenya's GDP*. <https://www.paymentscardsandmobile.com/mobile-money-transactions-half-of-kenyas-gdp/>
7. Francis, T. and Hoefel, F. 2018. 'True Gen': Generation Z and its implications for companies. <https://www.mckinsey.com/industries/consumer-packaged-goods/our-insights/true-gen-generation-z-and-its-implications-for-companies>
8. OECD. 2018. Bridging The Digital Gender Divide. <http://www.oecd.org/internet/bridging-the-digital-gender-divide.pdf>
9. World Bank. 2020. Women and Trade. <https://www.worldbank.org/en/topic/trade/publication/women-and-trade-the-role-of-trade-in-promoting-womens-equality>
10. Zahidi, S. 2018. *Fifty Million Rising*. New York: Nation Books.
11. Bennis, W., and Toole, J. 2005. How business schools lost their way. *Harvard Business Review* 96 (5): 96–104, 154.
12. Fitzpatrick, M. 2020. *The Digital-Led Recovery From Covid-19: Five Questions for CEOs*. <https://www.Mckinsey.Com/Business-Functions/Mckinsey-Digital/Our-Insights/The-Digital-Led-Recovery-From-Covid-19-Five-Questions-For-Ceos#>
13. Klimas, T. 2019. DNA of the CFO: Is the future of finance new technology or new people? *EY* (April 11). https://www.ey.com/en_gl/advisory/is-the-future-of-finance-new-technology-or-new-people
14. Taylor, C. 2019. *Cybersecurity is the biggest threat to the world economy over the next decade, CEOs say*. CNBC (July 9). <https://www.cnbc.com/2019/07/09/cybersecurity-biggest-threat-to-world-economy-ceos-say.html>
15. Klimas, DNA of the CFO: Is the future of the finance new technology or new people?