

Renewing General Managers' Tasks in an Artificial Intelligence World¹

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Abstract

Artificial Intelligence (AI) is making important inroads into corporate decision-making. This paper reviews the impact of AI tools and applications on the jobs and tasks of chief executive officers (CEOs) and general managers. It presents the role of the CEO in two large companies that use AI in their business transformation process. With these cases as a background, it discusses the functions and responsibilities that CEOs will have as AI tools are increasingly used. In particular, it elaborates on the key role of CEOs in defining the firm's purpose, designing its governance, setting the firm's strategy and reinforcing its uniqueness, engaging people, thinking about the firm's broader social impact and leading with ethical values to generate trust.

Keywords:

General Management; Strategy; Artificial Intelligence; Board of Directors

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1. Introduction

Until recently, the role of semi-autonomous machines or robots in undertaking tasks in the workplace or making some decisions was limited to the shop floor, where they were programmed to execute some physical actions. Today, those machines have been introduced slowly but effectively in many manufacturing plants and warehouses, handling operations and logistics with high reliability, effectiveness, speed and physical safety. Many of them are not robots in the sense that popular literature tends to characterize them. They are simply machines programmed to perform certain tasks. With increasingly sophisticated software, data and learning, these machines now undertake many office functions and services, such as answering questions in call centers, offering customer service, deciding how to invest money in financial products or carrying out facial and voice recognition in security functions.

Some companies' experiences show the advance in recent years of artificial intelligence (AI) that is increasingly applied across industries. Inditex, the world's leading fast-fashion retailer, is allocating most of its information technology (IT) investment to the use of big data and AI tools to improve its sophisticated online shops, with new attributes such as customer facial recognition and recommendations for specific clothes according to personal lifestyles and preferences. Inditex's retail business in traditional stores in some geographies is slowing down, but online sales—where the application of AI tools is deep—are growing.

BlackRock, the world's largest asset manager, with a top reputation for the quality of its management and investment decisions, set up its Lab for Artificial Intelligence in Palo Alto, California, in 2018. It is investing in applying AI to improve the performance of its investment managers, automating back-office functions, cutting costs and enhancing its client service, by analyzing vast amounts of data. AI has become a key tool for sophisticated asset managers.

MD Anderson and Mass General Hospital—two of the leading medical centers in the United States—are spending significant resources on applying AI tools to diagnose and treat some specific diseases more effectively and with a higher success rate. These tools are developed based on the evidence of thousands of patients who followed different medical therapies and treatments with a diversity of outcomes.

Growth in AI applications in the business world has been propelled by a combination of factors: growing computer power, the development of sophisticated algorithms that help make complex decisions of a predictive nature, and more abundant data to train and improve those algorithms. AI tools that use big data and sophisticated algorithms are replacing some types of human work: both traditional robots—those that simply do some physical functions more effectively—and computers with special software—those that run accounting or sales reports with speed and accuracy, like spreadsheets. New AI capabilities include not only search capabilities, but also artificial vision, language processing and face recognition. This new world of AI encompasses more autonomous, intelligent machines—including a new generation of chatbots—that run algorithms nourished with huge amounts of data. AI, more specifically machine learning (ML), has become the most important general purpose technology of our time (McAfee and Brynjolfsson 2017).

The AI new wave is improving managers' capabilities to make predictions: this is a very important ability in all key business functions, such as manufacturing, purchasing, sales, marketing, finance and logistics (Agrawal, Gans, and Goldfarb 2018). These changes are not only introducing new degrees of automation in many companies, they are challenging organizations and management, and transforming industries—like retail, fashion and financial services—by introducing new



strategies to approach the final customer and developing more efficient business models. If AI tools are truly effective, many companies may become laggards, and their assets and capabilities will become obsolete. This will involve a huge reallocation of assets. As a result, these changes will have colossal implications for society in terms of the future of human work, job destruction, new educational needs and the retraining of people.

The implications of widespread AI use for management are big. Senior managers need to learn about them and consider some experiences around the functionality, possibilities, deployment and impact of AI. As these AI tools do more sophisticated, intelligent work and come up with some recommendations or solutions to problems, they are helping to better frame some managerial decisions and make better predictions. In some business areas, like logistics, marketing and trading, they are already doing a good job, improving productivity and efficiency, but they are also replacing traditional jobs and layers of intermediate managers.

With its success in these managerial functions, AI is starting to put into question the future role of chief executive officers (CEOs) and senior managers. This is the specific focus of this paper. We will refer both to CEOs and senior managers as general managers, without making explicit the distinctions between them every time. The CEO is the top manager of a company, holding the final and overall responsibility for its major decisions, activities and performance, and sharing it with the board of directors. Senior general managers are managers with the overall responsibility for a business unit or a corporate division (chief financial officer [CFO], chief technical officer [CTO], chief human resources officer [CHRO] or chief marketing officer [CMO], among others). They may have fewer responsibilities than CEOs but share the overall responsibility for the whole company as members of the top management team.

The structure of this paper is as follows. Section 2 presents an overview of the potential implications of AI for managerial decision-making in different business functions. It also outlines how management can test and monitor the implementation of AI tools in managerial decision-making, with some specific goals and timing: the decisions around the why, what, how, where and when of AI are clear functions and responsibilities of senior managers in any company.

Section 3 discusses how key senior management functions will evolve in the age of AI. By discussing the experience of two international companies that are making extensive use of big data and AI tools, I identify the areas where those tools are making some progress and the areas and functions where good general managers are needed to keep developing their companies.

With the background of those cases, in Section 4 I discuss the CEOs' tasks and responsibilities that are required in an AI world. In particular, I describe how competent CEOs think about the firm's purpose, consider what makes a company unique and make some specific decisions to reinforce this uniqueness, develop the next generation of leaders and ponder the broader social impact of the firm. These and other functions and requirements make the job of a CEO truly human. Section 5 offers some final reflections on the future of general management.

2. AI Potential in Management Functions

Over the past years, increasing industrial automation and highly capable robots have been introduced in many manufacturing companies around the world, with a positive impact on productivity. Recent AI developments clearly have a high potential to help companies and senior executives make better decisions based on data. With the availability of more powerful computing power, AI algorithms can carry out many tasks—including data analysis—quicker and more accurately, in ways that individuals do not have the capacity to do.



A new round of process automation is the first area of AI deployment and impact (Davenport and Ronanki 2018). It can be seen as the natural next step in the design and use of IT. It is a natural expansion of traditional IT capabilities, which means that many companies already have the people and skills to understand and use them. It includes applications such as software that reads documents—for instance, financial information and bills used for audit purposes—and software that screens and manages data from call centers and servers.

The second AI area of influence is related to cognition (McAfee and Brynjolfsson 2017; Davenport and Ronanki 2018). In this case, AI tools use algorithms that map sets of data, identify patterns of behavior from data and suggest how to interpret and use data, and make some decisions. It includes functions such as digital advertising placement in a personalized way, predictions about future consumer behavior and implications from data on traffic in shopping malls or online stores. These tools are a bit more sophisticated than traditional analytics or predictive models. They use not only statistical correlations, but also deep learning techniques (see Gil et al. 2019). These techniques try to mimic how the human brain works with data and makes some decisions. Voice recognition, like that provided by Siri or Alexa, and image recognition, like that offered by Facebook and other apps that recognize a face and encourage users to tag photos with their names, belong to this category. Intelligent machines, like chatbots, can also engage with humans using the information they have and provide customer service or offer answers to some frequently asked questions.

AI that aims at cognition is making progress, although it is more expensive than traditional analytics and needs strong human monitoring to make sure that cognitive insights offer reasonable answers. AI that aims at cognitive insight is also opening up the dangerous world of fake news and deepfakes, the AI-powered imitation of speech and images that can create alternative realities. They make somebody appear to be doing things or saying things that the person never did or said. The growing problem of fake news and deepfakes is increasing with the use of AI tools and creates a huge challenge of trust in online media and other companies using and selling private data.

In this paper, I will specifically refer to the impact of AI developments on senior management and managerial decision-making. Recent AI developments in automation and cognitive insights are covering data clustering and estimation. As Agrawal, Gans and Goldfarb (2018) point out, the current wave of AI may not bring a lot of general intelligence, but instead a greater capacity for prediction. Prediction itself is not the whole business decision. A decision involves data, judgment and a final action. But it is true that algorithms that can make business predictions are getting better because the data that nourishes them is more abundant and richer than ever, and the computing power to analyze and classify those data is also bigger.

Algorithms that make use of large sets of data may help identify hidden patterns in consumers' behavior or prices and demand elasticity. In other key business functions, like global supply chain and finance, they help to better understand some complex problems in today's business world and provide stronger data-based evidence to make decisions.

It is true that there might be some hype around AI's potential. Its development has also awakened some sharp criticisms, some of which come from people from the AI field, such as Pearl (2018), one of the leading scholars in developing Bayesian networks and bringing a probabilistic approach to AI. AI does not have all the answers, but offers some tools to collect and analyze vast amounts of data on consumer behavior and purchasing decisions, establish some patterns of behavior of some variables and eventually make decisions or suggest some recommendations. In some particular business functions, AI is making some inroads by helping improve the quality of decision-making.



Manufacturing and Operations

AI tools can help manufacturing companies plan and make better decisions on purchasing, based on historical prices, demand, quality, reliability, inventory levels and service (Sanders 2016). They help allocate manufacturing capacity in different factories around the world more effectively and run manufacturing networks smoothly. Car manufacturers are making better use of robots and other intelligent machines in their operations. SEAT, a Volkswagen subsidiary, employs close to 10,000 people and already has 4,000 robots in its manufacturing plant and warehouses, many of them performing complex tasks, with a positive impact on human health—as they replace people in heavy physical activities—and on productivity.

New sets of data reveal patterns of obsolescence of physical assets and suggest policies in advance to improve their maintenance or, eventually, their replacement. Sensors and satellites can better track the delivery of merchandising, improving the quality of any company's distribution system. These traditional business functions do not disappear, but the use of algorithms with vast amounts of data change the need for human optimization and human supervision.

Marketing and Sales

Companies like Inditex, Ermenegildo Zegna or Walmart are using AI tools to deliver better customer experience. Amazon is improving its capacity to make useful recommendations to online buyers by using data on their behavior more accurately. Google and Facebook have become the largest advertising platforms due to their capacity to personalize ads to specific consumers by using big data and AI.

Fast-moving consumer goods companies, like Henkel, Nestlé, P&G and Unilever, launch dozens of new products and varieties of products every year. With AI tools, they can now better understand why so many new product launches fail and the factors that help successful product development in a wider variety of markets, segments and types of customer profiles.

Finance and Investment Decisions

Financial officers can go through investment decisions with much better estimates of their internal rate of return or net present value, simply because of the richer and more diverse data to be used in analyzing a complex decision. They can also make better estimates of the firm's future profitability and financial structure by using better data and fine-tuning it, depending on different scenarios. Fund managers are using AI tools to make better decisions on portfolio management, based on richer information about historical prices, yields, companies' performance, interest rates and the economic cycle.

Banks, insurance firms and other financial institutions are using risk assessment models that take into account a wider and richer variety of data on their clients, including a company's historical performance, its industry and the overall state of the economy.



Human Resources (HR)

Once considered one of the less sophisticated business functions in many companies in terms of technology, it has become a hot area in terms of applications of AI tools. HR departments usually have some challenges that AI tools may help solve. We highlight just two of them. The first is the screening of curricula vitae (CVs) and the hiring process; in particular, when companies have hundreds or thousands of applicants to choose from. AI tools are helping screen the candidates and match their profiles with companies' expected skills and capabilities. They help detect basic and hidden attitudes in interviews. AI tools have many challenges—in particular, avoiding data bias that may distort the decisions by preferring candidates with certain qualities, as we will discuss later. The second is to help identify and select internal talent. Some companies are very good at this; others are not. AI tools help track all the company's talent pipeline, organize it according to certain variables and suggest, for instance, horizontal moves within an organization when an opening is available in any division within the company.

Strategy and M&A

AI tools are helping investment banks and consulting firms develop better scenarios for corporate strategies, contemplating different outcomes depending on specific key external or internal factors. They can also develop quicker and better combinations of companies through mergers and acquisitions (M&A), not only by crunching the numbers more quickly with different scenarios, but also by including other data related to customer acquisition, synergies that can be achieved or product portfolio enhancement.

The cases that have been briefly described above highlight that AI tools can introduce new decision-making capabilities in any organization, based on algorithms and the more effective use of more abundant data. They are helping shape decisions with more abundant data, at a higher speed, with better accuracy and by drawing more diverse scenarios. The possibilities of AI in managerial decision-making are becoming not only bigger, but also encompassing a wider scope of activities and business functions in organizations, from purchasing and manufacturing to marketing, sales, logistics and distribution, and affecting corporate functions such as HR and finance as well.

Management, Data and the Adoption of AI Tools

A key management issue is how CEOs and senior managers should consider the adoption of AI tools to improve their decision-making. In the adoption of AI tools, senior managers should know and understand them, including their potential and their limitations and risks. The introduction of robots in manufacturing and logistics is easy to understand and plan. The introduction of chatbots in customer service is easy to understand but more expensive to develop, and its risk of failure may easily lead to a crisis. The introduction of a deep learning technique is even more complex, because most algorithms do not provide any clues about why they make the decision that they make.

The experience of some companies that use AI tools—including large, high-tech companies—share some common features. The first is that their scope is very specific regarding some tasks and goals (such as improving marketing effectiveness in online sales). Second, they search and select data for the specific purpose that they are aiming for (for instance, what customers buy and when). Third, the predictive power of algorithms is based upon causality factors, not only correlations. Fourth, there is a monitoring of AI tools by human experts. In most of those cases,



we observe that the replacement of human work by machines is more related to the increasing automation of certain processes, rather than the replacement of experts. Fifth, leading firms select one or a few pilot programs out of those projects, learn from them, see the outcomes in terms of customer satisfaction or operational effectiveness, and fine-tune the human needs for data analysis and data filtering. It is also important to establish some key milestones. Finally, AI requires the education of people: firms need to have an explicit educational strategy for their employees to use AI in an effective way.

In the deployment of AI tools, there are some caveats that companies need to take into account, in order to prevent them from making major organizational mistakes. The most relevant is related to the use of data and the capability of algorithms. The combination of big data, algorithms and computer power may not be enough to make sure that decisions improve simply because there is more data available. To start with, quality data is essential. The use of biased data will lead to major disasters in decision-making, including its impact on corporate reputation and customers' trust.

It is not only the effect of the quality of data on decision-making itself that is relevant, but the quality of data also has a strong influence on how algorithms develop their own learning to make recommendations or decisions. Algorithms' ability to make good decisions depends on the quality and amount of data fed to them to train them. Data is used to train algorithms with the aim of including new potential solutions to different problems that algorithms are supposed to solve. It is often said that AI may eliminate human bias in decision-making. This will happen only if algorithms make decisions with unbiased data. Bias in the data used to make predictions and data used in training algorithms can have a devastating impact. A clear example of this situation is the potential for discrimination in an algorithm that selects CVs that has been trained with data on successful individuals that only come from certain groups of people. The problem here is not only about data selected and used, but data not used by omission: the failure to include some data to be used by algorithms is another type of bias. Data are not neutral.

The debate on privacy and data is also very relevant. AI is based on using vast amounts of data. The way companies—both high-tech and other companies—manage third-party data has and will have an impact on corporate reputation and trust and the long-term survival of those firms. The 2018 Facebook data crisis over Cambridge Analytica highlights the new challenges that AI raises for companies and senior managers. The reputation of many companies and the whole AI field is at stake if governance and some critical ethical issues related to AI are not taken into account.

The quality of algorithms themselves and their transparency to AI users are also causes for concern. Algorithms need to offer a comprehensive and reasonable modeling of the real world, beyond what traditional big data and analytics do. They need to capture the different connections of causes and effects—not only correlations—in understanding certain phenomena. Most AI algorithms are good at recognizing patterns, but are not able to distinguish between causes and effects. They should be understood by decision-makers, who will be the final agents responsible for the decisions made. The way algorithms are modeled and how they are trained with quality data are key to a functional development of AI. This requires transparency on how algorithms are designed and described.

In a nutshell, AI tools should be explicit about data used and data not used—including omissions—and respect the truth about data. AI tools should also be explicit about how algorithms suggest decisions to be made. These are essential qualities in making AI functional, reliable and trustworthy.



Both the AI potential and its limits are compelling reasons why CEOs and senior managers have the responsibility to become familiar with these tools and gradually test their application in their companies in an effective way. The challenge to implement AI tools highlights the need for competent management in AI deployment as well. AI is a more complex form of IT and, as already happens with IT, needs very capable management to become an effective tool for positive change in any company.

3. AI and the Future of General Management

AI's potential to improve decision-making increases the value of good management. Management is not only about making decisions. Management—in particular, the work of CEOs, senior executives and other general managers—can offer an answer about why the company actually exists and why it does what it does. General management requires thinking about the future of the company and making that future happen. It involves setting goals, which are framed by the personal preferences of the different stakeholders, in an integrated way. It designs policies and executes actions in a consistent way. It aims at engaging and developing people. It needs to serve a wide variety of stakeholders. It tries to balance different requirements and constraints, in the short and the long term (Birkinshaw 2011).

In some professions, such as law, accounting and consulting, among others, the threat of technology disruption is large (Susskind and Susskind 2015). In management, the prospects are a bit different. Management is not only about some specialized knowledge and data. It is also about reason, freedom, empathy, engagement, entrepreneurial mindset, humility to learn and prudence in making good judgments—qualities that AI can complement but is unlikely to replace. Moreover, the deeper impact of AI may come from management making use of algorithms and data, not from machines talking to machines (Malone 2018).

Management is indispensable in an AI world. It is a clear observation—even in technology-based start-ups—that the long-term success of most companies depends on developing good management teams that can engage people and harness technology innovation to serve customers.

Most successful companies have a CEO and a senior management team—general managers who want to have a positive impact on the long-term performance of the firm (Wasserman, Anand, and Nohria 2010). The CEO and senior managers:

- think about the strategy of the firm
- discuss and present its major strategic challenges and decisions to the board of directors
- hire and develop the future leaders of the firm
- engage and develop people
- focus the organization on serving customers and creating economic value
- try to design and operate a functional organization

Respected senior managers think about the future, undertake new business projects and help create the future with energy and passion. They are keen to develop new ideas with an entrepreneurial mindset. The adventure of creating a new business to serve customers better and help solve some human needs is a source of inspiration for many of them. There is a truly



human factor in this process of creating new products, services or companies that can make a positive difference. It is impossible to create something new and relevant without the human passion for discovery, innovation, people growth and desire to have a differential impact. These areas are the natural domain of senior managers.

The role of management in the AI world can be better understood by highlighting the technology challenge in the context of wider problems that large companies face. I will briefly present and discuss two cases of successful, international companies that are leaders in their industries and that are investing a great deal in big data, analytics and machine learning. They show the type of management and leadership challenges in today's world and the role of technology within them. They will help us understand the role of good management in tackling those challenges.

3.1. Unilever

In November 2010, under the leadership of CEO Paul Polman and with the support of its board of directors, the company launched the Unilever Sustainable Living Plan (USLP), which aimed at making sustainable living commonplace (Canals 2018 provides the background of this business situation). This plan, unlike other corporate social responsibility initiatives, took the responsibility of the whole value chain and included some ambitious targets to be achieved by 2020:

- sustainably source 100% of its agricultural raw materials
- halve the greenhouse gas impact and water consumption
- help more than 1 billion people improve their health and hygiene
- double the proportion of the product portfolio, meeting the highest nutritional standards

Polman also established that those goals should not only be achieved by some business units—for instance, boosted by outsourcing some activities—but across the whole value chain.

A unique quality of the USLP was the integration of those goals into Unilever's business and strategy. USLP was at the center of a strategy that aimed at:

- engaging consumers
- driving growth
- reducing costs
- sustaining innovation
- inspiring employees

These ideas fit well with the history and tradition of Unilever, a company that was already distinguished as a caring organization due to its social impact. Nevertheless, in the years before Polman's arrival in 2009, Unilever's growth was flat and financial performance was behind other firms in its industry.

Polman and his team were concerned about finding a new strategic vision that could mobilize the company to pursue some long-term goals and develop a new growth strategy. These objectives had to be reached within the backdrop of a global economy sunk in the deep hole of the 2008 global financial crisis and the accelerated digital transformation of companies. In particular, consumer goods companies faced the need to connect with the new generation of



young consumers with different consumption habits and preferences—most of them digital natives. Polman thought that the growth crisis at Unilever and the crisis in the global economy were opportunities to rethink the way companies pursued growth, following a different pathway rather than doing more of the same as many used to do. Polman decided that Unilever had to do different things in different ways.

The USLP had some core elements:

- It served to reinforce the values of Unilever.
- It gave the company a clear sense of purpose.
- It was well integrated into the new corporate strategy aimed at growth.
- It offered a good combination of delivering financial results and achieving some clear, social goals.

Unilever was investing a huge amount of money in new technology tools—both to operate manufacturing, purchasing and logistics more efficiently, and to be more active in online media advertising and marketing. In its digital transformation, Unilever started to use the AI tools available in the market.

Unilever's transformation process since 2009 had been impressive. It had become one of the leading firms in the world in integrating purpose and broad social impact with economic performance and operational effectiveness. It became one of the leaders in the fast-moving consumer goods industry, in terms of economic performance, between 2009 and 2017. Technology had been a key driver in this process. What is truly interesting about Unilever's transformation was that the huge investment in technology had not been the essential driver of transformation at Unilever. Technology had been an enabler of change, but not the engine of change.

It is assumed by all stakeholders that the driver of change at Unilever from 2009 was Polman and his top management team. They were able to be explicit about a purpose and a strategic vision. They made the effort to mobilize thousands of managers and other employees around the world behind a purpose and strategy, and turn those frameworks into specific action plans to be implemented. Polman and his team convinced the board of directors to support the plan, engaged with shareholders to explain the value of the plan, worked with suppliers to make the plan feasible and eventually they delivered results.

Unilever's transformation process had been remarkable and it became an excellent example of a multistakeholder company. This case highlights some of the key factors that can be identified as:

- the outcome of good, general management that AI tools will not replace
- a sense of purpose and support of certain values
- a clear strategic vision
- integration of sustainability and social goals in the strategic vision
- specific goals to be achieved
- engaging and developing people
- executing and delivering value



- managing a complex organization
- communicating well with all stakeholders

Unilever invested considerably in technology and new AI tools. These tools are very important, but without good general management, they would have been useless.

3.2. Cellnex: A Successful Growth Story in Telecom Infrastructure Management

By the end of 2018, Cellnex, an international telecom infrastructure management firm based in Spain, had become one of the industry leaders in Europe, with accelerated growth and a strong reputation for technology and service capabilities. Cellnex went public in 2015. Under the original name of Abertis Telecom, it was the spin-off of Abertis and had evolved from a small business unit in the late 1990s that provided radio and TV signals to networks in Spain. Abertis was an industrial holding firm with a global, leading position in highway management.

Cellnex's exponential growth in less than four years, to a total market value of close to €6 billion by the end of 2018, in a very competitive and sophisticated telecoms industry, was a remarkable story. Canals (2018) provides the background of its evolution.

The management of telecommunications infrastructure—mainly communication towers—for the transmission of mobile phone signals (voice and data) had become vertically disintegrated in the United States in the early 2000s. Major telecom operators (ATT, Verizon, etc.) decided to sell their infrastructure business units in the late 1990s to specialized companies to generate cash for content development and other purposes. American Tower was the leading US telecom infrastructure management company in 2018, with a total market value close to \$60 billion. In the European Union (EU), most telecommunications operators were still vertically integrated and owned and controlled their infrastructure. Nevertheless, the need to reduce debt after the 2008 financial crisis and to invest more in 5G and content was forcing EU telecom companies to rethink their level of vertical integration. The use of big data and some AI tools was becoming increasingly important for telecom operators and, in particular, for the management of their telecommunications infrastructure.

In this context, in 2012, Abertis Telecom's top managers started to consider how to speed up the potential growth of this new industry in the wake of the highly probable divestment of infrastructure assets by telecom operators. In 2012, Abertis Telecom, bought 4,000 towers from Telefónica and Yoigo in Spain and, in 2014, 300 towers in Italy from TowerCo. New opportunities arose on the horizon, the most important being the telecom infrastructure assets of Wind, the second largest mobile telecom operator in Italy, in 2015.

The orientation of the new Cellnex in 2015 was a combination of corporate governance, strategic foresight and good leadership deployed by Francisco Reynés, CEO of Abertis and chairman of the new Cellnex, and Tobias Martínez, CEO of Cellnex, and their colleagues in Cellnex's top management.

The first step they took was to provide a long-term strategic framework for Cellnex's future growth, by the end of 2014. It was based on the resources and technology capabilities the company had at that time and the market opportunities that were unfolding. Reynés and Martínez put together a small team of senior executives from the former Abertis Telecom to develop some clear strategic guidelines and a financial model to help fund the future growth of the company.



With this plan and their personal commitment, they were able to convince Abertis' board of directors to approve the spin-off of Cellnex and its eventual initial public offering (IPO) in 2015. This was a very complex, emotional situation for Abertis' board members. The professionalism and commitment of the Cellnex leaders was powerful enough to convince board members about the decision to be made. The Abertis board of directors established as a condition for the operation that Abertis, the holding company, would not issue new debt to fund any of Cellnex's acquisitions. Any new investment project had to be funded by Cellnex itself. This was an additional challenge for the newly created company, which had to go to capital markets without the financial backing of its parent company. This constraint helped improve the quality of the project and fostered the firm's entrepreneurial mindset.

Third, Cellnex's top management had to deal simultaneously with the normal operations of the company, the IPO and the potential acquisition of Wind's telecom infrastructure in Italy. The CEO put together some small teams to manage the different projects, trying to maximize communication and minimize interferences.

Fourth, they had to develop of a comprehensive and credible equity story for Cellnex to convince potential investors and asset managers—still a challenge in the post-financial-crisis European landscape. It included a vision, a mission, a corporate governance model based on the independence of the board of directors, a clear strategic plan, some key capabilities, and an experienced and entrepreneurial management team. In the strategic plan, technology, big data and analytics played a very important role, but so did the sophisticated service provided to its demanding customers.

Cellnex went public in May 2015. Its growth through the end of 2018 was spectacular: solid, organic growth and selected acquisitions of infrastructure assets in France, Italy, The Netherlands and Switzerland, among others. Cellnex became one of the leading European telecom infrastructure management firms by the end of 2018.

In the Cellnex growth process, the role of IT and big data was very relevant. And the technology capabilities were essential to provide outstanding services to telecom operators that were outsourcing those services to Cellnex. Technology was a demanding requirement that Cellnex could offer, but it was a capability also available to other telecom operators and technology-based companies in the EU.

Cellnex's growth since 2015 provides some useful references on the role of AI and technology in a highly competitive industry. What truly set Cellnex apart from its competitors was not the quality of technology capabilities or AI tools: it was the combination of a highly competent and motivated management team who developed a clear strategic orientation, their entrepreneurial mindset, a sense of innovation, their aspiration for a culture of top customer orientation, and the support of its board of directors, including some clear guidelines for its corporate governance. The quality of leadership and management, and the culture of customer service, really made Cellnex a unique and successful company in its industry.

The Cellnex and Unilever transformation processes discussed above highlight some key managerial challenges and responsibilities, beyond the adoption of advanced technology and AI tools. Their senior managers did a job that went beyond the challenge of optimization—which is the function where AI has some superior qualities in many cases, due to its huge computing power. They offer us a reminder that optimization is only one of the challenges that managers face. There are many other relevant areas where the need for good general management is very clear.



4. Some Critical Functions and Responsibilities of General Managers in an AI World

No matter how transformational AI may be for companies, CEOs and senior executives are still left with some very basic responsibilities and challenges that only competent leaders can address. Good managers do so with a combination of knowledge and experience, rational judgment, emotional intelligence, ethical principles and the wisdom to make decisions with a holistic perspective.

Cellnex and Unilever's experiences, among others, highlight the value of general managers' jobs as presented by some management authors. In his classic paper, Mintzberg (1975) suggests that managers undertake some key jobs: interpersonal roles (including figurehead, leader and liaison), informational roles (including monitor, disseminator and spokesman) and decisional roles (entrepreneur, disturbance handler, resource allocator and negotiator).

Kotter (1982) approaches the general manager's job by distinguishing general managers' challenges with regard to responsibilities and challenges related to relationships. Some of them coincide with Mintzberg's categories.

Porter and Nohria (2018) explain some basic CEO challenges and tasks by carefully studying the agenda of CEOs. They observe that CEOs are agenda-driven, work face-to-face, rely heavily on their direct reports, manage using broad integrating mechanisms and deal with many external constituencies.

In a nutshell, even with sophisticated AI tools CEOs and senior executives will still need to address some basic management challenges. Based on Unilever and Cellnex's experiences, I will highlight some of the critical functions and responsibilities of CEOs and general managers.

Purpose

One of the first functions of a good CEO is to offer a good answer to the question: "Why does my company exist?" In other words, a company needs to be explicit about its purpose. This is a key responsibility of the board of director, the CEO and the top management team. Shareholders' returns are an indispensable condition for any company, but not a sufficient condition for a company to exist in the long term. Companies need to nurture and grow their reputation, with small and big steps—their purpose is one of them (Canals 2010). And the way this purpose is deployed and reflected in large and small decisions is a litmus test for any company. An engaging purpose is also one of the key anchors that a company has to attract and retain good professionals. It is also an important step in convincing potential shareholders and talented professionals about how serious a company is about the type of impact it wants to have (Mayer 2018). Top asset management companies, such as BlackRock, Vanguard and State Street, are also increasingly clear about it and are vocal about why they value this quality in the companies they invest in.

Purpose has always been a cherished topic among leadership scholars. Barnard (1938) highlighted the need for a common purpose in any organization, one that would go beyond the individual goals of the different stakeholders and that could help the company develop in the long term. Drucker (1954) emphasized that the purpose of any company is to make a client. He also highlighted the importance of the human side of management over optimization and wrote early on about the wrong approach of maximizing shareholder returns, even when this notion was not yet very popular. Drucker also was a great supporter of the relevant role of business in society beyond creating economic value.



Selznick (1957) discussed in *Leadership in Administration* how companies can become institutions. In this process, business leaders need to perform some basic functions related to purpose: the definition of institutional mission, the institutional embodiment of purpose, the defense of institutional integrity and the ordering of internal conflict. More recently, Moss Kanter (2011), among others, highlighted the need for a clear purpose in organizational change and the process of institutionalizing a company. The firm's purpose is one the distinguishing features of relevant companies: it helps anchor the strategic vision, strategic plans and action plans, and differentiates the company for employees, customers and other stakeholders. It is also true that purpose gains legitimacy, in as far as the top management knows how to make decisions in coherence with it across the organization.

The definition of the firm's purpose and its translation and application into different areas is a key function of the CEO and the senior managers. It involves a combination of vision, values, determination, passion, consistency and creativity, all of them key attributes of good managers. We will need to keep asking the question about why a specific company exists, whatever the level of technical progress that AI tools may offer.

Governance

The second challenge is the design of a good governance model for the firm. Governance is not the specific job of the CEO alone. It is more accurate to say that the governance model of any company is a key function of its board of directors. The board has a special mission to design a good governance model, by taking into account the nature of shareholders, and the history and identity of the firm; it also has to protect the firm from the private interests of some shareholders or other stakeholders, and develop it for the long term (Carter and Lorsch 2004; Canals 2010). We assume here that the CEO is a board member and the unique link between the board and the top management team, and has a special responsibility to help the board design the best corporate governance model, which a company needs.

Most successful companies—including the largest tech-based firms that use AI, such as Apple and Microsoft, among others—have strong boards. A good board of directors sets the reference for the governance of the firm, chooses the CEO and other senior executives, and discusses and approves the company's strategy, among other key functions. The firm's governance may need some special AI assistance in gathering data or preparing some specific scenarios. But governance is essentially a human activity that requires integration of perspectives and good judgment—aimed at the development of the company in the long term—and the right balance of interests among the different stakeholders.

A good corporate governance model includes:

- clear criteria for the election or replacement of the CEO
- some rules on the structure and composition of the board of directors
- a process to evaluate the strategic orientation of the company, including the approval of major strategic decisions
- regular financial and nonfinancial monitoring
- the supervisory and compliance functions that any board has to fulfill



These are key strategic leadership functions that are not only essential for any good company, but also critical to make companies stable. In this process, boards of directors need to establish and consolidate relationships based on trust, professionalism and service. Companies that are not good at managing the different criteria that different shareholders may have regarding the firm or conflicts between some shareholders and the board of directors may be a serious threat to the firm's survival. On a positive note, good corporate governance mechanisms help boards of directors and top management teams make the right decisions and choices to develop the company for the future.

It is an interesting observation that the leading asset managers that have become the dominant shareholders of large, publicly traded firms throughout the world—companies like BlackRock, Vanguard and Fidelity, among others—have recently been highlighting that two of their top criteria for investing as shareholders in some companies are that those firms have a good corporate governance model and a clear definition of purpose that the company wants to aim for. The fact that dominant shareholders are using those criteria highlights very clearly the importance of those issues for boards of directors and senior managers.

Corporate governance is the key activity of the board of directors in collaboration with the CEO and the top management. It is a key condition for the long-term development of any firm. Due to its very nature, governance will remain a truly human activity in organizations.

Strategy and Uniqueness

The third top management challenge is how the board, the CEO and the top management team take some key decisions that can make a company unique and different. A good strategy is about uniqueness, a quality that makes a company special to its customers (Porter 1996; Hanssens 2019). Those specific decisions help develop the unique value proposition that a company wants to offer its customers: either the superior perceived quality of the product or the overall buying experience; or a great operational effectiveness that helps the firm have a very competitive cost structure and allows it to offer lower prices. This value proposition is based on some competitive advantages developed through specific decisions that a company has made over the years, including irreversible investments (Ghemawat 1991).

The combination of the specific value proposition, the positioning of the firm in the industry and the decisions to support this positioning define the specific business model that a firm chooses to have (Casadesus-Masanell and Ricart 2011; Zott, Amit, and Massa 2011). The decisions about the business model involve specific choices about where the company wants to compete and where it doesn't.

These strategic decisions should be based on data. AI tools may analyze large sets of data about the industry, customer patterns and positioning data faster and more accurately than in the past. Those tools may also develop richer scenarios and describe strategic options more accurately. AI tools may help model better some strategic decisions, although one should not forget that those decisions are surrounded by uncertainty and depend on the data used.

Wisdom and prudence in decision-making are indispensable, both to verify that the process by which the quality of data is validated and the internal processes by which algorithms make recommendations or final decisions are reasonable and coherent. Without good judgment, decision-making is flawed. There is an individual and social need to monitor the outcomes of some machine decisions, in particular, when they have an impact on the well-being of individuals. The failures associated with AI tools due to fake data or incomplete algorithms are already abundant.



Prudence is a key quality in strategic decision-making. It develops the ability to make wise judgments in situations with a variety of constraints; it also helps choose the best pathways to govern oneself and others through the use of reason, while promoting the common good of the organization. AI can complement wisdom and prudence well when data are reliable and algorithms are well designed. As recent experience with sophisticated IT systems shows, in situations where complex human behavior and human interaction are critical, we need good human judgment. We all want relationships based on trust and to deal with people who assume their own moral and legal responsibilities for their decisions at any time.

Competent CEOs and senior managers:

- come up with good ideas about strategy out of entrepreneurial management
- frame those decisions
- try to balance the requirements that different shareholders and other investors in the company may have
- offer some solutions to trade-offs between the short term and the long term
- consider how those decisions may have an impact on people, culture, values and the firm's reputation

It is clear that AI may help model decisions and design richer and different scenarios, but coming up with entrepreneurial attitudes and proposals and making and executing those strategic decisions are still a key attribute of CEOs and general managers.

A less-known attribute of a good strategy and its uniqueness is how some strategic decisions shape the soul of the firm and reinforce the corporate culture and values that the firm has: the activities at which the firm is really special in the eyes of customers and employees. Pondering the different qualitative and quantitative implications of those strategic decisions on people and culture also requires a combination of wisdom, experience and human empathy that good managers display—and technology doesn't.

Developing People, Nurturing Teams

Successful companies, in the long term, are thriving groups of individuals who like to work together with a shared purpose. A critical task of management is to attract, retain, engage and develop people. In an age of more powerful technology, this challenge for management is more important than ever. AI tools may make our companies a bit less human than most of us would like to see in the workplace.

The potential impact of technology on the engagement of employees with their firms is a key factor in the debate about the future of human work in the age of AI. Unfortunately, technology is not very good at motivating and engaging employees (see Cappelli, Trambe, and Yakubovich 2019), who feel that technology-driven innovation may put their jobs at stake and fear that technology will require new skills and capabilities that they do not have and that most of them do not know how to get.

It is very unfortunate, but the growing role of technology and digitalization in many companies has mainly advanced in the direction of optimization and operational effectiveness, not in the direction of making companies more attractive for talent and offering a better context for professional and



personal development (Pfeffer 2018). Technology has a potential for helping people—not only final customers, but also employees.

If technology makes people perceive that the level of personalization in the company diminishes with growing automation, people will feel less engaged. The challenge of integrating millennials in the current workplace is a signal of that problem. It is true that some AI tools for managing people may help make more personalized approaches to people development. But there is nothing more motivational for any person in any company than working with a good manager who not only allocates resources effectively, but also sets new challenges for people, helps people tackle them, promotes good human values, offers flexibility, encourages participation and allows people to learn and grow in this process.

Developing talent and helping talent work effectively in a team is a very relevant quality of the agile economy that technology is contributing to expand. The art and science of developing teams requires a combination of mission, sense of direction, quality and motivation of the team members, flexibility and empathy. These are great attributes of the best leaders. AI tools can offer some criteria on how to combine the members of a team according to their background, culture and expertise. In the end, it is the job of general managers to help develop people's skills and attitudes and make sure that a team is ready to tackle a challenge and turn a problem into an opportunity to learn and improve.

The impact of technology in job creation and destruction is also a very relevant issue in people's motivation and engagement. AI will likely involve job losses and higher unemployment in the short term. It is a fact that technological advancement looks more like a threat rather than an opportunity for people. These negative effects of technology generate personal anxiety and the potential for social unrest. It is important that companies—in particular, tech-based companies—and senior executives seriously consider what needs to be done to train and re-train people to succeed in this new world. Technological innovation that brings about this level of potential disruption requires that business leaders and senior executives think holistically about the impact that their technology decisions have on their companies, people and wider society. The reputational impact of the mishandling of data used by tech companies is only the tip of the iceberg of the huge risks that are looming in the AI world.

In particular, large, high-tech companies should think more holistically about the overall impact of the technology solutions that they are offering on employees, rather than emphasizing the disruptive effect of those technology solutions. Innovation is good and indispensable, but when an innovator introduces disruptions—in particular, in the workforce and its community—shareholder maximization should not be the only criterion. Technological innovation is creating social, negative effects that need to be taken into account. Technology-based companies should also use their capabilities to innovate to find innovative solutions on how to use those tools so that employees feel more engaged, not more disengaged.

What is clear is that few technological innovations will succeed in the long term if their implementation comes with a high human cost. Social unrest will slow technological innovation down, and regulation and public policy will shape its future development, unless it aligns its goals with the wellbeing of society. AI transformational effects may be really big, not only in terms of efficiency, but also in terms of the future of work and the nature of work itself. We need to make sure that it is being deployed in a way that actually helps and empowers people and not in a way that threatens jobs or diminishes people's potential to contribute.



All in all, the role of general managers in attracting and developing people will increase with AI. There might be some useful AI tools that may help track people's performance a bit better. But managing people still seems to be a task and a mission that should be entrusted to competent and good general managers, not AI tools.

Sustainability and Sustainable Performance

The fourth challenge is how to make sure that the company is not only unique and special, but also that it creates economic value in a sustainable way. A good firm needs to make sure that the economic value creation process can be sustained over the years by avoiding the threats of imitation and substitution that may diminish the value of its advantages—through continuous investment, product development and process improvement. Again, these considerations may lead to some sophisticated analysis with some simulation tools or software to help visualize the impact of those changes, but the wise judgment of good CEOs is indispensable.

There are other risks that threaten sustainability that are not related to increasing product market competition or the emergence of new entrants. There are three areas that have an impact on sustainable performance that are especially important in today's business world. The first is related to the ownership structure and the type of shareholders that companies have. The increasing role of private equity firms, hedge funds and activist investors as large shareholders of companies has generated less stable ownership structures, the need for quicker financial returns and some boardroom fights that reflect the growing role—and noise—that some of those investors have on their companies. This is a different type of capitalism, away from a system with more dispersed shareholders who used to have long-term horizons. Engaging constructively with those shareholders and investors is a key function of the CEO, the CFO and maybe other members of the top management team. The potential that they have today for rocking companies is enormous.

The second challenge regarding sustainability is the increasing influence of some geopolitical factors on the strategy of international firms and their performance. Some issues that we thought were a relic of the past have come back to the boardroom. Protectionism, trade barriers, foreign direct investment barriers, trade retaliation, unstable international rules, lack of stable regulatory frameworks and other forms of political influence have become very relevant. These geopolitical issues add to a new world of more unstable financial markets, higher international savings and liquidity, and more erratic currency volatility; in particular, in emerging markets. International companies cannot forget about those issues without putting their companies in jeopardy.

The third challenge related to sustainability is the firm's impact on the environment. The need to decarbonize the economy is clear. Even if the specific impact of carbon emissions is still the object of some debate, it is clear that they have a negative impact on global warming. This impact is even bigger in emerging markets that are also suppliers of raw materials for companies in more advanced economies. Wise general managers also need to think about the role of their companies in society in terms of their impact on the environment. Legislation to cut emissions will become tougher around the world. More importantly, there is the moral responsibility that any leader has to leave behind a better legacy.

It is clear that good CEOs and general managers need to address and manage those risks and threats to the sustainability of any company. Technology may help, but general managers' competence, wisdom and personal values are indispensable in tackling those challenges and they define the quality of the decisions that they make. They also shape the firm's overall reputation.



Broader Social Impact

Companies need to think not only in terms of how much economic value they create, and what purpose they have, but also about the wider impact that they may have on society. This approach involves more than managing different stakeholders, as some notions of corporate social responsibility suggest. Companies need to be responsible citizens in the society where they live and operate. As a result, they need to integrate, in a coherent way, different objectives that sometimes may seem to be in contradiction: short-term and long-term performance, shareholders and other stakeholders, operational effectiveness and people engagement, and financial performance and impact on a local community, among others.

An attractive quality of good management is that it balances different criteria and objectives and allows for innovation and creativity in finding solutions to new problems, for which there may not be historical data. AI may be very good at dealing with large sets of data, but many challenges are new; there is no data to help make a decision, and there is a need to solve the problem.

Management is also about exploring the facts as they are, understanding different opportunities and options, establishing different criteria to evaluate the options, making a final decision and evaluating its impact. In defining the firm's broader social impact, a company should not choose to undertake many different social challenges but should be known for using some specific capabilities to tackle some of those challenges and integrate them into their overall strategy. Unilever, with its Sustainable Living Plan, actually did so, and executed it very well. Unilever has had a broader social impact, bigger than many other companies of its size and potential. In this way, it has helped not only tackle some issues around carbon emissions and sustainable sourcing of raw materials, but also integrate those dimensions into its wider strategy and become a benchmark for many other companies.

In this coherent integration of specific business goals and strategy, and broader social impact, the unique role that a CEO can play as a leader and orchestrator is more relevant than ever. Caring about people and the environment, and integrating those dimensions into the firm's strategy—as companies such as Unilever are trying do—are attributes of the best human leadership. More importantly, only good CEOs are able to do so. It is truly professional, truly human and truly unique.

The Moral Dimension of the CEO's Job: Leading With Ethical Values

A CEO takes up the responsibility of the whole company. The CEO is entrusted with the care of people and clients, shareholders and other stakeholders. When there is a corporate failure or the company dives into a corporate crisis, all stakeholders look toward the CEO. These relationships entail moral and legal duties that the CEO should assume. Through different leadership actions, the CEO has an impact on other people and can grow professionally and personally through those actions.

Machines that learn with data are neither designed to make judgments about good and evil, nor can assume responsibilities. Experts can make progress in training machines by feeding data of what is good or bad in some specific cases, but machines cannot learn from specific data to make a general ethical judgment: this is a human capability. The more sophisticated AI tools do not have and will not have any responsibility for the negative impact that they may have on people and companies. The responsibility belongs to human beings, who freely make decisions and should accept their effects. CEOs and senior executives have the freedom to make a wise use of those tools and the related responsibility.



People may not always agree on the ethical dimensions of every single decision to be made. Nevertheless, there are some ethical values with universal appeal, such as the respect for the dignity of every person and individual freedom, the value of our own conscience, and the need to be fair and respect the truth, among others. These are values that most people consider important. They are part of the United Nations' Universal Declaration of Human Rights, stem from the dignity of each person and have been recognized as such in the fight for human rights. They are criteria coming from human reason, should be the paradigm for any managerial action and should prevail over any form of AI.

Through different managerial actions, a CEO has an impact on other people and oneself: for these very reasons, the job of a CEO has an ethical nature. The use of AI tools only amplifies this quality. A CEO is supposed to define some strategic pathways, engage and lead people and manage resources in an effective way for all stakeholders. It is not only about respecting laws and established norms and following some procedures. It is about considering that companies are made up of people; they are complex organizations that should allow different stakeholders to achieve their goals in a balanced and fair way, so that all parties can at least get some sufficient results. This outcome may not necessarily be the maximum that they can get, because there are other parties that are also necessary for the company to exist and operate.

In any thriving society, social interactions require trust; so do companies. Trust is developed by responsible people who deal with one another in a professional and responsible way and is supported by appropriate social institutions, like the legal system or a well-functioning government. Algorithms can help humans do part of the job in making decisions, but managerial decision-making still needs human wisdom and prudence.

CEOs deal with people, customers and other stakeholders. They manage resources and need to do it with efficiency. Their behavior has to search for the common good, not just one's own good, and be fair to the different stakeholders and exemplary. Leading by example is a clear condition of successful leadership. Example is a human and social language through which individuals learn from other individuals, and each generation of citizens learns from their predecessors. CEOs' behavior has a resonating echo in the ears of employees, customers and the rest of society. It can be a great force for good—as some business leaders are, by performing their social function with professional excellence and integrity.

This is one of the key features of CEOs and their jobs. It involves a moral dimension that AI and machines do not have. The moral character of managerial decision-making and the consideration of ethical values, such as respect for the dignity of each person, the well-being of others and the common good of society, make the job of CEOs different from that of machines. They make the job of CEOs truly human. The moral nature of the job of a CEO is more important today than ever. Moreover, it is one of the few pathways through which companies' leadership can regain credibility and legitimacy in contemporary society.

5. Some Final Reflections

Based on the discussion of some successful companies in transforming their business model, I have articulated the case for the role and responsibilities of CEOs and general managers in an AI world. Senior managers need to understand AI tools and their applications to companies. The general deployment of those tools needs excellent general managers who understand the business, can engage people to use those tools and can monitor their implementation effectively.



More importantly, those companies highlight that CEOs and general managers are indispensable, even in a world dominated by big data and smart algorithms. There are key top management decisions and functions that CEOs need to take up and address. I have highlighted some key areas: purpose, governance, strategy, people development, sustainability, broader social impact and leadership based upon ethical values. There are many relevant business functions where AI and other technologies will make inroads and help make better decisions. But in those areas, good general managers are indispensable.

Those managerial functions make companies social institutions, not only efficient organizations that are engineered to do a job, as Barnard (1938) and Selznick (1957) highlighted. In particular, the institutionalization of an organization requires that top managers infuse it with values, beyond the technical dimensions of the functions to be performed (Selznick 1957). Companies can become social institutions if they adopt a broader logic than the dominant shareholder value maximization (Moss Kanter 2011). CEOs and senior managers can make a unique contribution to their companies by providing the sense of purpose and direction that we have highlighted here. This is part of the process by which companies can become respected institutions in society (Canals 2010), an attribute that companies and society desperately need.

Senior executives are dealing with fascinating changes in the business world, with technology and data being used in much smarter ways. At the same time, we need to ask ourselves those fundamental leadership questions. AI neither knows how to frame them, nor provides an answer to them. Good CEOs and senior managers can do it. CEOs' challenge is how to use AI tools to make our companies not only more competitive but also more human, and turn them into respected institutions in society.



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