

THE NEXT BIG TECHNOLOGY TRANSFORMATIONS

Technology Innovation

How Technology
Innovation Will
Shape Our Future

Baldur Gudgeirsson

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1. Technology Innovation

To sustain economic growth and wellbeing, people must continually create and innovate novel things that capture, create, and fulfill broader consumer needs and values. As a result, we can make our world a better place for all of us.

Through the technological and industrial revolution, we have evolved from agriculture as a solitary industry to discovering and developing a variety of new magnificent industries. New industries have helped propel global welfare and economic growth. Habitually, people continue to challenge the status quo and push boundaries, to make great things happen to make a better world. Continual brand product and service innovations are the foundation for driving human wellbeing and economic growth.

In the 1860s, to thrive, all people in the world depended on having livestock nearby. Since then, multiple new industries have emerged, drastically changing our lives forever. Today, electricity, the lightbulb, aircraft, and the automobile are taken for granted; they were radical innovations in the past.

The fast-growing entertainment and leisure activities we enjoy today did not become a recognized industry until we began transforming and relocating into cities. People's free time has been the determining factor in the development of entertainment as an industry. Humbling and playing instruments have been part of human history for centuries. However, around 1905, movie theaters began to offer an inexpensive way for the public to watch movies and visit playhouses.

Innovation brings products, services, and market improvements to life. A brand's innovation path includes every touch point where consumers and users interact with its products and services. Innovation is the process of uncovering and introducing something novel and perceived as an improvement. Innovation can be a process improvement, a service improvement, or a brand-new way of doing something.

Innovative innovations will capture, create and fulfill more customer needs, being relevant to consumer choices.

The extent of innovation transformation is generally referred to as incremental innovation or radical innovation. Incremental innovations are gradual improvements made to existing products. In that case, brand products or services could provide better functionalities, quality, look, taste, and better price for value, for example. On the other hand, radical innovations shift the rules of the game. They create new generation needs. They create new consumers. They disrupt and shock the competitors. As a result, our lives will be forever changed by technological innovation. The term "radical innovation" refers to the process in which innovators take their "ah-ha" discoveries and turn them into breakthrough opportunities, making great things happen to make the world a better place.

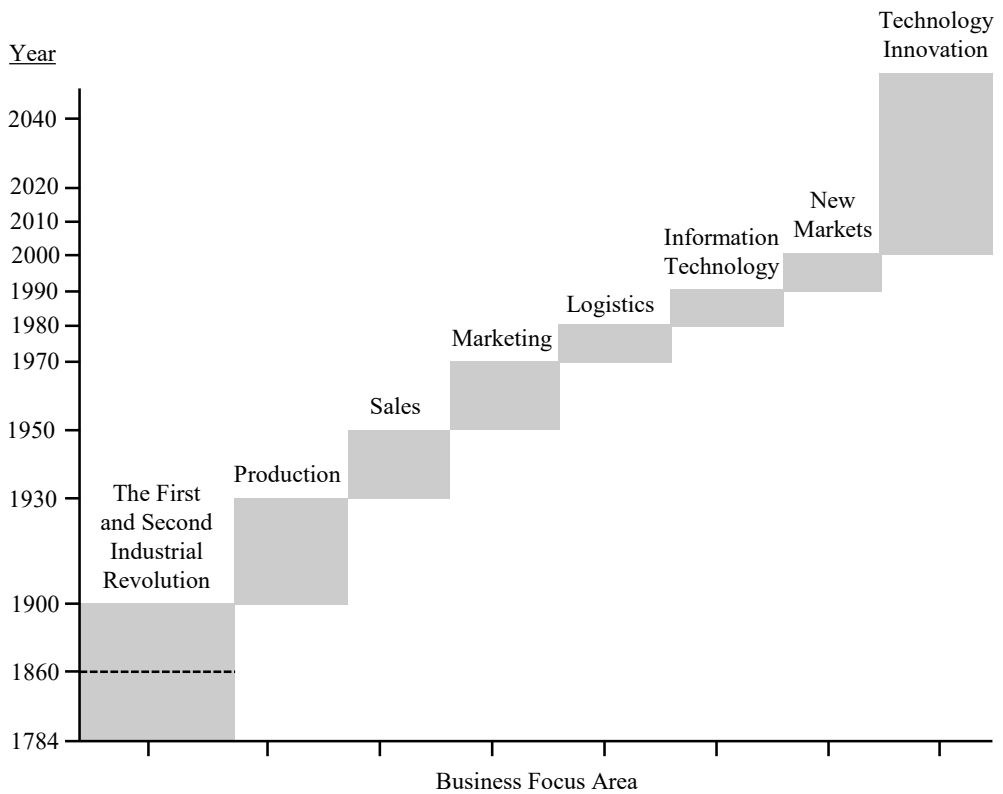


Figure 1-1. The business focuses on contributing to economic growth. A breakthrough innovation phase began in the 1860s, and since then, we have seen many radical and gradual innovations that have made a better world for everyone.

The next big thing to drive continued economic growth over the next few years is capitalizing on technology innovation opportunities. We are at the initial stages of

this transformational change process, and the innovation opportunities are endless. The Internet eCommerce, digitalization, functional mechanism, intelligent augmentation and Artificial Intelligence (AI), deep learning, and machine learning algorithms are among the core innovation origins that drive the change. Technology innovation will help to shape the future and increase well-being and society. This will allow us to experience more positive things in life while minimizing the negative implications of destroying jobs.

The Industrial Revolution – People Transfer to the Cities

As the world progresses through continual innovations, the agriculture labor trend declines proportionally. This happens at the same time the world's total population has grown from 1.3 billion in 1860 to 8.0 billion in 2023.

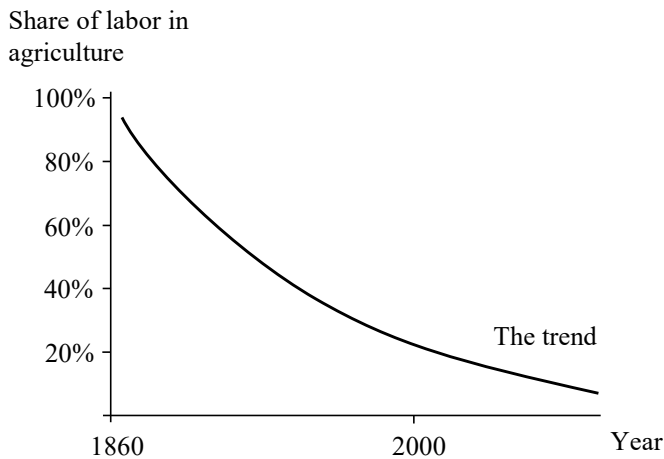


Figure 1-2. For many years, a market's urban versus rural population has been considered an indicator of its development. According to the World Bank, the current share of labor in agriculture in Ethiopia is 67%, India 43%, China 25%, Russia 6%, Canada 1.5%, USA 1.4%, and Germany 1.2%.

Since 1860, the urban versus rural population trend has increased steadily. People have moved to the cities to work in multiple industries as they have developed over time. The people living in cities, suburbs, and towns are mainly employed in commerce, services, production, and trade. Living in urban areas provides superior access to various facilities, health services, transportation services, and diverse entertainment and education possibilities. On the other hand, life in the cities can be stressful and complicated, and there are signs of escalated terrorist threats.

Fundamentally More Jobs Are Created Than Destroyed

Focus Period	Innovation	Needs and Trends	New Job Industry
1784-1930 The first and second industrial revolution	<ul style="list-style-type: none"> • Coal and steam • Iron • Textile production • Electricity • The fuel • Railroads • Production lines • The automobile • The assembly line • The light bulb • Telephone • Aviation • Mass made products 	<ul style="list-style-type: none"> • Move to the city • Housing • Education • Transport • Infrastructure • Foods and drinks • Leisure activities 	<ul style="list-style-type: none"> • Schools, education • Build houses • House appliances • Kitchen appliances • Radio • Automobile, travel • Aeronautical • Build infrastructure • Petrol stations • Power network • Electrician • Restaurants, hotel • Cinema
1930-1970 The travelling salesman and marketers	<ul style="list-style-type: none"> • Develop/build markets • Television • Selling skills • Brand building • Mass marketing 	<ul style="list-style-type: none"> • Quality awareness • Services • Fashion • Travel 	<ul style="list-style-type: none"> • Broadcasting • Salesmen • Marketers • Customer services
1970-1980 Logistics	<ul style="list-style-type: none"> • Logistics • Consolidation 	<ul style="list-style-type: none"> • Move cross-border • Close factories, warehouses and offices • Mergers and acquisitions 	<ul style="list-style-type: none"> • Logistics management • Market nature and effectiveness
1980-1990 Information technology age	<ul style="list-style-type: none"> • Personal computer • Word, Excel, etc. • The internet • The World Wide Web • Digital 	<ul style="list-style-type: none"> • Shift in how people spend time at work, on leisure and free time. 	<ul style="list-style-type: none"> • Computer science • Games • Analysts • Programmers
1990-2000	<ul style="list-style-type: none"> • New markets open up for free trade 	<ul style="list-style-type: none"> • Innovate China, India, USSR 	<ul style="list-style-type: none"> • Build new markets from ground up
2006 - Now Technology innovation	<ul style="list-style-type: none"> • eCommerce • Digitalization • Functional mechanism • Intelligent augmentation • Artificial intelligence 	<ul style="list-style-type: none"> • All mobile features in people's pockets • Automation • Labor productivity • Innovation amplification 	<ul style="list-style-type: none"> • Next level algorithm • Big data analytics • Innovators • Robotic • Metaverse • Computer technology

Table 1-1. New job opportunities and brand-new areas of focus were created.

We can learn from history that aligns with the world population; we have stimulated economic growth through radical innovations. The industrial revolution and technological innovations have made our life more advanced in terms of increased quality of life. There is no reason to believe that this trend will change. Conversely, people prefer to focus on the possible job losses rather than the many jobs that have been created over time. History has shown that advancing technology innovations could destroy jobs over the short-term and create a more diverse variety of new jobs over the long-term. Rapid population growth in the world has posed a significant challenge for maintaining the creation of new jobs. Thus, we could boldly state that continual technology innovations are essential to the creation of new jobs and to make great things happen to make a better world.

The bottom line is that people have benefited from all the radical and gradual innovations being introduced over time, which have increased conveniences, experiences, quality, functionalities, and safety at a lower price. As a result, new technology innovations continue to create competitive advantages in the future, capturing, creating, and fulfilling more consumer values and needs.

Human Rights – Everyone Has the Right to Work

Even with all these technological innovation possibilities, the loss of jobs will remain the principal issue. Looking back, most jobs lost in the established markets are due to continual streamlining and moving of factories and jobs to lower-cost markets, like China and India. Moreover, marvel brand product innovations have resulted in consolidations, mergers, and competitor insolvencies, resulting in significant cost savings and job redundancies. In reality, there is no systematic overview and study that can explain what initiatives affect the creation of new jobs and the loss of others. Scientists and analysts have different opinions of how radical technology innovation will affect the job market. Our study indicates that technological innovation, including new industries, will create a massive number of new jobs rather than destroy them.

UNITED NATIONS – The Universal Declaration of Human Rights

The Universal Declaration of Human Rights (UDHR) is a milestone document in the history of human rights. Drafted by representatives from different legal and cultural backgrounds from all regions of the world, the Declaration was proclaimed by the United Nations General Assembly in Paris on 10 December 1948 (General Assembly resolution 217 A) as a common standard of achievements for all peoples and all nations. For the first time, it sets out for fundamental human rights to be universally protected, and it has been translated into over 500 languages.

Article 23.

(1) Everyone has the right to work, to free choice of employment, to just and favorable conditions of work and to protection against unemployment.

Article 25.

(1) Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, and housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control.

The Universal Declaration of Human Rights demonstrates sound intention. However, it is expected that new technology innovations continue to be the fundamental driver in creating new jobs for everyone. This is despite the depressing fact that new technology innovations could potentially destroy jobs over the short-term. However, they could create more variety of new jobs over the long-term. People hate change, but maintaining the status quo is not an option. It is an engraved part of the human DNA to continually invent a better way of doing things – things that are needed and being waited for.

Destroying Jobs is Always a Big Concern

Suggestions for destroying jobs on a large scale in every economy are always concerning. Throughout the industrial revolution and the advent of cutting-edge technology, critics have expressed concern about job losses and even humanity's extinction. We are informed over and over again that technological innovation will destroy jobs on an enormous scale everywhere. Governments are adapting their functional structure, thinking there will be substantial job losses over the next few years. People generally have an unclear understanding of where new-fangled technology innovation could lead in the future. Worries started being expressed on a large scale in the media in the early 1960s, saying that automation might end most unskilled jobs in ten years. We have been living through stressful radical changes since the introduction of microprocessor computers in the mid-1970s.

Meanwhile, in the early 1980s, concerns were raised about robots taking our jobs because of the threat of computer chips. This trend happens simultaneously as the global economy keeps growing, year after year. Futurists and entrepreneurs have informed us that technological singularity will occur in the next 30 to 70 years. We are told that we are about to destroy ourselves by designing and developing Artificial Intelligence technology. Moreover, humans will have no jobs left due to Artificial Intelligence, self-learning machines, robots, autonomous vehicles, cognitive computing, and many more. For most people, all these negative headlines have enormous backfire effects. To overcome this technology worry, it helps to

appraise the situation thoroughly and evaluate how everything connects to everything else to understand what really will happen.

Hardly a month passes by without the introduction of a breakthrough Artificial Intelligence technology or a new-fangled product that inspires us. At the same time, thoughtful caution questions are raised. We are continually being introduced to the latest radical innovations as being already here, which they definitely are not, and some of them might never become a reality. Often, futurists and entrepreneurs make negative announcements in the media rather than focusing on the benefits of change as additional benefits. For example, we are told that millions of people will become unemployed because of AI automation – a robot will replace your job with more skills than any human. Several media announcements have indicated that artificial superintelligence is on its way to eliminating humanity and that the technological singularity is only a matter of time. However, one should not forget that people already use certain parts of AI technology in their everyday lives. For example, their smart mobile phones offer AI voice and speech recognition technology.

Things do not add up; something is not right. It is obvious that technology will inevitably destroy a particular job when one examines it closely. However, in that case, it is critical to understand the whole picture, look outside the box, and not only look at that particular job being destroyed – new relevant jobs can be created elsewhere.

Let us take an example of how technology is destroying a job. Diggers, also known as excavators, took over the job of manual digging. Efficiency soared, and thousands of jobs were destroyed. The excavators increased the rate of productivity radically. Compared with using a shovel, excavating a hole would cost less than 1 percent. This is a dramatic change in cost and efficiency. One must see the whole picture. Humans have been digging holes, ditches, and tunnels like there are no tomorrow. Holes are drilled every 0.12 miles (200 meters) in all cities, making it possible to set up street lights, traffic signs, buildings, fences, Internet networks and electric cables, and more. With productivity so high, we can construct holes, underground tunnels, and road tunnels through mountains, for example. In that case, the capacity needed for digging is so huge that manual labor would never have been able to carry out this dynamic task.

There must be a compelling reason to change, or else it will not work. To make a better world, one of the objectives of technology innovation is to reduce costs, improve service and quality, save time, and make great things happen. If productivity increases, the price usually comes down, leading to expandable usage. Moreover, technology has been proactive in overtaking heavy lifting jobs as well as manual labor, such as warehouse labor and loading and unloading jobs, for example. An entrepreneur's primary goal is to innovate and find ways to capitalize on radical business opportunities. This will improve productivity and reduce costs, to make a more prosperous life for everyone.

Another example of technological innovation is the telephone invention that replaced the electrical telegraph, mainly used in post offices. Before the home telephone invention, people had to meet in person to gain information or get a message through to another person. The telephone invention has changed people's

lives, enabling them to be in instant contact with family and friends. Moreover, the telephone has made life easier by saving people time and increasing the speed of delivering information. However, the telephone destroyed the message carrier's job. How people interact with one another has been in constant development over time. The same holds true for the telephone invention and the automobile invention. Before a radical innovation is widely accepted and modernized, people express skepticism, fear, and disapproval as common responses. As technology has developed, people's interaction with one another has continuously evolved since the home telephone was introduced. From the electric telegraph, telephone, and facsimile, to the mobile phone, the smartphone, social media, and the technology of virtual assistance, we have changed radically. Nowadays, people have numerous possibilities to communicate with friends and family; at the same time, multiple different industries and jobs have been created. Thus, it is common for new technology, product, or service to provide incremental choices for the consumer, creating multiple new jobs.

Furthermore, as technology continues to provide a broader range of choices, there are endless entertainment possibilities at home that did not exist before. These possibilities include live TV, VOD, streaming, social media, gaming, virtual reality, and much more. People can now do both offline and online shopping, including home delivery. These are additional consumer choices that drive the creation of many new jobs. One has to remember that many of these technology products and services are wholly novel and did not exist before. Technology innovations that drive increased consumer choices include social media, the Internet, digital products and services, apps, and computer games.

Since the industrial revolution, improvements in technology have developed a wider variety of jobs and, at the same time, changed the nature of our work. In the whole transformation process, many new jobs have been created, and some types of jobs have been destroyed. As we become more productive, the affordability factor increases, leading to more jobs being created. Consumers have more choices because various service channels are being innovated. Thus, enhanced service options provide more variety of choices. There must be a sound reason to change, and if current prices are too high, or a new invention will save people time, the invention will become a reality. In other words, brand and service innovation must add value to the consumer experience; otherwise, the change will not succeed. Technology innovation's most significant value is making remarkable things happen to make a better world.

The Strategic Model of Technology Innovation

Over the past few years, we have been introduced to several complicated technology disruptions. We observe a variety of inventions, advancing methods, practices, and processes, and completely different ways of doing something differently. The modern technology business model is in obscurity. Enhanced

people skills and focus are required. Inventions and thinking require operating with a distinctive business model, which we haven't seen before. All areas of daily life are being affected by this revolutionary technology. Business leaders do not understand how cutting-edge technology innovations can be profitable. Many technology innovations have caused job redundancies on a large scale, and the situation seems to be accelerating. Technology innovation is a short-term shock.

Moreover, business leaders tend to explain technological innovation as a solitary thing, all within the same Internet business. The common subjects include eCommerce, Big Data, the Internet of things, Artificial Intelligence, quantum computing, and digital business, to name a few. One must understand that technology innovation crosses all industries and affects all employees, homes, and families. Everything is changing. People's regular day-to-day routine has significantly changed. People's stress levels, uncertainties, and impulsiveness have accelerated to new heights. Businesses are being viciously attacked, forcing them to take immediate action if they are to survive. For companies, maintaining the status quo means losing revenue and profit, ultimately leading to bankruptcy.

Technology transformation is a multifaceted process. It isn't easy to understand how everything connects with everything else. Moreover, for technology innovation to be successful, many technologies must be integrated into one unified whole. As a result, it is not easy to understand where technological innovation will lead us in the future.

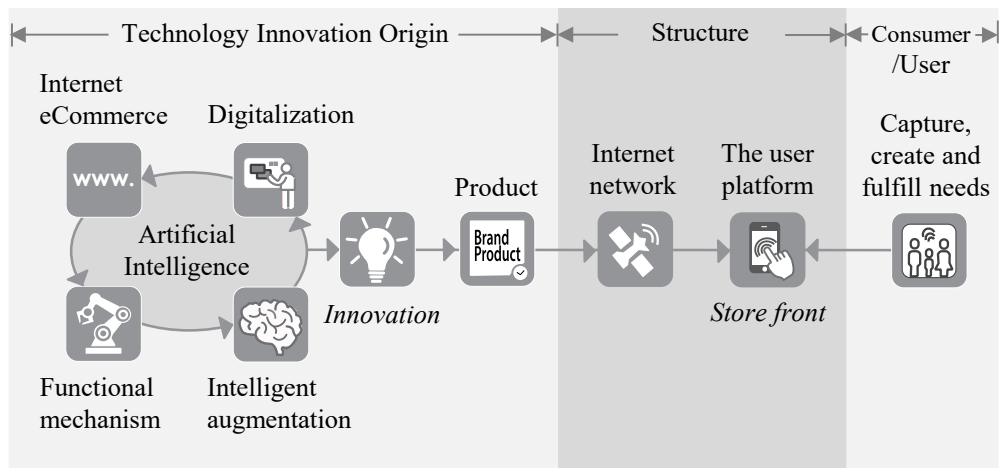


Figure 1-3. The Strategic Model of Technology Innovation.

It is imperative to understand how everything connects with everything else. The negative implications of new technology innovation over the short-term do not necessarily represent their long-term effects. It is, for example, likely that technological innovations will, over the long-term, create various supplementary jobs, as has happened in past radical innovation periods. The primary vision of

technology innovation is clear, and that is to make remarkable things happen to make a better world.

So far, the Strategic Model of Technology Innovation has not been systematically identified and structured. As a result, we must learn about the leading technological innovations, their business models and structures, their routes to market, and how they make revenue and profit.

Structuring technology innovation helps us understand where we are at and where we are heading with all these complex marriages of technologies. Additionally, it is essential to understand how the infrastructure is utilized to transfer the product and service to consumers and end-users.

Figure 1-3 illustrates the Strategic Model of Technology Innovation. Let us briefly explain it, starting with the consumer and end-users.

Consumers and or end-users:

The first question is always; will the consumer need it and want it? Unfortunately, many of today's inventions lack understanding and the capability of capturing, creating and fulfilling consumer needs. Are consumers likely to appreciate autonomous vehicles, for example? What about flying cars? What is the size scale? It is also critical to understand the system's economics before proceeding with firm execution.

- *Consumer and or end-user* information is the driver for all changes. Ultimately, consumer acceptance determines if the new invention will be a success or not. Furthermore, the scale at which an opportunity arises determines its opportunity.

The structure:

The structure is where the rubber meets the road. This is where the users interact with the products and services themselves. This is the place where consumers and end-users get in direct contact with the end product, its selling point, user experiences, Internet speed, Web design, and so on. Positive consumer experiences using the Website drive a successful business. Structural design and user experience must be flawless from the first click to payment, delivery, and after-sales services. You do not have a second chance; flawed platform design drives poor user experiences. When users interact with the brand's products and services, platform design and Internet speed determine how engaging the occasion is.

The structure is composed of the following two elements:

- *A user platform* is where users interact with an offer and decide whether to purchase a product or service. A platform connects a brand and its service offering with the user. It is essentially a storefront that displays text content, photos, and product offerings. When a user visits an online site, the platform

represents the "aesthetics" of the site. It is also the basic concept in terms of developing and putting together all the "technical platforms" through which a user interacts when visiting an online site. The user platform is designed to drive sales success and the perception of brand and service values.

- *The Internet network* allows computer users to connect with other computers through text, voice, visuals, and much more. The Internet network is a global electronic communications network that enables computers to exchange data with each other and is open for everyone to access and use. The network connects the entire world through a global communication network. The Internet "last mile" is the connection that generates the most significant barrier to speed. Users are turned off by slow speeds, which can be a barrier to growth. Thus, Internet speed is becoming one of the highest priorities of Internet users and Web companies.

Artificial Intelligence (AI):

AI is computer software that mimics the function of the human brain. The human brain has put the world where it is today. Therefore, one of the best-known blueprints for the next generation of computer systems is to emulate the brain's structure and functions. In that case, AI is the principal algorithm that marries different technologies together to create a unified flawless product. Generally, the most radical technological advances are supported by AI algorithms. However, the design is supported by traditional analog and digital algorithms, using the binary numbering system consisting of ones and zeros.

- *Artificial Intelligence* is the science of bringing values to humankind by making machines smart, utilizing digital opportunities, exploiting intelligent augmentation, and creating virtual reality, among others. AI is a science that enables algorithms to learn and improve themselves in terms of uncovering innovative and effective ways of doing things. Artificial Intelligence algorithms can basically teach themselves to learn and improve upon themselves. This is often without the programmer knowing, at later stages, the reason why and how the machine comes to a particular conclusion.

Technology innovation origin:

Technology innovation origins have been divided into four product categories. Its technology make-up and its product role determine its category. Even though multiple technology innovations require marrying several technologies to meet their purpose, the end product determines its category. Categorizing the technology product into groups generates better understanding, as products by nature have similar technological backgrounds. Even so, the technology developed for the brand products could eventually be applied to another category at later stages. In some instances, the sub-products might be assigned two technology categories, and then it might be revealed that the product is assigned to dual product categories.

The sources of technology innovation have been defined and broken down into four possible categories, as follows:

- *eCommerce* is buying or selling products and services, including payment transfers, over the Internet network. This is the business model where companies sell their brand products and services directly to consumers and customers. Thus, of the four technology categories, this is the largest category in terms of revenue. The eCommerce business model has disrupted many traditional businesses, forcing them to change fast if they are to stay in business in the future. The eCommerce business model has radically changed the world and continues to do so.
- *Digitalization* is utilizing digital technology to transform a business model, sales and service process, and operational process to build competitive advantages through streamlining. For example, regulatory functions such as taxes, laws, and customs are increasingly becoming digitalized by connecting people with things and things with things to increase efficiencies. Moreover, this is to improve services at the lowest possible cost.
- *Functional mechanisms* are basically self-learning machines and robots that exploit smart sensors, devices, and wireless networks, helping machines to learn by themselves and discover by doing. Moreover, through augmented reality and digital readings, robots and machines can make accurate diagnoses and acquire knowledge.
- *Intelligent augmentation* focuses on innovations, in terms of providing better health and medicine, longer life expectancy, improved education, and intelligence and knowledge, for example. The intelligent augmentation category is the most aspirational in expectations and holds the most significant potential to make a better world for everyone. This group comprises algorithm and software development, quantum computing development, augmented and virtual reality, cyber security, healthcare, biology, medical science, renewable energy, outer space science, and educational evolution, for example.

As we stand at a fantastic time in human history, many radical innovations are in progress because we live in an age of technological innovation. The status quo is not an option. It is engraved into people's DNA to constantly invent something new to make a better life for everyone. We are at the very beginning of the technology innovation age.

Consumer Insights Are the Driver for All Changes

The world's greatest innovations are often developed over a long time before becoming a reality. In that case, the latest ideas and theories on the matter spread among people at the outset. Thus, technology innovations are generally improved through the collaborative work of entrepreneurs, scientists, programmers, and

engineers over time. It is not uncommon for inventors to be a group of people who are passionate about innovation and creating something that they find extremely interesting. Frequently, the honor of an invention is presented to one or two individuals without recognizing that it was the result of the work of several people over a long period.

As part of the innovation process, prototypes are developed and introduced at the final development stages, and things begin to spark off. Acquiring capital is the most challenging phase of making an invention a reality. In the process, a mechanism is put in place to understand how significant the invention's business opportunity is. It will be a success if the innovation is conceived to capture, create and fulfill evolving consumer needs on a dynamic scale. By evaluating consumer insight, emerging needs and trends can be identified. A deep understanding of consumer insights is the foundation for discovering the most relevant business opportunities that drive competitive advantages. Consumer insight information can open up new sales opportunities through "ah-ha" discoveries. Discoveries are crucial for making accurate investment decisions and launching and introducing relevant brand products and services.

By understanding the user's behavior and needs, entrepreneurs can create new sales opportunities that capture and create more demand, effectively fulfilling the target group's needs. If an obvious need exists, the opportunity can be taken advantage of without hesitation, and the product can be released to the next phase without delay.

It is crucial to identify the "critical one" that is both differentiating and relevant, as well as the size that makes it rational to capitalize on the latest brand and service improvements. Entrepreneurs need to know who their potential target consumers are. What do they do? Who buys? What and when do they buy? Why do they buy, and what do they like and dislike about the company and competitor's products? Social media is now a valuable source for collecting insight information.

Getting consumer insight means understanding each touch point the consumer or user has with a brand. The "ah-ha" discoveries can best be captured through a systematic consumer insight analysis, focusing on the offer's perceived value. Consumer understanding sparks investor interest in participating in the innovation process, making it possible to become a reality.

Technology Innovation Requires a Radical Business Model

The key to this transformation process is not to forget that technology innovation is almost always business-oriented. It is basically all about business, market share, revenue, and profit. Therefore, the barrier to entry into the digital technology business is considered low. A computer, software, Internet access, and a person capable of carrying out her idea to execution are necessary to gain acceptance. However, this is not so easy. The technology titans are many years ahead in innovation and market development. Many world-leading companies have already

invested enormously in new technology and product innovation. Their organizational capabilities are strong and aggressive in defending their turf and market position. Throughout their careers, they have bought successful businesses and merged them to grow their own. Being a follower is certainly not the way forward. In order to successfully innovate, entrepreneurs must come up with a completely unorthodox approach. Imagination must be the limiting factor when doing something radically different.

Over the next few years, many technological innovations will radically shift the rules of the game. Innovation technology is radically changing the world, and it requires the setup of brand-new revolutionary business models. Companies have to rethink their business model to shift the rules of the game. In addition, the organizational structure must reflect the strategic intent. Rethinking and reinventing a traditional business is considered the greatest innovation challenge of them all and could cross all businesses and organizational levels. When rethinking a business model, there is a lot to understand and learn about people.

A radical change for a traditional business will require strong organizational readiness. Capitalizing on new growth opportunities requires the highest level of business understanding. Organizations are generally not effective enough to transform themselves and create competitive advantages. Most of them do not reach the objectives they set out to achieve. Lack of clear vision, planning, leadership, and a sense of urgency are among the key reasons organizations fail to deliver. Before capitalizing on new growth opportunities, it is essential to understand the organizational readiness strength.

In general radical innovations require hiring people with the novel technology skills necessary to transform proactively. Unfortunately, even though a well-built and balanced organizational culture can create huge competitive advantages, many companies generally do not focus on developing and balancing it, which results in weaker abilities to change.

Winning cultures and leadership behaviors are significant assets for a company to have, but they must be balanced with consumers' needs at the center. When proactively managing a technology change, it is critical to strike the right balance between individual leadership, team spirit, and cross-functional teamwork.

A leading organizational culture must be based on solid frameworks and disciplines. The technology titans have a clear vision, superior leadership, and both short-term and long-term strategies. Their high-level business targets are clear, aggressive, but realistic, and they adjust based on current market conditions, and change needs each time. The employees feel a sense of urgency to change and have developed their organizational capabilities to facilitate a change all the way from design through to execution. The organization consists of a few organizational layers with a definite sense of urgency. Full accountability is then fostered down to the lowest levels within the organization, based on clearly defined roles and job descriptions. Marketing strategies are given the highest priority, and customers and customer service are at the center of all thinking. Open cross-functional access between departments and business units enhances the right sense of urgency, which reduces complacency cultures. Employees get paid for performance, and all

departments have separate P&L targets (profit and loss). A key business indicators dashboard is constantly reviewed, measured, and compared with actual performances. A firm's culture, behavior, and management methods are evaluated annually as part of a performance management process. A high confidence level leads high-performing company leaders to achieve their business goals.

The Day In Life Study Is Real Time (DILS)

The technology titans have gained huge competitive advantages by systematically gathering real-time behavioral information about their consumers and users. By performing day-in-life studies, companies are able to sustain their business targets and take corrective actions on time if they get off track. The World Wide Web (WWW) is an information system that runs on the global Internet network and infrastructure. The Web introduces its content under a Uniform Resource Locator (URL) system that users can access through Web browsers software applications. The World Wide Web enables Marketers to gather Big Data about the consumer's day-in-life behavior. Gathering this information was difficult before the Internet.

Using the Internet and signing a user contract, users give away their identity by submitting their personal information to the platform. The information is aggregated and can be displayed through a range of cohort segmentation. User insight information is the Holy Grail of every marketer. Marketers' DILS is the most complex and the most in-depth marketing analysis because it uncovers people's attitudes and beliefs, which shape their scale of needs for goods.

A DILS is a targeted focus group analysis designed to uncover relevant insights using the old-fashioned method. However, more effective marketing methods have become available due to social media networks and other Websites. Therefore, discovering relevant insights can lead to new business opportunities that capture, create, and meet the needs of consumers ahead of the competition. The Web network platform can help companies to send the right sales activation message, personalized to the right consumer, at the right time, when the consumer needs it.

The possibility of acquiring consumer insights did not exist until after the Web was introduced in 1997. The strategic marketing process is very dynamic, and only comprehensive integration will generate optimal short-term and long-term results. Moreover, tremendous success is generated by introducing one unified brand message delivered through a seamless market activation program.

The Business Model of Social Media and Search Engines

The social media and search engine companies are following the business model of the newspaper, radio, and TV operations. They provide free subscriptions, and the revenue model is based on advertising income and data sales. According to their business model, the more active users, the better the alternative for advertisers

because more users will reach a larger audience. This business model is often referred to as the "Monetize model."

← Print → Radio → Television → Internet & Technology Innovation →

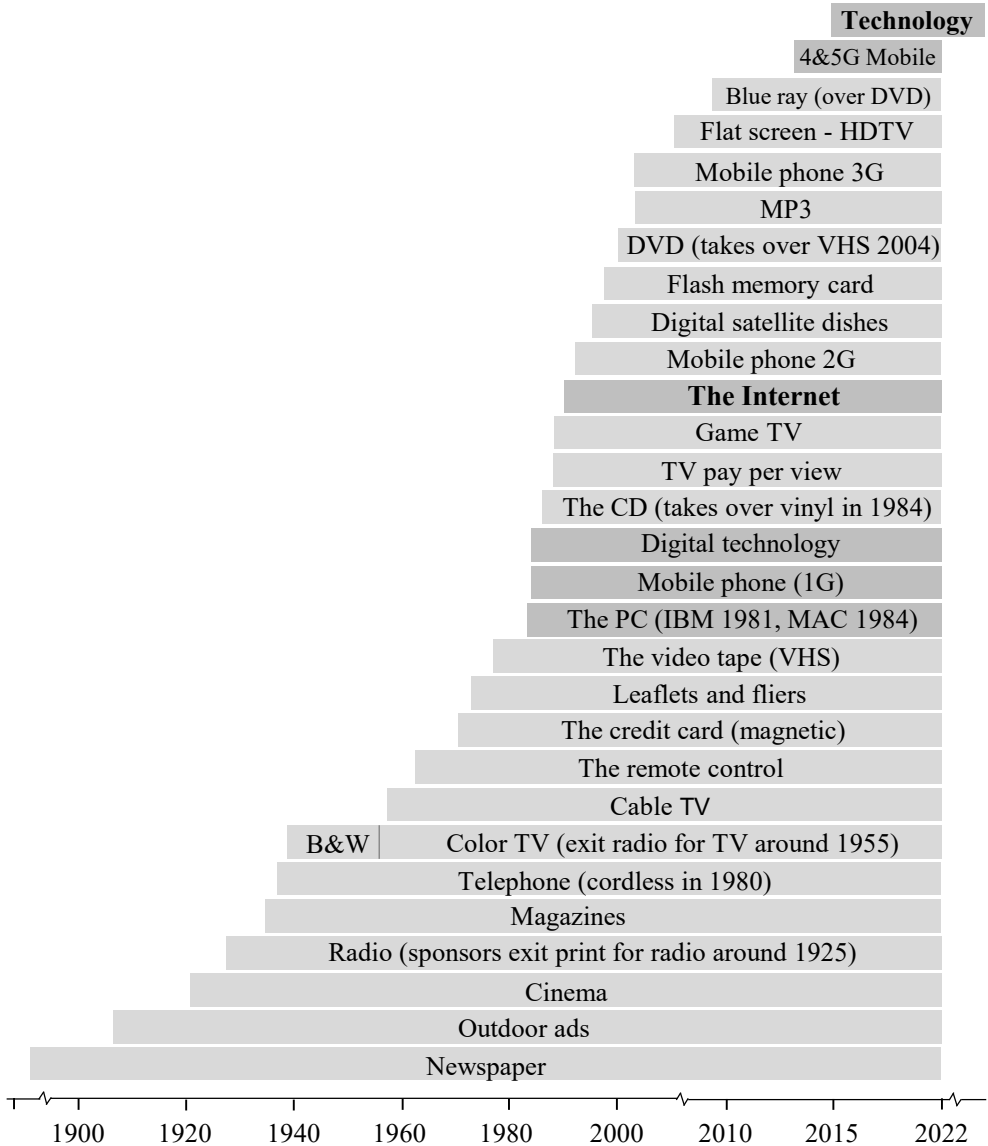


Figure 1-4. Advertising vehicles have evolved as a result of technology innovation.

The "Monetize model" is a platform that converts non-revenue user activities into cash flow by incorporating revenue-generating activities into play from

innovative sources. The social media monetization business model generates its core revenue through sales of user data, advertising, affiliate marketing, premium membership, and other services. These companies use a variety of business models depending on the circumstances, and these models will change over time.

In general, companies spend about 1% to 4% of their net sales revenue on advertising. A large part of this spending is online advertising flowing into the hands of very few Internet eCommerce titans. Social media and search engine companies have transformed advertising by delivering personalized ads to the people they target based on their demonstrated interest in products and services. The knowledge information is based on individual cohort profiles generated from browsing the Internet.

As shown in figure 1-4, the newspaper publishing industry dates all the way back to 1630, radio back to 1910, car radio to 1930, and motion pictures back to 1894. However, in the 1930s, radio takes over print as a more creative way of getting the marketing message through. Television became the leading inspiration for more creativity in 1955 due to motion, sound, and sight possibilities, with its peak leisure interest in the 1970s and 1980s. Nowadays, social media, search engines, and leading Web sellers have taken over the advertising market.

To Be Successful One Must Overcome Barrier to Growth

For explanation purposes, let's study the simple, clear, and powerful Ford vision statement that was developed in the early 1900s.

*The Ford vision statement in the early 1900s: **Democratize the automobile.***

The Ford vision was basically about rearranging wealth by making more people effective in the economy. Ford has clearly demonstrated to us the power of mastering compelling vision, mission, and values statements. The Ford vision in the early 1900s was simple and straightforward and set very clear directions for the desired destination. Every invention and activity scheme was designed to come up with the most innovative methods to reduce the vehicle cost so that everyone could afford a Ford.

The innovation of the moving assembly line was the single most significant factor, helping to democratize the automobile and making vehicles more affordable for everyone. Furthermore, Mr. Ford understood that part of democratizing his automobile was to increase the general workers' salaries as well. Therefore, Ford announced in January 1914 that he would double the workers' salaries while at the same time reducing the work shift from nine hours to eight hours. Ford also suggested that its employees operate on three shifts instead of two.

Ford's powerful vision statement must have inspired employee enthusiasm – it made every Ford employee proud and dedicated. As the leading pioneer of the

industrial revolution, Henry Ford demonstrated it was possible to democratize the automobile.

Democratizing the automobile can be considered the starting point in developing the middle-class generation in America, and it changed people's lives forever. Entrepreneurs can learn a lot from Henry Ford. He made a point of difference by identifying the profit center for his business. We all know it is not easy to master such a powerful breakthrough winning strategy as Ford did in the early 1900s – but it is clear that if one does, then it will leave the competitors far behind in the competitive journey.

Similarly, revolutionary technology has overcome its own barriers to growth with intelligent business model design. For example, there is a good reason why eCommerce businesses offer free shipping. It has been observed that consumers discard shopping baskets when they see shipping costs are high. As a result, free shipping is crucial to the success of eCommerce until shoppers are willing to pay for shipping. The same applies to product returns when bought on the Internet. Therefore, free shipping will ultimately lead to higher product prices in the future if companies are to sustain their profitable growth levels. In this way, social media is generally free for its users; otherwise, it is impossible to expand the audience continuously. Thus, advertising is paying for social media's continual development.

Generations and Adoption of New Technology Innovation

The world is changing faster than we can cope with. Continuous pressure is on the local political and legal systems to become transparent and equivalent to the modernized countries' systems. At the same time, all the world's information, media, and knowledge gathering can be sourced online, over the Internet. The Internet provides constructive information to people, and it is expected to be accessible to all people worldwide by 2030. The country's geopolitics, corruption, monopoly, environmental issues, regulatory systems, taxes, and labor and union laws are openly appraised on the Worldwide Web. Governments have difficulties coping with slow economic growth. There are high unemployment rates and increased debt issues. The increased global selling and buying possibilities have made it challenging to manage local price levels, VAT, and taxes. As a result, employee salaries are leveling out globally.

The world population is rapidly increasing and is expected to grow from 8.0 billion in 2023 to 9 billion in 2050. The population is aging, while life expectancy at birth is on the rise. The giant pension debt will put pressure on the young generation to support pensions.

People are under constant pressure and stress. There have been more technological changes than people can handle. Anyone can be reached 24/7, anywhere, at any time. Every organization is vulnerable and on alert due to the radical changes in technology. People have a say more than ever. The power is shifting to the consumer through real performance reviews and ratings. The power

of capturing real experiences and performance ratings outweighs classy sales and marketing strategies. The consumer is the King. The power has shifted from the brand producers to retailers to the consumers.

The upcoming generations will lead the technology innovation age. Young people will be the core drivers of the technology age. It is routine for them to undergo radical technological innovations as part of their everyday lives. By doing so, multitasking teens' and young adults' brains will be trained and skilled to think differently.

The categorization of generations in the Western world is classified by their historical background and logical behavior within that cohort, as follows:

- *Silent Generation* members were children who lived through the Great Depression and didn't respond to making speeches, demonstrating, or carrying posters. The Silent Generation was born in 1928-1944.
- *The Baby Boomers* were born following World War II. High birth rates were noted after World War II, making them the baby boom generation. The baby boom generation was born between 1945 and 1964. This generation was at the center of cable TV, remote control, mass marketing, and automobile innovation.
- *Generation X* is known for the significant drop in birth rates compared with the baby boomers generation. The X generation was born from 1965-1983. Digital technology was fostered by this generation, such as the credit card, the PC, IBM, Microsoft, and Apple.
- *Generation Y* or the Millennials are considered to be more confident and sometimes referred to as the "Me, Me Generation." Generation Y was born in 1984-2000. This generation experiences the Internet, game TV, the mobile phone, flash memory card, and digital MP3 music.
- *Generation Z* is the post-millennial generation born between 2001 and 2014. This is the hyper-stressed generation. This generation adapts to the smartphone, smart devices, and games and is on information alert 24/7. This is the period when technology innovation was initiated, AI, Big Data, IoT, drones, cryptocurrency, eCommerce, and many more. The norm is shifting from local travel to global travel. The increased threat around the world is reflected in the increased lethality of terrorist attacks. In addition, this generation is intensely experiencing global warming consequences.
- *Generation Alpha* is expected to generate booming birth rates, as well as become the wealthiest generation and live the longest of all. Generation Alfa is due to be born between 2015 and 2025. This generation will determine how technology innovation will shape the world. They will benefit from all the innovations in science and technology, robotics, education, medical and augmented, and virtual reality.

The use of technology will grow with new generations. What the mature generations do not understand, the younger generations take for granted as a norm.

We must be careful not to lose sight of what is relevant in our wonderful world. One must never forget that, in the 1860s, to thrive, all people in the world depended on having livestock nearby.

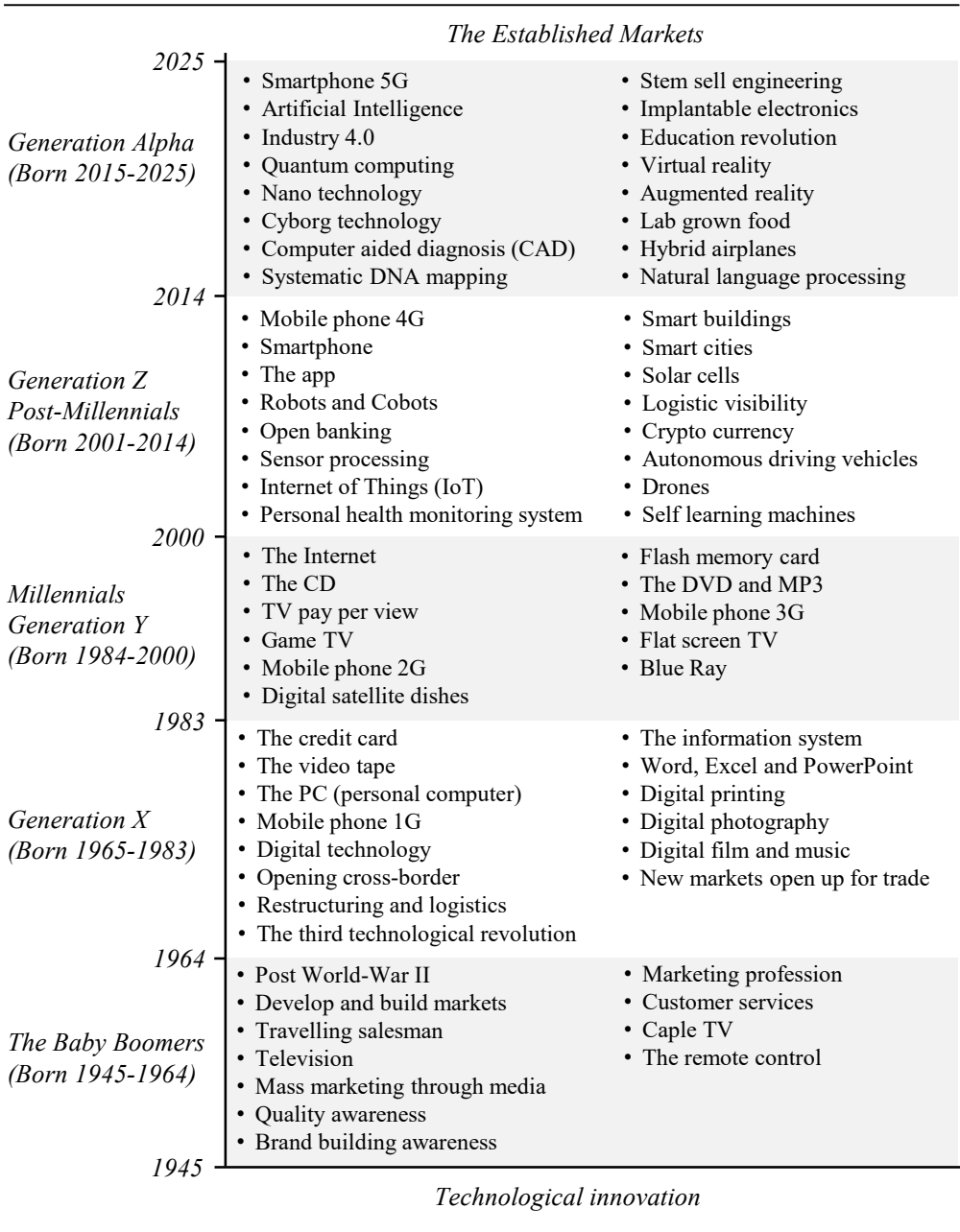


Figure 1-5. Generation's experience.

There are generation trends and changes. The millennials place a high value on less stress and a shorter workweek. They want to have a reasonable balance between work and free time. They are less loyal to the company and work and have less respect for the hierarchy and power structure. They must be rewarded for leadership and openness and must get paid for performance. They value life experiences and carry for the environment and initiatives focusing on global warming protection and waste management controls.

The trend in the past has been that about one-third of graduates from the top ten business schools plan to work within banking and finance services. The need trend for banking and finance graduates will drop, meaning fewer high-ranking jobs will be required. The question is, what will be the upcoming hot trend in employment for honor graduates?

Technology Innovation – Chapter Summary

History has shown that almost all past innovations have brought about positive changes that have made the world a better place. The standard of living has significantly improved, and we trust this innovation trend continues to progress, changing our lives forever. Thus, radical innovations continue to be the core driver of global economic growth. There is no silver bullet; traditional jobs are continually taken away from us. However, people are extremely adaptable to dealing with changes and seizing new job opportunities. While most radical innovations may seem overwhelming, there will always be a balance between job destruction and the creation of new jobs, aligned with the world's rapid population growth.

Change-related obstacles and barriers can hinder growth. Rethinking your business model and challenging the status quo comes first. This is because the business model reflects how the company plans to make its revenues and profits in the future. As a market leader, she places the consumer first and understands that consumer insight is the driving force behind all changes. Mass affordability is key to driving sustainable growth.

Constant and perpetual change is becoming the only guarantee in the business. Price competition has become intense in all markets. As a result, current business is evolving into more complex structures and methodologies. Growth equates to success, and if there is no growth, many problems will be ahead. On the other hand, growth generates freedom and flexibility and is the reason why it is possible to pay for the investments required to build a stronger business over the long-term. It is therefore imperative to focus constantly on identifying innovative methods of doing business throughout the journey. Creativity creates clear competitive advantages for a company to become a stronger player in the marketplace. It begins with radically rethinking your business model by defining where the opportunities are in creating continuous competitive advantages and strengths. In other words, capture the values that are going to be the core profit center of your business model design – differentiating it from your competitors.

Continual technology inventions will generate more flexibility and a variety of jobs and leisure activities, eventually creating jobs that did not exist before. The intention is to continually unlock breakthrough sales opportunities through technology innovations and marketing concepts founded on consumer insight information. We are beginning to innovate the next big business industry through technology innovation. Technology innovation ultimately could outperform human capabilities in all possible areas of design and development, analysis, science, and logical thinking. Innovation in science and technology has all the elements needed to change people's lives forever.

We will continue to exploit and follow the Strategic Model of Technology Innovation throughout this book.

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