

## Applying Digital Technology to Business

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### Abstract

During the last 20 years, one of the most powerful forces that changed civilization was the advancement of the digital technology in the areas of computing power, internet communication and information revolution. These developments are being called digital technology in general, which is a force that has changed everything in our daily life including business and economy.

Compared with the Industrial revolution, it is estimated that “this change is happening 10 times faster and at 300 times the scale, or roughly 3,000 times the impact”.<sup>1</sup> In short, the digitization of business produces new fundamental disruption and monumental changes in business models, strategy, and functions. In this study, changes in business strategy and changes in business function are analyzed.

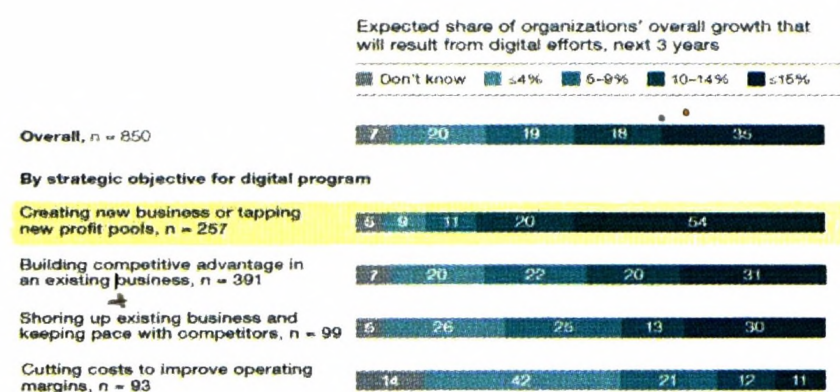
The furious adoption of digital technology in business and new trend of innovation in business models is definitely shortening the life cycle of companies. In one of surveys, 98% of CEOs indicated that changes in business models are imperative and urgent matters. The disruptions caused by digital technology are gaining strength, magnitude, and influence and are forcing businesses to make decisions accordingly and quickly.

### Introduction

As information and communication technology penetrates our lives, our everyday life is being changed dramatically. As a result, the volume of online shopping at 53.9 trillion won increased 19.1% compared with the previous year (45.3 trillion won) according to the Korea National Statistics bureau. This is evidence that internet transactions are drastically increasing while the market share of the offline mart is on decline.

According to the press a few days ago, this phenomenon has already occurred in the US, and Wal-Mart, the world’s largest retail company, decided to close 269 stores in late January because of sluggish sales. Eventually the world’s larger retailers like Wal-Mart would discard hypermarket sales type and increase investment on internet trading.

A recent survey shows that 80% of CEOs realize the need for changes in business strategy and business model. Therefore, companies need to recognize the change in business environment and prepare to survive using digital technology. According to a survey by McKinsey, expectation for growth is the highest at companies that pursue digitization to create new business. The result of the survey is summarized in Fig. 1 .



**Fig.1.** Expected Organization’s growth resulting from digital efforts. (Figures may not total 100%, because of rounding up)

### Age of digitization

Nowadays, customers can log in to their online account and check the real-time report of their consumption. Therefore, companies need to improve their business process with digital technology in order to meet high customer expectation. They also need to reinvent the entire business process, including cutting the number of steps required, reducing the number of documents, and dealing with regulatory and fraud issue.

McKinsey Global Institute (MGI) found that social media plays an increasingly important role in connecting people in emerging economies to the developed world, thereby opening new opportunities for work, learning, and personal connections. For businesses, digital platforms provide a huge built-in base of potential customers and effective ways to market to them directly. Instead of waiting for benefits of globalization to

trickle down from large corporations, SMEs can become micro-multinationals in their own right, and start-ups can be “born global”. Small and midsize enterprises can tap into opportunities, information, and ideas from anywhere in the world. The age of the customer has a 20-year business cycle in which the most successful enterprises will reinvent themselves to systematically understand and serve increasingly powerful customers. Fig. 2. shows the changes in business trends from 1900s to present<sup>5</sup>.

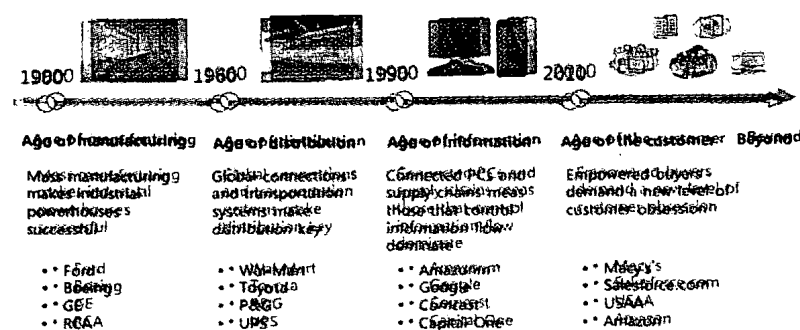


Fig. 2. Changes in the business trends

### Digital technology as a disrupter

Technology has long been a disruptive force, radically changing the nature of work and society. In the 19th century, the Industrial Revolution altered our world profoundly and permanently. Electrification, the automobile and mass production, just to name a few massive technological changes, reshaped the 20th century. Today, powerful digital technologies and ubiquitous connectivity have created a knowledge economy.

The coming age of disruption will forever change the nature of business, work and society. Technology is lowering the barrier to entry, increasing efficiency and cost saving, and even launching new industries. It has given rise to a “freelance economy” of independent workers, collaboration without boundaries.

Disruptive innovation has the potential to impact each and every business, no matter its size, sector or location. Operating models, skills, organizational structure, and roles need to redesign to match the reinvented processes.

### Changes in business strategy

Digitization is fundamentally altering the nature of competition. Customer experience is very different today. In this age of digitization, companies need to establish new business strategy for continuous growth and survival. New business strategies are proposed as follows.

#### i. From Market share to Opportunity share

Digital technology drives value in business in four ways: enhanced connectivity, automation of manual tasks, improved decision making, and product or service innovation. Tools such as big-data analytics, apps, work flow systems, and cloud platforms are often applied selectively by business in narrow pockets of their organization, particularly in sales and marketing. This creates missed opportunities to gain maximum advantage from digital investment.

Big-data insights, for example, can be used to enhance customer targeting and adjust pricing in real time, but they can also be used for better forecasting of operational-capacity needs to boost asset and resource utilization.

App technology can also be applied to a broad range of internal interaction such as HR and procurement requests. According to analysts, app-related revenue reached \$25 billion in 2013, and is expected to grow to more than \$70 billion by 2017. So far, market share has been emphasized as the core of competition, but opportunity share should be considered in a digital environment instead. Opportunity share is more important subject than merely maintaining market share in a new environment and newly developed market. In digital business strategy, it is called ‘from market share to opportunity share’. Indeed, Google, a leading search engine company, is trying to seize opportunities in various business areas such as driverless cars, healthcare, drones, etc.

#### ii. From Efficiency to Intelligence

These days, as development and utilization of AI (artificial intelligence) is expanding through the development of digital technology, companies need to make decisions and manage the business process by AI embedded in the computer rather than simple efficiency. Modern AI systems are now capable of displacing human workers in professional practices such as accounting, engineering and law.

AI systems will provide business with the means to become much more efficient and reduce the cost of doing business, as computers perform analytical tasks that once required dozens of workers. Therefore, companies are building flexibility and embedded intelligence direct into the production process to help them adapt quickly to changing needs. Embedded intelligence can, over time, help companies to improve both the performance and the value-in-use of products and services and thus improve their pricing.

iii. From Ownership to Collaboration arrangement

Companies have competed by owning assets that matter most to their strategy and believed that competitive advantage comes from owning valuable assets and resources. However, digital technology, by increasing transparency and reducing search and transaction costs, is enabling new and better value-creating models of collaborative consumption.

Global leading companies, such as Apple and Nike, are manufacturing their products by collaborating with manufacturing specialized companies instead of owning their own factories. They only focus on planning, development and marketing, which create most of value, and outsource the rest of jobs, which take most of the workload, to their cooperating partners. As depicted in Fig. 3, profit is proportional to created value rather than workload.

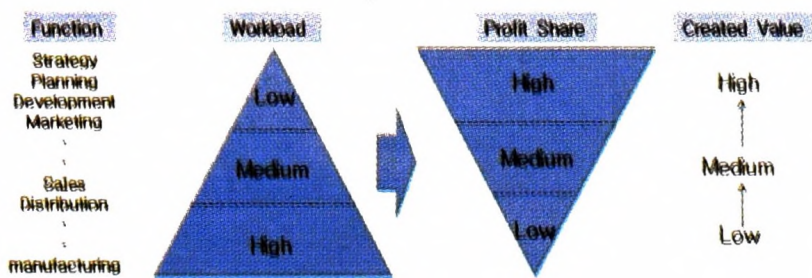


Fig. 3. Relationships among workload, profit share and created value

iv. From low cost to no cost

While volume advantages did translate into lower average costs per unit, economies of scale could never get the average cost down to zero. Digitization is reframing this ancient belief in powerfully disruptive ways. In fact, digitization has had the most devastating effect, since it can destroy entire industries. What is driving prices to zero is the reframe that multiple customers can simultaneously use digital goods, which can be replicated at zero marginal cost. According to BBC News, the Independent and Independent on Sunday are to cease print editions in March, leaving an online edition. It means that Independent can reduce its delivery and printing cost to zero.

All sectors of the economy have adopted ICT to enhance productivity, enlarge market reach, and reduce operational cost. A company attracts users by providing content for free or at a cost less than the cost of production. Elon Musk, the CEO of TESLA motors, clarified that Tesla's patents are really free. It means that the cost of adopting or developing new technology goes to zero.

Changes in business functions

Manufacturing without plants

Some firms do not conduct manufacturing activities but are heavily involved in activities related to the production of goods. Such companies are called factoryless goods producers. The best-known example is Apple Inc, which designs, engineers, develops, and sells consumer electronics, software and computers. Apple does none of its production and actual manufacturing is performed by other firms in China and elsewhere. Almost none of Apple's US establishments would be in the manufacturing sector<sup>15</sup>.

Global companies such as Apple and Nike only focus on R&D and Design while they use outsourcing for their manufacturing function. Manufacturing without plant is possible thanks to modularization and standardization of components, innovative manufacturing devices like the 3D printer, and manufacturing specialized companies.

Organizing without organization

Information management is evolving from controlled centralized systems with restricted access to a decentralized system with seemingly free access. Shirky's book, 'Here comes everybody,' describes the power of organizing without organization. Shirky discusses how social tools support group organization and communication in an entirely new way. Simple group formation can be being replaced by rapid group formation<sup>16</sup>.

If your organization is to survive in the changing economic and technical world, there is only one choice. You must understand the media and be prepared to provide a point of view on how social networking can or cannot be leveraged for your organization.

Market without borders

Digitization gets rid of both national boundary and business boundary. Web-based service providers in telecommunications or insurance, for example, can now tap markets without distribution networks of offices and local agents. They can compete effectively by mining data on risks and on the incomes and preferences of customers.

Digitization transforms global flows by vastly reducing marginal production and distribution costs in three ways. The first is the creation of purely digital goods, in both the B2B and B2C realms. Second, digitization enhances the value of physical flows by the use of "digital wrappers" that pack

information around goods as they traverse global value chains. Finally, digitization is creating online platforms that bring efficiency and speed to production and cross-border exchanges. Proliferating e-commerce platforms allow greater and faster flows of goods and services to new markets and help firms participate in expanding global trade.

#### *Customer empowerment without loyalty*

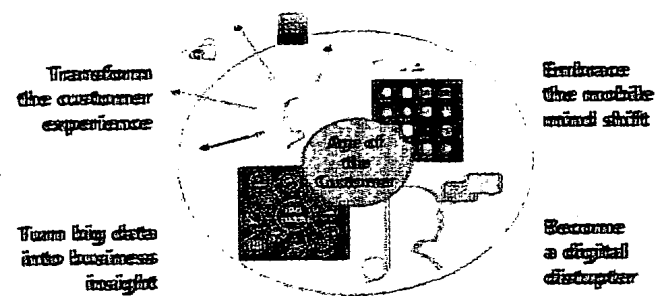
The pursuit of loyalty has become more complicated in the digital world. The cost of acquiring new customers has fallen, even without loyalty programs. Customers—empowered by digital tools and extensive peer-reviewed knowledge about products and services—now often do a better job of choosing in buying options than companies do. Switching costs are low. Most significantly, the former passivity of customers has been superseded by a desire to fulfill their own talents and express their own ideas, feelings, and thoughts. As a result, they may interpret efforts to win their loyalty as obstacles to self-actualization. The invention company Quirky, for example, lets the ideas and votes of its online community guide the products that it designs and produces. Maker Labs, an interactive design-build collective, provides its members with the tools and expertise that they need to build what they want.

#### **Conclusion**

The furious adoption of digital technology in business and new trend of innovation in business models is definitely shortening the life cycle of companies. In one survey, 98% of CEOs indicated that changes in business models are imperative and urgent. Disruptions caused by digital technology are gaining strength, magnitude, and influence, and force business to make decisions accordingly and quickly.

Companies also need to forecast the trend of business and be prepared for the future. Four important business fields in the age of the customer are depicted in Fig. 4.

If a company is currently successful, it needs to recognize that it may be the time to abandon its existing success strategy and design a new strategy and business model. In this paper, four changes in business strategy and four changes in business function are suggested.



**Fig. 4.** Important business fields in the age of the customer

In addition, it is also necessary for government to strengthen computer science education in order to prepare for the future of the digital economy. According to the NY times, President Obama plans to spend 4 billion dollar to help states pay for computer science education in the schools.

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