

Mental Transformation in Industrial Policies: An Analysis on Zombie Companies*

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Özet: Uzak Doğu 2008 krizi sonrası üretim konusunda Avrupa ve ABD'nin önüne geçmiştir. Uzak Doğu'daki ilerlemeyi kaçırmamak için Avrupa'dan "Endüstri 4.0" hamlesi gelmiştir. Endüstri 4.0 ile birlikte sanayinin dijitalleşmesi mümkün hale gelmiştir. Bu süreç sayesinde insan emeğinde, hata oranında azalış ve verimlilikte, esneklikte artış sağlanmıştır. Fakat Endüstri 4.0 sadece üretimde değil yönetimde de değişiklik getirmektedir. Ülkemiz 2008 krizi sonrasında başlayan sanayinin dijitalleşmesi sürecinde bu duruma uyum sağlamanın yanında yönetim mentalitesinde de değişikliğe gitmeye çalışmıştır. Yönetimdeki bu durum yönetim olarak ifade edilmektedir. Yönetişim kavramı, resmî ve özel kuruluşlarda idari, ekonomik, politik otoritenin ortak kullanımınıdır. Ortak yönetim- birlikte yönetmek anlamına gelir ve içinde yönetimden farklı olarak etkileşim ve iletişim kavramlarını barındırır. Araştırmanın amacı, dijitalleşmenin yönetim anlayışına etkisi incelenmesidir. Bu inceleme, kişisel bilgisayar dijitalleşme evresi, internet dijitalleşme evresi, mobil sosyal medya dijitalleşme evresi, nesnelerin interneti dijitalleşme evresi, işletmelerde dijital dönüşüm alanları olarak ele alınmıştır. Türkiye'de ve Dünya'da zombi şirketler de incelenmiştir. Araştırmadan elde edilen sonuçlara göre, sanayicilerin "Vizyon", "Misyon", "Kalite Anlayışı" ve "Toplam Kalite Anlayışı" gibi temel bakış açılarının üzerine yöneticilik anlayışını değiştirmeleri gerekmektedir. İşletme yapılarını belli bir kurumsallık seviyesine çıkarmış ve kurum içi dinamizmi, hızlı-kısa karar alma süreçlerine sahip ve pazarı/piyasayı yakından takip eden- sürekli sahada ekibi olan firmalar ayakta kalabilmiştir. Ayakta kalamayan şirketler ise zombi şirketler olarak karşımıza çıkmaktadır. Şirketler katma değerli üretim yapmak için yönetimin anlayışını tek taraflı ve dikey yapıdan çıkarması gereklidir. Şirketler özverili, paylaşımcı ve mütevazı anlayışla yönetildiğinde geleceğe taşınacaktır. Devlet tarafından şirketlere yönetim ve sanayinin dijitalleşmesi sürecinde teşviklerle ve denetimlerle müdahale etmelidir.

Anahtar Kelimeler: Endüstri 4.0, Dijitalleşme, Yönetişim, Zombi Şirketler, Sanayileşme Politikaları

Abstract: After the 2008 crisis, the Far East surpassed Europe and the USA in terms of production. In order not to miss the progress in the Far East, the "Industry 4.0" move came from Europe. With Industry 4.0, the digitalization of the industry has become possible. Thanks to this

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process, human labor, a decrease in the error rate and an increase in productivity and flexibility have been achieved. However, Industry 4.0 brings changes not only in production but also in management. In the process of digitalization of the industry that started after the 2008 crisis, our country tried to adapt to this situation as well as to change the management mentality. This situation in management is expressed as governance. The concept of governance is the common use of administrative, economic and political authority in public and private institutions. Co-management means co-management and it includes the concepts of interaction and communication, unlike management. The aim of the research is to examine the effect of digitalization on management understanding. In this review, personal computer digitization phase, internet digitization phase, mobile social media digitization phase, internet of things digitization phase, digital transformation fields in businesses. Zombie companies in Turkey and in the world have also been examined. According to the results obtained from the research, industrialists need to change their understanding of management over basic perspectives such as "Vision", "Mission", "Quality Concept" and "Total Quality Concept". Firms that have brought their business structures to a certain level of institutionalism and that have internal dynamism, fast-short decision-making processes, and that follow the market/market closely and that have a permanent team in the field have been able to survive. Companies that cannot survive appear as zombie companies. In order for companies to produce with added value, it is necessary to remove the understanding of the management from a one-sided and vertical structure. When companies are managed with a self-sacrificing, sharing and modest understanding, they will move into the future. It should intervene by the state with incentives and audits in the process of governance and industry digitization of companies.

Keywords: Industry 4.0, Digitalization, Governance, Zombie Companies, Industrialization Policies
JEL Classification: L79

1. Introduction

The leading economies of the world are trying to become more competitive in order to follow the path of sustainable growth and move to a new economic cycle (IMF, 2015). A competitive economy will be created thanks to the digitalized industry. Digitalization, or in other words Industry 4.0, is the primary agenda of industrial policies. Thanks to digitalization, it is thought that great transformation, development and progress will be achieved in the country's industry. It is known that with the development in the industry, productivity, competitiveness, price and quality advantages will be provided. However, the realization of digitalization will not only happen with a technological digital transformation. It should be realized through the implementation of digitalization at all levels of companies. With digitalization, the competitiveness of companies will increase. But the main weakness of many countries is that they are not competitive. There is a type of uncompetitive, largely unviable company called the "zombie company." Such firms pose a potentially very high threat to the economy as a whole, not only because of their own impending bankruptcy, but also because of the

risk they pass on to other companies by weakening their level of competition and their capacity to create value (Caballero et al., 2008).

With the completion of the digitalization process of zombie companies, the country's industry will be competitive. However, for the realization of digitalization, the management approach should be examined. The aim of this study is to examine the effect of management approach on the digitalization of the industry. In this research, first of all, zombie companies were examined. Problems in zombie companies and the digitization of the industry are discussed. The effects of digitalization phases on management understanding in businesses were examined. The originality of this study is that it is the first time to examine the impact of management approach in the digitalization process of the industry, including zombie companies. In this study, bringing a holistic perspective by including zombie companies will make a serious contribution to the literature.

2. Theoretical Background

2.1. Past and Present of Industrialization Policies in Turkey

Industrialization in Turkey made significant progress in the 1960s and 1970s. However, there were some important shortcomings as well. The trade situation at that time depended strongly on government support and remained inward-looking. Manufacturing industry exports remained very low throughout the 1970s.

The severe economic crisis at the end of the 1970s made it clear that these policies could not be sustained. In 1980, with the adoption of the liberal economic policies of Prime Minister Turgut Özal, Turkey started to align its economic policies with the realities and demands of the rising globalization period (Kepenek, 1999).

The balance sheet of Turkey's policies in the era of globalization is quite complex. However, it would not be wrong to say that the most successful aspect of these economic policies is export-oriented. Total exports increased from \$3 billion in 1980 to \$20 billion in 1990 and more than \$100 billion in 2007. One of the best indicators of an economy's openness or outward orientation is exports as a percentage of GDP. While this rate was below 3 percent in 1980, it increased to over 25 percent in 2007. More importantly, almost all of this increase stemmed from the increase in manufacturing industry exports. The share of manufactured goods in total exports has increased from about 35 percent of all exports in 1979 to over 95 percent in 2007 (Bozdemir, 2011).

There are good examples of industrial capitalism emerging from a predominantly rural and merchant society in these Anatolian cities in recent years. These industrialist initiatives have started late to take action both in their own regions and throughout the country. The Istanbul-based industrial elites of the previous industrialization wave established their own organization, the Turkish Industrialists' and Businessmen's Association (TUSIAD), in 1971. The new generation industrialists in Anatolia established the Turkish Independent Industrialists' and Businessmen's Association (MUSIAD) in 1990. In its early years, MUSIAD supported Islamist parties led by Necmettin Erbakan, but the increasingly inward and anti-European discourse of its members drew negative reactions. Ever since Recep Tayyip Erdoğan and Abdullah Gül left Erbakan and started to form a new political party in 2001, the new industrialists and MUSIAD have given the AK Party critical support for its more moderate, outward-looking and professional attitude (Erdem, 2016).

2.2. Problems Experienced by Companies in Turkey

- a) **Management and Organization Problems:** The common type of business in the manufacturing industry is small and medium-sized individual and family businesses. A large part of their management is mostly people who continue their father's profession or have brought their savings from trade to the industry. Centralist tendency in management and ownership psychology in human relations are dominant.
- b) **Personnel Problems:** Personnel problems of the manufacturing industry; It can be grouped under the headings of lack of qualified employees, labor disputes, and employment of illegal workers at a young age. The most needed workers in the manufacturing industry are mid-level technical staff. Industrial vocational high school is insufficient to meet these middle level technical staff requirements of enterprises (Ministry of Development, 2014).
- c) **Financing and Investment Problems:** Today, medium-sized enterprises in Turkey are in crisis because a rational financial policy and objectives have not been determined. Another reason for this is that there are no qualified personnel who understand the importance of finance in businesses and accountants do this task. As a result, a chaos arises in terms of businesses, organizations are forced to use high-interest loans and their equity is decreasing day by day in real terms.
- d) **Marketing Problems:** The starting point of business activities is the existing and potential customers of the business. The basic philosophy of the contemporary marketing approach satisfies the customer group targeted by the business. Snow; Satisfaction of customers should be achieved by satisfying their needs in the best way possible. The most important marketing task is not to sell the goods produced, but to produce the products and services desired by the

targeted customer group. The products produced by the operators and presented to the customers can be easily sold to the extent that they meet the desires and needs of each tried customer group (Ministry of Development, 2014).

2.3. Governance Concept

In its 1992 report titled “Governance and Development”, the World Bank considered good governance to be central to creating a favorable environment for sound economic policies. Governance is crucial in any political system as it is the process of implementing a state's policies that affect the people. Governance is subordinate to the three pillars of the Constitution i.e. executive, legislature and judiciary. The legislature formulates laws, the executive (including political and permanent ones) enforces laws, while the judiciary interprets laws.

Many management experts have emphasized the importance of governance. It has been recognized that strong corporate governance is vital to resilient and vibrant capital markets and an important tool of investor protection. The Cadbury Committee (England), 1992 defined corporate governance as: “Corporate governance is the system by which companies are directed and controlled. It covers all the mechanics of a company's functioning and tries to establish a system of checks and balances among shareholders, managers, employees.

There are also companies at the global level that recognize that better corporate governance adds significant value to their operational performance in the following ways.

2.4. Digitalization Process of Companies in Turkey

The integration of production, design and administrative processes in the manufacturing sector with software, machinery and robots is defined as industry 4.0. Industry 4.0 uses cyber-physical systems, sensors, artificial intelligence, analysis algorithms, IoT, cloud computing and cognitive analysis software.

Digital technologies are of great importance in order to ensure the technological transformation that will enable the production of higher value-added production and ecosystems in Turkey and to integrate the entire value chain to produce these technologies. For this reason, it is of great importance in the context of the analysis of the current situation in order to measure the competence levels of technology manufacturers and users in Turkey and to measure the deficiencies of these companies (TÜSİAD, 2016).

In the 10th development plan covering the years 2014–2018, it is stated that the importance of knowledge is increasing, especially in countries such as India and China. Studies on technology export have increased, and therefore, studies on technological development should be supported by the public without waiting for the private sector. Studies have started with technology centers on this subject (Ministry of Development, 2013).

2.5. The Effects of Digitization on the Role and Practices of Managers

As technology evolves, new digital achievements lead to the transformation of business organizations. The concept of digital transformation is closely related to digitalization and digital innovation (Fichman et al., 2014). All of these concepts are built on digital technology, and the consequences of innovation and digitalization are thought to lead to a change in big business behavior. Osmundsen et al. (2018) defines digital transformation as “the application of digitalization or digital innovation over time to enable major changes in the way business is run, leading to a significant transformation of an organization or an entire industry”. To gain competitive advantages, companies need to create new management practices to manage these complex transformations (Matt et al., 2015).

Managers can use tools at hand, such as evolving artificial intelligence technologies, to organize and generate this data to gain better insight into real-time customer behavior and demand trends (Chisambara, 2018). For example, a demand forecasting manager needs to achieve higher levels of accuracy of a forecast that translates into higher profitability and revenue (Chisambara, 2018). With the plethora of data collected during the complex process across supply chains, large companies are using cognitive-based technologies to support and help managers anticipate customers' demands. Osmundsen et al. (2018), Haffke et al. (2017), he pointed out that digital transformation has made the role of information systems in an organization more relevant. The concept of bimodal information technology emerges as a digital transformation process. Bimodal information technology (IT) divides traditional information systems into two parallel segments. While the first part is the traditional IT governance approach, the second part focuses on adapting to changes while improving the agility and responsiveness of the company (Haffke et al., 2017). By dividing these two divisions into new divisions, managers can enhance the organization's digital capabilities. By doing this, Haffke et al. (2017) argue that IT support in the business world will be more effective.

Also, technology becomes a tool for managers as human expertise such as decision making is seen as a requirement to successfully apply the capabilities of technology to take advantage of the combined benefits of the business (Chisambara, 2018).

Therefore, the need for a unified relationship between humans and machines remains a key issue.

3. Zombie Companies in Turkey and the World

3.1. Purpose of the research

The aim of the research is to examine the effect of digitalization on management understanding. The companies that have the biggest negative impact on the industry in terms of digitalization and productivity are zombie companies. Zombie companies in Turkey and in the world were also examined for the research. The originality of the research is that it is the first study that deals with the understanding of digitalization and management on the basis of zombie companies.

3.2. Methodology of the Research

As a research methodology, it is the examination, compilation and discussion of reports written for OECD, US Federal Bank, countries or EU, USA or Asian countries. In this way, the digitalization of the industry, the management approach and the situation and exit ways in zombie companies were examined all over the world and in our country.

3.3. Identifying Zombie Companies

Firms called zombies are bankrupt firms that are still in operation. Due to the increase in their numbers and their effects on the economy, they have recently attracted great attention. Zombie firms can disrupt market competition by lowering product prices, raising wages, and lending to productive firms (Ahearne and Shinada, 2005). Industries dominated by zombies also exhibit more job creation and lower productivity (McGowan et al., 2018). Zombie firms ultimately reduce economic performance because they reduce productivity. This can spread to healthy companies. However, despite the potential negative effects on the economy, the number of zombie firms continues to increase worldwide (Banerjee and Hofmann, 2018).

There are several possibilities for identifying zombie firms. Caballero et al. (2008), the first method proposed by compares firms' actual interest expenses with a hypothetical minimum rate that can only be achieved by the most credible firms. If the real interest rate falls below this lower limit, the firm is defined as a zombie firm. McGowan et al. (2018), a second method used by mainly focuses on operational and profitability aspects. According to Fukuda and Nakamura (2011), Caballero et al. (2008), both Type 1 and Type 2 errors will be larger when the model is used. Low interest rates and the cost of debt in general depend on many variables, so the relationship between being a zombie firm and the interest rate paid is not that simple. Bank finance is well

developed in Europe, so there can be healthy companies earning interest rates lower than the hypothetical minimum interest rate. For this reason, healthy companies can be incorrectly classified as zombie companies. Banks and borrowers will often negotiate interest rates so that different companies can charge very different rates. Contracts can play an important role in the rates achieved, and Caballero et al.'s (2008) research does not take this into account. Caballero et al.'s (2008) approach will also not detect evergreen loans to zombies because there are no low interest rates in this case. The zombie company can easily pay its interest with the evergreen loans they get from their banks. This means that banks give new loans at normal interest rates to companies that are struggling to repay their existing loans. Another alternative to a misclassification is for companies to pay off their loans largely during the year. So if you look at their outstanding debt at the beginning of the year, they pay a much lower interest rate than expected.

3.4. Zombie Companies in Other Countries

Some OECD countries have found, in the last decade, an increasing survivability of low-productivity firms (so-called “zombie firms”) that will typically exit a competitive market, hindering productivity growth by excluding growth opportunities for more productive firms, particularly start-ups (OECD, 2018).

New cross-country indicators on the design of bankruptcy regimes reveal significant differences between OECD countries, particularly in terms of personal costs to failed entrepreneurs and barriers to institutional restructuring. These cross-country differences in the design of bankruptcy regimes, in turn, may explain three interrelated sources of contemporary productivity weakness. These; survival of zombie firms, misappropriation of capital and cessation of technological diffusion.

Evidence suggests that the zombie firm problem in Europe is also linked to banking sector weakness and bank resilience. Stimulating productivity growth will require policies to diversify the source of corporate finance from bank loans to market-based debt and equity financing.

Reforms that accelerate institutional restructuring can have powerful effects on productivity. However, it can also carry social costs. ALMPs play a key role in the return of workers displaced due to layoffs. Thus, it helps to reconcile the productive potential of creative destruction with social inclusion.

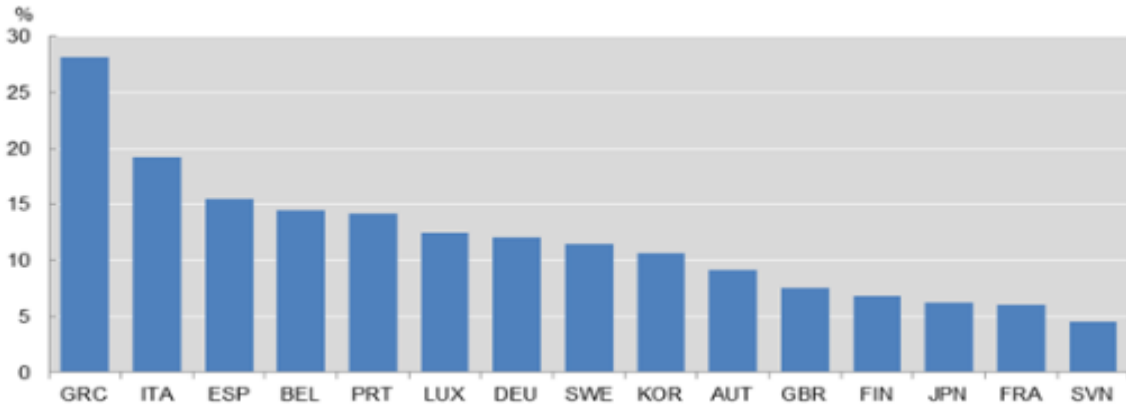


Figure 1. Sink Equity Stake in Zombie Firms in 2013 (Adalet McGowan et. al., 2017)

Zombie firms are highly inefficient, debt-ridden companies with very low or even negative productivity that can severely endanger the economy and constrain a country's economic growth (Caballero et al., 2008). This issue was first discussed by Caballero et al. (2008). However, there are recent reports of the possibility of zombie loan applications in other countries such as Spain, Ireland, the United Kingdom and China (Tan et al., 2016).

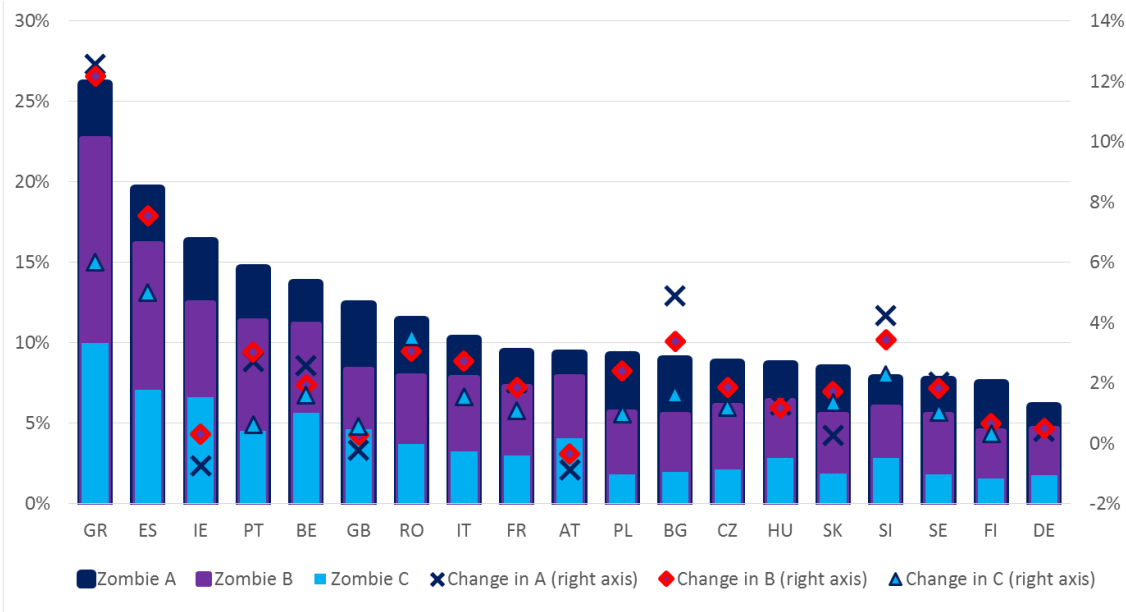


Figure 2. Number of Zombie Companies by Country (number of zombie companies by total companies)

The results of the measures taken by Europe are shown in Figure 2. As a background, this measure is obtained as the total amount of funds allocated to zombies that cannot

be allocated to other firms. It is referred to as sunk capital following AAM and is obtained using the book value of fixed assets reported in Orbis.

3.5. Zombie Companies in Turkey

2020 has been a challenging year for Turkey, amid growing opposition pressure from the government's mishandling of the pandemic, rising costs of living, high unemployment and falling household incomes, and the depreciation of the Turkish lira, which has lost nearly 30% of its value against the US dollar. The government managed to stay in power after appointing a new cabinet with pro-market reformers. However, market consensus predicts that this will be a short-lived relief, as the core founding base of management is the main cost bearers of tighter fiscal policies (Marsh, 2021).

Non-performing loans of companies and consumers for not paying the banks on time amounted to TL 151 billion (approximately \$ 20 billion) at the end of August 2020. The ratio of non-performing loans to total loans is 4.3 percent. However, this rate had increased to 5.7 percent in 2019. Despite the fact that the pandemic created a national income contraction of nearly 10 percent in the economy, especially in the second quarter, the rate of bad loans decreased. The reason for this lies among the government measures taken regarding the pandemic. Banks consider it a "non-performing loan" if their receivable is 90 days late. With the pandemic decisions, banks were instructed to increase this period to 180 days. In other words, banks do not record their receivables that are not more than 180 days past due as non-performing loans. If they had, the non-performing loan ratio approaching 5 percent would have reached 10 percent. In a sense, the swamps are kept alive as if they were alive. That's why zombie companies have emerged.

In particular, there are companies that cannot withstand the economic crisis that started in 2018 and extended into 2020, and the extraordinary increase in foreign exchange prices that triggered it, and it is almost a miracle that they survive after the great contraction brought by the pandemic.

The survival of "zombie" firms, the misappropriation of capital and the cessation of technological diffusion are the most important issues in institutional restructuring that stimulates efficiency. The new Turkish policy indicators show that there is much room to improve the design of bankruptcy regimes to reduce the barriers to restructuring weak firms and the personal costs associated with entrepreneurial failure. Bankruptcy regime reform not only addresses sources of productivity weakness, but also amplifies the productivity implications of reducing barriers to entry into product markets. Complementary reforms to bankruptcy regimes are necessary to ensure that a more aggressive policy to resolve non-performing loans is effective, as the zombie firm

problem may stem in part from bank leniency. The distortions in the banking sector emphasize the natural tendency of debt in corporate tax systems, which has emerged as an important obstacle to technological diffusion, and the importance of market-based financing instruments for productivity growth. Finally, well-designed job search and retraining policies are effective in returning workers displaced by exit, particularly in environments where barriers to entry are low.

As can be seen, no serious and comprehensive study has been conducted on zombie companies in Turkey. The reasons for this have also been mentioned above. For this reason, zombie companies in Turkey could not be looked at from a holistic point of view, as in other countries and regions.

4. Conclusion

For the full realization of industrialization and the implementation of Industry 4.0, it is necessary to complete the digitalization process, which is tried to be implemented all over the world. As in other countries, the fourth industrial revolution has many effects in Turkey. The industrial sector, which aims to address sectoral needs with a fast, reliable and innovative approach, is entering a new industrial reform period, namely Industry 4.0, thanks to rapidly developing technology opportunities. Due to the rapid industry currently experienced in the automotive industry in Turkey, the Industry 4.0 concept significantly shortens the time to market. Due to Turkey's geopolitical position, it is expected to complete the revolution transition quickly. Companies that have become a global brand leader in this revolution (Siemens, Bosch, Festo, Mitsubishi etc.) attach importance to research and development (R&D) studies in their factories in Turkey. It is necessary to examine the zombie companies in our country in order to see the industrialization level, efficiency and quality. The presence of zombie companies in a country reflects the level of commercial competitiveness as well as the country's permissibility to infect other healthy companies.

The results obtained within the scope of the study are as follows:

- Human expertise, such as decision making, is important to successfully apply the capabilities of technology to reap the combined benefits of the business. Because it is seen as a necessity, technology becomes a tool for managers. Therefore, the need for a unified relationship between humans and machines remains a key issue.
- Managers can use tools such as evolving artificial intelligence technologies to organize and generate this data to gain better insight into real-time customer behavior and demand trends.

- With the plethora of data collected during the complex process across supply chains, large companies are using cognitive-based technologies to support and help managers anticipate customers' demands.
- Industrialists need to change their understanding of management on top of basic perspectives such as "Vision", "Mission", "Quality Concept" and "Total Quality Concept".
- Firms that have brought their business structures to a certain level of institutionalism and that have internal dynamism, fast decision-making processes, follow the market closely and constantly have a team in the field have been able to survive. Companies that cannot survive appear as zombie companies.
- In order to progress in industrialization, the problem of zombie companies must be resolved.
- With the change in the management approach, improvements will be made in the management and efficiency of the companies.
- Firms that are not zombies and are closest to becoming zombies should be saved from turning into zombies.

The recommendations of the study are as follows:

- In order for companies to make value-added production, it is necessary to remove the understanding of the management from a one-sided and vertical structure. When companies are managed with a self-sacrificing, sharing and modest understanding, they will move into the future.
- The government should intervene in companies in the process of governance and digitalization of the industry with incentives and audits. Policies are necessary for the restructuring of zombie companies.

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