



Digital Human Performance Evaluation in the Public and Private Sectors

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Abstract: Increased controlling functions are a natural part of the day-to-day activities of companies operating in market conditions. Its successful functioning determines the market value of the company. In addition to measuring organizational performance, it also has a vital role in monitoring and evaluating individual performance on an ongoing basis, thus providing continuous feedback to employees and managers. Accordingly, the IT sector and modern IT solutions are taking a significant part in the operation of companies. With the development of these solutions, Industry 4.0 is already taking companies into the world of modern ICT technologies and is appearing at all levels of companies. Companies developing ERP systems are increasingly focusing on the dissemination of performance evaluation modules as part of controlling. Not only ERP systems but also serious HRM support solutions have emerged, and controlling has been complemented by measuring the performance not only of the whole organization but also of individual employees. Today, various publications discuss the fact that the cards have begun to be dealt with again in markets where companies must meet a myriad of conditions to stay afloat. We are not talking here about their ability to develop but merely about their efforts to maintain their market position. This is the environment in which controlling, which now covers a much more comprehensive range of areas, including human resources, is working. This process of controlling has extended from large companies to public interest entities, as they must operate effectively in the same environment as other companies with a similar profile but a different organizational structure, typically private. Not to mention the fact that the labor market is the same, where recruitment is not enough, but retention is just as necessary.

Keywords: Competitive sector, Human resource management, Performance evaluation, Public enterprises

1. Timeliness of Measuring Human Performance

In this ever-changing economic environment, the role of controlling solutions that assess human performance is becoming increasingly important. The ownership structure of the company is not relevant in this respect, but market conditions require the same from the participants. With a similar history, it may be interesting to look at these issues in the direction of the V4 Member States since the privatizations that started from a crucially state-owned structure have presented new but similar problems and challenges to the managers of both state-owned and newly created or privately-owned companies. Despite their larger size, companies are not always prepared to spend time implementing ERP systems, even though they know that this is a prerequisite for the day-to-day effectiveness of their operations. If the business is not going well, you have to follow it up because sooner or later, you will be asked why it is not going well. And if the business is booming and the results are coming in, you will not be able to follow it without good administration. It's just one more task of individual evaluation, all in compliance with GDPR rules.

These ERP systems have been introduced with high economic expectations. Still, in many cases, a large proportion of projects fail due to a lack of proper preparation or not being launched in the right life cycle. In addition, the lack of knowledge of software developers in organizational management makes it difficult to realize the true potential of these systems. Interestingly, some market leaders are shaping the main direction beyond the possibilities offered by ERP. They are building performance management systems by developing new requirements and implementing them. The relevance of the issue is that the state's role in the economy is constantly increasing, so the same challenges and problems are being faced by public enterprises and even public administrations. If we look only at the last decade or two, we can see that the

state's role has increased, whether we look at public enterprises or public administrations. If we look at the EU, including the V4 countries, the economic and political challenges and harmonization tasks resulting from the various crises have tended to determine the main functions of public involvement.

A crucial part of our economic policy today is strengthening industrial and foreign trade activity. It is no longer only agriculture playing an important role, but also industrial production and technological development. The effective operation of these sectors requires the presence of adequate human resources, and this requires conditions that are familiar in the competitive sector or at least approaching them since recruitment takes place in a competitive environment. In the definition of corporate governance, the primary function of IT support systems has been to increase organizational efficiency and control the functioning of the organization. This function was essentially focused on the core business. However, today's rapidly changing market and organizational circumstances require the existence of systems that underpin the corporate information base, including on the human side, but no longer as mere administrative support.

From a controlling point of view, these systems also support human resource management itself through human resource policy planning, monitoring of plans, economic analysis, and reporting; by coordinating human resource processes and matching them to organizational needs. This includes assessing the efficiency and effectiveness of human resource management. Measure and quantify the costs and benefits of human resource decisions. "The purpose of measurement is to ensure evaluability" (Karoliny - Poór, 2010).

2. The Impact of Digitalization on the Human Sector

According to a paper by Judit Nagy in Management Science, referring to a publication by Rüssman and colleagues (2015), nine technologies have been collected that characterize the leading companies in this fourth industrial revolution. Do not forget that the labor market - and the human domain itself - feeds on the same medium, whether we are talking about state-owned enterprises, public administration, or the competitive sector. The article also mentions the technical tools and organizational methods that,

- Additive manufacturing (3D printing),
- Augmented reality,
- Autonomous robots,
- Big data analysis,
- Cloud services,
- Cybersecurity,
- Horizontal and vertical systems integration,
- Industrial IoT (IIoT) (which is CPPS),
- Simulation.

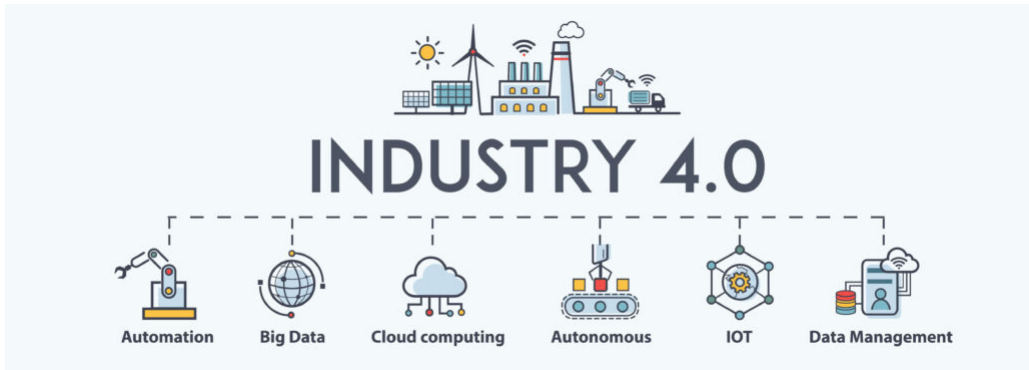
If we look at the characteristics of the different business objectives, based on Attila Chikán (2008), business is a human activity that aims to satisfy consumer needs while ensuring profit and wealth creation. Its organizational framework is the enterprise, which operates within a legally delimited structure, carrying out the processes and activities necessary to achieve its purpose. If we look further at the set of objectives and means, we see similarities there too. Although the concept or ownership structure is different, the objective is similar. The human resources area is developing accordingly, for example by introducing and using cloud computing solutions or by analyzing and integrating systems to serve the needs of individual employees in addition to the specialized areas of work, while also striving for cyber security.

Before accepting the technical achievements of the fourth industrial revolution as a fact, it is worth looking behind the processes that have given rise to this technical and IT background. Edina Erdei, in an article published in Acta Carolus Robertus (2019), entitled "The evolution, use and challenges of Industry 4.0 today". There she writes about the precursors that have enabled the application of these modern technologies in production, trade, or even in logistics and supply chains, which have meanwhile become a major industry. "Accelerated transport and lighting have led to the emergence of three-shift production. With the spread of electricity, telecommunications also developed at an accelerating pace (Barnatt, 2017)", Edina Erdei.

The info-communications – ICT – sector has developed enormously, with the Internet having had - and still having - a major impact on both private and business life, becoming the primary channel of communication. This is a major

advantage when considering the importance of fast business processes and connecting partners, even across borders. Many argue that the third industrial revolution is still ongoing, as the level of industrial development varies significantly between countries and regions (Marsh, 2017). A real test of this has been the multiple waves of the epidemic, which have thrown proven scenarios into the fire. Supply chains, logistics, local manufacturing and sourcing, and the global production concept of large corporations were pitted against each other, not to mention the dramatic rise in costs.

Figure 1: What is Industry 4.0



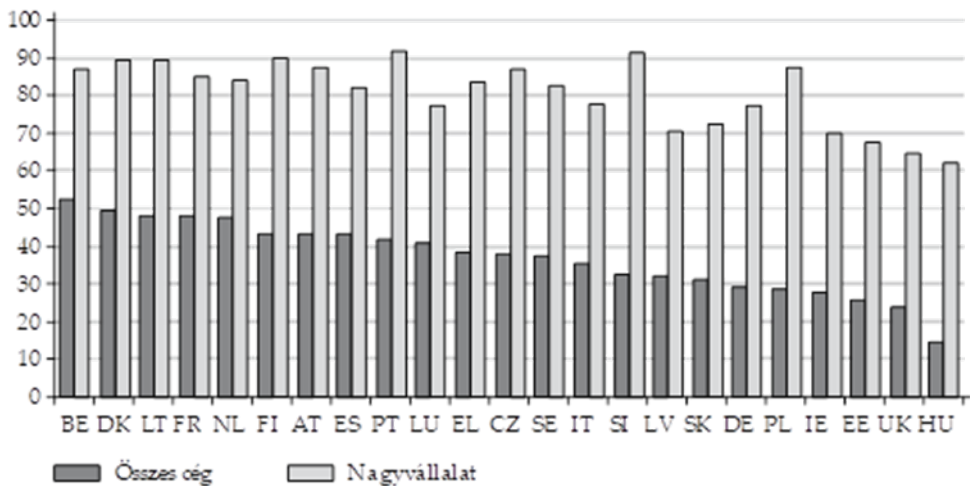
Sources: DAT4Zero

3. Economical Actors – Different levels of Development and Ranking

The culture and level of development of a company are determined by its ability to create a vision. This also implies how it approaches planning, what visions it wants to realize in the short and long term. The epidemic situation has also caused managers to reassess their planning horizons. Before the pandemic, one year meant long-term planning periods, and one year meant short-term planning periods. The pandemic upheaval has shortened these intervals. The quarterly is now considered a medium- to long-term period, as the quarterly blocks of monthly results have taken over the primary role in planning.

The human resources area faced new challenges overnight, as the existence of digital skills became the primary attribute of importance, with everything else taking a back seat. The World Economic Forum (WEF), based in Switzerland, has broken more than two decades of tradition by not publishing its annual competitiveness index covering more than 100 countries. It is one of the most comprehensive index systems in use today; although there is much debate about the reality or validity of the indices and sub-indices, the competitiveness indices offered as an alternative do not carry markedly different results and conclusions.

Figure 2: Companies using ERP software, 2019 (%) (All of companies vs. large companies)



Source: OECD ICT access by Business Database

In the WEF's view, the global economic environment has changed radically, and a drastic overhaul of the index system will be inevitable. A strong focus should be given to digitalization, market competition, equal opportunities, exposure to long supply chains, the management of an ageing society (not only benefits and pensions but also the so-called age gap), and a more substantial role for government in improving innovation capacity (R&D&I, funding universities, etc.). With these indicators added to the index, it will take at least another year to obtain sufficiently robust results. The table below also shows the situation in the V4 regarding the use of ERP systems, with a particular focus on the large enterprises sector. (Living, Sass 2021)

4. Where Hungary is Today?

The report has not been published, but the available survey would assess the competitiveness of national economies on a total of 147 indicators. Typically, most of them are based on the results of the CEO survey, which is based on the size of firms (those with at least 5 employees) and the value-added of sectors in terms of GDP, representative of each country. Hungary was included in a survey of 80 companies. At first glance, this may seem low, but considering that Hungary had 77,000 non-state or municipality-owned companies with at least 5 employees in 2019, the sample size is even better than the regular polls' sample of 1,000. If the list of countries narrowed down to European economies only (39 countries), Hungary's ranking can be established for all indicators.

Péter Vakhai, (2022) in an article published by Kopint-Tárki, draws on data from the WEF and the Kopint-Tárki Institute for Business Research. "In the indicator, Hungary is mostly ranked between 20th and 30th among European countries, on average 27th, which means that among the 39 economies, we belong more to the second half of the continent's competitiveness structure. ... Hungary most closely resembles the Polish-Slovak dual, with a kind of specific competitiveness strategy, in which the advantage continues to be relatively lower wages relative to productivity and a highly (foreign) investment-incentive policy. One of the main advantages of these countries remains their membership of the European Union." - writes the author.

It is interesting that our indicators, including hiring and firing rules, are the best in terms of labor market efficiency and this market flexibility. We are below the European average in terms of access to finance and quality services, but the relatively favorable interest rate and financing environment for companies operating here is perceived very positively, as is the government's long-term strategy.

4.1 V4 as Competitiveness

In an article in the Statistical Review, written by Marianna Sávai, the results of the Global Competitiveness Index (GCI) are presented. Looking at the 15 years under review - 2001-2016 - the Visegrad countries' GCI ranking showed a mixed performance, with countries relatively close to each other at the beginning of the period (ranging from 28th to 40th). Hungary was the most competitive between 2002 and 2004, but in 2008, the year of the crisis, it slipped back to last place.

The gap widened towards the end of the period analyzed, with Slovakia and Hungary falling slightly behind the Czech Republic and Poland (between 31st and 65th). The Czech Republic took over the role of the most competitive Visegrad country in 2005 (except in 2013), with Poland closely behind since 2010. Slovakia's ranking steadily declined between 2005 and 2013 (it was the worst performer in the group between 2010 and 2015), improving since 2014 and overtaking Hungary in 2016. In the 2019 GCI ranking of the Visegrad countries, the Czech Republic is 32nd, Poland is 37th, Slovakia is 42nd, and Hungary is only 47th out of 137 countries. Poland and Slovakia belong to the transition group between efficiency- and innovation-driven economies, while the Czech Republic stands out among them, being part of the innovation-driven group.

4.2 Investment

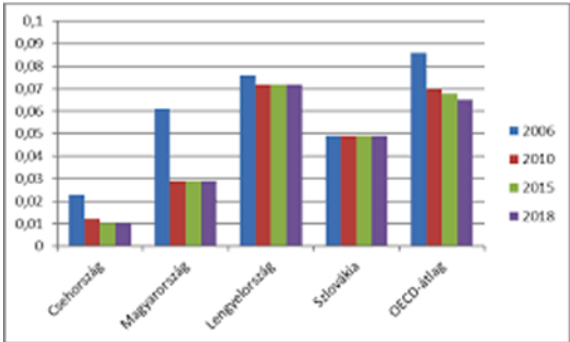
Zoltán Gál, Magdolna Sass and Bálint Juhász, (2018) examine the impact of foreign direct investment and the crisis on the services sectors of the Visegrad countries from the perspective of the host countries, looking at two areas: exports and employment. FDI in the three sectors is predominantly vertical in business services, mainly horizontal in financial services, and mixed in ICT services.

In the services sectors, foreign direct investment (FDI) has been significant in the former transition countries, including Hungary and the other three Visegrad countries (Czech Republic, Poland, Slovakia). In the 1990s, the main objective of investment projects in these sectors was to seek markets, in particular to supply local markets with services that were limited or unavailable during the socialist period, i.e. to carry out the same activities in the host countries as in the home country of the company. From the early 2000s onwards, FDI in the Visegrad countries has been increasingly carried out with the primary objective of building export-producing service capacities (Gál, 2014, Hamar, 2005, Hardy et al., 2011, Micek, 2015, Sass-Fifekova, 2011). For these, the abundant availability of medium- and high-skilled labor at relatively low wages has proved attractive.

Foreign investment is relatively high in the three sectors studied. The importance of the three industries varied across countries in 2012: in Hungary, business services is the most important FDI sector of the three, and this is not a new phenomenon: it has been the case since the early 2000s (Hamar, 2005). In addition, the weight of financial services in total capital investment was also significant. In contrast, in the other three Visegrad countries, the weight of Financial Services is the highest and lower than the business services. The share of ICT services is higher than that of business services in the Czech Republic and Slovakia. The role of foreign-owned enterprises is very important in the service sectors surveyed, especially in financial and information and communication services, where they account for a significant share of total sales, value added, and employment.

Overall, the indicator remains below 5 percent for financial services everywhere, ranging from 16 to 25 percent for ICT services, while for business services, the indicator ranged from 27 percent (Slovakia) to 87 percent (Hungary) in 2013. These investments all imply a higher level of corporate governance, so controlling and benchmarking have made a significant improvement even compared to the 1990s, when presence was more of a priority for operators.

Table 3: V4 FDI Regulatory Restrictiveness Index, 2006, 2010, 2015 and 2018



Source: OECD

5. Summary and Conclusions

Having the right information and information systems in place will be a prerequisite for companies to survive in the future and succeed in the market. This has serious implications for HR activities, including feedback on the performance of individual employees. As a direct consequence, IT developments in this area are already coming to the fore.

Industry 4.0 is taking a significant step towards human digitalization systems, with evaluation functions - with the definition of appropriate KPIs - now forming part of day-to-day controlling activities. Its presence in the life of companies allows the necessary conclusions to be drawn and decisions to be prepared, both in the planning phase and in the day-to-day operational stage, which is linked to human resources management.

It should be added that the need to measure the performance of public service provision and public interest enterprises and economic organizations is unavoidable and must be an element of the system. It must, of course, consider aspects of efficiency and effectiveness. The proper preparation of government objectives requires feedback from the company or enterprise concerned, either to justify the preliminary ideas or to anticipate the necessary changes.

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