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# HUMAN PERFORMANCE ASSESSMENT METHODS IN THE PUBLIC AND COMPETITIVE SECTORS IN THE CONTEXT OF DIGITAL INDUSTRY 4.0

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## Abstract

The digitalisation of business means that the related business functions and stakeholders will be at the forefront of its development, so IT solutions that serve the core business of the organisation will also be at the forefront. This trend, also boosted by Industry 4.0, is also fundamentally changing the field of management controlling and human performance management.

This trend will enable new forms of collaboration between companies, suppliers, customers, and employees, leading to new product and service offerings. Just think of the emergence and proliferation of cross border service centres (SSCs). Here, we have seen global companies first start to provide services in the financial, economic, human resources and controlling areas, initially to their own consolidated subsidiaries, and then move out into the market and into the customer.

I will describe the relevant legal environment, the actual functioning, the practical experience of the studies carried out, and the common HR and corporate governance platforms and methods used, thus indicating, and supporting my hypothesis that the existence of technical and regulatory conditions does not automatically imply the possibility of an effective and strategic application of the system.

**Keywords:** *Controlling, Digitization, HRM, Industry 4.0, Public Companies.*

**JEL Classification:** *J24, J31, J33*

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## Introduction and theoretical background

The opportunities offered by digitalisation have generally increased in value, especially since the epidemic conditions have set the limits for companies to act. This is true for both competitive and state-owned companies, which have to operate effectively in the same environment, even if, despite similar industrial activities, the organisational and ownership structures of the companies in question are different.

The importance of digitalisation and the improved performance it can bring to companies operating and doing business in the competitive sector is self-evident and quantifying the results is a daily activity. It is a fundamental determinant of a company's market position and its value or saleability.

In for-profit organisations, it is common practice to measure and monitor both organisational performance and the individual performance that contributes to it, and to build a motivation system around this.

The changes in IT, the introduction and spread of integrated ERP systems and other innovative IT solutions, as envisaged by Industry 4.0, are changing the role of controlling-centred human resource management within organisations. Its popularity among companies continues to grow, as it holds up a mirror to measure the qualities that can make a fundamental contribution to the optimal functioning of individual areas or even the entire organisation.

Performance measurement in the public sector is based on an adaptation of the performance measurement used in the controlling area of business, although the specificity of the sector raises a number of problems and questions. *„The public sector is primarily characterised by indirect results, as these are slow, indirect and difficult to measure. The performance of an organisation is the sum of the performance of its employees, so measuring the performance of individual employees is essential to ensure effective operation“* (Gonda, 2019). Take, for example, the social benefits of resources invested in education, which are very often measured in two or three decades, and whose content is also difficult to define and test.

Secondly, the quantitative analysis and quantification of the performance of public tasks runs counter to the classical public service theory, which holds that public service is essentially an attitude that is achieved by conforming to abstract values. Public service professions are based on a moral foundation, on a respectable attitude, such as the image of the dutiful civil servant or the idea of the obsessive teacher. The expression of performance in figures, and pay based on it, eclipses this view. Since the human factor has always played an important role in value creation processes, it is therefore recommended from the point of view of companies that several specialist areas - both controlling and HR - focus on the more efficient use of human resources in order to increase competitiveness. (Szóke, Tóth, Vanó 2022)

The importance of this is underlined by a report produced by the State Audit Office of Hungary two years ago (Németh, 2020), which raises important questions about public offices and the public sector. It does so by using modern IT solutions from the market to answer them, while of course keeping the focus on basic functions. The scope of the questions ranges from the relevant and measurable statement of objectives to their substantiation by correct information, including the hierarchy of objectives, sub-objectives, and the timing of their achievement. Not forgetting, of course, the regulatory, institutional and financial framework, as well as the evaluation environment, monitoring and follow-up.

While the public sector sees this as a partly new and mandatory task - contributing to the process of creating customer and organisational value (Felméry, 2015) - large companies see human IT solutions to support their operations as a key strategic issue. At the same time, at a global level, operators can no longer expect a specific competitive advantage from the use of this module of integrated management systems. It is important that the necessity of applying controlling as an approach and methodology has also been proven in the case of public service and non-profit organizations, because the quality and standard of the management system is also a key issue in organizations outside the competitive sphere. Based on this, the primary goal of public service controlling is to promote the improvement of the quality of public services – the outputs created by public service organizations (e.g. public administration, law enforcement, healthcare, education) (Horvath & Partners, 2015).

This has become an expected basis for supporting day-to-day IT, as the implementation of ERP systems has become a prerequisite for staying competitive.

Nevertheless, companies do not always have the resources to implement the optional integrated IT system solutions. This is particularly true for human resources management systems, as often the main focus is on administrative support of this function, managing basic data - including data related to GDPR rules - including possibly financial information related to employee remuneration.

Despite the economic expectations of ERP systems, a large number of implementation projects fail because the decision process of the initiatives that trigger them is not sufficiently prepared, decisions are taken in the wrong life cycle of the company or are delayed, and therefore the projects often exceed the resources available to the companies. System implementations cannot be left to IT specialists without organisational skills. Software developers can only develop capabilities already specified by management.

Be it any module within the ERP system, - in connection with the controlling support systems - a number of stated requirements must be met for the users.

Nowadays, it is natural that the management of programs should be simple and user-friendly. In addition to the help screen and the operator's manual, it can also be telephone and online assistance. Partial implementation and continuous development of the program must also be ensured. In the case of large databases, an acceptable response time is required and it should be possible to perform well-parameterized, flexible queries, prepare reports, and display graphics. The development of plans, plan variations, and alternatives without the help of programmers, the electronic transfer of data from already functioning systems, should be compatible with other operating systems (Musiszinski 2012).

At the same time, the lack of knowledge of software developers in organisational management makes it difficult for business professionals to recognise the potential of these systems, and companies are already struggling to implement ERP systems. At present, solutions that significantly exceed the complexity of ERP systems have become available in the market. Market leading large companies are already in a trend-setting period that will lead to a technology shift; therefore, I consider it important to examine the operational change of human performance management systems in public companies, the role of future-proof technologies at the interface of information technology and management sciences. The precise measurement of the competitiveness of a national economy is an extremely complex task, as it is by definition a phenomenon encompassing all factors that affect the productivity of firms in the long run (Vakhal, 2022).

## Material and methods

The focus of controlling activity in the 21st century companies is improving organizational performance. Previously, there were differences between German and Anglo-Saxon trends in controlling. Whereas, according to the German approach, controlling is a system of tools, with the help of which the information necessary for managerial decision-making is available, and based on which, planning, inspection and control activities can be implemented. In addition, according to the German trend, a separate organizational unit is responsible for controlling activities. On the other hand, according to the Anglo-Saxon view, controlling is a part of management, and the task of managers is the efficient allocation of resources, the so-called "management control", the simultaneous performance of planning and control tasks. However, in relation to the "place" of controlling within the company's organizational framework,

we can discover differences between the two trends. However, it can be stated as a fact that management and controlling are inseparable from each other, the joint goal of both areas is to increase company performance (Sütő, 2017)

If we look only at the last decade or two, we can see that the role of controlling, whatever the ownership structure of the company, has increased.

As corporate governance has been defined so far, the primary function of IT-support systems has been to increase organisational efficiency and control the functioning of the organisation. This function was essentially focused on the core business. However, today's rapidly changing market and organisational 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, the monitoring of plans, economic analysis, and reporting; by coordinating human resource processes and matching them to organisational 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)

IT developments bring along a necessary change in approach and this process leads to an increase in the number of human-related IT projects. The managerial knowledge needed to successfully implement these projects is not available in most companies, requiring the involvement of external consultants.

The use of appropriate data-driven assessment tools requires more than the extension of corporate structure, it requires a focus on controlling and a rethinking of organisational information flow and organisational coordination along the lines of the business case for controlling, based on IT systems extensions.

The availability of an information base for companies is a key issue for the compilation of appropriate key performance indicators (KPIs). However, the question of which specific indicators to focus on and with what relative weight has so far been a pure management issue. New organisational opportunities, hitherto neglected, can be brought to the attention of management by evaluating the KPIs available to management and identifying new indicators that better support strategic implementation (Poór, 2016)

Waiting between the implementation of the necessary action plans and the emergence of a change in KPIs greatly impairs organisational responsiveness. With the help of integrated IT systems, the company can accelerate the speed of data processing, so that the necessary information reaches decision-makers faster.

The responsiveness of companies to new environmental conditions is greatly improved, but it is also important to examine the impact of continuous monitoring on human resources. If the system worsens the efficiency of human resources and generates additional errors, the use of systems should be carefully considered in terms of controlling and strategic management. The consequences of management decisions that are not only of a human nature, including hidden and long-term costs, can be anticipated. The quantified costs and benefits can be communicated to management in financial language, facilitating decision-making.

Benchmarking and related human controlling is not a method but a strategic process: integrative, evaluative thinking and calculation to assess human policy decisions, including their economic and social consequences. It is a tool that helps to achieve rational, cost-sensitive human resource management at company level.

We use our precisely defined metrics system to measure the use of resources for management, providing continuous feedback to management on changes. Many of

its benefits are also reflected on the controlling side in various related functions such as developing a compensation strategy that ensures competitiveness in the labour market and contributes to employee incentives, headcount management, reporting systems, job analysis, planning, evaluation, or the assessment of training and development opportunities.

Analyses are also necessary from an accounting point of view, and detailed cost-benefit analyses can be carried out to offset decentralisation in human resources policy work.

The difficulty in implementing and measuring the human resources studies used by the organisation is because human resources management contributes only indirectly to the value creation processes of the organisation, as a so-called supporting activity. Everything can be measured; it is just a matter of finding the right (measurement) indicators.

The advantage and strength of such a system is that it has a modular structure, storing all the information related to employees in its database. In addition to the employee's personal data, it is possible to register his/her qualifications, certificates, competences, career history and management experience. The system can also be used effectively for motivation and career planning. It includes a competency-based performance appraisal module which supports but does not replace the performance appraisal interview. Using the results of the Human Performance Evaluation module, the system can be used to build aptitude and skills profiles, provide appropriate training, but also as a basis for individual career planning.

It is a challenge for companies to integrate the human IT-systems they use, in many cases the systems operate in isolation from each other. Data is entered manually, from one system to another, without pre-screening, as everyone assumes that the data has been checked on first entry. Unfortunately, in many cases this is not the case, so incorrect data can generate a lot of noise in end-user systems.

Increasing the integration of IT-systems contributes to the development of new business capabilities. Companies will be able to make better decisions with greater accuracy and more options to choose from, and to formulate strategies that are better aligned with market trends. As the IT integration of individual companies and supply chains increases, the integration of markets is expected to increase. Firms without access to information will be at a strong competitive disadvantage and will be driven out of the market. This type of market dynamic leads to a reduction in the number of players in each industry.

IT-solutions for human resource management and the impact of Industry 4.0 According to a paper by Judit Nagy (Nagy, 2019) in Management Science, referring to a publication by Rüssman and colleagues (Rüssmann, Lorenz, Gerbert, Waldner, Justus, Engel, Harnisch, 2015), nine technologies have been collected that characterise the leading companies in this fourth industrial revolution. Let's not forget that the labour 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 organisational methods:

- 3D-Printing – Additive manufacturing,
- Augmented reality,
- Autonomous robots, vehicles
- Big data analysis,
- Cloud services,
- Cybersecurity,
- Horizontal and vertical systems integration,

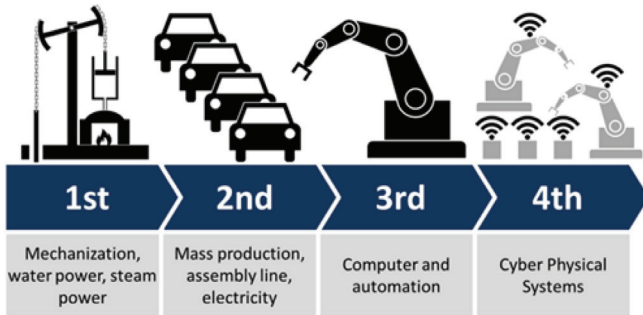
- Industrial IoT (IIoT), (CPPS),
- Simulation.

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 organisational 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 analysing and integrating systems to serve the needs of individual employees in addition to the specialised 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* (Erdei, 2019), entitled *“The evolution, use and challenges of Industry 4.0 today”*, 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.

Table 1: The impact of successive industrial revolutions on production



Source: [www.cnc.hu](http://www.cnc.hu)

## Results and discussion

In connection with this, I started my own research, which I hope will provide sufficiently well-founded answers in relation to company performance evaluation. My aim is to collect both qualitative and quantitative answers. The currently ongoing research, which is based on a complex questionnaire, tries to shed light on the internal structure, IT, controlling and HR capabilities of the surveyed companies. We put a lot of emphasis on personal opinions, as well as on the circumstances of the respondents, on getting to know basic information about the nature of the companies.

The structure of the research is relatively strict, as it consists of mandatory answers, and where possible, the Respondent participating in my research can make a detailed assessment that is characteristic of it.

Thanks to this consistent structure, we get quality answers, so based on the set and filled in questionnaires, we get a comprehensive picture of the given organization. We also paid attention to the fact that, in addition to assessing the interviewee's environment, we also get to know their opinion, and in a free-text block we gave them a way to express their own thoughts regarding the performance evaluation system.

At the end of the research, we prepare a comprehensive report on the results. More than 30% of the respondents so far claim the results, which indicates the relevance of the questions.

### **Controlling - The implementation of monitoring**

In the application of the control function in the Controlling organisation, the controller needs to know the long-term capabilities of the company, i.e. the conditions under which it can perform the tasks defined in the strategy.

This now includes a digital strategy, which takes advantage of digital technologies - also pointing the right direction - and allows managers to see, understand and manage digital opportunities, assess their progress, possibly even modifying them. (Ross et al., 2017). Controllers must play a proactive role in identifying digital opportunities and managing appropriate changes to business models and organisational strategies. Also for these reasons, they need to develop and adapt not only new KPIs, but also flexible management approaches (e.g. a system of objective and key performance indicators), new portfolio techniques, combining traditional and digital business models.

Consequently, traditional capital budgeting or investment control approaches may prove insufficient in the context of exponential growth. Possible research questions in this area are: to what extent and in what ways do digital business models differ from and influence strategy implementation and its monitoring, and what kind of management or control systems can be applied in the digital context. How are planning analytical methods being used and how are they influenced?

Where the IT foundations are in place, the majority of companies have already implemented data analytics and automated forecasting. These solutions, which use - or combine - time-series techniques and machine/deep learning with simulation. The main challenge is the selection of the right tool itself and, more importantly, the right combination of "*man and machine*" in the application process. The Coronavirus has made it clear that a combination of human judgement and business acumen, combined with a wide range of data and technology, is key. Full automation is only likely to be effective in niches with clearly defined and understood processes. Possible research questions include: what will be the impact of specific digital techniques on specific financial processes? How can planning drivers, forecasting and simulation be identified, used, categorized, analyzed and optimized? How can the interaction between "*man and machine*" be designed? What behavioural biases can be mitigated and what behavioural biases can arise from the use of digital technologies?

The Reports answer the questions, but if the input data is wrong, then obviously the result will be wrong or incorrect - as we so often say, relevant and correct data from a reliable, secure database should form the basis for any decision. The creation and maintenance of such a 'single source of truth' is a fundamental responsibility

of controllers, but one that is increasingly being questioned by data scientists and other IT professionals. In a WHU digitalisation pulse check, (Schäffer, Weber 2018b) it was perceived that only 50% of data officers in larger German companies are finance (CFO) or controlling managers. In other words, in half of the companies, the person who is ultimately responsible for data quality does not report to the person who is typically the company's sole source for financial data and their interpretation. In addition, new information routines may lead to a more decentralized, self-service reporting and decision-making environment, which may change the nature of control and the role of auditors. The use of chatbots and other robotic process automation techniques can lead to efficiency gains, but require robust governance.

"The challenges are many, as are the research opportunities: what are effective digital reporting designs, processes, structures and management systems? What are the prerequisites for self-monitoring and self-reporting solutions? What are the behavioural problems that arise in digital reporting? How does a self-service reporting system impact managerial decision making and how does it affect the relevance of the audit? How do companies manage data management?" writes the trio of authors Möller, Schäffer and Verbeeten in their publication (Möller, Schäffer, Verbeeten 2020).

### Digital opinion making

In most organisations, there are two types of individual evaluation, informal and formal. Informal appraisal is based on the thoughts and opinions of managers, who are always thinking about how each employee is performing. However, this form of evaluation is highly subjective, as it can be distorted by personal relationships, individual cultural tastes and differing political views, so it is not advisable to rely solely on it.

Increasingly precise and sophisticated methods and techniques are being used to measure the performance of organisations, their managers and their staff. The Performance Evaluation System (PER) is an important part of performance management, one of the youngest branches of management and leadership science and skills. Managers need to be familiar with performance appraisal techniques in the first place, since they have to appraise their staff almost constantly, just as they are constantly appraised by their own bosses and informally by subordinates. If we look at the IKEA method (Babovic, 2013), we start with the basics to assess individual performance. The enhancement of motivation starts with the one-year development adventure programme, including travel opportunities, a greater emphasis on leadership responsibility, on which the incentive scheme is based.

The performance management system is a means of achieving predefined performance based on planned strategic, tactical and operational objectives and levels within an agreed framework. Performance is always the result of some activity and consists of qualitative and quantitative elements related to the achievement of the tasks assigned by the organisation. As we can see down, in Table 2, a number of external and internal circumstances affect the possibilities for accurate measurement.

Today, performance improvement is part of a system that combines incentives and remuneration, competence development and quality assurance. It is no coincidence that performance management in organisations, for example, involves many people within a company: departmental managers, human resources specialists, internal and external management consultants. In larger companies, a separate department deals with all aspects of performance management. A book on business economics (Chikán,



2017) also covers the topics of motivation, remuneration and incentives, which is fundamentally reshaping human resource management and bringing these modern functions to the fore, now with the powerful help of IT-solutions.

The main general objectives of appraisal are not only to assess the performance of managers and employees, but also to provide a basis for the allocation of remuneration and a basis for promotion, transfer and dismissal.

This is why the basic questions of the system need to be answered at the time of its introduction, not only the purpose for which the appraisal is used, but who, what, by what method, what is considered performance and how it is communicated.

For many decades, individual performance was evaluated almost exclusively by the employee's line manager.

Once or twice a year, the manager would sit down separately with the subordinates and give his/her opinion on the employee's performance and, in principle, the employee being evaluated would also have the opportunity to give his/her opinion, explain the circumstances and justify any below-expected level. Although in most cases individual performance appraisals are based on specific indicators, it is not usually possible to ignore (in the short term, of course) so-called private factors that affect performance, such as illness or the death of a close relative. The emotional intelligence required of managers should not be abused, i.e. private factors should not be invoked too often.

Table 2: The impact of successive industrial revolutions on production

Table1: The environmental factor and measurement opportunities of the human controlling the human with the help of the measurement system of a performance*			
Environment			
Outer		Inner	
Factors	Factor's elements	Factors	Factor's elements
Sociological	society the development of his combination, an economy, environment and health care, family, values,	With workforce substance related factors	the quantitative, qualitative change of staff numbers, substance
Technological, technical	the design of an expected qualification, the development of production cycles, products,	The features of the wage-system	wage-level, allocations, fluctuation
Economic	union, investments, competition, cheaper, inpouring workforce	The features of training systems	new, qualified you are the training of existing ones, life-long-learning
Political	a government's social politics, multinational company companies' behaviour, Transzatlanti relation, EU markets' situation	Informational systems	IT the size of a support, his character, his combination

		Protections of interest, trade unions	their role, their strength
		Workplace atmosphere	satisfaction with the aims, knowledge, information, from measures, decisions, a responsibility
<b>Measurement opportunities:</b>			
Staff number combination	arrangement	qualification	the character of working hours, employment
The efficiency of expenses with a personal character	Human resource management expense	proportion the rotatory velocity of human costs	net production value pro a personal costs
Additional opportunities	human cost pro person	fluctuation	organizational efficiency, intellectual capital

*My own editing*

*Source: The Author's own editing*

The results of performance appraisals have many consequences. In both positive and negative terms, it affects, among other things, salary, bonuses, training and promotion opportunities, as well as performance targets for the following period. Results-oriented appraisal is an important feedback for the employee. It is not the concept of performance itself that is new in the public sector, but rather how it is measured. What to measure? How do we measure education performance? By student outcomes, enrolment indicators, etc.? For example, a civil servant performs well if he or she meets deadlines, deals with customers' problems impartially, is efficient, economical, etc. Performance also includes other data such as the number of accidents, absenteeism, punctuality, etc. However, it is now accepted that it is important to set precise performance targets for employees in the public sector and to monitor their performance.

The law no. CXXI of 2006., which - in Hungary - provides the legal basis for the performance evaluation system of civil servants (Wolters Kluwer, 2019), as well as Government Decree 301/2006 (23.12.2006) on the rules for performance evaluation and rewarding of civil servants, which aims to build an efficient and effective, service-oriented, customer-focused state are the basis of the performance evaluation system (PER). It clarifies the expectations civil servants need to meet, identifies individual performance and establishes an incentive system to match it. In doing so, it increases open and cooperative working relationships and the level of satisfaction of civil servants.

This could be facilitated by the so-called 360-degree appraisal method, which, although time-consuming, involves few subjective elements and is used by many companies today. By choosing the right IT solutions, the 360° method, not only offers the best practice, but can also be customized. Everything from running a simple performance evaluation through an agile project evaluation to an anonymous management evaluation is available.

The idea is that a person is appraised not only by his/her boss but by all (or part of all) those with whom he/she has a working relationship. The appraisals received are then used by the line manager and/or the HR department to compile an

annual appraisal, which is discussed with the employee. This thorough and highly objective performance appraisal technique takes a lot of time (especially at company level), but it is worthwhile because it evaluates many aspects, answers many questions and is virtually untamper-proof. It also provides certainty and clarity for those being evaluated.

There are many publications dealing with the various areas and possibilities of controlling, which today must be an integral part of the daily life of a modern company. The world economy is moving forward amidst many challenges, with the powerful help of IT, while the changing world order, scarcity of raw materials, local wars and epidemics are presenting ever new challenges. Now, it is in this uncertain and ever-changing landscape that controlling performs its planning function, providing a comprehensive view of the decision making process, helping managers to make informed decisions. It is precisely this planning system that has been overturned in the last few years. We have accepted the version of long-term decisions being made beyond the year, and short-term decisions being made within the year, when new challenges such as epidemics, changes in the product structure of industry, or supply chain disruptions due to global raw material shortages emerged.

This completely rewrote the controlling calendar. We draw conclusions on a monthly basis until the quarterly decisions are taken, and in parallel we rewrite and adjust our expectations and options for the year.

### **Adapting the controlling organisation to the new situation**

As regards the preparatory activities, it is important to mention that other departments are also involved in this work, such as portfolio management and human resources.

The portfolio area helps to prepare in a standardised way the management decisions that the different areas of the company want to achieve in management. The human resources area does not only exercise control over its own activities, but also tries to coordinate this task by focusing on performance measurement for the whole organisation. My own experience suggests that organisational managers are more likely to produce business-case material, plans and concepts than to assess the actual performance of colleagues under their own management.

Yet let's separate what performance evaluation means from the point of view of employees, and what other economic performance is the subject of evaluations and measurements that controlling can carry out. From other economic indicators, such as various calculations of the return on planned investments, or savings on operational costs, there are many measurement possibilities to assess real performance. All this can be expressed in numbers, values and amounts of money, for which economic IT offers a number of new methods. These BI solutions present results, ratios and trends in a very attractive way, thus contributing to the efficient monitoring and controlling of the business, not to mention the fact that they are communicated in an easy and understandable way to decision-makers for a correct analysis of the situation.

### **Better late, than never to analyse**

During the first year of the epidemic, I worked as a consultant or project manager in two different organisations. One of them was in the transport and logistics sector, where we were working with POWER BI on a daily basis, having already learned its mysteries. The other large company, which is state-owned, was just starting

to implement this system, so the setup, interpretation and training that went with it was a major task for my colleagues. Why is this interesting? It is to give a sense that every company that wants to do business today is strengthening the analytical and controlling area, whatever part of the company it is. In the context of management decision making, decision makers want to see exact numbers and trends. And making decisions, for better or worse, is now up to business analysts. If you look at a project, not even a good chart is enough, you have to be able to win over the leaders, because it is trust and belief that will vote for implementation, that will allow you to get going.

Analysis, the analytics area, while not a decision making function, has a significant value-adding role as a management decision support organisation within today's corporate hierarchy.

For example, when assessing different projects, portfolio management helps to ensure that the company does not start a project or devote resources to a requirement that does not bring business benefits or value to the company. It is worth mentioning here that possible organisational turnover is not good in these cases, as in the end there will not be the right person who was involved in the process from the beginning, making the implementation opaque and costly.

Analysis in itself, whether it concerns requirements or methodology, is not a magic bullet, so quality data is needed alongside good experts. From practice comes the statistical adage that if bad data go in, bad results come out. In many cases, you literally have to put together from little mock-ups and cubes what should go into the report.

I have also received on more than one occasion data from various areas that was unsuitable both for data integration and for independent presentation in a strategic document preparing or supporting a decision.

I used to say that administration is always very important. If the business is not going well, - sooner or later you will be asked why it is not going well - so it has to be documented. And if it does, it is because we will not be able to keep track of who we promised what, where we are at a particular moment. So it makes a difference what we record, what we monitor, what we summarise and, above all, in what context and with what opinions we send this data, in other words, it is the context that matters. *"In turbulent environments, value analysis should be used for important and complex problems!"* reads the book *Decision Support Accounting - Clear and Entertaining*, by Ágnes Laáb. (Laáb, 2016)

This is where the Business Analyst position, so sought after today, comes in, able to use and apply snippets of data to produce a complete, forward-looking material. If you look at the job advertisements, more and more companies are looking for business analysts, in different industries, in different fields.

And business IT has seized the opportunity, as several serious software companies have entered the market with products that look *"out of the box"* but can be tailored to the desired profile, helping companies to understand the realities and make decisions.

With these useful tools, we can see the time and cost constraints on projects, adhere to them, or even intervene in time if periodic reports show deviations from plans.

## Conclusion

The dimensions of KPI performance indicators that underpin organisational and strategic effectiveness are defined by the human digitalisation systems that are part

of Industry 4.0, which support both evaluation and controlling tasks. They can be used to draw all the conclusions and prepare all the decisions that are now an indispensable part of an organisation’s human resource management and planning functions.

In conclusion, the existence of adequate information and information systems will become a key issue for the survival of the company and market shares in the future, including the evaluation of human resources management and, within it, the performance of individuals, whether public or private, in order to be able to compete in the same market conditions.

Table 3: Company benchmarking – HR controlling

Company benchmarking - HR controlling*								
	Ownership	Legal form	Staff	Main activity	ERP	HR modul	HR partner	HR monitoring
1	private	Co.Ltd	150	car dealer	yes	“Island”	no	no
2	private	Co.Ltd	10	factory owned car importer			no	
3	state-owned	Inc. State-o.	37000	railway			yes	
4	state	State admin	1500	real estate, logistics, fleet			no	
5	private (stock ex)	Co.Pte	7000	logistics, fleet			yes	
6	state-owned	Inc. State-o.	1700	lottery			yes	yes

\*my own experiences in the last 8 years

Source: The Author’s own experience

The need to measure the performance of public service provision and of state-owned enterprises and economic organisations must be an element of the system and must take into account both efficiency and effectiveness. The performance of the public sector must be measured on an ongoing basis to ensure that the objectives set by economic policy and government are well prepared and justified, that the achievement of the objectives can be measured, and that the means of ensuring the conditions can be adjusted if necessary to achieve the expected results.

The need for performance measurement is also underpinned by the fact that measuring government performance enables decision-makers to produce evidence-based background material and impact assessments, as indicated by indicators, which measure, analyse and present the dynamics of change over time, thus providing a basis for decision-making.

The two main factors analysed in relation to business performance are efficiency and economy. Many other performance indicators can be derived from these two factors. The performance of an organisation is the sum of the performance of its employees, so measuring the performance of individual employees is essential to ensure effective operation.

## Bibliography

1. Babovic M. (2013) IKEA HRM [online] [cit: 2021. 04. 03.]
2. Belyó P. (2019) A HR controlling feladata, képletei [online] [cit: 2021. 04. 04.]
3. Chikán A. (2005, 2008, 2009, 2017) Vállalatgazdaságtan, Közgazdasági és Jogi Kiadó, Aula Kiadó
4. Erdei E. (2019) Az Ipar 4.0 fejlődése, használata és kihívásai napjainkban, Acta Carolus Robertus, 2019. 9 (1) pp 49 – 63, [online] [cit: 2022. 03. 02.] DOI: 10.33032/acr.2019.9.1.49
5. Felméry Z. (2015/1) Megkövetelt teljesítmény? Közgazdász Fórum OSZK [online] [cit: 2021. 02. 12.]
6. Gonda Gy. (2019) A teljesítmény, az értékelés, mérése – technikák, Az Üzlet [online] [cit: 2021. 02. 12.]
7. Hegedűs Sz. – Molnár P. (2019) Közüzemi vállalatok gazdálkodása NKE [online] [cit: 2021.11. 28.]
8. Horvath P. – Partners (2015) Controlling, Út egy hatékony controllingrendszerhez Budapest, Wolter Kluwer Kiadó ISBN 978 963 224 940 7
9. Karoliny M.né, – Poór J.(2010) Emberi erőforrás menedzsment kézikönyv 5. átdolgozott kiadás Budapest, CompLex Kiadó
10. Laáb Á. (2016) – Számviteli ismeretek – Érthetően, szórakoztatóan, Wolters Kluwer Budapest, ISBN / 9789632955889
11. Möller K. – Schäffer U. – Verbeeten F. (2020) Digitalization in management accounting and control: Journal of Management Control 31:1-8[online] [cit: 2022. 02. 21.]
12. Musiszinszki Z. (2012). Controlling alapjai. Oktatási segédlet. Miskolc: Miskolci Egyetem. [cit. 2022.10.15]
13. Nagy J. (2019) – Vezetéstudomány / Budapest Management Review L. ÉVF. 2019. 1. szám/ ISSN 0133- 0179 DOI: 10.14267/ [online] [cit: 2021. 11. 28.]
14. Németh E.- Szikszainé Király M. (2020) Állami Számvevőszék Elemzés Budapest [online] [cit: 2021. 02. 12.]
15. Poór J. (2016) Menedzsment-tanácsadási kézikönyv 4. bővített, átdolgozott kiadás Akadémiai Kiadó Budapest
16. Ross, J. W., Beath, C. M., & Sebastian, I. M. (2017). How to develop a great digital strategy. MIT Sloan Management Review, 58(2), 7[cit: 2022. 02. 03.]
17. Rüssmann, M. - Lorenz, M. - Gerbert, P. - Waldner, M. - Justus, J. - Engel, P. - Harnisch, M. (2015): Industry 4.0: The future of productivity and growth in manufacturing industries. Boston Consulting Group, 9. [cit.: 2017.07.19]
18. Schäffer, U., & Weber, J. (2018b). Der Controller verliert die Kontrolle. Frankfurter Allgemeine Zeitung, 16, March 26. [cit: 2022. 10. 15.]
19. Sütő D. (2017). Controlling fejlődéstörténete, helye és szerepe a gazdálkodó szervezetekben. International Journal of Engineering and Management Sciences (IJEMS) Vol. 2. (2017). No. 4. DOI: 10.21791/IJEMS.2017.4.37 [cit: 2022. 10. 15.]
20. Szóke B. – Tóth E.I. – Vanó P. (2022) The links between Human Resources Management and corporate and Human Resources strategy Acta Carolus Robertus, 12(1),85–95. DOI 10.33032/acr.2878
21. Vakhil P. (2022) Újraosztják a lapokat a világon: itt vannak Magyarország erősségei és gyengeségei, Portfólió [online] [cit: 2022. 02. 03.]
22. Veresné, Somosi M. – Högya O. (2011) A teljesítménymenedzsment, Digitális Tankönyvtár [online] [cit: 2021. 02. 12.]

23. Wolters Kluwer jogtár 89/2019 (IV.23) sz. Kormányrendelet [online] [cit: 2021. 02. 12.]
24. CreativeHRM [online] [cit: 2021. 04. 03.]
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