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Human Resource Assessment and Sustainability - Investigating the Measurability of Human Activity

Sustainability, as a complex set of goals, has many possible interpretations and approaches the 17 Sustainable Development Goals (SDGs) set out in the document have 169 sub-goals, of which Goal 10 is "reduced inequalities". There are 10 sub-goals linked to this goal, the first of which is aimed at reducing income inequality. Employers have direct responsibility and considerable leeway to develop fair wage systems. For HR professionals, the practical implementation of this is a major task, and their knowledge can therefore be a key factor in achieving SDG 10. In our research, we sought to answer the question of what future HR professionals know about the accounting measurability of human performance and how they assess its monetary valuation. In our view, HR professionals who are aware of the issues of human performance measurement and recognize the fundamental problems can play a significant role in meeting SDG 10. In our primary research, we surveyed 448 undergraduate human resources students from early December 2022 to the end of January 2023 using an online questionnaire. The questionnaire contains closed and open questions in addition to demographic data. Our research shows that the value of human activity is not well expressed in monetary terms, which implies that wages and the value of work are not closely related.

Keywords: sustainability, inequality, human resources

JEL-codes: D63, J01, J70

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Introduction

The social and environmental issues of sustainability are closely related to planning (Cruz and Tan, 2022), methodological (Sharaai et al., 2022), decision-making (Tian et al., 2022), and company analysis perspectives (Radácsi, 2021). Among the social issues of sustainability, the role of communities is also prominent (Basri et al., 2022).

Work organization can be a key factor in sustainability efforts, and its absence, even with good technical solutions, can lead to failure (Al Zarooni et al., 2022). Several studies have addressed the question of how university students perceive sustainability issues, how involved they are in the circular economy (Szigeti et al., 2023), or how they relate to sustainable business models (Csutora et al., 2022).

One of the key questions related to sustainability is the issue of equality - inequality, which is also included in the UN Sustainable Development Goals (SDGs) (Szennay et al., 2019). One important manifestation of inequality is the disparity in wages and incomes. One of the fundamental issues of ecological economics is the measurability of human activity in monetary terms, the conflict of values (Kocsis, 2001).

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Our research focuses on the question of how well-informed university students are about the interpretation and quantifiability of human capital, whether they agree with the practice of valuing people and human activity in monetary terms, and how much they see the contradictions. In our research, we interviewed undergraduate students enrolled in human resources studies. We hypothesize that students are aware of the basics of both HR and accounting and can make a nuanced assessment of the potential and limitations of these disciplines. The study is also of major importance from a societal perspective, as future HR professionals can have a significant impact on the achievement of sustainability goals to tackle inequalities.

Literature review

In the modern approach to human capital at companies, the concept of human capital and the strategic approach to human resources have become increasingly common over the last two decades.

Understanding human resources

The concept of human capital from the economic perspective derives historically from Beer and colleagues (1984), who argued that people should be seen as corporate assets rather than a cost and that they can form the basis of a company's competitive advantage by making the best use of their capabilities.

The term human resources has its roots in management and represents how people are treated to enable the effective utilization of their potential. The recognition that people create value for the company through their knowledge and ability to work has required a new approach to managing people.

In contrast to the previous administrative and resource-based approach to human resources, the current one emphasizes its strategic and value-creating nature. In effect, the competitive advantage of companies derives from how they acquire, develop, and use human capital in a way that is specific to them.

In contrast to competitive advantage, the inadequate management of human capital is a risk for the firm, i.e. losing a significant part of its wealth (Amit and Belcourt, 1999).

Strategic human resource management is an integrated approach that is an integral part of the implementation of the business strategy and should be treated as a critical factor in which both cost-effectiveness and efficiency are considered. It refers to policies, processes, and methods by which a company gains a competitive advantage (Bakacsi et al., 2006).

In research related to human resource management (HRM), several authors pointed out that HRM plays a key role in environmental and social sustainability beyond economic performance (Csehné Papp et al., 2021).

Considering the literature, human resource management can also be related to the relatively new field of controlling, human controlling. In the 21st century, research on human controlling and the integration of human resource management and controlling systems has come to the forefront of professional interest.

In the study of different aspects of human resource management, the methods of controlling and performance evaluation have also been examined, and the links and applications between them have been explored (Karoliny and Poór, 2010).

For modern organizations, the analysis of the impact of human controlling tools on effective management is an area of research (Bakacsi, 2004).

The role of human controlling and its application in corporate strategy also becomes important in the context of the concept of strategic human resource management (Bakacsi et al., 2006).

Human controlling can be seen as a strategic management tool, the basic purpose of which is to collect, analyze and evaluate human resource information to support the achievement of organizational goals.

Human controlling goes beyond traditional human resource (HR) functions to integrate HR into strategic and financial planning and management. Human controlling aims to ensure the efficient and effective use of human capital, to provide the skills and knowledge needed to achieve organizational goals, to identify and manage human resource risks, and to improve the cost-effectiveness of HR activities, employee engagement, and retention.

According to Kissné's (2010) online article *Human Capital Management in Practice* on hrportal.hu, one of the main tasks of human capital management is planning, which involves assessing human capital needs against organizational objectives and developing human capital development plans.

After collecting the data on human resources, the analysis process follows. The analysis may include labor costs (wage demand), wage levels (wage ratio) and wage profitability (wage efficiency), or even employee satisfaction. By calculating the wage intensity, analysts look at the share of wage costs in the cost structure, i.e. in the total use of resources.

Wage level refers to the wage cost per 100 cents of sales or production value, while wage profitability measures the reciprocal of the previous measure, the sales or production value that can be generated per unit of wage. The latter indicator, i.e. wage efficiency, can be analyzed in more detail by breaking it down into labor productivity and average wages, and by establishing further relationships.

The next step is reporting, i.e. communicating human resources information to management, followed by continuous monitoring of the implementation of human capital development plans and the implementation of any interventions.

To achieve its tasks, human controlling also involves the planning and control of human resources costs, and with the indicators used to measure the effectiveness of human capital (e.g. staff productivity, turnover rate). Benchmarking, i.e. comparing human resource practices with other organizations, is also important, as is the use of feedback systems to measure employee satisfaction and engagement (Kissné, 2010).

The applicability of human controlling has also been addressed by research that focus on the analysis of the role of the controller and the competences required. Indeed, labor market surveys have revealed links between the main tasks of controlling employees and the skills required for successful performance (Musinszki and Nácsa, 2021).

In his study, Drusza (2018) concludes that strategic EEM is a key issue for national security organizations, too. The application of appropriate EEM strategies can significantly contribute to increasing the efficiency and effectiveness of organizations and to the successful implementation of national security missions.

The author points out that recruitment and selection are key elements of strategic EEM in the national security domain, as finding and employing people with the right skills and commitment is of paramount importance. Continuous training and development is also a key factor in ensuring that staff are up to date with the latest technologies and methods. Regular performance evaluations and the provision of appropriate motivation schemes are also essential for effective operations. Security requirements and building trust are particularly important in the

In the regional economic approach to human resource management, the assessment of the human potential of municipalities can be highlighted.

Lipták (2017) analyzed the state of human resources in Hungarian municipalities through several indicators and their impact on competitiveness and sustainable development. In line with the socio-economic inequality dimensions, regions with a developed central location and large cities show much better results than peripheral rural areas, which often face human resource problems. Local authorities, the education system, and training provision also play an important role in developing human potential to increase the population retention capacity of a municipality.

In their study, Lipták and Horváth (2018) examined the role of social innovations in employment policy and rural development. The authors emphasized that social innovations are key factors in the development of local communities and to fostering economic growth. They pointed out that these innovations contribute to increasing employment opportunities and making better use of local resources.

The study focused in particular on rural development, where social innovations can play an important role in the catching up of peripheral regions. The authors show how involving local communities and supporting local initiatives can lead to sustainable development. They also highlighted the importance of community-based enterprises and local cooperation in rural development.

Examples of practical applications of social innovations and their success factors are analyzed. They found that social innovations increase labor market participation and reduce social inequalities. The authors made suggestions for making employment policies and rural development programs more effective through social innovation. Finally, they concluded that social innovations are essential in modern employment and rural development strategies.

Csugány and Tánczos (2018) examined methods for measuring the role of human resources in technological development. The authors emphasized that technological development has a significant impact on the labor market and human resource management. The paper also emphasized that the effective introduction and use of technological innovations depends to a large extent on a well-trained and flexible workforce.

Csugány and Tánczos analyzed methods for measuring the contribution of human resources, with a special focus on the adaptation of new technologies and productivity growth. They pointed out that traditional measurement methods often fail to take into account the human aspects of technological development, and that new, more comprehensive approaches are needed. The measurement models presented in this study help to identify key areas where human resource development has the greatest impact on technological progress.

The authors formulated how human resource measurement can be integrated into corporate strategies to better support technological innovation. They also suggested that continuous training and workforce development are essential to maintain competitiveness in a rapidly changing technological environment. Overall, it can be concluded that effective management and measurement of human resources are key factors to the technological development and long-term success of companies.

Human capital includes the knowledge and experience that employees within an organization have acquired through education, life experience, or work experience. Human capital can be increased through training and development. Indeed, examples of companies demonstrate the return on investment in human capital. Practices such as employment for an indefinite period, job rotation, training, and development, or programs to promote corporate integration are effective (Johnson, 1988 in Hitt et al., 1994).

At the same time, the low power distance and the focus on employee development can also draw attention to the importance of corporate culture for human capital (Armstrong, 2018). A key area for reconciling individual and organizational interests is long-term planning, whereby investing in employees provides the company with the knowledge and skills it needs.

The strategic view of human resources has sought to identify cost-effectiveness and efficiency from the outset, as it has become expected to account for its contribution to the strategic goals of the company. At the same time, measuring intangible strategic resources such as human capital is a major challenge. The inclusion of sustainability considerations in financial and corporate reporting contributes to ensuring that human capital is given proper weight in corporate decision-making (Györi and Csillag, 2019).

Especially in knowledge-based industries, there is an increasing need to properly assess these critical assets and to take them into account in the assessment of corporate wealth (Harangozó, 2020).

Human resources in accounting

Even though human resources are part of a corporation's resources, they cannot be presented in accounting documents in the same way as other assets. Following the logic of asset classification, human resources as human assets should be included in intangible assets, i.e. intangible assets serving an activity for more than one year. However, in the balance sheet, the balance sheet lines related to the measurement of the value of human resources have not been separated. Human resources are becoming increasingly valuable, which is why they are the focus of more scientific research. This is explained by the growing importance of human-generated value-based activities in socio-economic life. "Today, the only truly valuable resource for individuals and society is knowledge. With knowledge, everything else can be created. Knowledge has become a means of production" (Gyökér, 2004).

This is also proven by the fact that business-modeling tools all take human capital into account as an essential part of corporate value creation (Gyóri et al., 2021).

Both English and German literature also discuss human capital (Humankapital), human resources (human resource), and human assets (Humanvermögen). In most of the literature, human resources and human capital appear as synonymous concepts. According to Laáb (2006), however, the source of human capital is intellectual capital, and intellectual capital is understood to be an asset within the balance sheet. Boda (2008) distinguishes between visible and invisible assets, according to whether or not it is a specific item of assets that can be measured by accounting.

Over the past decades, a trend has emerged of researchers - Edvinsson and Malone (1997), Sveiby (2001), Stewart (2002) - who are able to measure invisible assets.

There are many names for invisible assets, but there is a huge overlap in terms of content. Common to all the works is that, in dealing with invisible assets, they also consider their quantification, the basic philosophy is based on the determination of the difference between the market value of the firm and the total value of the assets (balance sheet total) as recognized in the accounts. As human capital is not tangible in nature, but some intangible assets are included in the balance sheet, Bacsur and Boda (2006) also draw attention to the importance of the elimination of durable intangible assets.

Material and methods

In our primary research, we surveyed 410 undergraduate human resources students using an online questionnaire that was available from early December 2022 until the end of January 2023. The questionnaire contained mainly closed questions, including multiple-choice, tick-box, and Likert-scale questions. At the end of the questionnaire, students were also allowed to express their views on the topic. The composition of the sample by gender, permanent residence, and accounting knowledge is shown in the following table (*Table 1*).

Table 1: The composition of the sample

Gender		Accounting skills		Permanent residence							
Male	Female	basics of Account	Human management	Buda-pest	Pest	Central Trans-danubia	West Trans-danubia	South Trans-danubia	North Hungary	Northern Great Plain	Southern Great Plain
62	348	227	183	143	106	48	19	6	34	20	31

Source: Own calculation

85% of the students who completed the questionnaire were women, which can be explained by the fact, that a similar gender gap in favor of women can be also observed for the core population of human resources undergraduates. 45% of the respondents have a background in human resource management accounting, i.e. they are in their fifth semester, while more than half of the survey respondents are in their lower semester and have only studied the basics of accounting. In the composition by place of residence, 3 respondents were not included in the table because they are foreign students. By region, more than a third of respondents live in Budapest and a quarter in Pest County. More than 10% of respondents live in Central Transdanubia, 8% in Northern Hungary, and 8% in the Southern Great Plain. The fewest respondents live in Western and Southern Transdanubia.

In this paper, we examine the Likert scale statements from the survey responses. Each statement can be rated from 1 to 6, so for example, a 1 represents 'strongly disagree' and a 6 represents 'strongly agree'. Accordingly, the responses can be ranked, but the "distance" between them cannot be explained and therefore the strength of the interval scale is not met. Kendall's tau-b coefficient was used to determine the strength and direction of the association between two variables measured on the ordinal scale. The calculation can be considered a non-parametric alternative to Pearson's correlation. For those statements where there is a significant association stronger than the mean, we examined the positional measures (mode and median) to assess its content.

The statements of the questionnaire:

- 1) Short-term goals to maximize profits often mean that human resource development is often sidelined (*PROFIT*).
- 2) In the income statement using the total cost method, all income, revenue, costs, and expenses, except depreciation, can be linked to human resources (*AMORTIZATION*).
- 3) Expenditure on human resources does not only have an impact on the costs of the current year but in many cases serves the interests of the enterprise in the longer term (*EXPENDITURE*).
- 4) The human subjectivity of competitiveness factors makes it easy to measure human capital (*COMPETITIVENESS*).
- 5) The biggest challenge for companies is to find and retain the right people for certain jobs (*CHALLENGE*).
- 6) It would provide significant additional information if firms' annual reports could provide details on the trends of their human resources (turnover, absenteeism, training, etc.) (*INFORMATION*).
- 7) People who are highly paid do important work for society (*HIGH SALARY*).
- 8) Those who earn little are worth little (*LOW SALARY*).
- 9) The value of a person can be expressed in monetary terms (*VALUE 1*).
- 10) A person's value is the discounted sum of his or her lifetime earnings (*VALUE 2*).
- 11) At university, you should acquire skills that are immediately useful in the labor market (*SKILLS*).
- 12) Knowledge that does not pay in the labor market has no value (*VALUE 3*).
- 13) The value of all human activity can be expressed in monetary terms (*VALUE 4*).
- 14) Time spent with friends is worthless (*VALUE 5*).

The statements are listed with their abbreviations in brackets in Table 2.

Results

In the correlation matrix (*Table 2*) we have marked the ** statistically significant relationships, highlighting those stronger than medium (0.4). In below table

** = Correlation is significant at the 0.01 level (2-tailed),

* = Correlation is significant at the 0.05 level (2-tailed),

a = Correlation Coefficient,

b = Sig. (2-tailed).

Table 2: Correlation matrix

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
PROFIT	a	1.000	.151**	.280**	-.229**	.245**	-.288**	-0.056	-.216**	-.105*	-.186**	0.058	-.161**	-.147**	-.143**
	b		0.000	0.000	0.000	0.000	0.000	0.171	0.000	0.013	0.000	0.153	0.000	0.000	0.001
AMORTI-ZATION	a	.151**	1.000	.135**	-0.069	.161**	-.153**	-0.053	-.164**	-.104*	-0.039	-0.012	-.093*	-0.068	-.087*
	b	0.000		0.001	0.091	0.000	0.000	0.192	0.000	0.013	0.350	0.764	0.024	0.096	0.045
EXPENDI-TURE	a	-.280**	.135**	1.000	-.344**	.224**	-.289**	-.197**	-.261**	-.155**	-.267**	.081*	-.172**	-.124**	-.157**
	b	0.000	0.001		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.043	0.000	0.002	0.000
COMPETI-TIVENESS	a	-.229**	-0.069	-.344**	1.000	-.184**	-.198**	.222**	-.264**	.190**	.273**	-0.039	.247**	.139**	.199**
	b	0.000	0.091	0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.329	0.000	0.001	0.000
CHALLENGE	a	.245**	.161**	.224**	-.184**	1.000	.284**	-.136**	-.211**	-.123**	-.169**	.138**	-.176**	-.081*	-.179**
	b	0.000	0.000	0.000	0.000		0.000	0.001	0.000	0.003	0.000	0.001	0.000	0.046	0.000
INFORMA-TION	a	.288**	.153**	.289**	-.198**	.284**	1.000	-.174**	-.223**	-.160**	-.211**	.099*	-.186**	-.105**	-.232**
	b	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	0.013	0.000	0.010	0.000
HIGH SALARY	a	-0.056	-0.053	-.197**	.222**	-.136**	-.174**	1.000	.402**	.282**	.298**	0.065	.271**	.188**	.221**
	b	0.171	0.192	0.000	0.000	0.001	0.000		0.000	0.000	0.000	0.105	0.000	0.000	0.000
LOW SALARY	a	-.216**	-.164**	-.261**	-.264**	-.211**	-.223**	.402**	1.000	.528**	.449**	-0.067	.465**	.351**	.486**
	b	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.110	0.000	0.000	0.000	
VALUE 1	a	-.105*	-.104*	-.155**	.190**	-.123**	-.160**	.282**	.528**	1.000	.500**	0.028	.379**	.429**	.387**
	b	0.013	0.013	0.000	0.000	0.003	0.000	0.000	0.000		0.000	0.492	0.000	0.000	0.000
VALUE 2	a	-.186**	-0.039	-.267**	.273**	-.169**	-.211**	.298**	.449**	.500**	1.000	-0.002	.366**	.416**	.367**
	b	0.000	0.350	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.956	0.000	0.000	0.000
SKILLS	a	0.058	-0.012	.081*	-0.039	.138**	.099*	0.065	-0.067	0.028	-0.002	1.000	0.067	0.060	-0.063
	b	0.153	0.764	0.043	0.329	0.0001	0.013	0.105	0.110	0.492	0.956		0.097	0.132	0.137
VALUE 3	a	-.161**	-.093*	-.172**	.247**	-.176**	-.186**	.271**	.465**	.379**	.366**	0.067	1.000	.356**	.337**
	b	0.000	0.024	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.097		0.000	0.000
VALUE 4	a	-.147**	-0.068	-.124**	-.139**	-.081*	-.105**	-.188**	.351**	.429**	.416**	0.060	.356**	1.000	.322**
	b	0.000	0.096	0.002	0.001	0.046	0.010	0.000	0.000	0.000	0.000	0.132	0.000		0.000
VALUE 5	a	-.143**	-.087*	-.157**	.199**	-.179**	-.232**	.221**	.486**	.387**	.367**	-0.063	.337**	.322**	1.000
	b	0.001	0.045	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.137	0.000	0.000	

Source: Own calculation

Table 2 shows that there is a stronger than significant, medium statistical relationship between the pairwise statements in the following table (Table 3).

Table 3: Statements with a significant relationship stronger than medium

Statements	Statements
Who earns little is worth little (8)	People who are paid a high salary do important work for society (7) The value of a person can be expressed in monetary terms. (9) A person's value is the discounted sum of his lifetime earnings. (10) Knowledge that is not paid for in the labor market has no value. (12) Time spent with friends is worthless. (14)
The value of a person can be expressed in monetary terms. (9)	The value of a person is the discounted sum of his or her lifetime earnings. (10) The value of all human activities can be expressed in monetary terms. (13)
The value of a person is the discounted sum of his lifetime earnings. (10)	The value of all human activities can be expressed in monetary terms. (13)

Source: Own calculation

The below table shows that students disagreed with the content of the statements with a statistically significant correlation stronger than medium (Table 4).

Table 4: Positional averages

Statement	Mode	Median
PROFIT	5	5
AMORTIZATION	4	4
EXPENDITURE	5	5
COMPETITIVENESS	2	3
CHALLENGE	5	5
INFORMATION	5	5
HIGH SALARY	2	2
LOW SALARY	1	1
VALUE 1	1	1
VALUE 2	1	2
SKILLS	4	4
VALUE 3	1	2
VALUE 4	1	2
VALUE 5	1	1

Source: Own calculation

Conclusions and Discussion

The majority of respondents to the questionnaire survey were female students of human resources who already had some basic accounting knowledge but had not yet studied human resource management accounting. Although gender and accounting competencies may be a good representation of the population, we consider the proportion of students living in neighboring regions to be low in terms of residential composition and therefore do not consider the sample to be representative. However, the high number of respondents means that the survey can shed light on correlations that could form the basis for improvements in educational methodology. It is therefore a special corporate resource that differs significantly from other inputs, which also has a major impact on accounting measurability and the design of the information system (management of invisible assets, competency-based pay policy).

According to the results of the research, undergraduate students in human resources fundamentally disagree with the statement that the value of people and human activity can be well expressed in monetary terms. They see the problem that wages and the value of a job are not necessarily linked and that skills are not only important if they can be immediately used in the labor market. In the next phase of our research, we would like to compare our results with the views of other groups of students.

We plan to use the results directly in educational development and training design, reinforcing the idea that sustainability in a deeper sense is not based on uniform actions and slogans, but is inseparable from responsible practice in all areas of life.

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