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HR ONBOARDING: THE IMPACT OF EMPLOYEE ENGAGEMENT ON THE PERFORMANCE OF NEW HIRES IN THE FIRST PERIOD OF WORK

Onboarding, although present in management science for several decades, still requires in-depth research, especially in the context of its impact on economic and personnel indicators. The purpose of this article is to examine the links between the quality of onboarding and employee engagement and economic measures in large Polish companies. A regression analysis conducted on survey results showed that onboarding affects indicators such as absenteeism, productivity, and recruitment costs. The limitations of the study are sample selection and sample size, but the results provide important practical and theoretical conclusions. This article brings new insights into the economic evaluation of adaptation processes, highlighting their potential benefits for organizational efficiency and employee comfort.

Keywords: onboarding, engagement, HRM, HR indicators, correlation.

1. INTRODUCTION

HR onboarding can be defined as "a time-bound, purposeful and concise process of functionally introducing a newly hired person to the organization, socializing him or her as quickly as possible, familiarizing them with the company's mission, vision, culture and history, as well as familiarizing him or her with assigned tasks and expected behaviors, which continues from the moment of the mutual hiring decision, with the goal of building a positive experience associated with the company" (Jankowski, 2024b). As Iwańczuk M. suggests, one of the goals of onboarding is to build commitment and accelerate the achievement of full productivity of new hires (Iwańczuk, 2008). The fact that HR onboarding programs are the basis for building employee commitment from the first days of their work in the organization is also emphasized by more recent English-language academic sources either directly (Davila, Pina-Ramirez, 2018) or indirectly (Bell, 2021; Badshah, Bulut, 2020). In turn, engagement itself has been defined by the Institute for Employment Studies as:

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> A positive attitude of employees toward the organization and its values. An engaged employee is aware of the business context, and works with colleagues to improve work performance for the profit of the organization. The organization must work to develop and sustain commitment, which requires a two-way relationship between employer and employee (Szafarska, 2023).

Based on the above, it can be concluded that onboarding plays a moderating role for engagement in human resources (HR) processes in the first stage of a new hire's work. Exploring the topic of engagement in a scientific context, one can reach its component parts, such as vigor, dedication to work and absorption in work (Kinowska, 2021), as well as its positive effects found in organizations. These include higher productivity, satisfaction, increased employee loyalty and lower staff turnover (Kaczkowska-Serafińska, 2022). However, in the context of the employee adaptation and deployment process itself, it is important to emphasize that we are talking about emotional engagement (Ober, Karwot, 2017), as well as cognitive and behavioral engagement (Wach-Kąkolewicz, Shelest, 2014), which are crucial during the first period of work in a new organization. In order to find preliminary links between engagement and quantifiable economic and personnel indicators, a literature search[2] of the subject was performed from 17.03.2024 to 23.03.2024 using the scientific databases Google Scholar, Web of Science and SCOPUS, a summary of which is presented in Table 1.

A review of the literature showed that the majority (73.9%) of sources treating indicators, describing engagement, focus on "soft" (HR), hard to present in numerical form evaluation criteria, such as flexibility, enjoyment of work or relationship with the supervisor. On the other hand, that part of the academic texts that cited "hard", economic metrics[3] tended to show what, rather than how, correlates with employee engagement, and the indicators themselves were repetitive (mainly: productivity, efficiency, turnover, retention, employment costs, absenteeism). It is also worth mentioning that in each of the sources, the topics discussed in this paper were only side threads, not the main area of research. This raises the question of whether the indicators described above are the only

[2] The study adopted a literature review with six stages (Lenart-Gansiniec, 2021), which can be briefly described as follows:

1. Selection of research questions:
   - What are the main indicators of engagement in the context of the first period of employment?
   - What is the relevance of engagement from work to employee effectiveness and performance?
   - How can HR onboarding affect the engagement of newly hired employees?
2. Defining the purpose of the review: The purpose of the review is to find links between economic HR indicators (such as turnover) and employee engagement.
3. Choosing the type of review: a systematic literature review to find specific links between the variables in question.
4. Selection of keywords: employee, engagement, indicator.
5. Selection of literature eligibility criteria: Due to the need to reach as many texts as possible preserved in the subject matter under discussion, the only exclusions were related to the year of publication of the text (topicality: qualified 2018–2024), form of access (paid texts were excluded), relevancy (the literature should relate directly to the topic of HR processes).
6. Selection of information sources: SCOPUS, Google Scholar and Web of Science databases were selected for their easy accessibility, transparency and high level of scientific texts presented.

[3] An economic indicator [...] is a ratio of two values or a number resulting from a specific mathematical operation used in financial analysis to assess the economic performance of an organization (Jankowski, 2024a).

ones in the context of measuring employee engagement, and to what extent do they correlate with engagement itself, or further, onboarding?

Table 1. Desk research summary

Search term: employee engagement indicator (searched on 17.03.2024)	Google Scholar	Web of Science	SCOPUS	SUM
Number of scientific texts available through the search engine (limitation for 2018–2024)	17 400	275	244	17 919
Number of scientific texts analyzed (free access)	50	30	10	90
Number of indicated "soft" indicators (management field) related to the concept of engagement	13	3	1	17
Number of works containing "hard" (measurable) indicators (economics field) related to the concept of engagement	4	1	1	6

Source: own elaboration.

This line of thinking led to the current text, which poses the research questions:

1. What are the main indicators of engagement in the context of the first period of employment?
2. What is the importance of onboarding engagement for employee effectiveness and productivity?
3. How can HR onboarding affect the engagement of newly hired employees?

In order to find answers to these questions, the author uses research methods, such as a literature review, a survey, and a desk reaserch in the form of an analysis of data available on websites giving opinions to employers. Instead, the scientific hypothesis guiding this study became the statement according to which the commitment built during HR onboarding affects the personnel costs of the organization, which is reflected in the quality of measurable HR indicators.

2. METHODOLOGY

According to the theory outlined in the Introduction and according to the principles of generally accepted logic, high employee engagement should reflect positively on a company's financial performance. From a managerial point of view, however, the question should be asked: how can this be measured, and where will the translation of high engagement to the company's bottom line be seen? Theoretically, this relationship should be reflected in economic HR indicators, which are the result of HR analytics, whose task is to systematically identify and qualify the human factors that affect a company's business performance (Pszczółkowski, Michalczyk, 2020; Van den Heuvel, Bondarouk, 2016). A general theoretical model and a research model were developed to verify the thinking process presented above.

Analyzing the human resource (HR) measures described in the literature, it is possible to identify a dozen or so of the most common ones, which include the indicators listed below[4]:

- employee turnover,
- employee retention,
- admissions and dismissals,
- absenteeism,
- productivity,
- recruitment efficiency,
- recruitment costs per employee,
- job satisfaction,
- talent retention,
- involvement in company initiatives,
- investment in human capital,
- resignation,
- internal promotions,
- average length of service,
- contracts extended after probationary period,
- stability of executives,
- annual leave on request.

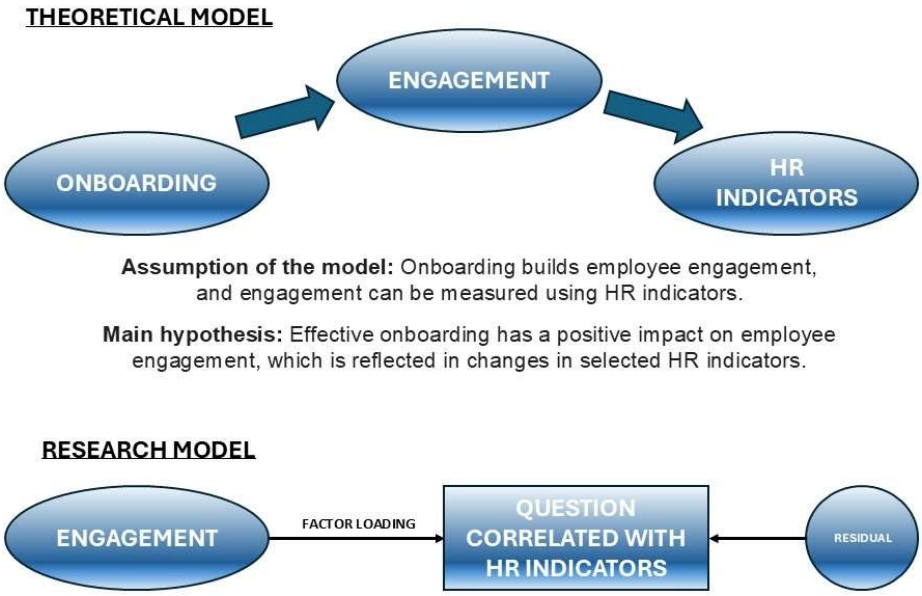


Figure 1. Framework for the study – theoretical and research model

Source: own elaboration.

[4] Indicators developed based on: (Pszczółkowski, Michalczyk, 2020; Skowron-Mielnik, Bor, 2015; (Janik, 2017; Zając, 2011), as well as based on data from https://wskaznikihr.pl/, 18.03.2024 and the author's own professional experience.

The indicators indicated were used to construct research questions for a survey conducted among a random sample of employees of various levels, distributed via LinkedIn[5] between 22.04.2024 and 05.05.2024, and 14 questions were drawn up. It should also be noted that the selection of the research sample limits the representativeness of the research results for the entire population. The metric questions asked about the respondent's age, length of service and size of the organization in which he or she currently works. The relevant research questions are presented in Table 2.

Appropriate questions (on a Likert scale): In the next section, respondents were asked how much on a scale of 1 (not at all) to 5 (very much) they agreed with the following statements.

Table 2. Research questions correlated with HR indicators

HR INDICATOR	**Likert scale research question:**
	If I am committed to working for a particular company:
employee turnover	I am not looking for a new place of employment.
retention of employees	
layoffs	
talent retention	I am able to endure temporary inconveniences without wanting to quit my job or without the so-called "silent resignation" (performing contractual minimum duties).
resignations	
absenteeism	I do not make excessive use of sick leave.
productivity	I try to work as well and as efficiently as possible.
investments in human capital	I am able to wait longer for a potential promotion/position change.
internal promotions	
average length of service (seniority)	I maintain a long tenure with one employer.
contracts extended after the probationary period	
stability of executives	
on-demand leaves per year	I do not overuse leave on demand.

[5] Link to Linkedin with the survey: https://www.linkedin.com/posts/%C5%82ukasz-jankowski-3547a2159_wp%C5%82yw-zaanga%C5%BCowania-pracownik%C3%B3w-na-wyniki-activity-7188274503615954944-qr6j?utm_source=share&utm_medium=member_desktop, 19.11.2024.
LinkedIn was chosen as the distribution medium for the survey because of the potential ease of reaching professionally credible respondents who meet basic research criteria such as age, or work status (current or past). As a platform that brings together professionals, it allows access to people who are potentially participating or have participated in onboarding processes, while also being a free and easily accessible service. However, potential biases associated with this channel such as the overrepresentation of certain industries or positions cannot be completely ruled out. However, an analysis of possible bias would require additional in-depth comparative research, which, due to the pilot nature of the study, it was decided not to perform.

Table 2 (cont.). Research questions correlated with HR indicators

HR INDICATOR	Likert scale research question:
	If I care about a particular job/would like to work at a particular workplace:
recruitment efficiency	I try to make the best possible impression during a recruitment interview.
recruitment costs per employee	
hiring	I can even apply several times for a position (the same or different) at a given company.
job satisfaction	I am more eager to come to work, and being at the workplace is not a mental burden for me.
involvement in company initiatives	I am more willing to get involved in company initiatives (charitable, social or business).

Source: own elaboration.

By the author's assumption, the questionnaire was intended to contain as few pertinent (precise) questions as possible, in order to encourage respondents to fill it out6 and obtain as many responses as possible, which, after analysis, will point the way for further in-depth scientific research on this topic.

3. RESULTS

The survey included 231 respondents, 83.98% of whom worked in organizations with large teams (Krancher et al., 2018), 61.90% classified as Generation Y, while the statistics of the seniority achieved by the respondents at the time of the survey were relatively evenly distributed among all responses.

Table 3. Compilation of responses to the question about the age of respondents

What age are you currently?	Amount of answers
18 years old – 24 years old	31
25 years old – 44 years old	143
45 years old – 59 years old	53
60 years old – 78 years old	4

Source: own elaboration.

Based on the metrics presented, it can be seen that the survey respondents are mainly aged 25–44 (143 responses) and work in large organizations employing more than 200 people (169 responses). In terms of length of service, most have work experience of more than 20 years (59 responses) or between 5 and 10 years (56 responses). The data above will be used later in the article to develop an in-depth regression analysis.

[6] "Better to have something short that gives acceptable results rather than something that produces better results but which nobody uses. Within this context, short questionnaires that produce reliable measures of usability are a desirable goal" (Cairns, 2013).

Table 4. Compilation of responses to the question on the length of service of respondents

What is your total length of service (regardless of employer)?	Amount of answers
0–5 years	42
5–10 years	56
10–15 years	41
15–20 years	33
Over 20 years	59

Source: own elaboration.

Table 5. Compilation of responses to the question about the size of the respondents' company

How large is the organization do you currently work for?	Amount of answers
Up to 10 people	20
10–50 people	17
50–200 people	25
More than 200 people	169

Source: own elaboration.

Table 6. Compilation of responses to Likert scale questions

Question / Respondents' rating on a Likert scale	1	2	3	4	5	Sum of responses "do not agree at all" and "partially disagree"	Sum of responses "fully agree" and "partially agree"
If I am committed to working for a particular company, then:							
[I am not looking for a new place of employment.]	21	33	5	67	105	54	172
[I am able to endure temporary inconveniences without wanting to resign or without so-called "quiet resignation" (performing the contractual minimum of duties).]	11	28	16	106	70	39	176
[I do not overuse sick leave.]	9	10	2	20	190	19	210
[I try to work as well and as efficiently as possible.]	4	7	7	56	157	11	213
[I am able to wait longer for a potential promotion/position change.]	13	24	24	89	81	37	170
[I maintain a long tenure with one employer.]	13	23	25	61	109	36	170

Table 6 (cont.). Compilation of responses to Likert scale questions

Question / Respondents' rating on a Likert scale	1	2	3	4	5	Sum of responses "do not agree at all" and "partially disagree"	Sum of responses "fully agree" and "partially agree"
[I do not overuse leave on demand.]	8	13	8	27	175	21	202
If I care about a particular job/want to work at a particular workplace, then							
[I try to make the best possible impression during a recruitment interview.]	3	10	4	22	192	13	214
[I can even apply for a position (same or different) at a given company several times.]	38	57	26	63	47	95	110
[I am more willing to come to work, and being in a workplace is not a mental burden for me.]	6	24	18	77	106	30	183
[I am more willing to get involved in company initiatives (charitable, social or business)].	16	30	31	75	79	46	154

Source: own elaboration.

Absolutely the highest number of "fully agree" responses was given to the questions:

- If I care about a particular job/would like to work at a particular job, then: [I try to make the best impression during the recruitment interview] – 192 responses;
- If I am committed to working at a particular company, then: [I don't overuse sick leave] – 190 responses;
- If I am committed to working at a particular company, then: [I do not excessively use leave on demand.] – 175 responses;
- If I am committed to working at a particular company, then: [I try to work as well and as efficiently as possible] – 157 responses.

The highest aggregate ratio of affirmative ("I fully agree" and "I partially agree") to negative ("I do not agree at all" and "I partially disagree") responses to the following questions:

- If I am committed to working for a company, I: [I try to work as well and as efficiently as possible] – Ratio > 19:1;
- If I care about a particular job/would like to work at a particular workplace, then: [I try to make the best impression during the recruitment interview.] – Ratio > 16:1;
- If I am committed to working at a particular company, then: [I do not overuse sick leave.] – Ratio > 11:1;
- If I am committed to working at a particular company, then: [I do not excessively use leave on demand.] – Ratio > 9:1.

While the design of the questions and their alignment with HR metrics presented in Table 2 is accurate, it can be concluded that the HR metrics on which the change in employee engagement should be most strongly reflected are:

- absenteeism,
- productivity,
- leave on demand per year,
- recruitment efficiency,
- recruitment costs per employee.

However, it should be remembered that the study group was relatively small, and the mere association of HR indicators with the proposed questions should be considered more as a proposal than as an unequivocal fact, making the study to be considered a pilot. The minimum group size calculated according to the formula cited by (Jabłońska, Sobieraj, 2013) assuming that:

- the standard error of the estimate is equal to 2%,
- standard value assumed at 1.96 (calculated on the basis of a confidence level equal to 95%),
- population size (working people) assumed at 15,148,500 people[7],

should be no less than 2,400 when examining the issue of all working people. Thus, the obtained results of the survey and their analysis only suggest a general trend and allow us to infer the direction of further research, which, in light of the evolving onboarding process and the increasing emphasis on cost reductions in companies (Neumann, 2017; Panek, 2006; Lesiak, 2014), seems to be a necessity. Regardless notwithstanding the above, in order to obtain the best possible results from the pilot study, it was decided to conduct an in-depth analysis of the results of the survey in question, which are presented in the next subsection.

An in-depth analysis of the survey results required mapping the data i.e., mapping textual data to numerical data. An example mapping table is presented below (Table 7). In each case of data mapping, the logic of assigning alpha-numeric values from the smallest in the logical context to the digit 1, proceeding with a unit step through the logically progressive values.

Table 7. Data mapping

Answer	Mapping
1 (do not agree at all)	1
2 (partially disagree)	2
3 (have no opinion)	3
4 (partially agree)	4
5 (fully agree)	5

Source: own elaboration.

[7] Data as of 30.04.2023 taken from the publication of the Polish Central Statistical Office: https://stat.gov.pl/obszary-tematyczne/rynek-pracy/pracujacy-zatrudnieni-wynagrodzenia-koszty-pracy/pracujacy-w-gospodarce-narodowej-w-polsce-w-kwietniu-2023-r-,27,5.html, 15.05.2024.

For ease of analysis, each of the research questions described in Table 2. was given one precisely assigned HR indicator, but it should be remembered that the descriptions in Table 2. have not lost their validity, and interpretation of the results should assume a certain multiplicity of the indicators described there. The provisional one-to-one assignment is shown in Table 8.

Table 8. Mapping of HR indicators

HR indicator	Likert scale research question
employee turnover	I am not looking for a new place of employment.
talent retention	I am able to withstand temporary inconvenience [...].
absenteeism	I do not make excessive use of sick leave.
productivity	I try to work as well and as efficiently as possible.
investment in human capital	I am able to wait longer for a potential promotion [...].
seniority	I maintain a long tenure with one employer.
leave on demand	I do not excessively use leave on demand.

Source: own elaboration.

The next step of the analysis became the creation of a correlation matrix based on two different measures of interdependence: the Pearson correlation coefficient and Spearman rank. The first of the latter measures only linear relationships, which can lead to the overlooking of any nonlinear relationships, to which the second coefficient is resistant. In the case of Pearson, linearity of the relationship and normality of the distribution of the variables are required (Walczak, 2015). Here, the correlation results can be distorted by any outliers, and its assumptions may not be met for the data and social phenomena under study.

Therefore, it was decided that it would be right to check the correlation results using two coefficients of Spearman and Pearson (Şahin, Aybek, 2019).

Table 9. Pearson's correlation for explained and explanatory variables

Pearson correlation	What age are you currently at?	What is your total length of service (regardless of employer)?	How large an organization do you currently work for?
employee turnover	0,0926	0,1447	0,0654
talent retention	0,1944	0,2207	0,0866
absenteeism	-0,0969	-0,0829	0,1721
productivity	0,0072	0,0358	0,0929
investment in human capital	0,1375	0,2121	0,0322
seniority	0,1439	0,2556	0,0347
leave on demand	-0,0207	-0,0217	0,055

Source: own elaboration.

There is a clear linear correlation (Peternek, Kośny, 2011) only in the context of pairs of variables: seniority and talent retention, seniority and investment in human capital and seniority and willingness to stay in the organization. For a more complete picture of the analyses, a summary of correlations based on the Spearman rank method was also performed.

Table 10. Spearman's rank correlation for explained and explanatory variables

Pearson correlation	What age are you currently at?	What is your total length of service (regardless of employer)?	How large an organization do you currently work for?
employee turnover	0,0349	0,0144	-0,5368
talent retention	0,2234	0,1374	-0,3305
absenteeism	-0,1201	-0,5559	-0,2122
productivity	-0,0527	-0,2261	-0,5635
investment in human capital	0,1007	0,1186	-0,498
seniority	0,0586	0,0971	-0,6111
leave on demand	-0,1322	-0,4947	-0,5145

Source: own elaboration.

Analyzing Spearman's rank correlation coefficient for the same data, analogous pairs of variables showed a weak correlation (Stanisz, 2006), but in this case the following pairs of variables also showed a weak correlation: age and talent retention, and age and human capital investment.

In order to understand more correlations, a reciprocal correlation matrix of independent variables was also created, as shown in Tables 11 and 12.

Table 11. Pearson cross-correlation for explanatory variables

Pearson correlation	employ-yee turnover	talents' retention	absen-teeism	produc-tivity	human capital investment	seniority	leave on demand
employee turnover	1,00	0,53	0,44	0,37	0,4	0,37	0,33
talent retention	0,53	1,00	0,41	0,4	0,38	0,38	0,32
absenteeism	0,44	0,41	1,00	0,60	0,41	0,4	0,69
productivity	0,37	0,40	0,60	1,00	0,52	0,47	0,56
investment in human capital	0,40	0,38	0,41	0,52	1,00	0,56	0,5
seniority	0,37	0,38	0,4	0,47	0,56	1,00	0,45
leave on demand	0,33	0,32	0,69	0,56	0,5	0,45	1,00

Source: own elaboration.

In the context of linear correlation, moderate relationships can be seen between the following pairs of data: turnover and retention, productivity and absenteeism, productivity and human capital investment, productivity and seniority, productivity and leave on

demand, human capital investment and seniority, and human capital investment and leave on demand.

Table 12. Spearman's rank correlation for explanatory variables

Spearman's Rank Correlation	employ-yee turnover	talents' retention	absen-teeism	produc-tivity	human capital investment	seniority	leave on demand
employee turnover	1,00	0,38	-0,03	-0,07	0,18	0,14	-0,16
talent retention	0,38	1,00	0,08	0,02	0,22	0,2	-0,12
absenteeism	-0,03	0,08	1,00	0,15	0,01	-0,06	0,37
productivity	-0,07	0,02	0,15	1,00	0,2	0,05	0,07
investment in human capital	0,18	0,22	0,01	0,2	1,00	0,43	0,07
seniority	0,14	0,2	-0,06	0,05	0,43	1,00	-0,01
leave on demand	-0,16	-0,12	0,37	0,07	0,07	-0,01	1,00

Source: own elaboration.

Correlation calculated using Spearman's rank method showed weak correlations only between on-demand leave and absenteeism, human capital investment and tenure, and talent retention and employee turnover. It is worth noting at this point that the survey examined the overall relationship, not its direction and return, but based on the two tables it can be thought that:

- difficulties in retaining talented employees are closely related to employee turnover,
- high absenteeism rates are negatively related to productivity performance,
- greater investment in human capital can lead to higher productivity,
- longer tenure can lead to higher productivity and lower absenteeism.

In the next steps of the study, a regression analysis was performed, resulting in the specification of data such as:

- Regression coefficient – "The directional coefficient of a regression line tells how many units, on average, the level of the dependent characteristic will change (increase or decrease) if the level of the independent characteristic increases by a unit" (Zając, 1974),
- Standard error – "the standard error of a coefficient (the value of 1 standard deviation; for a normal distribution in the mean±1 standard deviation is within 66% of the data value)" (Dmowska, 2024),
- Probability value – "is the probability of obtaining a result at least as contradictory to the null hypothesis as the result we have just obtained" [Sokolowski, 2010]. "Misinterpretation of the value of p (p-value) is to consider it as the probability of the truth of the null hypothesis" (Trzpiot, 2016),
- The z-value (t-student distribution) – "is the probability distribution used when constructing confidence intervals, testing statistical hypotheses and for assessing measurement error. A t-student distribution table is used to determine the value of the distribution" (*Ćwiczenia projektowe* 2020, nr 2),
- A confidence interval "is the realization of a random interval that, with repeated sampling [statistical – author's note] from the same population will cover the value

of the estimated quantity in 100(1-α)% of all samples. The interval is built around the mean value obtained from the sample" (Toczek, 2018),

- The coefficient of determination r2 which is a determination of how much of the variation in the explained variable is explained by the independent variables.

Microsoft Excel, which has a built-in LINEST function, was used for the actual regression analysis. The data were implemented into the function as follows:

- Known y → a single economic indicator from the HR area as described in Table 8 (HR indicator mapping).
- Known x → mapped by key (values from 1 to 5) answers to questions:
  - What is your current age?
  - What is your total length of service (regardless of employer)?
  - How large an organization do you currently work for?
- The value specifying the calculation of the constant b set to the logical value TRUE (calculated normally),
- The value specifying the return of additional regression statistics set to TRUE

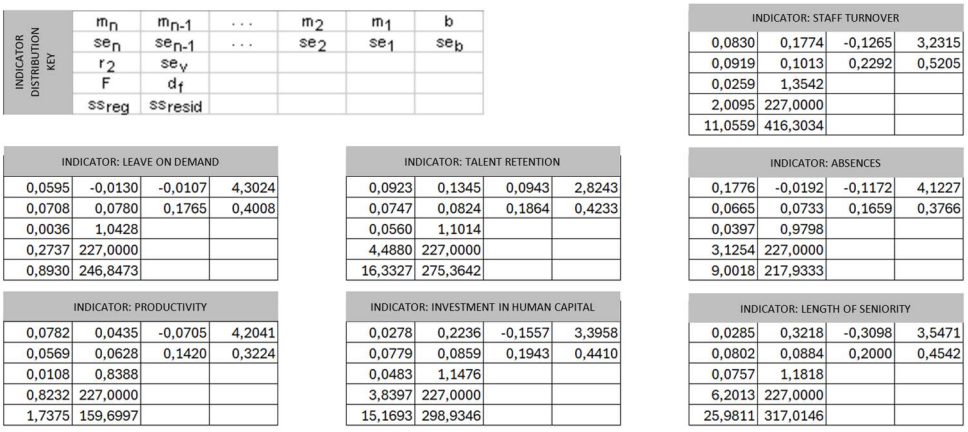
The values returned as a result of the function took a regular form, the key of which was defined by the company distributing the program (REGLINP, 2014). The descriptions are shown in the following table:

Table 13. Description of the LINEST (pol.REGLINP) function result labels (REGLINP, 2014)

Statistic	Description
se1,se2,...,sen	The standard error values for the coefficients m1,m2,...,mn.
seb	The standard error value for the constant b (seb = #N/A when const is FALSE).
r^2	The coefficient of determination. Compares estimated and actual y-values, and ranges in value from 0 to 1. If it is 1, there is a perfect correlation in the sample — there is no difference between the estimated y-value and the actual y-value. At the other extreme, if the coefficient of determination is 0, the regression equation is not helpful in predicting a y-value. For information about how r^2 is calculated, see "Remarks," later in this topic.
sey	The standard error for the y estimate.
F	The F statistic, or the F-observed value. Use the F statistic to determine whether the observed relationship between the dependent and independent variables occurs by chance.
df	The degrees of freedom. Use the degrees of freedom to help you find F-critical values in a statistical table. Compare the values you find in the table to the F statistic returned by LINEST to determine a confidence level for the model. For information about how df is calculated, see "Remarks," later in this topic. Example 4 shows use of F and df.
ssreg	The regression sum of squares.
ssresid	The residual sum of squares. For information about how ssreg and ssresid are calculated, see "Remarks," later in this topic.

Source: (REGLINP, 2014).

The distribution of the returned regression statistics, along with the key distribution of the data in each table, took the form presented in the table below.



INDICATOR DISTRIBUTION KEY	m_n	m_{n-1}	...	m_2	m_1	b
	se_n	se_{n-1}	...	se_2	se_1	se_b
	r_2	se_y				
	F	d_f				
	ss_{reg}	ss_{resid}				

INDICATOR: STAFF TURNOVER			
0,0830	0,1774	-0,1265	3,2315
0,0919	0,1013	0,2292	0,5205
0,0259	1,3542		
2,0095	227,0000		
11,0559	416,3034		

INDICATOR: LEAVE ON DEMAND			
0,0595	-0,0130	-0,0107	4,3024
0,0708	0,0780	0,1765	0,4008
0,0036	1,0428		
0,2737	227,0000		
0,8930	246,8473		

INDICATOR: TALENT RETENTION			
0,0923	0,1345	0,0943	2,8243
0,0747	0,0824	0,1864	0,4233
0,0560	1,1014		
4,4880	227,0000		
16,3327	275,3642		

INDICATOR: ABSENCES			
0,1776	-0,0192	-0,1172	4,1227
0,0665	0,0733	0,1659	0,3766
0,0397	0,9798		
3,1254	227,0000		
9,0018	217,9333		

INDICATOR: PRODUCTIVITY			
0,0782	0,0435	-0,0705	4,2041
0,0569	0,0628	0,1420	0,3224
0,0108	0,8388		
0,8232	227,0000		
1,7375	159,6997		

INDICATOR: INVESTMENT IN HUMAN CAPITAL			
0,0278	0,2236	-0,1557	3,3958
0,0779	0,0859	0,1943	0,4410
0,0483	1,1476		
3,8397	227,0000		
15,1693	298,9346		

INDICATOR: LENGTH OF SENIORITY			
0,0285	0,3218	-0,3098	3,5471
0,0802	0,0884	0,2000	0,4542
0,0757	1,1818		
6,2013	227,0000		
25,9811	317,0146		

Figure 2. Results of the regression function for each explanatory variable

Source: own elaboration.

Based on the tables in Figure 1, the following conclusions can be drawn:

- The coefficient of determination (r^2) means that the independent variables explain:
  - 2.6% of the variation in employee turnover,
  - 5.6% of the variation in talent retention,
  - 3.8% of the variation in absenteeism,
  - 1.1% of the variation in productivity,
  - 4.8% variability in human capital investment,
  - 7.6% variability in seniority,
  - 0.4% variability in leave on demand;
- The low r^2 values suggest that the presented results may be influenced by additional factors, such as, among others, the individual characteristics of employees, the quality of the relationship with the supervisor and the team, or the specifics of the onboarding process itself and the degree to which it is tailored to the needs of new hires, which may suggest the need for alternative studies using other analytical models;
- The following relationships proved to be statistically significant or marginally significant (p-values calculated using the originally implemented Microsoft Excel functions: T.DIST.2T and the results of the LINEST function):
  - Absenteeism and organization size (0.0081),
  - Employee turnover and seniority (0.0813),
  - Seniority on willingness to stay in the organization (0.0003).

Reliability statistics performed in IBM SPSS software (variables treated as quasi-quantitative (Wiktorowicz, 2016)) showed a Cronbach's Alpha coefficient of 0.858, indicating high reliability of measurements. Correlation coefficients between different elements should not be lower than 0.3 (Ramadhan et al., 2019) and higher than 0.7 (Merdiana, 2023). In light of this finding, the necessity of removing the question “If I care about a particular job/would like to work in a particular job, then: [I can even apply several times for a position (same or different) in a given company.]”, whose strongest correlation is only 0.285. The model built from the data is presented below.

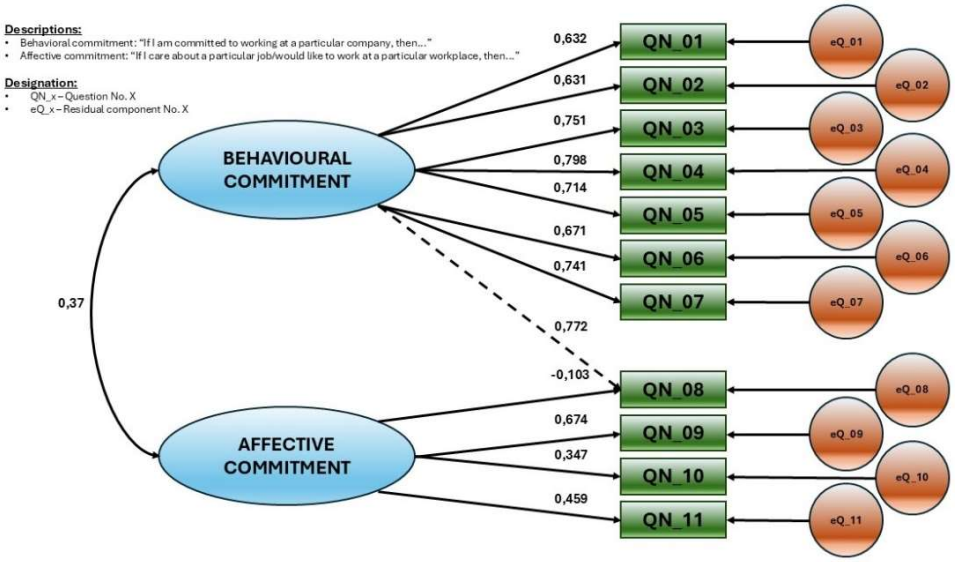


Figure 3. Analysis of the research model

Source: own elaboration.

Despite the correct choice of questions, the residual components are relatively high (all >1) which, with high factor loadings, suggests that the model does not account for all the variability. This means that the model may need to be expanded to include more questions or more factors considered. Nevertheless, the results presented on the basis of the data collected by the described model can be considered correct but incomplete, which leaves room for further research on the described topic.

On the basis of the employee opinion data analyzed in this way, it is potentially it is possible to specify economic indices, subject to change under the influence of changes in engagement caused by the quality of onboarding carried out. The indexes thus described include employee absenteeism, turnover and seniority (dependent on the individual values of the independent variables described earlier in the current subsection). It can also be concluded that relevant in connection with the implementation and adaptation process under study are the indices of retention, leave on demand or productivity. It is worth noting, however, that the conducted research was performed on a statistically small group. due to which, before presenting far-reaching conclusions, it would be necessary to carry out an in-depth survey, based not only on opinion, but also on unambiguous numerical data, obtained from the organization, burdened with renewed regression and correlation analysis.

In the course of interpreting the results, however, one should not forget the potential limitations of the study among which are:

- the significant impact of organizational culture, which affects the level of commitment in parallel with the effects of the onboarding process,
- inter-industry differences affecting the effectiveness and strength of the impact of adaptation and onboarding processes on engagement,
- global economic and political conditions such as the labor market situation or crises that will change perceptions of HR practices among employees and job candidates.

While the study provides valuable findings, further analysis should consider these variables to better understand the context of the relationship between onboarding and HR metrics.

4. CONCLUSION AND DISCUSSION

Recent academic work suggests that employee engagement, as a result of properly executed onboarding, plays a key role in moderating personnel costs and increasing organizational productivity. However, it is worth noting, that there are few precise lists of HR indicators on the basis of which improvements in the quality of onboarding or the resulting increase in employee engagement can be assessed. According to research, the key to increasing employee engagement is leadership, which, in people, satisfies the basic psychological needs of employees, such as autonomy, interpersonal relationships and increased competence. Managers who inspire co-workers positively influence their productivity, activity, bonds with the organization or their passion in performing their daily duties (Mazzetti, Schaufeli, 2022). Engaging leadership can manifest itself in high-quality employee onboarding driven by high-quality executives. New hires who are engaged from their first days on the job reach full effectiveness faster, resulting in higher organizational performance (Walker-Schmidt, 2022), which in turn has a positive impact on the company's financial performance.

Described in the introduction, the purpose of this study was to find preliminary links between engagement and quantifiable economic and personnel indicators. Based on the study, it can be tentatively concluded that increasing engagement of new hires, which is the aftermath of, among other things, a properly conducted HR onboarding process, can affect economic HR indicators such as:

- absenteeism,
- productivity,
- leave on demand per year,
- recruitment efficiency,
- recruitment costs per employee.

This does not mean, however, that the above-mentioned determinants are the only ones that are changed by the operation of onboarding processes. Here, however, the moderating role of commitment built through the onboarding and adaptation processes was significant in the level of indicators, so that some of the indicators naturally moderated by them may not have appeared in the indications of respondents. It is worth noting that employee engagement is not just the result of onboarding, but is the result of many factors. They are influenced by factors such as management style, organizational culture, development opportunities, team relationships and compensation, among others. Adaptation and onboarding processes can provide an important foundation, but their effectiveness depends on the broader organizational context.

In the context of the survey itself, it should be emphasized that it should be considered a pilot survey because:

- it was conducted on a relatively small number of people,
- the linking of HR indicators to the questions should be regarded as suggestions made by the author on the basis of academic and professional experience,
- employees' perceptions of HR practices depend on a number of factors, such as the value system represented, the period of the year in which the survey was performed and previous work experience.

As a practical implication, a conclusion can be made that HR departments should tailor onboarding to organizational needs and the individual needs of specific employee groups. Additionally, onboarding implementation processes should focus on building long-term relationships and commitment, which should translate into employee satisfaction and performance.

All the aforementioned aspects clearly qualify the present work as a prelude to further in-depth research, but they allow us to set an indicative direction for further work and draw the first conclusions, which can be literalized as follows:

- engagement can indeed play a moderating role between employee onboarding and HR economic indicators,
- it is possible to single out a group of HR indicators that is potentially more vulnerable to fluctuations that depend on the quality of the onboarding process,
- it is worth building positive impressions of employees through HR practices, as this can have a significant impact on an organization's financial performance.

However, it is worth remembering that HR practices are most effective when they are perceived by employees[8], and therefore it is important not only to create increasingly effective onboarding programs for employees, but also to build their ongoing awareness of any measures to improve their comfort level and commitment to the organization.

Previous research indicates that engaging new hires leads to faster adaptation and increased efficiency, which is key to achieving company goals (Mazzetti, Schaufeli, 2022). Reducing the turnover rate due to job satisfaction and a sense of belonging to the team translates into lower expenses, related to hiring and implementing new employees (Singh, Sant, 2023).

This text presents the results of our own research, which not only presents the indicators that change under the influence of an increase in engagement resulting from properly conducted onboarding, but also illustrates precisely what part of this relationship the various explanatory variables are responsible for. On the basis of the research conducted and compiled here, it can also be concluded that the current text can make a significant contribution to science in areas such as: taking away new, accurate empirical data; developing engagement theory in the context of employee adaptation and deployment; providing practical guidance for HR practitioners and university faculty; enriching the literature on the subject and filling the existing research gap at the interface of management science and economics in the area of employee onboarding, and highlighting the role of this process as one of the most important for new hires in their first period of work. Practical implications include the need to implement engagement strategies in the onboarding process, which can lead to significant benefits in terms of higher productivity, better quality of work and lower turnover rates. Management attention should also be focused in spheres such as building trust between employees and leaders, which will reinforce the positive effect of onboarding procedures.

[8] Regarding the words of Anna Pluta, Ph.D., Prof. US, and Aleksandra Rudawska, Ph.D., from the 5th Scientific Conference "Human capital in the enterprise and the economy – an interdisciplinary perspective", Międzyzdroje 16.05.2024 (paper entitled "Human capital in the enterprise and the economy". "Same but different – reasons for different perceptions of HR practices by employees").

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