

Article

The Role of Pro-Innovative HR Practices and Psychological Contract in Shaping Employee Commitment and Satisfaction: A Case from the Energy Industry

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Abstract: Innovation is a very important attribute of energy companies. Its level largely depends on employees' attitudes and behaviours, which are determined on the one hand by individual factors (e.g., psychological contract) and on the other hand by organisational factors (e.g., human resources (HR) practices). The aim of this article is to identify the relationship between pro-innovative HR practices, psychological contract and employee attitudes—commitment and job satisfaction. The research was conducted in a company which is one of the leading Polish electricity suppliers. Data were collected using a proprietary survey questionnaire. The research involved 402 HR professionals responsible for shaping and implementing pro-innovative HR practices in the company. Hypotheses were tested using the partial least squares structural equation modelling technique (PLS-SEM). The results indicate the existence of a positive relationship between pro-innovative HR practices, psychological contract and employee commitment and satisfaction. Furthermore, they indicate that organisations wishing to increase employee commitment and job satisfaction should strengthen and implement existing psychological contracts. One way to do this is to invest in pro-innovative HR practices, such as competence development, knowledge sharing or creativity-based candidate selection, as they have been shown to be good moderators of these relationships. The obtained results may be of particular importance for HR management specialists and managers responsible for shaping desired attitudes and behaviours of employees.

Keywords: energy sector; pro-innovative HR practices; psychological contract; job commitment; job satisfaction



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1. Introduction

Innovation is one of the key determinants of the competitive advantage of companies. The level of organisational innovativeness fundamentally depends on employees' attitudes and behaviours. These attitudes and behaviours are, among others, the result of psychological contracts and the result of implemented management practices, including those identified as pro-innovative HR practices.

The energy sector is one of the most innovative in terms of applied technological solutions, conducted research projects and organisational solutions. The company surveyed is one of the leaders in implementing innovative products and services in many areas of its very broad and diverse activities. Its brand belongs to one of the largest companies in Europe, which makes it universally recognisable. Its well-established position on the Polish market, supported by the trust of institutional and individual clients, as well as its prestige make it attractive for research.

In terms of its wide range of activities, since 2014, it has also held an active concession for trading electricity in Poland. The company has been recognised as a leader in the implementation of new solutions and the use of tools not only in energy production

and distribution or digital solutions, but also in management practices, especially pro-innovative HR practices. The scale of operations and related needs justified the creation of a separate HR structure in the company under study, with several hundred employees specialising in this area. The aim of the article is to identify the relationship between pro-innovative HR management practices, psychological contract, and employee commitment and satisfaction. The study undertaken analyses the impact of the application of pro-innovative HR practices related to the deliberate implementation of modern technologies within an energy distribution company in Poland on employees' psychological contracts, sense of job satisfaction and employee commitment. The surveyed company is the largest alternative energy retailer in Poland. It is a leader in creating and implementing pioneering solutions in providing access to stable, sustainable and modern energy. In order to ensure the most substantive assessment, the study selected HR department employees, as the most competent to assess the usefulness of specific tools and solutions.

The subject of the research concerns management problems related to shaping certain attitudes and behaviours of employees, which are relevant to the energy sector. We considered this topic to be important because the innovativeness of organisations in this sector largely depends on the attitudes and behaviours of their employees, and these can be successfully shaped and developed using appropriate HR practices. The research subject, which was a leading energy company, is an excellent example of this.

The current study contributes to the extant literature and practice in several ways. First, this article can contribute to a better understanding of the relationship between pro-innovative human resource management practices, the psychological contract, and employee commitment and satisfaction. This will enable the formation of desirable employee attitudes and the selection of effective tools, especially from the group of pro-innovative HR practices. This topic is important, given the impact of attitudes on employee behaviour, including innovative behaviour, and at the same time the unpromising picture of the labour market and employment problems faced by companies in the energy sector. Second, the study has demonstrated the positive impact of the psychological contract on commitment, and confirmed the relationship between commitment and job satisfaction. Pro-innovative HR practices proved to be a good moderator of this relationship—their introduction strengthens the positive relation between the psychological contract and job satisfaction and commitment. Finally, in the utilitarian dimension, the results of the research may be useful to direct the activities of companies in the energy sector consisting in the search for effective ways of shaping employees' attitudes—commitment and job satisfaction, consequently favouring the development of an effective human resources management policy.

The article consists of five parts. After the introduction, the theoretical framework is presented along with the characteristics of the main variables and relations between them, as a basis for deriving research hypotheses. The following sections describe the research methodology and the research results. Finally, in the last section, a discussion and conclusions are formulated along with practical and theoretical implications as well as limitations of the study and further possible research directions.

2. Theoretical Framework

2.1. Challenges for the Energy Sector in Poland—The Context of Research

The energy sector is one of the sectors of key importance for the economy of any country. No economy can develop without predictable and reliable energy production, distribution and supply. However, the strategic importance of energy companies, resulting from the need to ensure uninterrupted energy supply, is confronted with the impact of their activities on a wide range of stakeholders and on the environment. Therefore, the issue of sustainable development is becoming a priority, and the directives announced by the UN under the name of “Sustainable Development Goals” are becoming a kind of guide, also for companies in this sector [1]. It is difficult to overestimate how impactful the energy sector is and its significance for sustainable development in social, environmental,

market and consumer issues. In Poland, issues related to the energy sector, such as ensuring energy security, innovativeness of this sector, intelligent energy management, transformation of the mining sector or diversification of supplies, remain a particular area of interest both for state authorities and managers of companies. Data from the Responsible Business Forum [2] show that there are many energy companies that take a responsible and strategic approach to the challenges of sustainable development—they undertake socially responsible initiatives, care for dialogue and transparency of activities, report non-financial data adhering to the best standards, etc. However, there are still many dimensions in which more activity would be desirable, including environmental, market and consumer ones, such as sustainable production and consumption, energy efficiency or renewable energy sources. It is necessary to invest in energy infrastructure and the creation of clean energy technologies, including renewable energy and cleaner fossil fuel technologies, as well as the improvement of technologies for the provision of modern and sustainable energy services. This emphasises the need to implement innovative solutions, drawing special attention to the human resources of companies in this sector. The challenges they are facing confirm that they have to recruit the best specialists and make sure that such specialists are willing to stay with the organisation as long as possible and that they are committed to achieving its goals. At the same time, energy companies are reporting an increasing demand for staff. Construction of new and expansion of existing power units, modernisation of the network, growing sales of energy, etc. generate the need for new specialised employees. In addition, the current situation on the Polish labour market, referred to as the employee market, means that many companies also have problems with retention and must strive to ensure that employees, especially key ones, remain in the organisation. This justifies directing attention to employee attitudes, especially commitment and job satisfaction. An important role is played here by psychological contracts concluded with employees, as well as the activity of HR department employees, who are responsible for shaping and implementing management practices that favour the development of specific attitudes and behaviours of employees. The specificity of the sector, especially the need to create and develop newer and smarter solutions and to implement the latest technologies, induces the search for HR practices which will positively influence employee involvement and satisfaction, as well as being conducive to innovation. This makes it possible, in a way, to address two key objectives from the Development Agenda—Goal 7 on ensuring access to affordable, reliable, sustainable and modern energy, and Goal 8 on promoting stable, sustainable and inclusive economic growth, full and productive employment and decent work for all people.

2.2. Engagement and Job Satisfaction Versus Pro-Innovative HR Practices and Psychological Contract—Hypothesis Development

Employees' attitudes are a frequent subject of research due to the repeatedly empirically confirmed strong relationship with behaviour and, consequently, with the quality and efficiency of job performance [3,4]. Findings of Harrison, Newman, and Roth [5] suggest that if employees display positive attitudes, they perform better professionally. The consequences of positive attitudes relating to the work environment are specific behaviours (e.g., innovative, proactive, citizenship) as well as job performance. Thanks to the analysis of attitudes, it is also possible to assess the effectiveness of investments in employees. Among the group of attitudes that are particularly effective are job satisfaction and commitment to work. Both attitudes refer to the appraisal and emotional response to the situation in the workplace [6,7], where satisfaction is a more emotional state of well-being resulting from the fulfilment of an employee's needs, and commitment refers to the investment of cognitive, emotional and physical energy in the performance of work activities [8].

Job satisfaction is the most commonly analysed employee attitude in research [9]. It is defined as a general attitude towards work [10] or as an employee's feelings about their job [11]. Robbins and Judge [12] add that this positive feeling about a job stems from an evaluation of its characteristics. As a multidimensional concept, satisfaction

includes several aspects of the job. Among these aspects, most researchers point to: job characteristics, relationship with co-workers, relationship with supervisors, recognition and benefits, promotion opportunities and fairness, working conditions, satisfaction with the company and management, communication [13,14]. Satisfaction is the extent to which an employee perceives job needs as fulfilled [15]. Research by Beal and co-authors [16] has shown that job satisfaction can enhance employees' concentration and attention, and ultimately lead to better job performance. On the other hand, Zahoor, Zia, and Rizwan [17] proved the effect of satisfaction on loyalty. It turns out that employees who feel job satisfaction manifest a significantly lower tendency to leave their jobs [18], while a decrease in the level of satisfaction results in an increase in the desire to leave the organization [19].

Work commitment can be defined as an attitude towards an organisation of identification with its organisational goals, willingness to exert effort on its behalf and a strong desire to maintain membership in the organisation [20]. It provides a measure of the strength of the employee's psychological identification with the job. The stronger the commitment, the more important work is to the person and the more difficult it is to separate self-esteem from the work itself [21]. It is generally accepted that people who are strongly committed to work put more effort into it and perform better. Lv and Xu's [22] research demonstrates that work engagement is positively correlated with job performance at both the firm and individual employee levels. Research confirms strong positive relationships between engagement and a variety of positive outcomes in organisations [23,24]. As work engagement increases, the level of work task completion and job support increases [25]. An engaged employee is less likely to be absent and at the same time less likely to leave the organisation [26]. Engagement influences performance, which in turn influences the taking of new, creative initiatives and the willingness to make changes [27]. In addition, employees who have high levels of engagement are more likely to exhibit innovative behaviour at work [28]. The positive emotions that accompany engagement not only motivate employees to take initiative and try different things [6], but also encourage them to collect feedback on their performance [23].

As a result of low work engagement and individuals' low sense of job satisfaction, low levels of work task completion and work support, as well as citizenship and adaptive behaviour can be predicted [8]. Due to the significant impact of commitment and satisfaction on employee behaviour, it is necessary to search for factors that will positively influence these attitudes. Both individual and organisational variables seem to be important. Literature studies confirm that an important individual factor is the psychological contract, which influences employee attitudes and behaviours as well as organisational performance [29]. The psychological contract is an implicit agreement between the individual and the organization that defines what each person expects to offer and receive. It is a set of people's beliefs about the contract that defines the terms of exchange and the resulting benefits for both employer and employee [30]. It develops from the employee's belief in the mutual obligations between him or her and the employer, becoming the basis of the employment relationship [30,31], directing what the organisation expects of him or her and how it will reciprocate for the effort and actions the employee has made on its behalf [32]. This relates to various aspects of the employee relationship within the organisation [33] and the consequences of accepting and fulfilling mutual obligations to achieve the organisation's goals [34]. The psychological contract complements the formal arrangements, so to speak, and indicates expectations that may relate to economic, organisational or psychological issues. It can help employers understand and predict employee behaviour, induce employees to become more committed, and cause employees to pursue company goals to a greater extent [35]. The implementation of psychological contracts is associated with attitudes such as job satisfaction [36], organisational commitment [37] or innovative behaviour [38]. At the same time, an organisation's failure to fulfil its contractual provisions results in negative attitudes and behaviours, such as intentions to leave [39] or failure to exhibit citizenship behaviours [40]. At the organisational level, the variable that significantly influences the formation of employees' attitudes, as well as skills and behaviours, are HR

practices [41,42]. They have a synergistic effect that influences employees' attitudes towards work [43]. In particular, they affect job satisfaction and commitment [7,44]. Research by Okabe [45] confirms that HR practices can increase job satisfaction, facilitate knowledge sharing among employees, and contribute to the perception of a more welcoming workplace. This in turn can contribute to more innovative behaviour [46]. Effective HR practices make competent and innovative employees contribute to the achievement of organisational goals [47]. Research also indicates that HR practices influence perceptions of psychological contract [35,48,49]. It is one of the strongest influences on the psychological contract, factors [47]. HR practices and the employment relationship play a very important role in forming and shaping contracts [50]. The organisation and its agents [51] communicate promises and expectations to employees in both overt and covert ways. Overt ways usually include formal contracts and all kinds of written communications and direct interactions, while covert forms of communication are more complex and subtle. An employee can learn about mutual commitments and promises by observing the behaviour and reactions of others in the organisation. Recent research by [52] indicates that the formation of a psychological contract in an organisation is influenced by such perceived commitments as job retention, rapid promotion, satisfactory pay, training and career development. These commitments provide the organization with the opportunity for employees to become more involved in organizational activities and goal achievement.

At the same time, a certain group of HR practices is seen as particularly supportive of organisational innovation [53]. In the managerial dimension, innovation is the ability to recognise and respond not only to current, but also future needs and challenges [54,55]. Research by Oladapo and Onyeaso [56], for example, confirms the link between high performance work practices and organisational innovation. This group of practices is referred to as pro-innovation practices. These include, for example, an emphasis on recruiting staff who are creative and open to change, an emphasis on training and development in the context of innovation, or an emphasis on motivating employees to undertake innovative ventures [57]. Pouwels and Koster [58] also add that higher performance in product and service innovation, market and process innovation is achieved by organisations using training and performance-related pay. Furthermore, research by Cheng and Huan [59] indicates that organisations that invest in strategic HRM are better able to manage their internal knowledge. This in turn has a positive impact on the extent to which these organisations are able to innovate. Developing employees' skills and offering ways to optimise their work (through learning, employability, etc.) are mechanisms through which HRM can contribute to organisational innovation [60].

Various factors, both at the level of the individual (psychological contract) and at the level of the organisation (pro-innovative HR practices) influence employee attitudes, especially satisfaction and commitment, and translate into constructive behaviour in the work environment.

Given the considerations presented, we conclude that knowledge of the relationship between pro-innovative HR practices, psychological contract, job satisfaction and commitment is fundamental in the effort to shape desirable employee attitudes and behaviours. Based on the findings, we pose the following hypotheses:

Hypothesis 1 (H1). *Psychological contract has positive impact on employees' job satisfaction.*

Hypothesis 2 (H2). *Psychological contract has positive impact on employee commitment.*

Hypothesis 3 (H3). *Employee commitment has positive impact on employees' job satisfaction.*

Hypothesis 4 (H4). *Implementing pro-innovative HR practices strengthens the positive relation between psychological contract and employees' job satisfaction.*

Hypothesis 5 (H5). *Implementing pro-innovative HR practices strengthens the positive relation between psychological contract and employee commitment.*

Hypothesis 6 (H6). *Implementing pro-innovative HR practices strengthens the positive relation between employee commitment and employees' job satisfaction.*

A research model was created to show the relationship between the tested features. This is illustrated in Figure 1.

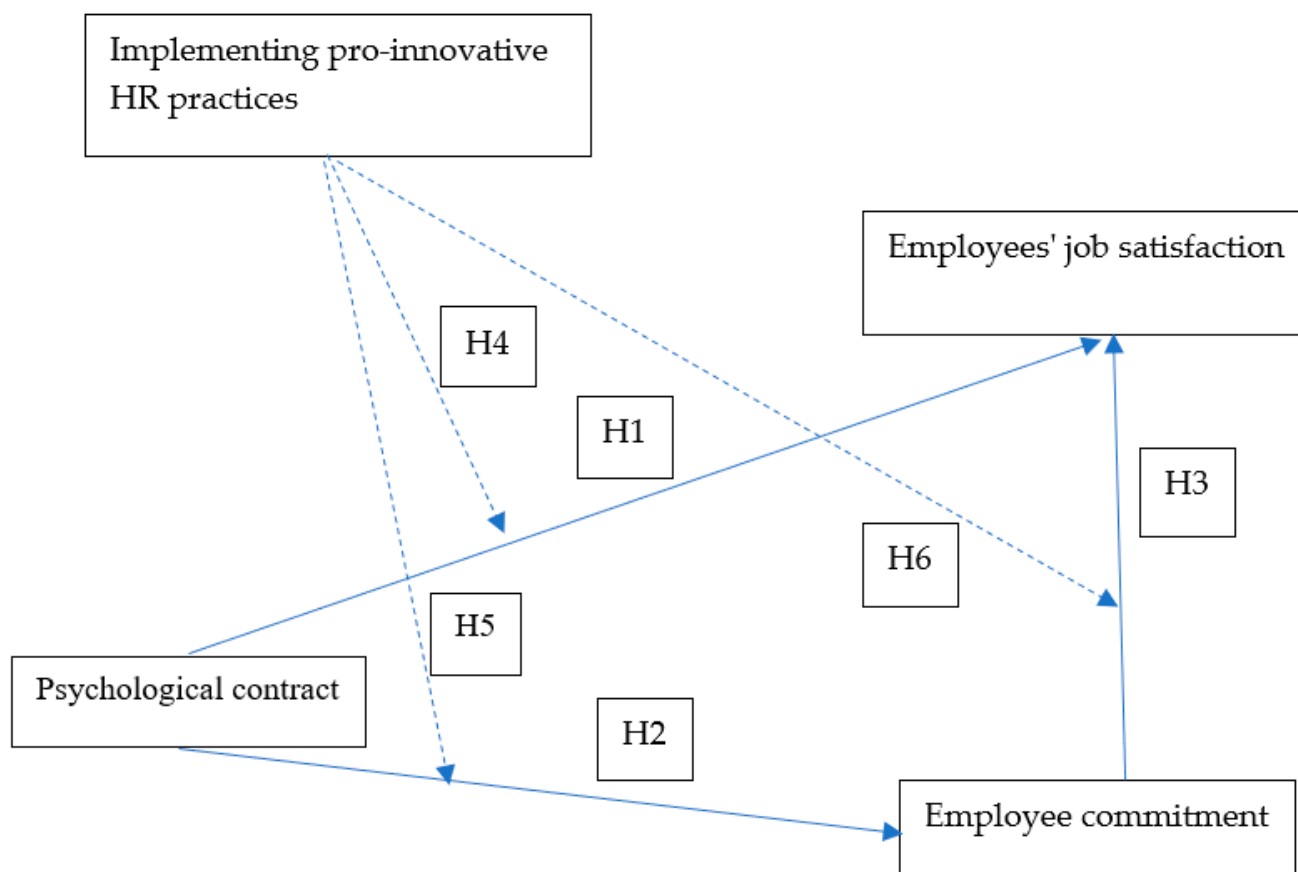


Figure 1. Hypothetical research model. Source: created by the authors.

3. Materials and Methods

3.1. Research Entity

The surveyed entity belongs to a group that is a leader on the Polish fixed telephony, Internet and data transmission market, which, as an innovative provider of ICT and telecommunications services, has the largest, most technologically advanced infrastructure in the country. For seven years, it has also been selling energy under its own brand. Currently, it is the largest alternative energy seller in Poland, with a customer base of over 120,000. Over 97% of households are within the reach of its offer. The company creates and implements pioneering solutions in the scope of providing access to stable, balanced and modern energy. It vigilantly observes the environment and catches all market signals and business opportunities. Based on its strengths, which are the complexity of solutions and knowledge of customer needs, it constantly creates new solutions and enriches its offer. It focuses on innovation. It carries out investments and pro-environmental projects. Currently, it is investing in obtaining electricity from environmentally neutral sources (two wind farms launched for the company), which is part of a broader, ambitious plan—to achieve climate neutrality by 2040. The company's offer also includes Smart Energy solutions, comprising efficient, modern photovoltaic installations producing green energy from solar radiation and a comprehensive monitoring and management system, unique in the market, and as indicated among others by the research of Grębosz-Krawczyk and colleagues [61] on consumers' purchase intentions towards the installation of photovoltaic panels, this is

a future-oriented development. The researched company is a leader in introducing innovative solutions in various areas of activity, as well as in the area of human resources management. It encourages its employees to search for and create technological, product and organisational solutions, favourable to energy efficiency, reduction of negative impact on the environment or reduction of resources consumption. It appreciates the importance of human resources. It pursues business objectives with respect for the subjectivity of employees, uses digital solutions, and creates a culture of cooperation in which all employees feel respected and are able to freely pursue their professional objectives.

With the company being recognised as implementing innovative solutions in various areas of activity, including management, the legitimacy of implementing pro-innovative HR practices was analysed in the context of influencing employees' psychological contracts and their attitudes—commitment and satisfaction. In order to ensure the most substantive assessment, HR employees comprising over 400 people were selected for the study.

The choice of HR employees was dictated by the fact that they are best qualified to assess, through their experience, the usefulness of new tools as well as personnel or management solutions. Therefore, the usefulness of these solutions was assessed by all HR department employees, who have the broadest competence in this area and therefore their answers, based on their professional experience, are the most reliable. The research has shown that there is a very large specialised group within this innovative structure, which through its involvement in the research has also in a way confirmed that it was selected accurately.

3.2. Testing Procedure

To achieve the objective of this research and to verify the hypotheses, the survey was conducted in December 2019. The sampling frame consisted of 402 respondents who represented 100% of the HR department employees of the surveyed company. The personnel of the selected organization was surveyed using the "Employee satisfaction survey" method, which was developed by the Partner in the "AnStat" Business Strategies as per the organization's Strategy of Development for the years 2015–2020. We used a self-administered questionnaire consistent with the needs of the contracting authority and purposive sampling [62].

In the first stage, a pilot test was conducted with ten selected HR department staff. During this research process, respondents checked the content and relevance of each item to ensure every question was adequate and understood. Based on the feedback from the pre-test, minor modifications were made to the questionnaire.

In the second stage, a sample of 402 employees was purposively selected for the study and represented 100% of the HR department employees of the surveyed organisation. The quantitative survey followed a standardised procedure [63], through statements aggregated into a diagnostic tool which used the CATI computer-assisted telephone interview technique. The data collected from each interview were analysed for the questionnaire path that was scripted and also for the consistency of the tool. The average duration of the survey (median) was 19 min with an employee.

Table 1 details the structure of the study sample, which presents: gender, age, level of education, total work experience and length of work experience in the current company, as well as the type of HR position in the professional hierarchy.

The results show that the group working in the HR department is relatively feminised, as almost 65% are women. The large portion of participants employed in the HR department are between 30 and 50 years old. The smallest groups are surveyed employees under 30 years old (10.2%) and 55 and over (5%). The majority of participants (82.3%) are highly educated, having a university degree or above. The company has a preference for recruiting employees to the HR department already with significant work experience, as more than half of the participants have more than 10 years of work experience and a quarter of the surveyed group has worked for up to 10 years in total. In addition, employees working in HR department are characterised by long seniority—66.6% have been working in the

surveyed company for 6 years and more. The distribution of positions in the professional hierarchy is standard, with the majority of survey participants employed as HR assistants and senior HR assistants (74.8%) and a minority of managers and executives (5.2%).

Table 1. Demographic description of respondents.

Demographic	Descriptors	General	
		<i>n</i>	%
Gender	Male	141	35.1
	Female	261	64.9
Age	<30	41	10.2
	<30–39>	160	39.8
	<40–49>	111	27.6
	<50–54>	70	17.4
	55+	20	5.0
Education	Secondary	71	17.7
	Postgraduate degree (Masters)	287	71.4
	Doctorate PhD	44	10.9
Total Work Experience	Less than year	2	0.5
	1–5 years	53	13.2
	6–10 years	100	24.8
	Over 10 years	247	61.5
Work Experience in existing organization	Less than year	51	12.7
	1–5 years	83	20.7
	6–10 years	144	35.8
	Over 10 years	124	30.8
HR position in the professional hierarchy	HR Director	21	5.2
	HR Manager	80	20.0
	Senior assistants and HR assistants	301	74.8
Total		402	100.0

Source: created by the authors.

3.3. Measures, Validation and Reliability Analysis

Fundamental in the research process was the design of measurement instruments to collect data on the main constructs within the proposed hypotheses. The quantitative study, which used the CATI computer-assisted telephone interview technique to collect empirical material, involved a battery of tests aggregated to a single questionnaire.

The measurement of the study variables was carried out using a set of items derived from adaptations of existing research tools, which were selected on the basis of a literature review. Some tools required cultural adaptation prior to the research. For this purpose, one of the procedures of tool adaptation [64] was used; translation and post-translation from the Polish version of the text to the original (English language) version, in order to faithfully translate the methods used. The translated questionnaires were evaluated by competent judges, who were three independent experts in the fields of English philology, HRM and statistical methods. Attention was also taken to the criterion of equivalence of the questionnaires in the form of: facial, psychometric, functional equivalence and reconstruction validity.

The questionnaire consisted of 35 items taken from the literature measuring basic constructs, such as implementing pro-innovative HR practices, psychological contract, employees' job satisfaction, employee commitment, and the demographic characteristics of respondents (indicated in Table 1), which played the role of control variables. A list of the key constructs used with associated items is presented in Appendix A.

3.4. Implementing Pro-Innovative HR Practices (IPHRP)

Since the impact of HR practices is not immediate and not always in line with employees' expectations, its effect can manifest in the meanings that employees attribute to these practices. The IPHRP construct intended for opinion by employees measured the implementation of pro-innovative HRM practices implemented in the company. It was divided into 4 subscales: (IPHRP I) Personnel pro-innovative activities in the area of employee recruitment (2 items); (IPHRP II) Personnel pro-innovative activities in the area of professional development (3 items); (IPHRP III) Personnel pro-innovative activities in the area of motivation and remuneration (3 items), and (IPHRP IV) Personnel pro-innovative activities in the area of maintaining positive employee relations (4 items). In developing the items within each subscale, we followed the indications by Kinnie and collaborators [65] and Wang and collaborators [66]. As part of the measurement of IPHRP, employees were asked for their opinion on how satisfied they were with the implementation of pro-innovative company's HR practices. All research measures were carried out by a seven-point Likert scale (where 1 = "not at all" and 7 = "to a very high degree") for each item.

3.5. Psychological Contract (PC)

The next section of the questionnaire examining the PC was measured by a single variable: the perceived degree to which the psychological contract was fulfilled. The study measured the extent to which obligations under the PC were fulfilled by the employee and the employer. Items to measure the PC were adapted from the study by Rousseau and Tijoriwala [67] and Guest and Conway [68]. To measure the fulfilment of the employer's and employees' obligations two subscales were used, each containing 9 and 8 items, respectively, such as "To what extent do you fulfil the promises and obligations you made to your employer?" and "How would you rate the fulfilment of promises and obligations by your employer?" All items were assessed by respondents on a seven-point Likert scale, where 1 was "not filled at all" and 7 "completely filled".

3.6. Employees' Job Satisfaction (EJS)

EJS was measured using three items diagnosing general job satisfaction, attitude towards the job and interest in the job. This construct was diagnosed using modified statements taken from the Job Satisfaction Scale by Bettencourt, Gwinner and Meuter [69].

3.7. Employee Commitment (EC)

EC is conceptualised here as the extent to which the employee personally identifies with his or her work and is intra-orientated and motivated towards work. Employee engagement was assessed using three-item scales which were adapted from the studies by MOW [70] and Saks [71].

For the questions in the tool, regarding EJS and EC, respondents were asked to rate the extent to which they agreed or disagreed with the statements on a seven-point Likert scale from 1—"strongly disagree" to 7—"strongly agree".

3.8. Data Analysis

The purpose of this paper is to examine how the introduction of pro-innovation practices into an organisation strengthens the role of psychological contracts between the organisation and its employees and influences employees' attitudes at work—commitment and job satisfaction. This objective was achieved through the following research steps:

Stage 1 consisted of desk research on the current situation of the energy sector in Poland and an introduction to the concepts of pro-innovative HR practices, psychological contract, commitment and job satisfaction (chapter: Theoretical Framework).

Stage two focused on the development of 6 research hypotheses (subsection: Engagement and job satisfaction versus pro-innovative HR practices and psychological contract—hypothesis development).

In stage 3, the research methodology was developed, the survey questionnaire was constructed and validated, the research sample for the study was planned and the pilot study and proper research were conducted (chapter: Materials and Methods).

Step 4 involved the processing of the statistical data obtained from the quantitative CAWI survey (subsection: Data analysis; chapter: Results)

In step 5 we analysed the results of the survey, synthesised and discussed the results of the survey at the organisational level while presenting the research limitations. (Chapter: Discussion).

Quantitative social survey methodology was used in the data compilation. Descriptive statistics such as frequencies, means and standard deviations were used to describe the distributions of respondents in terms of sociodemographic characteristics. The main statistical techniques used for data analysis were EFA, CFA and SEM.

The research process was conducted with exploratory factor analysis (EFA) to possible reduce items and define patterns of constructs in the data set [72,73]. EFA was used to eliminate measurement elements that had less than 0.30 factor loading or had high cross loading over two or more factors [72]. Then, Cronbach's Coefficient Alpha was used to control the reliability of internal consistency items [73]. Exploratory factor analysis (EFA) was conducted on the results of the pilot study.

The matching factors were then used in the next step. We used confirmatory factor analysis (CFA) to develop a measurement model and to verify that each of the variables proposed in the research model is valid for the baseline constructs. This research employed confirmatory factor analysis (CFA) with maximum likelihood estimation [74] to test the significance of items' factor loadings to ensure that the items were not loading onto other constructs and to assess the reliability and validity of the multi-item scales. Discriminant validity was assessed in CFA because factor loadings in each construct can be represented by specific scores. CR and AVE also used for assessment in CFA to represent the quality of the constructs. Tables 2 and 3 set out our empirical results in detail.

Table 2. Constructs, measures and factor loadings.

Variable	Subscales	Items	Loading	t-Value	AVE	CR
IPHRP ($\alpha = 0.810$)	IPHRP I ($\alpha = 0.767$)		0.701	9.37		
		IPHRP I_1	0.776	8.63		
		IPHRP I_2	0.791	8.29		
	IPHRP II ($\alpha = 0.699$)		0.735	9.77		
		IPHRP II_1	0.701	5.96		
		IPHRP II_2	0.698	6.71		
		IPHRP II_3	0.732	7.95	0.565	0.876
	IPHRP III ($\alpha = 0.711$)		0.797	8.91		
		IPHRP III_1	0.824	8.49		
		IPHRP III_2	0.709	6.83		
		IPHRP III_3	0.723	5.47		
	IPHRP IV ($\alpha = 0.805$)		0.782	10.01		
		IPHRP IV_1	0.689	9.01		
		IPHRP IV_2	0.721	8.34		
		IPHRP IV_3	0.883	6.81		
		IPHRP IV_4	0.718	7.83		

Table 2. *Cont.*

Variable	Subscales	Items	Loading	t-Value	AVE	CR
PC ($\alpha = 0.698$)	PC I ($\alpha = 0.804$)		0.731	5.44	0.516	0.821
		PC I_1	0.864	9.21		
		PC I_2	0.732	9.16		
		PC I_3	0.719	8.19		
		PC I_4	0.721	9.24		
		PC I_5	0.765	9.59		
		PC I_6	0.722	7.01		
		PC I_7	0.758	6.54		
		PC I_8	0.705	9.04		
	PC II ($\alpha = 0.798$)	PC I_9	0.744	8.72		
			0.764	8.53	0.667	0.921
		PC II_1	0.795	9.18		
		PC II_2	0.899	7.31		
		PC II_3	0.800	5.24		
		PC II_4	0.857	6.33		
		PC II_5	0.699	7.04		
		PC II_6	0.789	9.98		
		PC II_7	0.797	7.74		
EJS ($\alpha = 0.899$)		PC II_8	0.735	7.56	0.872	0.825
		EJS 1	0.856	8.83		
		EJS 2	0.832	9.21		
EC ($\alpha = 0.827$)		EJS 1	0.879	8.67	0.715	0.899
		EC 1	0.899	5.88		
		EC2	0.845	6.79		
		EC 3	0.866	7.16		

Source: created by the authors.

Table 3. Convergent validity of the measurement model.

Variable	AVE	CR	IPHRP	PC	EJS	EC
IPHRP	0.565	0.876	0.765			
PC	0.516	0.821	0.760	0.802		
EJS	0.667	0.921	0.744	0.731	0.872	
EC	0.715	0.899	0.717	0.840	0.705	0.825

Source: created by the authors.

All factor loadings were higher than 0.7 and all t-tests of the variables were significant at the 0.001 level with t-values greater than 2, suggesting adequate level of reliability. The reliability of the scales was conducted by calculating composite reliability (CR) and Cronbach's α . Cronbach's alpha values for all scales exceeded 0.7 and exceeded the recommended threshold level [73]. Composite reliability (CR) of all constructs exceeded the threshold value of 0.7, suggesting internal consistency and reliability [75]. The average variance extracted (AVE) values were higher than 0.50. In addition, all the square roots of AVE are also greater than inter-construct correlations. Thus, the convergent validity of the scales was confirmed [75].

Table 3 suggests good validity of the measurement model. This is also confirmed by the results of the chi-square test, where $p < 0.001$ was obtained. Further measures confirm good model fit— $\chi^2/df < 5$ [76], RMSEA is less than 0.8 [77], and SRMR is less than 0.08 [76], CFI > 0.9 [78], GFI, AGFI, and gamma exceed 0.95 [76], and Bollen's delta is 0.9, and the parsimonious James-Mulaika-Brett index (PGFI) is greater than 0.7. Importantly, for each of the variables, the parameters (factor loadings and measurement error variance) are statistically significant (by item t -test, $p < 0.0001$). The correlation between the variables is also significant ($p < 0.0001$).

Summing up, the CFA supported our measurement model and showed that implementing pro-innovative HR practices, psychological contract, employees' job satisfaction and employee commitment are four distinct constructs.

In a final step, partial least squares structural equation modelling (PLS-SEM) was used to determine the assumed relationships between all constructs. In SEM, the direct and indirect effects of endogenous variables provide the overall relationship between all constructs [74]. In addition, discriminant and convergent significance were represented in SEM, indicating the overall validity of the overall constructs. The SEM procedure including data analysis is further discussed in the next section.

The database and statistical tests were conducted using IBM SPSS PS Clementinei IBM SPSS PS Imago computer software. The Statistica statistical package was used for the analyses, which enabled the data to be entered in numerical form and then carried out statistical analyses, facilitating and accelerating the process of compiling the research results.

4. Results

The theoretical framework of our study became the impact of introducing pro-innovative HR techniques on the relationship between psychological contract, employee commitment and employee's job satisfaction. We assumed that implementing pro-innovative HR practices would have a positive impact on these relationships. In order to test the proposed research hypotheses and to empirically verify the hypothesized research model, we performed partial least squares structural equation modelling. PLS-SEM method is frequently selected to test and develop a theory [79], as well as used in business management or management information systems. Ringle, Sarstedt and Straub [80] argue that the most commonly mentioned reasons for adopting PLS-SEM are associated with non-normal data, small sample sizes and the use of formally measured latent variables. In our study, measures and indicators were developed for the following research constructs: psychological contract, job commitment and employees' job satisfaction.

The size of the research sample (402) that we have selected for the study is also comparatively limited, as the entire Company employs 14,587 people. The study sample thus represents only 2.75% of the total workforce. Therefore, we conclude that PLS-SEM is a better and an appropriate method than other tests to examine the research hypotheses of this study. Table 4 shows that the four hypotheses we developed are supported based on the evaluation of the PLS-SEM model.

Hypothesis H1 must be rejected because psychological contracts have no significant impact on employee's job satisfaction (H1: $\beta = 0.215$; $t = 1.461$, ns). The results obtained are contrary to the research of Khorev and Wechtler [81], who support the idea that positive fulfilment of employers' promises is related to job satisfaction behaviours. Our result suggests a full mediation of employee commitment on the relationship between psychological contract and employee's job satisfaction.

As expected, psychological contract has significant positive impact on employee commitment (H2: $\beta = 0.5040$; $t = 3.049$, $p < 0.01$), which suggests that employees with a sense of fulfilled psychological contract are more committed in their work. Our results confirm that employee commitment has a positive significant impact on employee job satisfaction (H3: $\beta = 0.646$; $t = 3.647$, $p < 0.05$).

Table 4. Hypotheses tests results.

Path Analysis	β -Unstandardized Path Coefficient	t-Value	Significant Level	Results
PC—>EJS	0.215	1.461	ns	H1 is not confirmed
PC—>EC	0.504	3.049	***	H2 is confirmed
EC—>EJS	0.646	3.647	**	H3 is confirmed
IPHRP*PC—>EJS	0.758	5.040	**	H4 is confirmed
IPHRP*PC—>EC	0.471	3.655	**	H5 is confirmed
IPHRP*EC—>EJS	0.189	0.467	ns	H6 is not confirmed

Note. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$; ns (not significant). Source: created by the authors.

When testing the moderating effect of implementing pro-innovative HR practices on the relationship among psychological contract, employee commitment and employees' job satisfaction, our study indicates the confirmation of H 4–5. It is found that implementing pro-innovative HR practices strengthens the positive relationship between psychological contract and employee job satisfaction (H4: $\beta = 0.758$; $t = 5.040$, $p < 0.05$). Similarly, implementing pro-innovative HR practices enhances the positive relationship between psychological contract and employee commitment (H5: $\beta = 0.471$; $t = 3.655$, $p < 0.05$).

Our study finds that the implementation of pro-innovative HR practices has no significant impact on the relationship between employee commitment and employees' job satisfaction (H6: $\beta = 0.189$; $t = 0.467$, ns).

5. Discussion

The aim of this study was to investigate the relationship between employees' perceptions of pro-innovative HR practices, psychological contract and their level of job commitment and job satisfaction. The results generally supported the hypothesis that such relationships exist.

Evidence from existing literature shows that employee commitment is crucial for organizational welfare [15,82]. The results of our study show that employee commitment is positively influenced by psychological contracts and employee job satisfaction.

In particular, we found that the psychological contract has a significant positive impact on employee commitment. This finding reinforces well-established knowledge about psychological contracts in the literature. According to Chambel and Oliveira-Cruz, psychological contract fulfilment has a positive impact on employee commitment [83]. The results of Lv and Xu [22] research analysis confirmed that psychological contract breach has a strong negative impact on employee commitment.

Employees who implement psychological contracts know what conditions and level of support they can expect from their employers. In the short-term relationships, they know that their efforts are rewarded in the form of financial compensation without any further obligations or demands [84]. As long as the amount of financial reward received matches the employees' perceptions of justice and fairness, they will seek to maintain a positive relationship with their employer [85]. Employees who have long-term relationships influence the environment with their attitudes and behaviours. In a similar way, their attitudes and behaviours are influenced by their employer [86]. Thus, employees participate in creating the culture and can influence its change. They then have a sense of ownership because they see that their employer is interested in their professional growth, motivation, adequate remuneration, and that they themselves are working for the benefit of the organisation in which they are employed. Furthermore, the results of our survey show that employee commitment has a direct and positive impact on employee satisfaction. This turns out

to be an important, albeit different, finding, as previous research suggests that higher levels of satisfaction are associated with a number of benefits, such as improved working conditions, interpersonal relationships, or employer branding [87]. This is consistent with Coyle-Shapiro and Conway and Xiong and collaborators [37,88] who argue that employees feel more job satisfaction when they are more committed in their work.

Our results indicate that the relationship between psychological contract and employee job satisfaction is fully mediated by employees' commitment. Our study indicates that without sufficient commitment, employees are less likely to increase their sense of job satisfaction based on their psychological contract.

In the work context, pro-innovative HR practices are strong predictors of psychological contracting because these shape employee behaviour and are the main mechanisms by which employees understand the terms and conditions of employment [89].

Our results show that implementing pro-innovative HR practices increases employee commitment levels. Although this effect has already been verified theoretically [90], to the best of our knowledge, this study is the first to show this effect evidenced through conducted research. The results achieved appear to be relevant, as the increase in employee commitment is linked to the fulfilment of the psychological contract. Thus, we also found that as pro-innovative HR practices were introduced into the company, the positive impact of psychological contracts improved. This is the first study to examine changes in the strength of psychological contracts due to the implementation of pro-innovative HR practices.

The results of the study presented remain consistent with previous studies which have shown that pro-innovative HR practices appropriately selected in an organization, i.e., training and development [91], reward [22], organization of individual and team work [92], communication [93] and stable employment [94], enhance attitudes of job satisfaction and a sense of fulfilment of the psychological contract. In contrast, the results obtained are contrary to suggestions of other researchers [50,95,96] who pointed that implementing pro-innovative HR practices has negative effects of uncertainty at work and weakens employee commitment.

The pressure to use pro-innovative HR practices contributing to fulfilling SDG 7 and 8 will continue to intensify, whether due to high levels of competitiveness, changing working conditions, or consumer preferences [97,98]. Implementations of pro-innovative HR practices are gaining significant support from top managers and HR professionals, particularly in energy sector organisations. Employees need to feel a sense of fulfilling the psychological contract and be positively committed in the implementation of innovative HR practices in order to fully gain the advantages. Our study shows how employee commitment increases as a result of adopting and implementing pro-innovative HR practices. This study has demonstrated the importance of psychological contracts when introducing pro-innovative HR practices. This means that psychological contracts will play a greater role in shaping the relationship between employers and employees as pro-innovative HR practices spread more widely. Finally, the implementation of pro-innovative HR practices leads to employees fulfilling psychological contracts while being perceived as committed and satisfied with their work, which will move organisations with a particular focus on the energy sector towards achieving SDGs 7 and 8.

5.1. Theoretical Implications

The theoretical contribution of this study is manifested in several aspects. First, we identified relationships between pro-innovative human resource management practices, psychological contract, commitment and job satisfaction. We confirmed that the psychological contract positively influences commitment and that commitment is associated with job satisfaction.

Second, we found that pro-innovative HR practices are a good moderator of this relationship; the introduction of pro-innovative HR practices strengthens the positive relationship between psychological contract and job satisfaction and commitment.

It is also important that this study integrates individual variables (psychological contract) and organizational variables (pro-innovative HR practices) and employee attitudes, which enriches the existing literature on the mechanism of interaction and extends the researchers' theoretical view.

Finally, this study integrates HR practices into a group of pro-innovation practices and assesses employee perceptions of these practices, which demonstrates that HR practices should be analysed holistically rather than as independent practices, because, as Snape and Redman [99] found, they can substitute, complement or interfere with each other in predicting employee behaviour.

5.2. Practical Implications

The completed research also has practical implications. First of all, the results of the research may direct the activities of companies from the energy sector, regarding the search for effective ways of shaping employees' attitudes—commitment and job satisfaction, which may contribute to shaping desired behaviours, including innovative ones. They provide, especially to employees responsible for human resources management, knowledge in the selection of tools and solutions to stimulate commitment and job satisfaction. This may be helpful in developing a more effective human resources management policy. The project also draws attention to the importance of psychological contracts and thus encourages respect for them, as well as the design of HR practices in such a way that employees feel supported by the organisation and reciprocate this support through higher levels of commitment to the organisation's goals.

5.3. Limitations and Further Research

Like most studies, this study also has several limitations. One of the limitations of the study is related to the research methodology used, which was limited to using data from a single source (i.e., reports from employees) through survey methods. Therefore, it would be advisable to conduct further research using, for example, longitudinal studies, which could show a more precise picture of the relationships found and would allow the directions of causality to be explored. Furthermore, the method of data collection may result in a common method bias, which may affect the magnitude of the relationship between the variables under study. To overcome this limitation, all variables were measured using fixed scales, which may reduce measurement error and thus reduce common method bias.

Another limitation stems from the fact that the subject of the study included employees of a single company, albeit thriving in the energy industry. It would therefore be useful to widen the circle of research, which would allow us to establish how these practices are perceived by employees of other energy companies. Moreover, the data were collected in a company operating in specific—Polish—cultural conditions. On the one hand, this may be a limitation of the research, as it narrows the possibility of generalising the results to other countries. On the other hand, however, it provides knowledge on attitudes and behaviours related to the application of pro-innovative HR practices and psychological contracts, characteristic of this cultural circle.

In the course of the research investigation, further interesting research directions also emerged. Firstly, as we focused on employee engagement and satisfaction, it would be worthwhile to widen the circle of research and verify how pro-innovative HR practices and the psychological contract affect other attitudes and behaviours of energy sector employees, e.g., attachment to the organisation. Another interesting direction of research appears to be the analysis of different types of the psychological contract—relational and transactional.

The study was limited to HR professionals of one energy organisation and therefore the results cannot be generalised to other professions. The participants in this study were senior and mid-level HR professionals. Future research recommends including more high-level HR professionals as well as Industry 4.0 experts in the sample to understand the role of HR in Industry 4.0. Future research may seek to use quantitative research methods to validate the findings and conclusions of this study.

6. Conclusions

The issues addressed, supported by the research discussed in the text, made it possible to grasp the relations between the key individual (psychological contract) and organisational (pro-innovative HR practices) variables in a broader perspective, both practical and theoretical. They made it possible to give them a fuller context by capturing the relationships and measuring their strength in a specific way. This justifies the derivation of a positive prognosis as to the topicality of the undertaken issues and the adoption of this research as a starting point for further scientific exploration. Research confirmation of the relationships between these variables may prove useful for organisational practice in enterprises basing their operational and organisational activity on innovative solutions (similarly to the research subject). For the above reasons, the authors remain convinced of the relevance of the undertaken subject matter, its scientific significance and practical usefulness for the functioning of entities operating in the field of modern technological solutions, manifesting their readiness to use innovative organisational solutions, which undoubtedly include energy companies using modern technologies.

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Appendix A. Key Constructs, Subscales and Items

Implementing Pro-innovative HR Practices (IPHRP) [4,5]

(IPHRP I) Personnel pro-innovative activities in the area of employee acquisition related to:

(IPHRP I_1) cooperation with newly recruited employees

(IPHRP I_2) the specificity and nature of one's work

(IPHRP II) Personal pro-innovative activities in the area of professional development related to:

(IPHRP II_1) development opportunities offered by the company

(IPHRP II_2) the implementation of programmes designed to develop high-potential employees (talents)

(IPHRP II_3) flexible and task-based working conditions offered by the company

(IPHRP III) Personal pro-innovative activities in the area of employees' motivation remuneration of related to:

(IPHRP III_1) the remuneration

(IPHRP III_2) the personalised additional package offered (financial and non-financial total rewards)

(IPHRP III_3) the functioning of the performance evaluation system

(IPHRP IV) Personal pro-innovative activities in the area of maintaining positive employee relations related to:

(IPHRP IV_1) maintaining relations and cooperation with employers in the performance of their professional duties

(IPHRP IV_2) maintaining relations and cooperation with co-workers as part of their work on innovative projects

(IPHRP IV_3) opportunities for involvement in decision-making concerning important issues of the company

- (IPHRP IV_4) opportunities to create new and innovative products and services for the company's clients
- Psychological Contract (PC) [6,7]
 - (PC I) Fulfilment of the psychological contract by employees towards the employer in the opinion of employees
 - (PC I_1) Promote and maintain a positive employer branding (company reputation)
 - (PC I_2) Demonstrate loyalty to the organisation
 - (PC I_3) Develop new knowledge, skills and experience
 - (PC I_4) Flexible thinking and proactive approach to solving arising problems
 - (PC I_5) Be courteous to customers, clients and other colleagues
 - (PC I_6) Take initiative and put forward new, innovative ideas
 - (PC I_7) Achieving expected results of strictly defined tasks (hard work for the organisation)
 - (PC I_8) Maintain high level of attendance and punctuality
 - (PC I_9) Willingness to work additional hours if the needs of the employer change
 - (PC II) Fulfilling the psychological contract by the employer towards employees in the employees' opinion
 - (PC II_1) Opportunities to participate in attractive and innovative trainings, mentoring and opportunities for professional development within the organisation
 - (PC II_2) Opportunities for promotion within the organisation
 - (PC II_3) Providing acknowledgement to the employee for initiating and implementing new ideas
 - (PC II_4) Offering the employee interesting tasks to perform
 - (PC II_5) Guaranteeing a pleasant and safe working environment
 - (PC II_6) Ensuring job security and stability
 - (PC II_7) Providing total rewards commensurate with outputs achieved
 - (PC II_8) Offering a non-wage benefits package
- Employees' Job Satisfaction (EJS)
 - (EJS 1) I like my job more than the typical employee
 - (EJS 2) I am enthusiastic about my work most days
 - (EJS 3) I feel that my work is more interesting than others
- Employee Commitment (EC)
 - (EC 1) I work according to the values of the company
 - (EC 2) I am happy to be part of the organisation
 - (EC 3) The organisation where I work encourages me to improve my work performance

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