# Study on the Impact of Remote Working on the Satisfaction and Experience of IT Workers in Poland

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## Abstract

The purpose of this study is to determine the level of employee satisfaction with the performance of tasks assigned by the employer in remote form, to explore the discrepancy between employee expectations and the experience of remote working and to identify the characteristics shaping employee preferences, together with an attempt to identify and classify the requirements of IT staff carrying out their professional duties remotely. Employee job satisfaction is a source of benefits both for the employees themselves and for companies operating in a dynamically changing environment. The issue of remote working is the subject of public debate and is a particularly current and important research topic. Satisfaction with remote working is a multidimensional phenomenon encompassing different aspects of the work experience, as well as a subjective experience that varies from person to person, considered in relation to a variety of factors. The paper is theoretical and methodological in nature, using a variety of research methods and techniques, such as a survey questionnaire, the Kano model and the Servqual approach. These methods were supported by a classical literature review, which served as a supporting tool and starting point for further analysis and critique of the literature, as well as structural and causal analysis. The primary data collected through the survey questionnaire were analysed and inferred, and the results showed that IT employees' expectations of remote working are not fully met, especially in the areas of career development and adaptation. Significant differences relate to bonuses, recognition and job stability. The largest unfulfilled expectations are related to job stability, bonuses, allowances to cover the costs of remote working and workplace flexibility. Remote working has positive aspects such as less environmental stress, higher productivity, reduced costs and commuting-related stress. Most of the identified features of remote working (20 out of 24) directly influence job satisfaction.

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Access to global projects attracts potential employees the most. Three features – subsidised equipment, coverage of remote working costs, and the environmental impact of remote working – are irrelevant to employee satisfaction. This study addresses a topical and relevant contemporary issue in the field of remote working and job satisfaction. It is a pioneering study focusing on the links between remote working and IT employee satisfaction. To date, research has considered the issue from the perspective of remote working, the IT sector or job satisfaction in relation to various factors. However, there is a lack of research combining these three issues. Furthermore, analysis based on the Servqual method and the Kano model has so far been used to measure service quality in various industries and to analyse and categorise customer needs in relation to satisfaction. The application of this tool to the study of employee satisfaction with remote working in the IT industry is a new and unique approach. The findings may be relevant to employers, IT employees, HR professionals and regulators alike.

### Key words

remote working, personnel policy of the IT company, forms of work, employee satisfaction, information and communication technologies, remote working satisfaction factors, IT industry.

## Introduction

As a result of the SARS-CoV-2 pandemic, many companies and industries have been forced to offer the possibility of working from home. Remote working has become commonplace and both companies and employees have discovered the benefits of this working model, particularly in the technology sector. As Abdulrahim and Yousif (2023) rightly point out, remote working, besides being one of the consequences of digital transformation, is also a new form of work that allows employees to work away from the company's premises. Therefore, understanding how employees adapt to remote working, what their experiences are and how these affect job satisfaction is crucial to both the further development and success of companies and the wellbeing of employees.

It is worth noting that research on remote working is complex and multifaceted, addressing a range of topics such as technologies and tools used at work (Král et al., 2022; Wang et al., 2023; Pietruszka-Ortyl, 2020), work structure and organisational culture (Deschênes, 2023; Giauque et al., 2022; Shpak,et al., 2023), performance analysis (Kurdy et al., 2023; Hadasik and Kubiczek, 2022), and employee health, wellbeing and experience (Burr et al., 2022; Osoian and Petre, 2022; Sonnentag et al., 2023; Zampetakis, 2023). Undoubtedly, it can be crucial in terms of maintaining employability in times of change, allowing the company to function smoothly, and it depends on a wide variety of factors, shaping employee job satisfaction to varying degrees (Atobishi and Nosratabadi, 2023).

Investigating the issue of job satisfaction is important for several reasons. Firstly, it is closely linked to productivity. As research indicates, employees who are satisfied with their working conditions are more productive, engaged and motivated (Abdulrahim

and Yousif, 2023). Secondly, meeting employees' expectations influences their wellbeing and lowers turnover rates. Additionally, as J. Ma (2021) rightly points out, it is a form of distributed working that has become common practice and, importantly, is part of the future of work. Therefore, a study of employee satisfaction with remote working can be helpful in understanding this phenomenon and in indicating how companies should adapt their strategies and policies.

An analysis of the literature indicates the existence of studies on satisfaction with remote working (Golden and Gajendran, 2019). We can also note that the number of studies on remote working increased after the outbreak of the pandemic (Adekoya et al., 2022; Deschênes, 2023; Dolot, 2020; Irawanto et al., 2021; Stefanska et al., 2023; Wood et al., 2022; Xu et al., 2022). However, research on satisfaction with remote working is still limited and, as G. Xu and his team (2022), M. Grant (2021), and T. Golden and R. Gajendran (2019) emphasise, there is a need for further analysis, especially in relation to the IT industry.

The research gap identified from the analysis of the literature indicates a lack of research into the evaluation of satisfaction with remote working and expectations of IT employees in relation to Poland.

The article is structured in three parts. The first discusses the specifics of the IT industry, with a particular focus on current trends in the information technology sector. The second part focuses on presenting the essence of job satisfaction with an indication of the research results obtained to date. The final part presents the research methodology along with the results obtained. The research used an approach based on the Servqual method and the Kano model, which are not specific to remote working research, but are tools used in service quality and customer satisfaction research. However, it is worth emphasising that the incorporation of the methods used for customer satisfaction research allows for a better understanding of employees' experiences of remote working. The results obtained can also be helpful in adapting remote working policies to employees' needs, by improving their experience and job satisfaction. Furthermore, the focus on remote working in the context of the IT industry and the application of the above approach is a novel contribution to the research literature.

# 1. Literature review

## 1.1. The IT industry in Poland

The development of information and communication technologies and the associated process of digitalisation of the economy and society is one of the most dynamic changes of modern times (Radomska, 2019). New digital technologies are spreading around the world much faster than the inventions of the industrial era (DeGusta, 2012). The ICT sector contributes to technological progress, increased production and productivity.

According to the OECD definition (2017), the term information and communication technologies (ICT), interchangeably referred to as information and telecommunication or information technology, refers to both the different types of communication networks and the technologies used therein. A narrower term is information technologies (IT). The IT sector is the industry related to information technology and related services, products and solutions. It encompasses a wide range of areas, such as the production of computer hardware, software and IT services. The development of these technologies makes the two concepts increasingly coherent, being an engine for civilisational, social and economic development (PARP, 2017).

The ICT sector brings together manufacturing and service industries whose products primarily perform or enable the function of information processing and communication by electronic means, including transmission

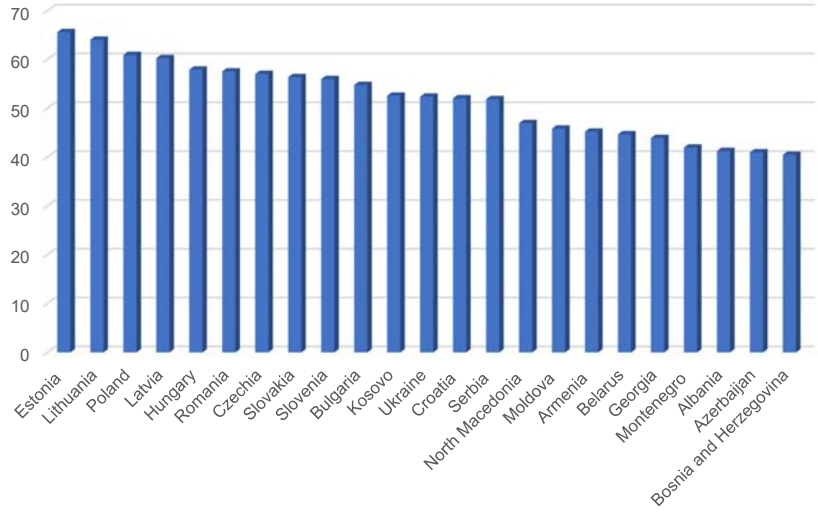
and display. Its impact can be studied in several ways: directly, through its contribution to production, employment or productivity growth, or indirectly, as a source of technological change affecting, for example, other parts of the economy and society (OECD, 2017). The COVID-19 pandemic has accelerated the digitalisation of many sectors of the economy and increased the demand for information technology, with a significant impact on the development of the IT industry. There are significant growth opportunities for companies in this industry, whether in software and application development or in areas related to artificial intelligence, data analytics, cyber security or robotics, education or entertainment (Baker Tilly TPA, 2023).

Information and communication technologies (ICT) are considered an integral part of modern society and play an important role in every field (Łada, 2021). ICT is developing very rapidly and is one of the most dynamic and innovative branches of the Polish economy.

The IT industry shows significant growth potential, promotes economic development and ensures international cooperation in this field. Dynamic development, innovation and creativity are the fundamental characteristics of this industry (Kyrylych, 2018). The IT sector plays such a crucial role because it affects not only professional life, but every smallest part of private and everyday life, where it is visible at every turn and without which it would be difficult to imagine the functioning of the modern world (Ober, 2020).

Poland is considered the digital leader of Central and Eastern Europe (PAIH, 2021) and is one of the three most competitive markets (after Estonia and Lithuania, see Fig.1.) for the IT industry among the region's 23 markets (Emerging Europe, 2023). Research shows that there is a strong correlation between the development of the IT sector and economic growth, as measured by the sector's share of gross domestic product (Niebel, 2018). According to the Central Statistical Office, the IT sector in Poland accounted for approximately 7.4% of Polish GDP in 2020 (GUS, 2021) and currently accounts for approximately 8% (Baker Tilly TPA, 2023), demonstrating the growing role of the sector in the Polish economy.

**Figure 1.** IT industry – competitiveness of the Central and Eastern European markets




**Source:** own elaboration based on Emerging Europe (2023)

For Western companies (e.g. Microsoft, AWS and Google), an important advantage in choosing Poland over other countries is, among other things, the good education and preparation of Polish employees, including the growing number of students (50,000 in 2019 and 68,000 in 2021) and graduates (8,000 in 2019 and 13,000 in 2021) of IT faculties or the high grades of students in PISA educational surveys (Emerging Europe, 2023). An additional advantage is Poland's 13th place among 100 countries in terms of English proficiency and other high positions in international rankings (EF, 2022), as shown in Table 1.

**Table 1.** Poland's position in international rankings (2021)

| Index name (number of countries included) | Ranking |
|---|---|
| PISA Mathematics (78) | 10 |
| EF English Proficiency Index (111) | 13 |
| Human Development Index (190) | 34 |
| Social Progress Index (169) | 39 |
| Index of Economic Freedom (176) | 40 |
| Online Service Index (193) | 43 |

**Source:** own elaboration based on Emerging Europe 2023

The Polish IT market (see Table 2) is highly diversified and fragmented (Baker Tilly TPA, 2023). IT companies account for 2.7% of all businesses operating in Poland. Although official statistics show almost 190,000 companies providing IT services, the employment figures do not reflect the actual situation, as it is common in this sector to employ experts, IT specialists and programmers on the basis of B2B contracts.

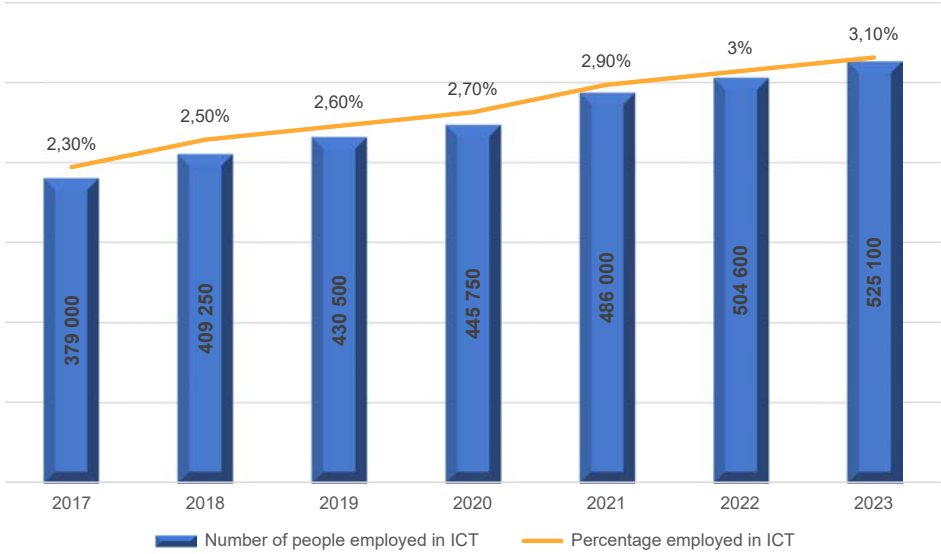
**Table 2.** Polish ICT in numbers (2021)

| Companies | Over 100,000 |
|---|---|
| employing 10 or more people | 2500 |
| introduced innovation | 50% |
| offer ICT services | 9 in 10 |
| of which are IT services | ¾ |
| revenues generated by the industry | EUR 46.5 billion |
| growth | 12% |
| share in overall exports | 7% |
| split between males and females in the IT sector | 85% to 15% |
| proportion of ICT hardware manufacturers income generated through exports | 2/3 |
| number of students of IT faculties | 68,000 |
| number of graduates of IT faculties | 13,000 |

**Source:** own elaboration based on The IT/ICT sector in Poland report 2023

The IT sector employs more than half a million people in Poland, whose average salary is 174% of the national average wage (Emerging Europe, 2023). In total, approximately 3% of all working Poles are professionally connected with the IT sector (see Fig. 2).

**Figure 2.** ICT employment in Poland in 2017-23.




**Source:** own elaboration based on Emerging Europe (2023)

One of the biggest problems for the Polish IT industry is the insufficient number of specialists. Research by the Polish Economic Institute in 2022 shows that they currently account for around 3.5% per cent of all employees, which is one of the lowest figures in the EU. Another problem is the aforementioned differentiation of the Polish market – on the one hand, there are dynamically developing companies producing software for export and for multinational corporations, and on the other hand, companies operating on the domestic market. The former compete globally for projects and specialists and can offer very high remuneration rates, while the latter are digitalising slowly and have limited financial capabilities. In the medium to long term, this can be a hindrance to the country's development (Łukasik, Strzelecki, Śliwowski & Święcicki, 2022).

Currently, the Polish IT sector is exposed to a number of challenges, both global and local, which shape the needs and expectations of companies, institutions and customer demand for new technologies (Baker Tilly TPA, 2023). Internal factors stem from the country's economic situation, such as increasing competition from other countries in the region, a lack of skilled labour, inflationary pressures or a lack of investment in research and development. External factors, on the other hand, are related to the slowdown in global digitalisation combined with downsizing of technology giants, cybersecurity, geopolitical destabilisation (such as the war in Ukraine or tensions between the West and China) or the emergence of commercial applications of artificial intelligence. These challenges require action at the political and business level to increase market competitiveness and accelerate the development of new technologies.

Technological advances represent, on the one hand, opportunities, benefits and

possibilities for development, but also new and increasing forms of risks (Wilson, 2020). These trends are widely reported in the literature (see, for example, Akundi et al., 2022; Chawla and Goyal, 2022; Dana, Salamzadeh, Mortazavi, Hadizadeh and Zolfaghari, 2022; Leng et al., 2022; Taherdoost, 2023). As indicated by research (Antal, 2023), among the phenomena that will be of greatest importance in the information technology industry in a post-pandemic environment are cyber security (see, e.g. Alagheband, Mashatan and Zihayat, 2020; Kumar, Sharma, Vachhani and Yadav, 2022; Wilson, 2020), artificial intelligence (AI) and machine learning (see, e.g. Alimadadi et al., 2020; Das, Dey, Pal and Roy, 2015; Haefner, Wincent, Parida and Gassmann, 2021; Lu, 2019; Pfeifer and Iida, 2004; Zhang and Lu, 2021), remote working (see Antal, 2023; Prasad, Mangipudi, Vaidya and Muralidhar, 2020; Sokolic, 2022), cloud computing and edge computing (Bilal, Khalid, Erbad and Khan, 2018; Carvalho, Cabral, Pereira and Bernardino, 2021; De Donno, Tange and Dragoni, 2019), and Big Data and data science (see Frank, Dalenogare and Ayala, 2019; Gunasekaran et al., 2017; Hariri, Fredericks and Bowers, 2019; Himeur et al., 2023).

As indicated above, remote working is currently one of the main trends characteristic of the contemporary labour market in the post-pandemic period. The need for companies to adapt their operations to the sanitary and social requirements during the pandemic, the development of technology and the possibilities of working online have led to remote working contributing to the spread of this form of work.

The rapid increase in the number of employees working from home – in Poland, the percentage of people working in this way has almost doubled (Lewiatan Confederation, 2023) – forced the legislator to introduce clear regulations on the subject of remote working. This resulted in the enactment of legislation (Ustawa o zmianie Kodeksu pracy) which introduced a separate chapter on remote working. According to Article 67, remote working may be performed wholly or partly at the place indicated by the employee and agreed with the employer in each case, including at the employee's home address, in particular by means of direct communication at a distance. The Labour Code provides for both total remote working and hybrid remote working (partly at home and partly at the company) according to the needs of the individual employee and the employer.

A 2022 survey of IT professionals and specialists from Poland, the Czech Republic, Slovakia and Hungary (No Fluff Jobs & Ringer Axel Springer, 2022) showed that after the pandemic, remote working was the preferred choice of the majority of those working in the technology sector. As many as 61% of industry professionals(s) worked fully remotely (five days a week). This rate was highest in Poland (close to 75%) and lowest in Hungary (45.5%), but was No. 1 on the list of possible work modes in every country (including the Czech Republic and Slovakia). A total of 96% of IT professionals and specialists want to work entirely remotely or in hybrid mode, with a majority of respondents (55.8%) from this group preferring fully remote work and 40% preferring to work in hybrid mode. The ability to work from home has become so important that for 56% of the CEE IT professionals surveyed, the lack of such a possibility would be reason enough to look for a new job (No Fluff Jobs & Ringer Axel Springer, 2022). These expectations of CEE IT employees coincide with the desires of Western workers (Owl Labs, 2021). Among the advantages of working remotely are improved wellbeing (as mentioned by more than 60% of respondents) and increased productivity compared to working at the office (57.7% of respondents). Respondents also highlighted that after switching to remote/hybrid working, they feel more freedom (61%) and have more time for themselves (42%); they also

enjoy not having to commute to the office (40%) and being able to work from anywhere (18.2%). Among the factors that occur infrequently or hardly at all that can be described as negative effects of remote working, the most frequently mentioned were more meetings than in a stationary job, working more hours, fatigue, physical ailments, poorer relationships with colleagues or feeling neglected at work (No Fluff Jobs & Ringer Axel Springer, 2022).

### 1.2. The problem of remote working satisfaction research in the literature

The concept of satisfaction is a complex term that can be considered from different perspectives and with respect to a variety of determining factors. One of the most widely recognised and quoted definitions was proposed by E. A. Locke (1976), who was one of the first to study the problem of job satisfaction, which is a positive or pleasant emotional state resulting from an evaluation of one's job or work experience. Moreover, it represents a complex construct, encompassing various aspects of work such as pay, working conditions, opportunities for advancement, relationships with colleagues and management, and a sense of personal and professional fulfilment (McFarlin and Rice, 1991).

We can see that this concept is not just a single emotional state or level of satisfaction, but a multidimensional phenomenon encompassing different aspects of work experience. It represents a subjective experience that can vary between individuals even working under the same conditions.

In contrast, the provision of remote working can have different aspects (Barriga Medina et al., 2021; Caillier, 2012; Cooper and Kurland, 2002; Deschênes, 2023; Gajendran and Harrison, 2007; Ingusci et al., 2023; Raghuram et al., 2001; Szczepanski and Zamêcki, 2021; van Zoonen et al., 2021) affecting both work motivation and work satisfaction.

It is also worth noting that employee satisfaction in the IT industry can be shaped by industry-specific factors (Al-Shammari, 2021), such as access to the latest technology, continuous learning opportunities, continuous availability requirements, time pressure to complete projects, flexibility, not having to commute to the office, or work–life balance, psychological empowerment and support from superiors (W. E. Nwagwu, 2020; Lee et al., 2018; Vennila and Vivekanandan, 2017; Kowal and Roztocki, 2015b; Kowal and Roztocki, 2015a; Bordin et al., 2006; Lumley et al., 2011; Yousef, 2017). Moreover, in the IT industry, where remote work is often the norm, employee expectations may be higher than in other sectors (W. Nwagwu, 2019). These may include, for example, access to high-quality hardware and software, or mental health support (Lee et al., 2018; Vennila and Vivekanandan, 2017).

A critical analysis of the literature on the subject, the experiences of researchers, and the proposal of a typology of factors influencing employees' adaptation to remote working (van Zoonen et al., 2021) formed the basis for distinguishing six dimensions (career development factors, adaptation factors, productivity factors, sustainability factors, relational factors, and structural factors) and 24 characteristics (opportunity for promotion, pay rise, opportunity for personal development, job stability, bonuses/recognition, working with modern technologies, allowance to cover remote working costs, equipment subsidy, flexibility of time and place of work, work productivity, reduced environmental impact, reduced commuting costs, reduced commuting stress, wellbeing, reduced contact with employees, communication with colleagues, communication with superiors, support from employer, clearly defined tasks, clearly defined policies and procedures, autonomy of work, no geographical restrictions, and access to global projects) that may affect employee satisfaction with remote working.

The two dimensions – structural and relational – partly overlap with the factors proposed by the researchers (Raghuram et al., 2001; van Zoonen et al., 2021), but given the context of the remote working satisfaction study, they were extended to include additional characteristics relevant to this problem.

**Professional development factors** refer to aspects conducive to career advancement, the acquisition of new competences and personal development, improvement of professional position and prestige, obtaining bonuses, recognition, and employment stability. The issue is important not only in the context of remote working (Stroińska, 2008; Ślązak, 2012; Wyrwicka and Trziszka, 2019), but also in terms of job satisfaction. It seems that in the long term, these factors may influence levels of satisfaction with remote working through the possibility of employees holding higher-level positions, job security, lack of fear of losing their jobs, as well as recognition and positive evaluation from superiors and colleagues. In one study, however, researcher M. Charalampous and her team (2018) indicate that remote working can be a threat to career advancement.

**Adaptation factors** refer to elements that facilitate employee adaptation to new working conditions. In the context of remote working, especially in the IT industry, adaptive factors may include working with modern technologies (Battisti et al., 2022) that allow tasks to be performed effectively, provided, among other things, that they function efficiently (Åborg et al., 2002). These technologies may include the use of various tools not only for communication and collaboration, but also industry- or job-specific technologies. It is noteworthy that both the opportunity to work with new technologies and the support of the employer (Atobishi and Nosratabadi, 2023) can be a factor in increasing job satisfaction in the long term. It is important to emphasise that working from home may involve additional costs for employees (Battisti et al., 2022) (payment for electricity, additional computer equipment, reliable internet connection, access to necessary software, or maintenance of the home office), and the lack of employer support may contribute to stress (Battisti et al., 2022; Molino et al., 2020), reduced work comfort, dissatisfaction, frustration and, consequently, lower satisfaction.

**Factors related to productivity, or the performance** of employees when working remotely, are a group of determinants that have enjoyed continued popularity among both researchers (Kurdy et al., 2023) and practitioners. This is because there is a correlation between job satisfaction and productivity (Abdulrahim and Yousif, 2023), with job satisfaction contributing to better performance and higher efficiency (Stefanska et al., 2023).

In the context of remote working, this factor is particularly relevant, as the rules associated with office work often do not apply or are modified. This includes work flexibility, whereby employees have the opportunity to manage their own working hours, as well as where they work (Charalampous et al., 2018). The freedom to design working hours gives the employee the chance to adjust their working hours, personal commitments, or daily rhythm, although, as C. Åborg and her team (2002) point out, long hours at a computer pose health risks. Additionally, the employee has a choice of work location, which can include working from home, coworking spaces, or working from any location with internet access. As S. Poulsen and K. Ipsen's (2017) research indicates, remote working is professionally challenging – because employees feel they have influence over their work – and fosters increased self-perceived productivity (Ali et al., 2023). Flexible working influences productivity, as employees choose times and places to work that are more comfortable and stimulating for them, as well as increasing their level of job satisfaction (Djoemadi et al., 2019). This, in turn,

influences the amount and quality of work an employee does in a given period of time. Additionally, as A. Ali and his team (2023) point out, employees who work remotely have a higher sense of self-efficacy, greater job satisfaction and are likely to have better personal wellbeing compared to others.

**Sustainability factors** refer to the assumptions of a sustainable economy and society, as well as to the wellbeing of employees. The concept of sustainable development is not only about protecting the environment, but also about promoting the health and wellbeing of people together with skilfully combining sustainable economic development with the wellbeing of society (Bielinska-Dusza et al., 2021). Employee wellbeing, in addition to being one of the key elements of sustainable development (European Commission, 2019), is an important research issue in relation to remote working (Atobishi and Nosratabadi, 2023; Charalampous et al., 2018; Juchnowicz and Kinowska, 2022; Park et al., 2021), as well as employee satisfaction (Ali et al., 2023), which has contributed to expanding the catalogue of moderating factors to include this dimension. Remote working reduces the need to commute to the company's headquarters resulting in lower commuting costs (fuel, public transport tickets, vehicle maintenance and depreciation), greater environmental care (lower fuel consumption, lower greenhouse gas emissions), time savings or work-life balance (Grant, 2021), and a lower degree of work-family conflict (Gajendran and Harrison, 2007; Molino et al., 2020). Moreover, commuting to the workplace often involves delays caused by traffic jams. This is a source of stress for employees, causes deterioration in their wellbeing, and reduces the time available for leisure activities and hobbies, reducing job and life satisfaction. It should also be noted, however, that remote working can lead to a blurring of the boundaries between one's work and private life (Buła et al., 2022).

**Relational factors** affect the interactions and relationships between employees. In the context of remote working, these include limiting contact with employees, communication with colleagues and supervisors, and support from employers. Remote working can limit direct interpersonal contact, information exchange and relationship building. It can have both a positive (Gajendran and Harrison, 2007) and negative (Poulsen and Ipsen, 2017) impact and, as A. Deschênes (2023) highlighted, it can lead to a sense of isolation (Åborg et al., 2002; Battisti et al., 2022) negatively affecting satisfaction with the remote working experience. Interestingly, research by T. Atobishi and S. Nosratabadi (2023) showed that limited communication is an effective factor in causing a decrease in employee satisfaction with remote working.

Undoubtedly, working remotely requires more organised and purposeful communication, translating into quality collaboration and team coordination (Åborg et al., 2002). Moreover, for communication with superiors to be effective and increase job satisfaction, it requires extra attention and clear instructions. Employer support improves task performance, which consequently increases task satisfaction. Additionally, it is worth noting the issue of training in new tools and technologies (Åborg et al., 2002), which can be crucial to maintaining job satisfaction when working remotely.

**Structural factors** refer to the organisational conditions of work, related to the definition of tasks, responsibilities and work rules, autonomy and geographic conditions, among others. Research shows that planning and clearly defined tasks and working conditions, affiliations, delegation of authority to employees (Poulsen and Ipsen, 2017) or job descriptions contribute to employees' confidence in performing remote work (van Zoonen et al., 2021) and facilitate better job performance, which can result in greater satisfaction (Grant, 2021). In contrast, unclear or undefined tasks can lead to frustration,

inefficiency and dissatisfaction. Because remote working provides the opportunity to work from anywhere in the world, it eliminates geographic limitations (Poulsen and Ipsen, 2017) and gives employees access to global projects. In addition, it allows for a sense of greater autonomy (Gajendran and Harrison, 2007), one of the key factors in job satisfaction. This can be particularly attractive to individuals who value flexibility, acquiring new competencies and working in global markets that allow them to work in different cultural contexts.

## 2. Methodology

The subject of the study was the evaluation of remote working performed by people employed in IT departments. The purpose of the study was to determine the level of employee satisfaction with the performance of tasks assigned by the employer in remote form, and to examine the discrepancy between the expectations of employees and the level of remote working performance they experienced. The authors also attempted to identify and classify the requirements of IT employees performing their job duties remotely.

In order to achieve the research objective thus set, an approach based on the Servqual method and the Kano model was used. The analysis was carried out according to the following stages:

Stage 1 – Determination of factors that affect remote working satisfaction of IT department employees.

Stage 2 – Preparation of a questionnaire examining the discrepancy between employees' expectations and the experience they have gained from working remotely.

Stage 3 – Identifying the discrepancy between employees' expectations of remote working and their experience based on the approach used in the Servqual method.

Stage 4 – Identification of characteristics shaping employee preferences using the Kano model.

The survey was distributed through social networks. The survey included 113 respondents who are employees of IT departments and perform their work remotely. The demographic and social structure of the respondents is shown in Table 3.

**Table 3.** Sociodemographic structure of respondents

| Factor | Group | Share |
|---|---|---|
| Gender | Female | 51% |
| | Male | 49% |
| Age | Under 23 years of age | 8% |
| | 24–43 | 83% |
| | 44–58 | 9% |
| Seniority | Less than one year | 8% |
| | 1–2 years | 16% |
| | 2–3 years | 11% |
| | 3–5 years | 14% |
| | 5–10 years | 24% |
| | Over 10 years | 27% |

| Factor | Group | Share |
|---|---|---|
| Number of days working remotely | 1 day per week | 3% |
| | 2 days per week | 10% |
| | 3 days per week | 11% |
| | 4 days per week | 7% |
| | 5 days per week | 69% |

**Source:** own elaboration

In order to determine the gap between the level of satisfaction of employees with the performance of tasks assigned by the employer in remote form, an approach based on the Servqual method was used.

For this purpose, on the basis of a critical analysis of the literature on the subject, the characteristics affecting the level of employee satisfaction with work performed remotely were identified and defined, and assigned to the six dimensions defined by the authors of the publication. Table 4 shows a summary of the characteristics categorised in six dimensions.

**Table 4.** Summary of the characteristics affecting the level of satisfaction with remote working among IT department employees

| Dimension | Features |
|---|---|
| Professional development factors | Promotion opportunity |
| | Raise |
| | Opportunity for personal development |
| | Job stability |
| | Bonuses/recognition |
| Adaptation factors | Working with modern technology |
| | Allowance to cover the costs of remote working (electricity, etc.) |
| | Equipment subsidy |
| Productivity/performance factors | Flexibility of working hours |
| | Workplace flexibility |
| | Work productivity |
| Sustainability factors | Less burden on the environment |
| | Reduction in commuting costs |
| | Reduction of commuting stress |
| | Wellbeing |
| Relational factors | Reduction of contact with employees |
| | Communication with co-workers |
| | Communication with superiors |
| | Support from the employer |

| Dimension | Features |
|---|---|
| Structural factors | Structural factors |
| | Clearly defined tasks |
| | Clearly defined policies and procedures |
| | Autonomy of work |
| | No geographical restrictions |
| | Access to global projects |

**Source:** own elaboration

On the basis of the characteristics shown in Table 2, a questionnaire was created in which respondents assessed, on the one hand, their expectations of remote working, and, on the other hand, their experience with the form of work analysed. An example of the structure of the questions in the questionnaire is shown in Table 5.

**Table 5.** Example of questions from a questionnaire assessing the difference between expectations and experience of IT staff in terms of remote working

| Questions | Response options |
|---|---|
| Remote working should enable promotion | 1 – I strongly disagree<br>2 – I somewhat disagree<br>3 – I have no opinion<br>4 – I somewhat agree<br>5 – I strongly agree |
| Remote working allows me to advance | 1 – I strongly disagree<br>2 – I somewhat disagree<br>3 – I have no opinion<br>4 – I somewhat agree<br>5 – I strongly agree |

**Source:** own elaboration

In order to determine the discrepancy between respondents' expectations and their experience, the analysis was carried out using the Servqual approach according to the following steps:

1. Based on the average opinion of respondents for each characteristic, which are shown in Table 2, the expected and experienced levels from the remote working evaluation were determined.
2. The average score for the expected and experienced level from remote working within each dimension was calculated.
3. The gap between the experienced and expected evaluation of remote working of IT employees was calculated.

The Kano model approach was used to identify and classify the requirements of IT employees performing their job duties remotely. For this purpose, the characteristics used were those shown in Table 2. The research procedure was carried out according to the following steps:

1. Development of the KANO questionnaire;
2. Conducting surveys;
3. Determining the type of features;
4. Analysis of the results.

Table 6 shows an example of a question posed in the survey questionnaire

**Table 6.** Example of a question from the questionnaire assessing which characteristics influence the preference of IT employees for remote working

| Questions | Response options |
|---|---|
| Remote working should enable personal development | 1 – It suits me<br>2 – It must be so<br>3 – I am indifferent to it<br>4 – I can come to terms with it<br>5 – It does not suit me |
| How would you feel if remote working did not enable personal development? | 1 – It suits me<br>2 – It must be so<br>3 – I am indifferent to it<br>4 – I can come to terms with it<br>5 – It does not suit me |

**Source:** own study

A questionnaire based on the Kano approach formed the basis for the survey. Based on the respondents' opinions, one of the following types was assigned to each feature:

1. mandatory, basic features (must have – M),
2. one-dimensional, functional traits (one-dimensional or more is better – O),
3. attractive, delightful, superlative traits, so-called lures (attractive – A),
4. indifferent traits, so-called without difference (indifferent – I),
5. questionable traits (questionable – Q),
6. opposite traits (reverse – R)

Based on the defined groups, the type of trait was determined by the following procedure (Malinowska et al., 2014):

– if (A+M+O) > (R+Q+I), the trait takes a category from group A, M, O, with the highest value;
– if (A+M+O) < (R+Q+I), the feature takes a category from the group R, Q, I, with the highest value.

In the final stage of the study, the results were analysed.

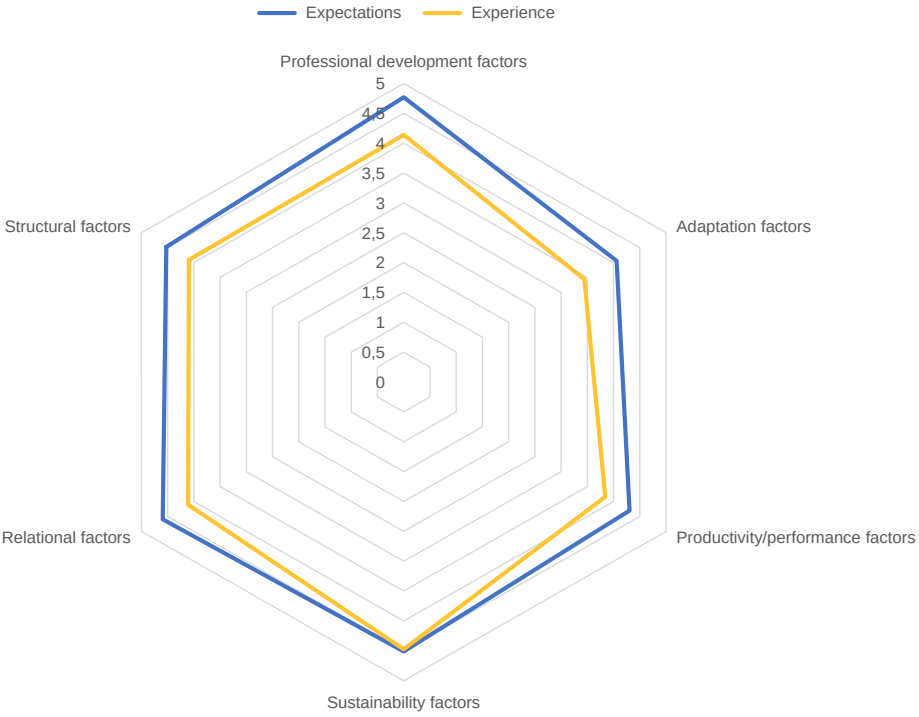
## 3. Research results

In the first stage of the analyses, the discrepancies between employees' expectations of remote working and their experience were determined. To achieve such a goal, an approach based on the Servqual method was used. The authors identified the following dimensions that affect IT employees' satisfaction with remote working, and within the dimensions they identified the following groups of factors:

1. professional development factors;
2. adaptation factors;
3. productivity/performance factors;
4. sustainability factors;
5. relational factors;
6. structural factors.

Within the indicated groups of factors, the employees' expectations of working remotely and the evaluation related to experience are presented. The results of the analyses are shown in Figure 3.

**Figure 3.** Expectation and experience-related assessment of remote working of employees of IT departments




**Source:** own elaboration

Employees' expectations about remote working were not met, which means the presence of a negative gap for each of the analysed dimensions, i.e. the difference between the experienced and expected evaluation. The largest gap relates to the dimension related to personal development and adaptation factors. The gap for this dimension is -0.63 and -0.62, respectively. The smallest gap was indicated for the dimension related to sustainability factors (-0.04).

Analysing the factors that were identified in the area of personal development, the largest gaps between experienced and expected ratings are related to bonuses and employer recognition (-0.77) and job stability (-0.72). Within this dimension, the factor related to opportunities for personal development was rated best (-0.40).

Looking at individual factors, it should be noted that within the framework of the analyses conducted, it is possible to identify those in which the experienced rating exceeded the expected rating or was at the same level. These factors include:

1. a smaller burden on the environment (-0.21)
2. labour productivity (-0.04)
3. reduction of commuting costs (-0.02)
4. reduction of commuting stress (0.00)

On the other hand, the factors with the largest gap, meaning that expectations far exceeded the experience of IT employees, are as follows:

1. job stability (-0.72)
2. bonuses/recognition (-0.77)
3. allowance to cover the costs of remote working (electricity, etc.) (-0.77)
4. workplace flexibility (-0.96)

The detailed results of the analyses are shown in Table 7.

**Table 7.** Evaluation between experienced and expected value for each dimension and factor

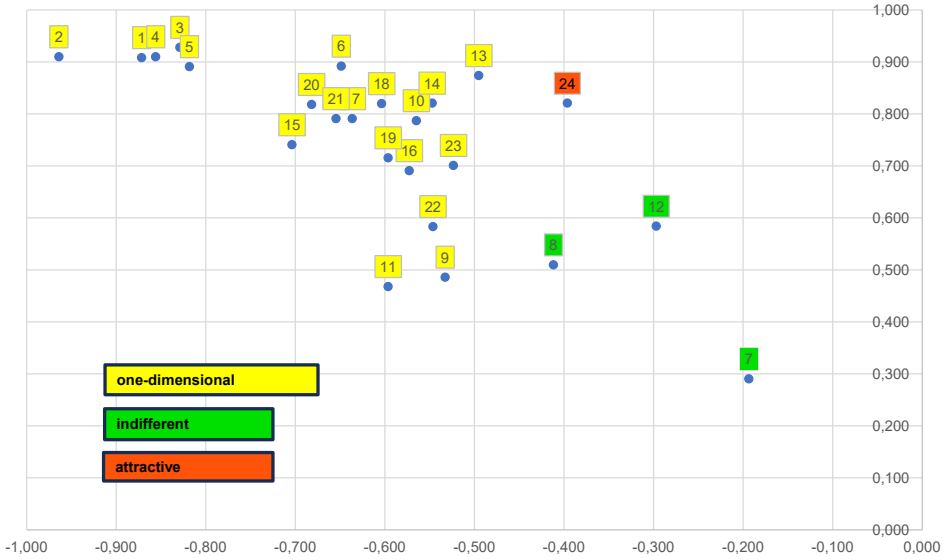
| Dimension | Features | Gap – factor | Gap – dimension |
|---|---|---|---|
| Professional development factors | Promotion opportunity | -0.65 | -0.63 |
| | Raise | -0.62 | |
| | Opportunity for personal development | -0.40 | |
| | Job stability | -0.72 | |
| | Bonuses/recognition | -0.77 | |
| Adaptation factors | Working with modern technology | -0.52 | -0.62 |
| | Allowance to cover the costs of remote working (electricity, etc.) | -0.77 | |
| | Equipment subsidy | -0.56 | |
| Productivity/performance factors | Flexibility of working hours | -0.46 | -0.46 |
| | Workplace flexibility | -0.96 | |
| | Work productivity | 0.04 | |
| Sustainability factors | Smaller burden on the environment | 0.21 | -0.04 |
| | Reduction in commuting costs | 0.02 | |
| | Reduction of commuting stress | 0.00 | |
| | Wellbeing | -0.37 | |
| Relational factors | Reduction of contact with employees | -0.58 | -0.48 |
| | Communication with co-workers | -0.50 | |
| | Communication with superiors | -0.42 | |
| | Support from the employer | -0.43 | |
| Structural factors | Structural factors / Clearly defined tasks | -0.58 | -0.43 |
| | Clearly defined policies and procedures | -0.61 | |
| | Autonomy of work | -0.03 | |
| | No geographical restrictions | -0.42 | |
| | Access to global projects | -0.53 | |

**Source:** own study

The next step of the analysis was to identify the characteristics that shape the preferences of IT employees working remotely. For this purpose, an approach based on the Kano model was used. The results for the Kano method are shown in Figure 2, where the vertical axis represents satisfaction <0, 1> and the horizontal axis represents

dissatisfaction <-1, 0> with remote working. The numbers shown in Figure 4 refer to the characteristics studied. The traits and corresponding numbers are shown in Table 8.

**Figure 4.** Satisfaction and dissatisfaction according to the Kano model




**Source:** own elaboration

**Table 8.** Summary of analysis results

| Dimension | No | Features | Kano model | Gap – factor | Gap – dimension |
|---|---|---|---|---|---|
| Professional development factors | 1 | Promotion opportunity | 0 | -0.65 | -0.63 |
| | 2 | Raise | 0 | -0.62 | |
| | 3 | Opportunity for personal development | 0 | -0.40 | |
| | 4 | Job stability | 0 | -0.72 | |
| | 5 | Bonuses/recognition | 0 | -0.77 | |
| Adaptation factors | 6 | Working with modern technology | 0 | -0.52 | -0.62 |
| | 7 | Allowance to cover costs of remote working (electricity, etc.) | I | -0.77 | |
| | 8 | Equipment subsidy | I | -0.56 | |
| Productivity/ performance factors | 9 | Flexibility of working hours | 0 | -0.46 | -0.46 |
| | 10 | Workplace flexibility | 0 | -0.96 | |
| | 11 | Work productivity | 0 | 0.04 | |

| Dimension | No | Features | Kano model | Gap – factor | Gap – dimension |
|---|---|---|---|---|---|
| Sustainability factors | 12 | Smaller burden on the environment | I | 0.21 | -0.04 |
| | 13 | Reduction in commuting costs | 0 | 0.02 | |
| | 14 | Reduction of commuting stress | 0 | 0.00 | |
| | 15 | Wellbeing | 0 | -0.37 | |
| Relational factors | 16 | Reduction of contact with employees | 0 | -0.58 | -0.48 |
| | 17 | Communication with co-workers | 0 | -0.50 | |
| | 18 | Communication with superiors | 0 | -0.42 | |
| | 19 | Support from the employer | 0 | -0.43 | |
| Structural factors | 20 | Structural factors / Clearly defined tasks | 0 | -0.58 | -0.43 |
| | 21 | Clearly defined policies and procedures | 0 | -0.61 | |
| | 22 | Autonomy of work | 0 | -0.03 | |
| | 23 | No geographical restrictions | 0 | -0.42 | |
| | 24 | Access to global projects | A | -0.53 | |

**Source:** own study

The most numerous category in terms of the number of features is the group of one-dimensional features (O). As many as 20 of the 24 features were assigned to this category. This is a group of features to which one should pay close attention and observe the activities of other employers in this area. Only one trait, access to global projects, was assigned to the category of attractive traits (A), which can be a so-called "lure" for potential employees. It should be pointed out that employees showed a gap within this trait (-0.53). On the other hand, three out of 24 factors were grouped as indifferent (I) traits. The traits related to equipment subsidies and costs associated with remote working have fairly high gaps, -0.56 and -0.77, respectively. On the other hand, within the indifferent traits, the factor related to the assessment of the impact of remote working on the environmental burden was rated higher by respondents than employees' expectations in this regard.

## Conclusions

The purpose of this research was to investigate the level of employee satisfaction with the performance of tasks assigned by the employer in remote form, and to examine the discrepancy between employee expectations and the level of performance of remote working. Our study attempted to analyse the discrepancy between employee expectations and the experience of remote working, and sought to identify the characteristics that shape employee preferences, along with an attempt to identify and classify the requirements of IT employees working remotely.

Performing job duties using ICT without the need to be physically present in the office affects both the experience and satisfaction of employees. This satisfaction, as a multidimensional and complex concept, can be studied through areas classified in six dimensions according to 24 characteristics. The results of our research show that we can

identify areas in which employees' expectations of remote working are inadequately met and employers should take appropriate steps to meet these expectations and increase employee satisfaction. In addition:

- IT employees' expectations in the context of remote working were not fully met, resulting in a negative gap for each of the six dimensions (career development factors, adaptive factors, productivity factors, sustainability factors, relational factors, and structural factors). This shows the gap between the employees' assessment of expectations and experiences;
- the largest gap is found in the dimensions of personal development and adaptive factors. The most noticeable differences in these areas relate to bonuses and recognition from the employer, as well as employment stability;
- the factors for which expectations significantly exceeded employees' actual experiences are related to employment stability, bonuses and recognition from the employer, an allowance covering the costs of remote working (e.g. electricity) and workplace flexibility;
- the positive effect of remote working has been recognised in relation to factors such as reduced environmental impact, productivity, reduced commuting costs and reduced commuting stress;
- the Kano model approach indicated that most of the characteristics we studied (as many as 20 out of 24) can be categorised as one-dimensional characteristics that have a direct impact on job satisfaction. For example, a raise or opportunity for promotion may be one example of such a trait, and implies that the greater the opportunity for a raise or promotion, the greater the employee's satisfaction. It is therefore important for organisations to focus on these one-dimensional traits while keeping an eye on competitors' activities in this area;
- only one attribute, access to global projects, was classified as an attribute of attractiveness, with the ability to attract potential employees to work there;
- three attributes related to subsidising equipment, covering the costs resulting from remote working, and the impact of remote working on environmental load, were classified as indifferent. In our case, the presence or absence of these features has no significant impact on employees' overall satisfaction with remote working.

It should also be noted that the results obtained are not free of limitations. One of these is the research sample. Our study included a sample of 113 employees providing remote working in a sample that is not representative of the entire population of employees working in the IT sector in Poland. In addition, as M. Stefanska and her team (2023) emphasise, for each subjective category, the level of satisfaction of individual employees may be shaped by different factors, and the level of perceived satisfaction may be different for each employee. In addition, in order to confirm the universality of the approach presented and the methods used, it would be necessary to repeat the study on a representative sample or in other industries. Future analyses could also be expanded to include additional aspects that were not included in our study.

The results of the study can be useful in a variety of ways. By bridging the research gap and providing insights into the impact of remote working on the experience and satisfaction levels of employees with remote working in the IT industry, they can inspire further in-depth research and analysis. Also, employers, IT HR professionals, advisors and consultants can use this information to understand how remote working affects employee satisfaction and how the remote working experience of employees can be improved, and how to shape remote working strategy, conditions and policies.

In addition, based on the results of our survey and in response to the demonstrated gaps and unfulfilled expectations of employees regarding remote work in the IT industry, it is necessary to develop practical recommendations that will improve the form of remote work and, as a result, increase the level of satisfaction of employees of IT companies in Poland. The next step in this process should be to develop a strategy for organising remote work for IT employees in the era of digital transformation. Such an approach would not only increase the efficiency of remote work, but could also be an important element in attracting and retaining talent in the industry. This provides an interesting direction for further research.

It is also worth defining and detailing the prospects for further research. The possibilities in this regard are numerous, from analysing the effectiveness of specific remote working tools and platforms, to studying the impact of different management strategies on the satisfaction and effectiveness of remote workers in the IT sector. Such an analysis could also take into account changing trends and innovations in technology that affect the way remote work is organised and executed.

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