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PRO-ENVIRONMENTAL BEHAVIORS OF HOTEL GUESTS IN DIFFERENT AREAS OF LIFE AND SELECTED ASPECTS OF SOCIOECONOMIC STATUS

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ABSTRACT: The aim of the article is to assess the variability of pro-environmental behaviors of hotel guests in various areas of life and the correlation of these behaviors with the socioeconomic status of guests. The survey was conducted on a sample of 1,317 hotel guests from four Polish cities using a diagnostic questionnaire and a proprietary. The study showed that the respondents most often implemented pro-environmental behaviours while performing household chores and professional duties, and least often during leisure trips and self-development activities. The study also noted significant relationships between the frequency of such behaviours and such aspects of socioeconomic status as gender, age, education, place of residence, professional status, marital status, and having children under 18 years of age. These are variables which, as shown by the literature review made in the article, have not been analysed in more detail in similar domestic and foreign studies. The research undertaken, therefore, fills the identified research gap to some extent. These results highlight the need for more targeted educational initiatives and wider dissemination of environmental programs in hotels and travel agencies to encourage environmentally sustainable leisure behaviour. Guests should also be informed about how the funds raised by changing their behaviour to a more environmentally friendly one are being used.

KEYWORDS: Pro-environmental behaviour, hotels, hotel guests, living areas, socioeconomic status

Introduction

Of all commercial properties, hotels have the greatest negative impact on the natural environment. According to estimates, an average hotel annually releases 160-200 kg of CO₂ per square meter of floor space and consumes 170-440 litres of water (Han et al., 2011; Mbasera et al., 2016). The intensity of waste generation per day is 1-6 kg per room. In less economically developed countries, solid waste generated in hotels often ends up in landfills (Singh et al., 2014).

The negative impact of hotels on the natural environment is often due to the behaviour of guests. Meanwhile, pro-environmental behaviours or “conscious actions that aim to reduce the negative impact humans have on the environment” (Kollmuss & Agyeman, 2002) are essential tools for building sustainable hotels (Puciato et al., 2023). Behaviours, including minimising the use of natural resources and harmful, toxic substances, reducing waste production, and reducing energy consumption, should be implemented by guests and other hotel stakeholders, mainly employees, managers, and suppliers (Borys et al., 2023).

Meanwhile, guests who want to rest often do not pay attention to water consumption and electricity and heat in hotels, although, due to financial costs and the state of the environment, they reduce their consumption in their own homes (Orynycz & Tucki, 2021). This is supported by the results of studies conducted by Baker et al. (2014), Foroughi et al. (2022), Melo et al. (2018), and Wu et al. (2021), which showed that people exhibit different pro-environmental behaviours in different areas of life, i.e., home, workplace, or leisure time. In addition, the literature has documented differences in pro-environmental behaviors by socioeconomic status, including age (Bugdol et al., 2023; Han et al., 2011; Sudbury et al., 2014), gender (Briscoe et al., 2019; Sudbury et al., 2014;), education (Vasiljevic-Shikaleska et al., 2018), and income (Otto et al., 2016).

In the context of the remarks made, the main purpose of the article is to assess the degree of variation in the implementation of pro-environmental behaviour of hotel guests in different areas of life and to identify correlations between these behaviours and their socioeconomic status.

Research Methods

This article employs the following research methods:

- In the conceptual section, a systematic review of the literature is conducted.
- In the empirical section, diagnostic survey research is applied using a proprietary questionnaire comprising several questions concerning hotel guests’ pro-environmental behaviours across various domains of daily life.
- Statistical methods are employed to analyse the survey results, with particular emphasis on descriptive statistics (frequencies, proportions, correlation indices) and inferential statistics (statistical tests and confidence intervals).

An overview of the literature and research gap identification

The literature review was conducted in the following stages: (1) selecting keywords: pro-environmental behavior, factors, hotels, (2) searching for works containing the identified keywords in the following databases: Academic Search Ultimate, including Business Source Ultimate, Education Resources Information Center, AGRICOLA, Open Dissertations, Green FILE, Newspaper Source, and Google Scholar; (3) examination of selected publications; (4) their critical review; (5) preparing a map of the available literature; (6) summary of findings from the reviewed publications and identification of research gaps; (7) arranging the collected research material. The applied procedure is consistent with the general methodology of conducting research and the methodology of research in management sciences (Easterby-Smith et al., 2015).

The literature review will be conducted following the previously established research objective. Specifically, it will focus on assessing the current state of knowledge regarding the diversity of hotel

guests' pro-environmental behaviours across different domains of life – both within and outside the hotel setting – and subsequently on identifying the relationships between these behaviours and the guests' socioeconomic status.

Pro-environmental behaviour inside and outside the hotel

Green behaviour has been the subject of much research for several years in the hospitality industry (Baker et al., 2014; Dolnicar et al., 2017; Han & Hyun, 2018; Rezapouraghdam et al., 2018; Wei-Che et al., 2018; Yucedag et al., 2018). It is assumed that pro-environmental behaviour depends on many factors, including held values, individual and collective standards, awareness of consequences, internal motivation, personal convictions, faith, religion, personal relations with nature, health awareness, a sense of guilt, and an internal sense of duty (Bugdol & Stańczyk, 2021). The results of various studies indicate that the main factor of pro-environmental behaviour in hotels is the environmental and social value (Foroughi et al., 2022), which is formed in different places and at different times of life. Findings from previous research also suggest that pro-environmental behaviour in hotels plays an important role in fostering pro-environmental behaviour in other areas of life (Han et al., 2018). Recently published research pointed out that shaping pro-environmental behaviour in a hotel is difficult, not only because of the nature of the stay and the different needs of hotel guests. Hotel behaviour is also co-determined by home habits, how we act daily (Wang et al., 2023). Pro-environmental behaviours of guests in their own homes have a positive modelling effect on the correlation between home experiences and pro-environmental behaviours in hotels (Liu & Peng, 2023).

If we consider only hotel stays during tourism trips, it can be assumed that these behaviours are influenced by everyday habits (Liu et al., 2020; Dharmesti et al., 2020). Research by Wu et al. (2021) further indicates that stated pro-environmental intention on vacation does not translate into actual pro-environmental behaviour at home. There is, of course, no indication that pro-environmental behaviour changes over time and place. On the other hand, the physical context may be relevant to these behaviours, including infrastructure. It is understood that pro-environmental behaviour at home may be different from on vacation. One study (Baratta et al., 2023) looked at how a resting place that resembles home influences this type of behaviour. It turns out that tourists who experience a home-like atmosphere are more loyal to such destinations and exhibit higher levels of pro-environmental behaviours. Another study (Xu et al., 2020) found that domestic pro-environmental behaviour is positively associated with tourism pro-environmental behaviour. Earlier studies have also analysed the correlation between home and work behaviour. The results indicate that there is a strong correlation between individuals' behaviours in the two locations, with employees who did recycling activities at home more likely to behave similarly at work. There was also some similarity in the level of behavioural persistence between the two communities. These behaviours were strongly influenced by the respondents' underlying attitudes and beliefs toward the environment (Tudor et al., 2007). Workplace food waste interventions have also been found to influence household pro-environmental behaviour (Wang et al., 2022).

A study by Melo et al. (2018) indicates that the large number of work responsibilities and limited leisure resources prevent some respondents from acting according to their values and are a barrier to pro-environmental behaviour. Indeed, in their free time, some respondents undertook pro-environmental activities, including educational (Krajhanzl, 2010). This is supported by a study in China, which found that using the Internet during working hours and using the Internet in leisure time for educational purposes promotes improved environmental behaviour (Gong et al., 2020). In addition, research that has been conducted in the UK shows that work-life imbalance does not seem to influence either directly or indirectly (through environmental values and attitudes) pro-environmental behaviour. The actual availability of free time does not affect pro-environmental behaviour much, while the subjective experience of a lack of work-life balance can have a direct negative impact on pro-environmental behaviour (Melo et al., 2018).

Pro-environmental behaviours and the socioeconomic characteristics of hotel guests

Studies of the correlation between pro-environmental behaviour and socioeconomic characteristics have considered age, gender, education, income, and place of residence. Age-related findings were inconclusive. On the one hand, the younger generation shows a greater propensity for this

behaviour (Bugdol et al., 2023). On the other hand, however, Han et al. (2011) showed that intentions to use green hotels do not differ significantly by age. Although some studies show that older generations are more likely to advocate environmentally friendly actions, a significant part of the research shows that young people are more environmentally conscious (Sudbury et al., 2014). Research conducted in hotels indicates that young individuals from Generation Z frequently exhibit environmentally friendly behaviours, although these tend to focus primarily on actions that offer financial or health benefits. Younger guests generally support most pro-environmental practices implemented by hotels; however, their preferences vary, and in exchange for endorsing such initiatives, they typically expect financial incentives (Dębski & Borkowska-Niszczota, 2020). The results of a Pennsylvania study indicated that young people are most likely to maintain proactive positions on environmental issues (Theodori & Luloff, 2002).

Taking gender into account, it has been shown that women are more likely than men to engage in environmentally friendly behaviour in the private sphere (Gong et al., 2020). Gender differences are also evident in the public's pro-environmental behaviour, although the results suggest that this may be a consequence of higher levels of environmental concern among women (Briscoe et al., 2019). In a study conducted in China (Bhutto et al., 2019), it was also shown that the impact of attitude and subjective norms regarding the intention to buy green is higher in women than in men. Although gender plays an important role in the expression of pro-environmental behaviours, culture and upbringing are also significant contributing factors. For example, although numerous studies suggest that women are more inclined than men to engage in private pro-environmental behaviours, research findings from China do not support this thesis. The lower level of environmental knowledge of Chinese women compared to men hinders their participation in private pro-environmental activities, indicating that men may be more aware and more likely to exhibit pro-environmental behaviour.

Analysing the impact of education on these behaviours, Theodori and Luloff (2002) showed that people with higher education are more likely to implement pro-environmental behaviour. Positive associations between pro-environmental behaviour and education level were also demonstrated by Gong et al. (2020), Han et al. (2011), and Melo et al. (2018). Vasiljevic-Shikaleska et al. (2018), on the other hand, found no significant significance of education level for behaviour.

Income is also an important modifier of pro-environmental behaviour (Melo et al., 2018; Otto et al., 2016; Theodori & Luloff, 2002). The results of the study, conducted in Macedonia, show that waste minimisation and energy efficiency behaviour are influenced by income level. It has been observed that pro-environmental behaviour is most often demonstrated by people with high incomes (Vasiljevic-Shikaleska et al., 2018). In addition, Gong et al. (2020) showed higher levels of pro-environmental behaviour in urban residents than in rural ones.

A review of the literature indicates that the variation in hotel guests' pro-environmental behaviour in different areas of life is not yet well recognised. There is a lack of research on these behaviours during professional work at home and during business trips, performing household chores and caring for others, as well as in the context of further professional development and mobility. Previous research shows that these behaviours cannot be clearly separated, suggesting that our daily habits may be important for how we behave in hotels (Liu et al., 2020; Dharmesti et al., 2020; Wang et al., 2023; Gao et al., 2023), despite the temporary nature of our stay. Therefore, it is important to establish how these behaviours differ in different areas of our lives. The results of studies on socio-demographic characteristics – such as age (Han et al., 2011), gender (Briscoe et al., 2019; Bhutto et al., 2019), education (Melo et al., 2018; Vasiljevic-Shikaleska et al., 2018; Gong et al., 2020) – remain inconclusive. Moreover, some of the cited studies were conducted outside the hotel industry. In addition, the study did not consider occupational and marital status.

One of the fundamental research problems is determining the extent to which individuals' behaviours differ across various environments. A key question is whether the temporary nature of hotel stays alters these behaviours. We assume that guests seeking relaxation often do not pay as much attention to pro-environmental behaviours as they do at home. This assumption is supported by findings from previous studies conducted by Baker et al. (2014), Foroughi et al. (2022), Melo et al. (2018), Wu et al. (2021), and Orynycz and Tucki (2021).

Due to the lack of clear evidence on how social and demographic characteristics shape pro-environmental behaviour, we examine how attributes such as age, gender, and education influence the expression of such behaviour. Based on previous research results, we can only assume that younger

individuals (Dębski & Borkowska-Niszczoła, 2020), those with a higher level of education (Melo et al., 2018; Gong et al., 2020), and those with higher incomes (Melo et al., 2018; Otto et al., 2016; Theodori & Luloff, 2002) are more likely to engage in pro-environmental behaviours in different domains of activity.

Survey research

Once the research questions were formulated, diagnostic survey research was conducted using a proprietary questionnaire with a time-random sample. The survey questionnaire included 15 questions on hotel guests' pro-environmental behaviour and 12 regarding metrics. A disjunctive and conjunctive cafeteria was used. The questions were typically formulated in closed format, and occasionally semi-open. The questionnaire included items addressing, among other issues, the frequency of pro-environmental behaviours across various domains of the respondents' lives, the types of pro-environmental behaviours undertaken in hotels, as well as the motivations for and barriers to engaging in such behaviours. Due to the specific aim of the article, not all questions were included in this paper. The study included a total of six hotels located in Warsaw, Krakow, Wrocław, and Opole. The criteria for selecting hotels for the study were as follows: location in a large city with a population of more than 100,000 residents, a medium standard – 3-star category, and the consent of top management to participate in the study. The number of hotels included in the study and the use of convenience sampling do not allow the sample to be considered representative. The average number of accommodation units was slightly below 100, with the smallest hotel offering 24 rooms and the largest 170. The hotels in which the study was conducted offered, on average, approximately 192 bed places, with values ranging from 42 to 340. The hotels were characterised by high variability in the number of accommodation units and beds – the coefficients of variation were above 60%. The average number of employees per hotel was approximately 37, with staffing levels ranging from 15 to 49 employees. Employment size in the analysed hotels showed moderate variability, with a coefficient of variation of approximately 40%.

The statistical material was obtained from a survey of a total of 1,317 hotel guests, including 835 (63%) women and 482 (37%) men. The characteristics of the respondents by selected socio-economic characteristics are shown in Table 1.

Table 1. Socio-economic characteristics of the surveyed hotel guests

Variable	Category	n	p
Gender	Female	835	63.4%
	Male	482	36.6%
Age	18-25 years	468	35.5%
	26-35 years	306	23.2%
	36-45 years	331	25.1%
	46-55 years	167	12.7%
	56-65 years	45	3.4%
Education	Higher	793	60.2%
	Medium	489	37.1%
	Basic vocational	35	2.7%
Place of residence	Big city	442	33.6%
	Medium city	416	31.6%
	Small town	280	21.3%
	Village	179	13.6%

Variable	Category	n	p
Professional status	White-collar worker	563	42.7%
	Pupil or student	360	27.3%
	Entrepreneur	239	18.1%
	Manual worker	108	8.2%
	Unemployed, retired, or pensioner	47	3.6%
Marital status	Married	765	58.1%
	Single	552	41.9%
Having underage children	No	860	65.3%
	Yes	457	34.7%
Assessment of material status	High	312	23.7%
	Medium	932	70.8%
	Low	73	5.5%

Legend: *n* – the number of respondents, – The proportions (frequencies; percentages) of respondents.

Source: authors' work based on the conducted survey research.

Results of the research

Considering the total sample size ($N=1317$), it was possible to adopt a significance level of 0.05 and a maximum sampling error of $\pm 2.7\%$. The quality of the research instrument was assessed using a measure of questionnaire reliability, which confirmed the instrument's reliability. Cronbach's alpha coefficient for the research instrument reached a value of 0.77. As part of the statistical analysis, descriptive statistics were calculated: the sample size (*n*) and proportions (frequencies; percentages) (*p*) of the surveyed respondents. The values of the chi-square goodness-of-fit and binomial tests with Bonferroni correction for the number of simple comparisons were calculated, as well as the *W*-Cohen(*W*) ratios as a measure of the practical significance of the difference between the proportions being compared (Cohen, 1988). These measures were used to determine the categories of variables occurring most frequently and to assess their variation in the observed group of hotel guests. The degree of variation in individual variables characterizing the pro-environmental behavior of hotel guests was assessed using Q-Cochran (Omnibus tests) and Dunn (post-hoc test) tests with Bonferroni's correction for the number of simple comparisons. The adjusted odds ratio (*R*) was also determined as a measure of the practical significance of the difference between the compared variables. Odds ratio (*OR*) statistics, along with 95% confidence intervals (95% *CI*), were used to assess the correlation between pro-environmental behaviours (*DVs*) and selected socioeconomic indicators (*IVs*). The choice of statistical analysis techniques was motivated by three factors: the type of research sample, the nature of the variables, and the objectives of the article.

Statistical analyses were conducted using a significance level of $\alpha = 0.05$. All calculations were performed with IBM SPSS Statistics (Version 26.0).

Using these statistical tools, the following aspects were examined:

- the diversity of guests' pro-environmental behaviours across different areas of life;
- and the socioeconomic correlates of hotel guests' pro-environmental behaviours in various areas of life.

Differentiation of guests' pro-environmental behaviour in different areas of life

The highest percentage of respondents implemented pro-environmental behaviours while performing household chores, with 91.3% 'always and frequently' responses and 8.7% 'never and rarely' responses ($\chi^2 = 897.17$, $p < 0.001$, $W = 0.83$). In subsequent areas of activity, the shares of 'always and frequently' responses remained high but were lower than those observed for performing household tasks. These shares were as follows:

- during work duties performed at home: 85.4% ‘always and frequently’, while 14.6% responded ‘never and rarely’ ($\chi^2 = 660.96$, $p < 0.001$, $W = 0.71$);
- at the workplace, 83.8% of respondents indicated ‘always and frequently’, while 16.2% responded ‘never and rarely’ ($\chi^2 = 600.09$, $p < 0.001$, $W = 0.68$);
- during business trips, 76.5% of hotel guests engaged in pro-environmental behaviours ‘always and frequently’, while 23.5% responded ‘never and rarely’;
- during everyday leisure activities, while caring for others, and moving around, the proportions of ‘always and frequently’ responses versus ‘never and rarely’ were as follows: 73.3% and 26.7%; 72.1% and 27.9%; 71.5% and 28.5%.
- Hotel guests exhibited pro-environmental behaviours least frequently during:
 - a leisure trip abroad – 64.2% ‘always and frequently’ and 35.8% ‘never and rarely’ ($\chi^2 = 106.78$, $p < 0.001$, $W = 0.25$),
 - a domestic leisure trip – 67.4% ‘always and frequently’ and 32.6% ‘never and rarely’ ($\chi^2 = 158.58$, $p < 0.001$, $W = 0.35$),
 - and self-development activities – 69.5% ‘always and frequently’ and 30.5% ‘never and rarely’ ($\chi^2 = 199.82$, $p < 0.001$, $W = 0.39$) (cf. Table 2).

Table 2. Characteristics of pro-environmental behaviour of hotel guests in various areas of life

Variable	Category	n	p
Professional work in the workplace	Always/frequently	1103	83.8%
	Never/rarely	214	16.2%
	$\chi^2 (1, N=1317) = 600.09, p < 0.001, W = 0.68$		
Professional work at home	Always/frequently	1125	85.4%
	Never/rarely	192	14.6%
	$\chi^2 (1, N=1317) = 660.96, p < 0.001, W = 0.71$		
Professional work on a business trip	Always/frequently	1008	76.5%
	Never/rarely	309	23.5%
	$\chi^2 (1, N=1317) = 371.00, p < 0.001, W = 0.53$		
Household duties	Always/frequently	1202	91.3%
	Never/rarely	115	8.7%
	$\chi^2 (1, N=1317) = 897.17, p < 0.001, W = 0.83$		
Caring for other people or animals	Always/frequently	949	72.1%
	Never/rarely	368	27.9%
	$\chi^2 (1, N=1317) = 256.21, p < 0.001, W = 0.44$		
Self-development activities	Always/frequently	915	69.5%
	Never/rarely	402	30.5%
	$\chi^2 (1, N=1317) = 199.82, p < 0.001, W = 0.39$		
Moving from place to place	Always/frequently	941	71.5%
	Never/rarely	376	28.5%
	$\chi^2 (1, N=1317) = 242.39, p < 0.001, W = 0.43$		
Everyday leisure time	Always/frequently	965	73.3%
	Never/rarely	352	26.7%
	$\chi^2 (1, N=1317) = 285.32, p < 0.001, W = 0.47$		

Variable	Category	n	p
Domestic weekend or vacation trip	Always/frequently	887	67.4%
	Never/rarely	430	32.6%
	$\chi^2(1, N=1317) = 158.58, p < 0.001, W = 0.35$		
Weekend or vacation trip abroad	Always/frequently	846	64.2%
	Never/rarely	471	35.8%
	$\chi^2(1, N=1317) = 106.78, p < 0.001, W = 0.25$		

Legend: *n* – number of subjects, – proportion of subjects, χ^2 – chi-square goodness-of-fit test value, *p* – test probability level for χ^2 , *W* – effect size measure, where: *W* = 0.10 small effect, *W* = 0.30, medium effect, *W* = 0.50 large effect.

Based on the results of the Q-Cochran test, it can be concluded that the pro-environmental behaviours of hotel guests in the ten areas of their lives considered differ significantly ($\chi^2 = 859.43, p < 0.001$), although to a small extent (*R* = 0.04). Post-hoc comparisons of proportions (frequencies) using Dunn's test showed statistically significant differences ($p \leq .001$) for the following pairs of variables (cf. Table 3):

- foreign leisure trip vs. moving around, caring for other people or animals, leisure activities on a daily basis, professional work on a business trip, professional work at the workplace, professional work at home and performing household duties,
- domestic leisure trip vs. spending leisure time on a daily basis, professional work on business trips, professional work at the workplace, professional work at home and performance of household chores,
- self-development activities vs. professional work on business trips, professional work at the workplace, professional work at home, and performance of domestic duties, moving from place to place vs. professional work at the workplace, professional work at home, and performance of household duties, care of other people or animals vs. professional work at the workplace, professional work at home and performance of household duties,
- leisure activities on a daily basis vs. professional work at the workplace, professional work at home and performance of domestic duties,
- professional work on business trips vs. professional work at the workplace, professional work at home and performance of household duties, professional work at the workplace vs. performing household duties
- and professional work performed at home vs. performing household chores.

All other comparisons of proportions against each other showed that they were not statistically significantly different ($p > 0.05$).

Table 3. Differentiation of pro-environmental behaviour of hotel guests in different areas of their lives

Variable		p
Weekend trip or vacation abroad vs.	Domestic weekend or vacation trip	0.597
	Self-development activities	0.001
	Moving from place to place	<0.001
	Caring for other people or animals	<0.001
	Everyday leisure time	<0.001
	Professional work carried out on business trips	<0.001
	Professional work carried out in the workplace	<0.001
	Professional work carried out at home	<0.001
Performing household chores	<0.001	

Variable		p
Domestic weekend or vacation trip vs.	Self-development activities	1.000
	Moving from place to place	0.050
	Caring for other people or animals	0.008
	Everyday leisure time	<0.001
	Professional work carried out on business trips	<0.001
	Professional work carried out in the workplace	<0.001
	Professional work carried out at home	<0.001
	Performing household chores	<0.001
Self-development activities vs.	Moving from place to place	1.000
	Caring for other people or animals	1.000
	Everyday leisure time	0.114
	Professional work carried out on business trips	<0.001
	Professional work carried out in the workplace	<0.001
	Professional work carried out at home	<0.001
	Performing household chores	<0.001
Moving from place to place vs.	Caring for other people or animals	1.000
	Everyday leisure time	1.000
	Professional work carried out on business trips	0.002
	Professional work carried out in the workplace	<0.001
	Professional work carried out at home	<0.001
	Performing household chores	<0.001
Caring for other people or animals vs.	Everyday leisure time	1.000
	Professional work carried out on business trips	0.016
	Professional work carried out in the workplace	<0.001
	Professional work carried out at home	<0.001
	Performing household chores	<0.001
Spending leisure time every day vs.	Professional work carried out on business trips	0.423
	Professional work carried out in the workplace	<0.001
	Professional work carried out at home	<0.001
	Performing household chores	<0.001
Professional work carried out on business trips vs.	Professional work carried out in the workplace	<0.001
	Professional work carried out at home	<0.001
	Performing household chores	<0.001
Professional work carried out in the workplace vs.	Professional work carried out at home	1.000
	Performing household chores	<0.001
Professional work carried out at home vs.	Performing household chores	<0.001
$\chi^2(9, N=1317) = 859.43, p < 0.001, R = 0.04$		

Notes: χ^2 – Cochran's *Q* test value, *p* – test probability level for Cochran's *Q*, *R* – effect size measure for Cochran's *Q* test, where: *R* ≤ 0.20, small effect, *R* = 0.21-0.40, sufficient effect, *R* = 0.41-0.60, moderate effect, *R* = 0.61-0.80, large effect, *R* ≥ 0.81, very large effect (Berry et al., 2007).

Socioeconomic correlates of pro-environmental behaviour of hotel guests in different areas of life

Among the hotel guests surveyed, there were statistically significant associations of pro-environmental behaviour between work in the workplace during business trips and during travel and leisure trips abroad, with gender. The probability of realising pro-environmental behaviour with frequency 'always/frequently' vs 'never/rarely' was lower in female respondents by 34%, 50%, 53%, and 27% lower than in men.

When considering the age of the respondents, significant correlations were noted only in the youngest group of respondents, across nearly all areas of life except for household duties. Chances of realising pro-environmental behaviour with the frequency of answers 'always/frequently' vs 'never/rarely' for respondents aged 18-25 were by 67% (CI: 0.16-0.65) for leisure trips abroad to 84% (CI: 0.06-0.45) for leisure activities daily, lower than in respondents aged 56-65.

In the study conducted, clear correlations were obtained between pro-environmental behaviours implemented during work and home duties and the education of the respondents. The probability of implementing pro-environmental behaviours with the frequency of answers 'always/frequently' vs 'never/rarely' during household chores in those with higher and secondary education was almost seven times higher than in those with basic vocational education. Those with higher education compared to those with vocational education were also characterized by: more than five times higher odds of performing these behaviors more often in the workplace (OR = 5.46, CI: 0.06-10.94), almost four times during work done at home (OR = 3.87, CI: 1.89-7.92), and more than two times during business trips (OR = 2.44, CI: 1.22-4.91).

Clear correlations were also noted between the frequency of implementation of pro-environmental behaviour and the place of residence of the respondents. The highest likelihood of exhibiting such behaviour 'always and frequently' compared to 'never and rarely' was recorded among individuals living in small (up to 20,000 residents) and medium-sized (20-100 thousand residents) cities, compared to rural residents. Odds ratios ranged from 1.89 (CI: 1.26-2.83) for small-town residents implementing pro-environmental behaviours during self-development activities to 4.14 (CI: 2.68-6.41) for small-town residents when moving from place to place.

Occupational status significantly modelled pro-environmental behaviours while performing work at the workplace and on business trips, while travelling, and during domestic leisure trips. The probability of exhibiting behaviour with frequency of answers 'always/frequently' vs. 'never/rarely' in the workplace was almost three times (OR = 2.87, CI: 1.29-6.39) in entrepreneurs, and more than twice (OR = 2.38, CI: 1.16-4.91) in white-collar workers, higher than in the group of retirees and casual workers. Entrepreneurs were also characterised by nearly three times (OR = 2.74, CI: 1.23-6.07) higher odds of completing work on business trips and more than twice (OR = 2.48, CI: 1.23-5.02) when moving from place to place, compared to the reference group. However, in the group of casual working pupils and students, compared to casual working pensioners, it was noticed by 58% in the case of work done during business trips (OR = 0.42, CI: 0.21-0.86) and by 51% during domestic leisure trips (OR = 0.49, CI: 0.25-0.97), lower odds of implementing pro-environmental behaviors with frequency of 'always/frequently' vs. 'never/rarely'.

Higher odds of pursuing pro-environmental behaviours more frequently in almost all, except self-development, areas of life were noted for those married compared to singles. Odds ratio values ranged from 1.31 (CI: 1.03-1.67) when caring for other people or animals to 2.30 (CI: 1.78-2.99) when working on a business trip. Lower odds of implementing pro-environmental behaviours with the frequency of 'always/frequently' vs 'never/rarely' in all but self-development areas of life were further characterised by those without minor children compared to those with children.

Among the respondents, there was also a fairly strong correlation between the frequency of implementation of pro-environmental behaviour and material status. Chances of implementing those behaviours with frequency of 'always/frequently' vs. 'never/rarely' in professional work carried out at the workplace and during business trips, during self-development activities, moving around, and during domestic and international leisure trips, were higher in those with a medium and high opinion of their material status than in respondents with a low material status. Odds ratios ranged from 1.72 (CI: 1.01-2.93) in high-income individuals pursuing the behaviour during self-development to 3.18 (CI: 1.88-5.37) in high-income individuals during leisure trips abroad (cf. Table 4).

Table 4. Associations of pro-environmental behaviour with socioeconomic indicators of hotel guests

IVs	Category	DV ₁	DV ₂	DV ₃	DV ₄	DV ₅	DV ₆	DV ₇	DV ₈	DV ₉	DV ₁₀
		OR [95% CI]	OR [95% CI]	OR [95% CI]	OR [95% CI]	OR [95% CI]	OR [95% CI]	OR [95% CI]	OR [95% CI]	OR [95% CI]	OR [95% CI]
Gender	Female	0.66 [0.48, 0.91]	0.82 [0.59, 1.14]	0.50 [0.38, 0.67]	1.17 [0.79, 1.73]	0.91 [0.71, 1.17]	1.27 [1.00, 1.62]	0.47 [0.36, 0.61]	0.88 [0.68, 1.13]	0.78 [0.61, 1.00]	0.73 [0.58, 0.93]
	Male	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Age	18-25 years	0.19 [0.06, 0.64]	0.23 [0.07, 0.76]	0.17 [0.06, 0.43]	0.53 [0.16, 1.75]	0.29 [0.13, 0.66]	0.31 [0.14, 0.71]	0.18 [0.07, 0.42]	0.16 [0.06, 0.45]	0.32 [0.15, 0.66]	0.33 [0.16, 0.65]
	26-35 years	0.74 [0.21, 2.54]	0.88 [0.25, 3.06]	1.00 [0.37, 2.71]	1.39 [0.38, 4.99]	0.60 [0.26, 1.40]	0.44 [0.19, 1.01]	0.70 [0.28, 1.74]	0.30 [0.10, 0.85]	0.74 [0.35, 1.57]	0.90 [0.44, 1.82]
	36-45 years	0.69 [0.20, 2.36]	0.72 [0.21, 2.45]	0.86 [0.32, 2.30]	1.17 [0.33, 4.13]	0.65 [0.28, 1.52]	0.53 [0.23, 1.24]	0.68 [0.28, 1.68]	0.42 [0.15, 1.23]	0.87 [0.41, 1.83]	1.02 [0.50, 2.06]
	46-55 years	0.37 [0.11, 1.28]	0.41 [0.12, 1.41]	0.65 [0.23, 1.79]	0.47 [0.13, 1.65]	0.72 [0.30, 1.75]	0.50 [0.21, 1.20]	0.56 [0.22, 1.43]	0.41 [0.14, 1.23]	1.21 [0.54, 2.69]	1.28 [0.60, 2.72]
	56-65 years	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Education	Higher	5.46 [2.72, 10.94]	3.87 [1.89, 7.92]	2.44 [1.22, 4.91]	6.85 [3.29, 14.24]	1.33 [0.66, 2.68]	1.10 [0.54, 2.25]	1.15 [0.56, 2.36]	1.46 [0.72, 2.94]	1.73 [0.87, 3.41]	1.49 [0.76, 2.95]
	Medium	3.63 [1.80, 7.34]	3.31 [1.6, 6.87]	1.94 [0.96, 3.93]	6.82 [3.19, 14.57]	2.01 [0.98, 4.12]	1.37 [0.66, 2.83]	1.66 [0.80, 3.44]	2.04 [0.99, 4.17]	1.83 [0.92, 3.66]	1.59 [0.80, 3.18]
	Basic vocational	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Place of residence	Big city	1.73 [1.15, 2.59]	1.19 [0.77, 1.85]	1.46 [1.01, 2.11]	1.24 [0.72, 2.13]	0.96 [0.67, 1.38]	1.17 [0.82, 1.67]	1.16 [0.81, 1.64]	1.29 [0.90, 1.86]	1.31 [0.92, 1.87]	1.28 [0.91, 1.82]
	Medium city	3.04 [1.95, 4.75]	1.89 [1.18, 3.02]	2.55 [1.72, 3.78]	2.02 [1.12, 3.65]	1.92 [1.30, 2.82]	1.93 [1.33, 2.80]	3.40 [2.31, 5.00]	2.19 [1.49, 3.20]	2.02 [1.40, 2.91]	2.03 [1.42, 2.91]
	Small town	2.63 [1.63, 4.24]	2.10 [1.24, 3.55]	3.06 [1.96, 4.76]	1.73 [0.92, 3.24]	1.98 [1.30, 3.02]	1.89 [1.26, 2.83]	4.14 [2.68, 6.41]	2.75 [1.79, 4.22]	2.46 [1.65, 3.68]	2.77 [1.86, 4.13]
	Village	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Professional status	White-collar worker	2.38 [1.16, 4.91]	1.54 [0.69, 3.45]	1.41 [0.70, 2.87]	1.15 [0.40, 3.37]	0.74 [0.37, 1.50]	0.89 [0.46, 1.70]	1.31 [0.69, 2.50]	1.02 [0.53, 1.99]	0.81 [0.42, 1.58]	0.97 [0.52, 1.81]
	Pupil or student	0.84 [0.41, 1.72]	0.71 [0.32, 1.57]	0.42 [0.21, 0.86]	0.79 [0.27, 2.32]	0.63 [0.31, 1.27]	0.90 [0.47, 1.75]	0.68 [0.36, 1.30]	0.78 [0.40, 1.54]	0.49 [0.25, 0.97]	0.53 [0.28, 1.01]
	Entrepreneur	2.87 [1.29, 6.39]	2.38 [0.97, 5.80]	2.74 [1.23, 6.07]	1.30 [0.41, 4.07]	1.28 [0.61, 2.71]	1.42 [0.71, 2.84]	2.48 [1.23, 5.02]	1.69 [0.83, 3.47]	1.34 [0.66, 2.72]	1.77 [0.90, 3.47]
	Manual worker	1.34 [0.59, 3.09]	1.03 [0.41, 2.56]	1.13 [0.50, 2.56]	0.58 [0.18, 1.84]	0.83 [0.37, 1.85]	0.85 [0.40, 1.78]	1.34 [0.63, 2.83]	1.34 [0.61, 2.93]	1.15 [0.53, 2.49]	1.47 [0.70, 3.09]
	Pensioner	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Marital status	Married	1.94 [1.44, 2.60]	1.50 [1.11, 2.04]	2.30 [1.78, 2.99]	1.52 [1.03, 2.22]	1.31 [1.03, 1.67]	1.02 [0.81, 1.30]	1.63 [1.28, 2.08]	1.32 [1.03, 1.68]	1.36 [1.08, 1.71]	1.39 [1.11, 1.75]
	Single	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Having children up to 18 years	No	0.42 [0.29, 0.60]	0.46 [0.32, 0.67]	0.32 [0.23, 0.44]	0.52 [0.33, 0.82]	0.63 [0.48, 0.82]	0.81 [0.63, 1.03]	0.38 [0.29, 0.50]	0.63 [0.48, 0.82]	0.57 [0.44, 0.74]	0.50 [0.39, 0.64]
	Yes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Assessment of material status	Very high/high	1.50 [0.82, 2.74]	1.62 [0.86, 3.07]	1.66 [0.96, 2.86]	0.69 [0.28, 1.70]	1.55 [0.90, 2.67]	1.72 [1.01, 2.93]	1.93 [1.15, 3.25]	1.48 [0.86, 2.54]	2.68 [1.59, 4.51]	3.18 [1.88, 5.37]
	Medium	1.85 [1.06, 3.25]	1.73 [0.97, 3.11]	1.96 [1.19, 3.25]	1.05 [0.44, 2.51]	1.43 [0.87, 2.36]	1.37 [0.84, 2.24]	2.44 [1.51, 3.96]	1.59 [0.96, 2.62]	2.26 [1.40, 3.66]	2.60 [1.60, 4.23]
	Low/very low	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Legend: **OR** – odds ratio, DV₁ – professional work carried out in the workplace, DV₂ – professional work carried out at home, DV₃ – professional work carried out on a business trip, DV₄ – performing household duties, DV₅ – caring for other people or animals, DV₆ – self-development activities, DV₇ – moving from place to place, DV₈ – spending leisure time daily, DV₉ – domestic weekend or vacation trip, DV₁₀ – foreign weekend or vacation trip.
 DV reference category never/rarely.

Discussion

The highest percentage of respondents engaged in pro-environmental behaviours while performing household chores, followed by professional duties carried out at home, at work, and during business trips. These findings reveal a certain pattern. Guests seeking relaxation often pay less attention to their consumption of water, electricity, and heating in hotels, even though they reduce such consumption at home due to financial considerations and environmental concerns (Orynycz & Tucki, 2021). This is consistent with the results reported by Baker et al. (2014), Foroughi et al. (2022), Melo et al. (2018), and Wu et al. (2021). Consequently, encouraging pro-environmental behaviour among hotel guests – through financial or other mechanisms – remains a significant challenge, despite ongoing efforts in this area.

Interestingly, the likelihood of engaging in pro-environmental behaviours at the frequency of “always/often” vs. “never/rarely” was lower among women than among men. With respect to age, significant correlations were observed only in the youngest group of respondents, and in nearly all areas of life except household chores. Previous research indicates that women tend to engage in pro-environmental behaviours in the private sphere more frequently than men (Gong et al., 2020). However, Sudbury et al. (2014) report that men may demonstrate greater environmental awareness and a higher likelihood of exhibiting pro-environmental behaviour.

These studies indicate the existence of certain differences, but more in-depth research with a larger study population is needed to confirm them. Respondents’ education appears to play a significant role in shaping pro-environmental behaviours, which is consistent with earlier findings by Theodori and Luloff (2002), Han et al. (2011), Melo et al. (2018), and Gong et al. (2020). Results related to place of residence should be interpreted with caution, as they must be considered in relation to age, education, and wealth. These assumptions are partially supported by the relatively strong correlation between the frequency of pro-environmental behaviours and financial status. Individuals with medium or high financial status were more likely to engage in such behaviours than those with low financial status.

Conclusion

Among the conclusions, the following should be emphasised in particular:

- firstly, the surveyed hotel guests most frequently implemented pro-environmental behaviours while performing household chores and working professionally at home and work, while least often during leisure trips and self-development activities.
- secondly, the study also noted significant correlations between the frequency of implementation of pro-environmental behaviour and socioeconomic status. Thus: lower chances of implementing pro-environmental behaviours with the frequency of ‘always/frequent’ vs. ‘never/rarely’ were revealed more in female respondents than in male respondents and in younger versus older subjects. The probability of implementing pro-environmental behaviours with the frequency of ‘always/frequently’ vs. ‘never/rarely’ among people with higher and secondary education was higher than among people with basic vocational education and people from small and medium-sized cities than in rural areas. Chances of exhibiting pro-environmental behaviour with frequency of ‘always/frequently’ vs. ‘never/rarely’ were higher in businessmen and white-collar workers and lower in working students compared to working pensioners. Married people were also more likely to engage in pro-environmental behaviours than single people, and people without minor children were less likely to engage in such behaviours than those with children. Chances of implementing pro-environmental behaviours with frequency of ‘always/frequently’ vs ‘never/rarely’ were higher in those with medium and high material status than in respondents with low material status.

In the opinion of the authors of the article, the originality or novelty of the conducted research lies, among other things, in the analysis of pro-environmental behaviours in various areas of life. So far, as revealed by the literature review, no consideration has been given to work behaviours carried out at home or during household chores, and the frequency of exhibiting pro-environmental behav-

iours in these areas of life appeared to be the highest among the surveyed hotel guests. Moreover, the role of pro-environmental behaviours in the areas of professional status, marital status and having children was demonstrated, and these factors have not been previously considered in research, as also shown by the literature review conducted earlier.

Limitations and further research

The main limitations of the conducted study were its relatively small spatial scope (four Polish cities) and subject matter (medium standard hotels), and the research methods adopted. This methodological limitation is commonly observed in studies of this type, as diagnostic survey research allows us to capture – by its very nature – only the respondents' opinions and self-reported declarations, rather than their actual behaviours (Easterby-Smith et al., 2015).

However, due to the ethical requirements of the research process, collecting data by observing these behaviours in the life practice of respondents is difficult and certainly constitutes an important challenge for future research on this issue. This is not the only recommendation for future research. It was noted that the surveyed hotel guests were least likely to engage in pro-environmental behaviours during their leisure trips and self-development activities. Therefore, the authors propose that hotels, as well as operators offering various forms of leisure activities, should jointly conduct promotional and educational campaigns. Despite the many limitations of such activities, it is education that can influence changes in hotel guests' pro-environmental behaviours. Similar recommendations should be directed toward educational and training institutions, such as schools, universities, consulting and advisory firms, as well as pro-environmental NGOs.

In addition, it is advisable to increase the financial transparency of hotels, for example, by informing guests about the purposes for which the funds generated by their pro-environmental behaviour are used. This solution, however, requires the development of an internal environmental costing. Increasing hotel guest participation in shaping and evaluating operating practices, including systems of environmental management, is also an important demand. To this end, visitors can be encouraged, voluntarily, to participate in annual environmental reviews, for example. Further research should also be conducted with broader spatial and subject coverage in mind. Observational and experimental methods should also be applied more broadly. Further research should also address barriers to shaping behaviour among hotel guests. Interactions between different individuals are another interesting topic. It should be determined how perceptions of employee behaviour affect guest behaviour, and what the strength and extent of those impacts. Still, little is known about the effects that can be achieved by using negative messages that induce a sense of shame or even danger in guests. Valuable information about the postulated solutions is to determine the impact of financial motivation on guest behaviour. In addition, studies covering the correlation between guest behaviour and hotel infrastructure can also provide interesting information.

The contribution of the authors

Theoretical framework and literature review, M.B. and M.P.; research concept, D.P. and M.B.; development of research tools and data collection, D.P.; verification of the methods used, T.B.; statistical analysis, K.R. and T.B.; interpretation of results, D.P.; verification of research, T.B.; methodological accuracy and editing, M.P.; conclusions, discussion and limitations, T.B. and M.B.

The authors have read and agreed to the published version of the manuscript.

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ZACHOWANIA PROEKOLOGICZNE WDRAŻANE PRZEZ GOŚCI HOTELOWYCH W RÓŻNYCH OBSZARACH ŻYCIA A WYBRANE ASPEKTY STATUSU SPOŁECZNO-EKONOMICZNEGO

STRESZCZENIE: Celem artykułu jest ocena zmienności zachowań prośrodowiskowych gości hotelowych w różnych dziedzinach życia oraz korelacji tych zachowań ze statusem społeczno-ekonomicznym gości. Badanie zostało przeprowadzone na próbie 1 317 gości hotelowych z czterech polskich miast z wykorzystaniem ankiety diagnostycznej oraz autorskiego kwestionariusza ankiety. Przeprowadzone badanie wykazało, że respondenci najczęściej realizowali zachowania prośrodowiskowe podczas wykonywania prac domowych i obowiązków zawodowych, a najrzadziej podczas wyjazdów wypoczynkowych i działań samorozwojowych. W badaniu odnotowano także istotne zależności między częstotliwością takich zachowań a takimi aspektami statusu społeczno-ekonomicznego jak płeć, wiek, wykształcenie, miejsce zamieszkania, status zawodowy, stan cywilny oraz posiadanie dzieci poniżej 18. roku życia. Są to zmienne, które – jak wykazał to dokonany w artykule przegląd literatury – nie były wcześniej szerzej analizowane w podobnych badaniach krajowych i zagranicznych. Podjęte badania wypełniają więc w pewnym stopniu zidentyfikowaną lukę badawczą. Wyniki te podkreślają potrzebę prowadzenia bardziej ukierunkowanych inicjatyw edukacyjnych i szerszego upowszechniania programów środowiskowych w hotelach i biurach podróży, aby zachęcać do zrównoważonych środowiskowo zachowań w czasie wolnym. Goście powinni być również informowani, w jaki sposób wykorzystywane są środki pozyskane dzięki zmianom ich zachowań na bardziej prośrodowiskowe.

SŁOWA KLUCZOWE: zachowania proekologiczne, hotele, goście hotelowi, obszary życia, status społeczno-ekonomiczny