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Does my employer care about my garbage? The relationship between pro-environmental actions in the workplace and employees' behaviour at home

Drawing on a survey conducted among employees of companies located in a non-developed country, this article seeks to determine whether there is a relation between actions connected to plastic waste reduction undertaken in the workplace and pro-environmental behaviours in the household. The amount of plastic waste is becoming a global problem, and we believe that effective solutions demand the cooperation of business, society and public authorities. Although, the issue of excessive plastic waste is already well established in the academic literature, the question of the impact of pro-environmental actions undertaken at work on employees' behaviour at home is not sufficiently addressed to be solved. Along with standard statistical measures, we conducted logistic regressions. We found that both the number, along with the type of anti-plastic actions in the workplace, have a positive influence on the employees' willingness to reduce the use of plastic in their households. Furthermore, we found that the most meaningful actions are those aimed at increasing employees' awareness regarding the plastic waste.

Keywords: plastic reduction, pro-environmental behaviour, households, workplace

JEL classification: Q50, D91

Introduction

Excessive plastic waste is a well-established issue in academic literature, international organisations' reports, and traditional and social media [Lebreton, Andrady, 2019]. Despite this, the problem remains insufficiently addressed. According to United Nations data, if current trends continue, by 2050 there will be more plastic waste in the oceans than fish [UN Environment Programme, n.d.].

While environmental concerns were initially raised as a challenge for economic policy at the supranational level [Meadows et al., 1972], recent literature suggests that managing environmental change at the global level requires cooperation between the triad of the government, businesses, and households as each of those stakeholders has different motives. For example, the public sector may intervene to address the environment as a market failure, the business sector may consider environmental issues to fall under the purview of corporate social responsibility (CSR) or profit maximisation [Slack et al., 2015], while individual households may view pro-environmental behaviours from the perspective of altruism or cost-cutting, among other factors [Steg, Vlek, 2009].

While the literature concerning the majority of interdependencies between the above-mentioned agents is generally well-established, little attention has been paid to the relationship between corporate pro-environmental actions and employees' behaviour at home. In particular, it remains unclear whether engaging in pro-environmental actions in the workplace may spill over to influence employees' behaviour at home and what factors may facilitate such spillover effects.

Understanding the variables that influence pro-environmental behaviour is challenging due to inconsistencies in individuals' behaviour. It is generally agreed that engagement in one pro-environmental behaviour domain does not necessarily spill over to another [Maki et al., 2019]. For instance, people who recycle waste do not necessarily cycle to work or drink from reusable cups. Moreover, only few studies have investigated whether there is a relationship between conceptually similar actions undertaken in different areas, such as plastic waste reduction in the workplace and in the household [Whitmarsh, O'Neill, 2010].

Studying the relationship between pro-environmental actions undertaken in the workplace and employees' behaviour at home is important for several reasons. Firstly, if engaging in pro-environmental actions in the workplace encourages similar behaviours at home, this could have significant implications for the attempts to promote sustainable behaviour more broadly and, in that sense, could amplify the impact of these initiatives. Secondly, investigating the factors that enable spillover effects could help to design workplace actions more effectively in promoting sustainable behaviours.

To address these issues, this study aims to investigate the relationship between pro-environmental actions in the workplace and employees' behaviour at home. Specifically, we investigate the impact of green actions undertaken by the employer on off-work behaviour in terms of reducing plastic waste. Overall, this study seeks to contribute to a better understanding of the potential spillover effects of workplace pro-environmental actions and to inform about the development of more effective interventions for promoting sustainable behaviour. In that sense, our study contributes to the literature on the subject in several ways. Firstly, we

investigate the unique impact of pro-environmental actions undertaken at work on employees' household behaviour. Secondly, we analyse the significance of different initiatives aimed at plastic use reduction at the workplace within the spillover effect. Last but not least, to the best knowledge of the authors, it is the first paper addressing this issue in Poland.

The remaining part of the paper is structured as follows: the next section contains a review of the literature and presents our research hypothesis. The third section explains the dataset and the methodology used. The fourth section describes the results while the final section contains our conclusions as well as theoretical and managerial implications.

1. Theoretical background and hypotheses development

1.1. Individual Pro-Environmental Behaviour

Pro-environmental behaviour (PEB) is defined as a behaviour that consciously aims to minimise the adverse impact of one's activities on the natural and built environment [Kollmuss, Agyeman, 2002]. According to Stern et al. [1999] and Tian and Liu [2022], PEB encompasses all efforts to decrease or limit an individual's adverse environmental footprint. Stern et al. [1999] categorises PEB into three types: green purchasing, environmental citizenship behaviour, and activist behaviour. Green purchasing refers to consumers choosing products and services that have a lower adverse impact on the environment [Chen, Chang, 2012; Joshi, Rahman, 2015]. Citizenship behaviour involves any activity that has a positive impact on the environment, not necessarily related to purchasing [Dono et al., 2010; Mackay et al., 2021]. Lastly, environmental activist behaviour involves participating in public actions and supporting initiatives that aim to protect the environment.

The common definition of PEB [Kollmuss, Agyeman, 2002] ignores the fact that people perform their actions in different contexts or settings. In practice, this means that behaviours typical of one domain of life or certain spaces may not be possible or effective in another. This is both a problem and an opportunity. Many researchers on behaviour change have focused so far on the home as one of the key areas of everyday life, but there has recently been a growing interest in exploring the workplace as an area where sustainable behaviour can be learned and encouraged. The main reason for this is the understanding of the role of the organisation as a producer of significant greenhouse gas emissions and its potential for steering behaviours in a new, more sustainable direction.

From a theoretical perspective, the motivation behind individual pro-environmental behaviour is often explained by two frameworks: the theory of

planned behaviour (TPB) proposed by Ajzen [1985] and Stern's [2004] value-belief-norm model (VBN). The TPB posits that an individual's behaviour results from their intentions, which are composed of three factors: attitudes, subjective norms, and perceived behavioural control. In the environmental context, attitudes can be understood as a general attitude towards the environment and pro-environmental actions. Research indicates that attitudes play a significant role in pro-environmental behaviour, but they only explain certain behaviours and are relatively easy to change. More stable individual factors, such as values and identities, can influence a wider range of behaviours in different contexts and situations. Subjective norms refer to social expectations and pressures towards pro-environmental behaviour. Finally, perceived behavioural control refers to an individual's feeling of their ability to perform pro-environmental actions [Ajzen, 1985; Ajzen, 2002].

On the other hand, the VBN model is rooted in Schwartz's [1977] moral norm-activation theory of altruistic behaviour and in Dunlap and Van Liere's [1978] new environmental paradigm. Stern's [2004] model consists of a 5-stage causal chain: values, individual environmental worldview (measured and often referred to as the new environmental paradigm), awareness of consequences, ascription of responsibility to self-beliefs, and personal norms. In the environmental context values translate into a set of principles that should guide the formulation of environmental beliefs and are often general and formulated in early life stages. Environmental worldview relates to an individual belief about human-environment relationship, such as human's ability to restore balance with nature and to limit the economic growth. Awareness of consequences is related to individual consciousness about the negative outcomes of acting against the environment (or not acting pro-environmentally). Ascriptions of responsibility to self-beliefs refer to the feeling of being responsible for the negative impact on the environment and the ability to mitigate it, which translates into personal norms that oblige an individual to perform pro-environmental actions. In general, the VBN theory also finds support in numerous empirical studies [De Groot, Steg, 2008; Chen, 2015; Wynveen et al., 2015].

According to a study conducted by Yuriev et al. [2018], the TPB is the dominant framework in empirical studies of workplace pro-environmental behaviour. For instance, De Leeuw et al. [2015] found that TPB is highly effective in explaining pro-environmental behaviour among high-school students, particularly in terms of the perceived behavioural control. The study also suggests that the pro-environmental behaviour of students can be influenced by the behaviour of their parents and family as well as celebrities. Graves et al. [2013] demonstrated that TPB can account for up to 61% of the variation in employees' willingness to engage in pro-environmental behaviours in the workplace. TPB is also widely referred to in literature on household behaviour. For example, Pakpour et al. [2014] found that TPB can explain 47% of the variability in households' pro-environmental behaviour.

1.2. Pro-environmental behaviour at workplace

While TPB and VBN provide useful frameworks for understanding an individual's pro-environmental behaviour, it is important to apply these theories in context and examine the specific social, economic, and environmental factors that can influence behaviour, such as education and knowledge, social norms and peer influence [...] economic factors [...], convenience and access environmental cues and the environment in which they function, including their workplace [Steg, Vlek, 2009; Abrahamse, Steg, 2013]. The latter is of a particular interest in the context of this study.

Organizational Citizenship Behaviour (OCB) refers to voluntary behaviours of employees that are not part of their contractual obligations [Organ, 1988]. This concept is not exclusively related to the environment and is used in various contexts. In contrast, organisational citizenship behaviour for the environment (OCBE) focuses specifically on an individual's pro-environmental actions in the workplace [Boiral, Paille, 2012]. While OCBE is derived from OCB, it has three distinct components: eco-helping (such as sharing knowledge with co-workers), eco-civic engagement (supporting the greening of an organisation), and eco-initiatives (introducing personal eco-initiatives). It is important to note that OCB and OCBE should be clearly distinguished [Paille, Boiral, 2013].

There have been several empirical studies that investigate the impact of pro-environmental actions undertaken in the workplace on households' awareness and behaviour, independent of the standard theoretical frameworks presented above. For instance, Lo et al. [2012] found that energy-saving behaviour at home differs from individuals' behaviour at the workplace. Likewise, Lee et al. [1995] suggest that the propensity to recycle is higher at home than at work. Al-Shemmeri and Naylor [2017] demonstrate that energy-saving behaviours at home and in the workplace are highly related: employees who act pro-environmentally at home are more likely to behave similarly at work. The differences between the factors that influence pro-environmental behaviour in the workplace and households are highlighted by Blok et al. [2015]. The authors suggest that external factors, such as leadership support, play a significant role in workplace behaviour and that these factors are absent at home.

The perception of pro-environmental actions and their costs can differ between employers and employees, which can affect the environmental performance of a company that relies on employee volunteering [Greene et al., 2014]. At the same time, the environmental performance of a company is primarily dependent on employees' voluntary engagement [Boiral, 2009]. The attitude towards pro-environmental behaviours in the workplace comprises personal and organisational factors, and incentives promoting such behaviours may depend on the industry or type of organisation [Manika et al., 2015]. While environmental information

dissemination alone may be insufficient [Ramus, 2002], well-established policies and managers' commitment can stimulate pro-environmental actions. Leaders' pro-environmental norms and workplace behaviour can affect employees' environmental passion, which in turn enables organisation-wide greening [Robertson, Barling, 2013]. However, a study by Saifulina and Carballo-Panela [2017] has shown that employees' attitude and organisational support are the most important determinants of workplace environmentally friendly behaviour (WEFB). Surprisingly, the influence of supervisors and colleagues on employees' behaviour was not confirmed in some studies. Finally, green training has been shown to successfully stimulate employees' pro-environmental behaviour in the workplace [Zientara, Zamojska, 2016; Pham et al., 2018].

1.3. Spillover effects of workplace pro-environmental initiatives on employees' household behaviour

Taking the aforementioned factors into consideration, the question arises as to whether and how the employers' engagement in pro-environmental activities produces a positive spillover effect, resulting in pro-environmental behaviour in the household. On the one hand, some scholars argue that PEB in the workplace may result in a negative spillover, as engagement in OCBE may be a result of the expectations, norms, and pressures set by the organisation [Littleford et al., 2014; Seroka-Stolka, Fijorek, 2020]. On the other hand, we believe that by creating a social norm, employers may encourage workers to adopt similar behaviour in their personal lives. According to the principles of TPB, individuals are more likely to engage in pro-environmental behaviour when they perceive their actions as socially desirable. This is supported by the fundamentals of the social learning theory, which suggests that people learn from observing the behaviour of others and the consequences of those actions.

Individuals learn through observation and imitation of behaviours of the people who are important to them, specifically their colleagues or managers at work. Studies found that employees who engaged in workplace PEB were more likely to engage in PEB at home [Kormos, Gifford, 2014]. Furthermore, initiatives aimed at PEB in the workplace, such as reducing plastic packaging, can create a sense of shared responsibility and commitment to sustainability among colleagues, which can further reinforce pro-environmental attitudes and behaviours in households. Therefore, we argue that employers' engagement in pro-environmental activities can produce a positive spillover effect, triggering pro-environmental behaviour in the household. However, to achieve this effect, it is essential to create a supportive and empowering workplace culture that encourages pro-environmental behaviours and initiatives. Such initiatives should involve the participation of all employees and should be based on effective communication, education, and leadership support.

Our particular focus is on awareness campaigns in the workplace, as they are perceived as particularly effective in promoting sustainable behaviours among employees, such as reducing their environmental impact by using fewer plastic products at home. These campaigns provide employees with the necessary information and resources to become more conscious of their actions' environmental consequences. By raising awareness, employees are more likely to adopt sustainable practices. Additionally, workplace campaigns can help promote a culture of sustainability that extends beyond the workplace into employees' personal lives. Research shows that awareness campaigns can promote pro-environmental behaviour in households [Kollmuss, Agyeman, 2002], contributing to a more sustainable society overall. Therefore, when a company initiates an awareness campaign related to pro-environmental initiatives, it creates a normative influence that can lead to the formation of a social norm promoting environmentally responsible behaviour outside the company.

Moreover, the self-efficacy theory proposes that people are more likely to engage in a behaviour if they feel capable of doing it successfully. To increase employees' perceived self-efficacy and confidence in adopting pro-environmental behaviours, companies can offer external incentives. For instance, providing employees with reusable items that they can use in their personal lives instead of disposable plastic items can encourage them to reduce plastic waste outside of work. Additionally, the diffusion of innovation theory suggests that individuals who are exposed to new ideas and practices are more likely to adopt them over time. By implementing initiatives that reduce plastic use in general or offering innovative reusable items, employers can foster PEB in employees' households.

Based on the above line of argumentation, we contend that:

H1: There is a positive relationship between workplace awareness campaigns and pro-environmental behaviour in households.

H2: There is a positive relationship between reducing the use of plastic packaging for workplace products and pro-environmental behaviour in households.

H3: There is a positive relationship between obligatory plastic waste recycling and pro-environmental behaviour in households.

H4: There is a positive relationship between providing employees with reusable, non-plastic items and pro-environmental behaviour in households.

H5: There is a positive relationship between conducting competition for employees aimed at plastic use reduction and pro-environmental behaviour in households.

2. Context of the study

For our analysis, we have selected Poland as a case study of a non-developed country. This choice is particularly noteworthy for several reasons. Firstly, as Yuriev et al. [2018] noted, the majority of recent studies on pro-environmental behaviour among employees have focused on developed countries, primarily the UK and the US. According to literature on the Environmental Kuznets Curve (EKC) [Grossman, Krueger, 1991; Stern, 2004; Zielińska-Głębocka et al., 2020], the inclination to protect the environment can vary significantly between developed and less-developed countries. This implies that there may be differences in individual pro-environmental behaviour in countries at different stages of development [Vicente-Molina, et al., 2013]. Studies also suggest that ecological awareness in Poland is relatively low, but increasing [Wądołowska, 2011]. Interestingly, Mazurek-Łopacińska and Sobocińska [2014] argue that Poles' pro-environmental behaviour may be partly explained by their saving habits rather than ecological concerns. Furthermore, the authors observe that ecological awareness does not necessarily translate into pro-environmental behaviour. This conclusion is supported by a minimal change in the Environmental Performance Index over the last 10 years (Poland was ranked 37th in 2020, with an index of 60.9 and a 1.1-point change over a decade). On the other hand, Poland is subject to the European Union's stringent environmental policies, such as the European Green Deal, which aims to achieve environmental neutrality by 2050. From this perspective, ecological awareness and action should involve the triad of administration, businesses, and households, which presents a particular challenge for Poland.

Finally, the empirical literature focusing on non-developed countries, particularly Poland, remains relatively scarce. Zientara and Zamojska [2016] examined the relationship between green organisational climate (GOC) and OCBE in the Polish hotel industry. Their findings revealed a generally low level of GOC, which nevertheless exerted a direct influence on OCBE. They also identified a positive impact of employees' values and commitment on environmentally oriented behaviours. In a subsequent study, Zientara et al. [2019] surveyed coal miners in Poland to determine whether the industry was implementing organisational greening principles and whether employees engaged in pro-environmental practices. The authors found that a green workplace climate positively affects individuals' behaviour, both at work and at home. Moreover, Szeliga-Duchnowska and Szewczyk [2020] investigated environmental workplace behaviour in small and medium-sized enterprises (SMEs) in Poland. Their study identified several counter-ecological behaviours, mainly related to waste management, and – crucially – showed that in more than 70% of cases, employees were unaware of their employers' pro-ecological initiatives. These findings highlight that examining the

behaviour of employers and employees in Poland may offer valuable insights into the challenges and opportunities associated with fostering pro-environmental behaviour in non-developed countries and may indicate the potential for a broader cultural shift towards sustainability.

In parallel, central and local governments in Poland have been implementing various policies and regulations aimed at reducing plastic waste, such as mandatory recycling and charges for plastic shopping bags. Although these measures have increased the number of individuals engaging in plastic-reduction activities, most of these actions remain primarily cost-driven and, therefore, insufficient. Consequently, an effective approach to reducing plastic waste requires a higher level of voluntary commitment. In line with this argument, we contend that pro-environmental behaviour within households should involve self-initiated and voluntary actions rather than those motivated solely by economic incentives.

3. Research design

3.1. Data collection and participants

To test our hypotheses, we employed an online self-report questionnaire. The survey was administered to employees working in middle-sized and large companies operating in Poland. To select the companies for our study, we started by defining our criteria as covering companies operating in Poland with a workforce of more than 49 employees. We then accessed the ORBIS database – a global database of public and private companies – and conducted a search using these defined criteria. Using a random number generator, we selected 500 companies from the list. Next, we contacted them via email and asked for their participation in the study. In particular, we requested them to send a link to a questionnaire and a description of the study to their employees. In total, we received 125 responses, out of which 9 we considered incomplete and therefore excluded from further analysis. As a result, 116 responses were used in our analysis.

The study participants comprised 78% females, with an average age of 35 years. A significant majority (96%) had attained a university education, and 84% of them resided in multi-family buildings such as flats or apartments. On average, each household had 2.48 individuals. More than 70% of the respondents worked for companies with a staff size exceeding 249, while 43% were employed by international organisations (Table 1).

Table 1. Sample characteristic (N = 125; 9 responses excluded from further analysis)

Variable	Characteristic	(%)
Gender	men	22
	women	78
Age	18–24	5.2
	25–34	50
	35–44	27.6
	45–54	13.8
	55+	3.4
Education	high school	5
	university graduate	95
Residence	single-family house	16
	flat	84
Number of people in the household	1	17.2
	2	40.5
	3	20.7
	4 or more	21.6

Source: Own elaboration.

3.2. Instrument development and data analysis

The survey questionnaire comprised four parts. The first section aimed to measure employees' pro-environmental engagement with regard to reducing plastic usage in their households. Specifically, participants were asked to select from a list of twenty activities those that they undertake in their households. We considered engagement to be high if they indicated a minimum of five activities (first quartile).

The second part focused on the employer's efforts towards reducing plastic usage in the workplace. In particular, we enquired about specific activities such as conducting awareness campaigns, distributing reusable non-plastic items to employees, reducing the use of products in plastic packaging, and obligatory plastic waste recycling (via yes/no questions). We also controlled for age, gender, place of residence, and number of people living in the household (Table 2).

A logistic regression approach was employed to test the hypotheses. This statistical method enables the examination of how changes in the selected variables relate to the likelihood of engaging in pro-environmental behaviour. In this study, the level of engagement in plastic use reduction is represented by a binary variable with two categories: low engagement ("0") and high engagement ("1"). Importantly, respondents who selected five or fewer activities aimed at reducing plastic use

Table 2. Description of variables

Variable	Description
Engagement	individual engagement in households aimed at avoidance of plastic and its use reduction in the household (dummy variable)
Age	the age of respondents
Residence	the type of residence of respondents (single-family house or flat/apartment)
Household	the number of people living in the household
Campaigns	workplace campaigns to raise the awareness of the need to reduce plastic use (dummy variable)
Reduction	reducing the use of products in plastic packages in the workplace (dummy variable)
Reusables	distributing reusable items to employees, such as bottles or bags, in the workplace (dummy variable)
Competitions	competitions organised by employer aimed at plastic use reduction (dummy variable)
Recycling	obligatory plastic waste recycling in the workplace (dummy variable)

Source: Own elaboration.

at their households were classified as having low engagement, while those who selected more than five activities were classified as highly engaged. Consistent with prior studies [Cameron, Trivedi, 2010], we evaluated our results using the pseudo- R^2 measure, predictive accuracy, and standard post-estimation analysis.

4. Results

4.1. Statistical analysis

Initially, we conducted a simple statistical analysis of the answers provided in the questionnaire. The level of concern about plastic waste in Poland is relatively high, with 98% of respondents segregating plastic waste, and 97% undertaking further activities to reduce the use of plastic and the quantity of plastic waste produced by their households. On average, respondents take 8.82 actions aimed at reducing plastic use, with a mean value of 9. Specifically, 94% of respondents carry reusable shopping bags, 80% do not use plastic plates and cutlery, 77% do not use disposable dishes or cups, and 74% regularly use reusable products. More than half of our respondents reported that they have stopped using straws, drink tap water to avoid using plastic bottles, select products that do not have any plastic packaging, and use reusable wrappers to pack food. On the other hand, less than 20% of respondents purchase bar cosmetics, refill empty cosmetic containers, avoid using plastic sponges, or prepare their own cleaning products (Table 3).

Table 3. Selected actions aimed at plastic usage reduction in households

Question	Responses (%)
I carry reusable shopping bags when I go shopping	94
I have stopped using plastic plates and cutlery	80
I do not use disposable dishes, cups or cutlery	77
I use reusable products	74
I have stopped using disposable straws	68
I drink tap water to avoid using plastic bottles	67
I choose products that do not have any unnecessary plastic packaging	55
I use reusable breakfast wrappers and lunch boxes instead of plastic wraps and bags to pack food	51
I limit my clothing purchases	48
I avoid buying food in plastic packaging	47
I carry my own coffee mug with me	47
I buy clothes of good quality made from natural materials	46
I have stopped using plastic cotton buds	44
I buy products by weight and pack them into containers that I bring with me	39
I carry my own cutlery to avoid using plastic cutlery	32
I refill empty cosmetic containers	19
I buy bar cosmetics	16
I have stopped using plastic sponges	13
I prepare household cleaning products myself	13
I use a bamboo toothbrush (or a toothbrush made from another environmentally friendly material)	13

Source: Own elaboration.

Seventy-five percent of our respondents declared that their employers carry out promotional campaigns to raise the awareness of the need to reduce plastic use. Seventy-two percent added that their employer had introduced obligatory recycling and another 61% reported that plastic water bottles had been replaced by tap filter or glass bottles in their workplace (Table 4).

Table 4. Selected actions aimed at plastic use reduction in the workplace

Question	Responses (%)
Pro-environmental campaigns	75
Obligatory recycling	72
Replacing plastic water bottles with tap filters or glass bottles	61
Replacing plastic dishes with reusable ones, ceramic, or glass	49
Distributing reusable shopping bags, bottles, etc.	43

Source: Own elaboration.

4.2. Hypotheses testing

In order to test the hypotheses, we conducted the logistic regression, with the independent variable indicating an individual's engagement in plastic reduction. The model included several independent variables, such as age, gender, and employers' action aimed at reducing plastic use (see Table 2).

The logistic regression model was statistically significant ($\chi^2(8) = 16.41$, $p = .0037$), indicating that the model as a whole was an acceptable fit for the data. The model explained 10.36% of the variance in purchase behaviour (pseudo $R^2 = .1036$). Table 5 presents the coefficients, standard errors, and p-values for each independent variable in the model. Surprisingly, among employers' actions aimed at reducing plastic use in the workplace, only campaigns designed to increase employees' awareness turned out to be significantly related to individuals' engagement in their workplace ($\beta = 1.7907$; $p = .003$), thus H1 was supported. Employers' effort to reduce the use of plastic goods in the workplace ($\beta = -.4324$, $p = .35$), obligatory recycling ($\beta = .2688$, $p = .59$), as well as providing employees with reusable non-plastic items ($\beta = -.4997$, $p = .26$) and conducting competitions with incentives to reduce plastic items ($\beta = -.7061$, $p = .174$) were not significantly related to employee engagement in plastic use reduction at home. Thus, H2–H5 were not supported. The model was correctly classified in 66%.

Table 5. Logit regression results – variables coefficients, standard errors and p-values

Hypothesis	Coeff.	SE	p-value	Decision
H1	1.7907	0.6053	0.003	supported
H2	0.4324	0.4607	0.348	unsupported
H3	0.2688	0.5048	0.594	unsupported
H4	–0.4997	0.4469	0.264	unsupported
H5	–0.7061	0.5199	0.174	unsupported

Source: Own elaboration.

5. Discussion and implications

As already highlighted above, the relationship between pro-environmental actions in the workplace and pro-environmental behaviour at home was generally neglected in the academic literature. In line with Lee et al. [1995] it should be underlined that the determinants of pro-environmental behaviour at home and at the workplace differ. For example, economic factors (such as utilities costs) can play significant role at home [Siero et al., 1989], while in the workplace, the behaviour

can be affected by organisational support. Despite these differences, we find evidence that both the concepts are clearly linked, which is in line with the results obtained by Al-Shemmeri and Naylor [2017].

In particular, our results revealed that campaigns increasing employees' awareness of plastic use reduction in the workplace were significantly related to individuals' engagement in plastic use reduction at home, thus supporting the first hypothesis (H1). This finding is consistent with the previous research that has highlighted the importance of education and awareness-raising initiatives in promoting sustainable behaviour change [Kollmuss, Agyeman, 2002]. Our results indicate that supporting employees' pro-environmental behaviours can imply a "positive externality" for the environment in the form of change of at-home behaviours, as a complement to a parallel behaviour in the workplace. This in turn supports the findings of Linder et al. [2018] or Chow et al. [2017] who suggest that actions raising environmental awareness can successfully influence employees' behaviour. Most household activities are limited to actions imposed by legal regulations and introduced fees. However, we believe that voluntary actions stemming from growing awareness and understanding by individuals are the key to an effective reduction of plastic waste production. Hence, it is important to provide the proper means and training, also in the individuals' environments, in particular in the workplace. We think that actions undertaken by employers can significantly influence pro-environmental behaviours in households.

Our findings also suggest that workplace education may spill over into the home environment. This finding supports the idea of the social learning theory. According to social learning theory, individuals learn by observing others and modelling their behaviour [Bandura, 1977]. This suggests that the workplace can serve as a site for social learning, where employees can observe and learn from their colleagues' sustainable behaviours. Moreover, social learning theory suggests that environmental cues can also influence individuals' behaviour. In this study, campaigns aimed at increasing employees' awareness of plastic use reduction may have acted as environmental cues, reminding individuals to engage in sustainable behaviour not only at work but also in their personal lives. By creating a culture of sustainability within the workplace, organisations can inspire employees to adopt sustainable behaviours both at work and in their personal lives.

In contrast, the lack of significant relationships between other employer-led initiatives, such as reducing plastic use in the workplace, providing reusable non-plastic items, conducting competitions with incentives, obligatory recycling, and individuals' engagement in plastic reduction at home (not supporting H2–H5) suggests that these initiatives may not be effective in promoting sustainable behaviour change, which is contrary to previous research [Pham et al., 2018; Pham et al., 2019]. This can – at least partly – be explained by the TPB. According to TPB,

individuals' intentions to engage in a behaviour are influenced by their attitudes, subjective norms, and perceived behavioural control [Ajzen, 1991]. The findings suggest that employer-led initiatives other than awareness campaigns may not have been effective in changing employees' attitudes, subjective norms, or PBC related to plastic use reduction at home. Additionally, it seems that employees do not become more self-efficacious or fail to develop the habit of acting in a pro-environmental way. Perhaps it is related to the fact that, at least in selected cases, employers' actions have been concentrated on greening and building a good image, rather than on the empowerment of their employees to become agents of sustainable change. This highlights the need for a more comprehensive approach to sustainability in the workplace, which includes empowering employees to become sustainability advocates both at work and in their personal lives.

Our findings also have important implications for policymakers and employers who may wish to promote sustainable behaviours among their employees. They suggest that education and awareness-raising initiatives may be effective not only in the workplace but also in promoting sustainable behaviours at home. On the other hand, although some actions – such as replacing plastic items with more sustainable alternatives or implementing obligatory recycling – may help to reduce plastic use within the company, our findings suggest that these actions may not generate a spill-over effect into employees' personal lives. This highlights the need for a more comprehensive approach to promoting sustainable behaviour change within organisations. CSR and ESG managers should prioritise educational initiatives aimed at raising employees' awareness of the environmental impacts of plastic use and at empowering them to become agents of change. Furthermore, our study emphasises the importance of not relying solely on providing employees with reusable items as a means of reducing plastic use. While providing reusable items may be a well-intentioned action, our findings suggest that it may not be sufficient to generate sustainable behaviour change. Instead, CSR and ESG managers should focus on promoting behaviour change through education and awareness-raising initiatives.

6. Conclusions

In this article, we have aimed to analyse the impact of different groups of actions undertaken by employers on individuals' pro-environmental behaviour. Based on a sample of 116 responses from corporate employees in Poland, our study suggests that activities targeted at increasing awareness and knowledge about plastic waste production have the most significant impact on individuals' pro-environmental behaviours. However, we have also found that the number of

pro-ecological actions undertaken in the company significantly impacts individuals' pro-environmental behaviours, thus suggesting that the more actions are taken, the better the pro-environmental habits are developed. Nonetheless, awareness campaigns remain the most significant factor in driving change.

Despite the findings of our study, we recognise several limitations that should be mentioned. First, we acknowledge the potential for selection bias – given that the questionnaire was distributed voluntarily, it could lead to the participation of more environmentally aware employees. However, as noted by Brodzicki and Ciolek [2016], a lack of balance between sub-samples in logistic regression is not particularly problematic.

Furthermore, as the questionnaire focused solely on plastic waste reduction behaviours, the obtained results may not be universal to all pro-environmental behaviours. Therefore, further research should investigate the relationship between the workplace and home and consider a broader range of pro-environmental behaviours.

Lastly, the results of our study should be confirmed on a larger research sample, preferably in a panel data setting. By doing so, we could better understand the relationship between employers' actions, individual pro-environmental behaviours, and the potential spillover effect.

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