



Personality traits and willingness to pay for sustainability in supply chains

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Abstract

Supply chain and procurement professionals may play a crucial role in implementing sustainability across the supply chain. However, the role or influence of these professionals, specifically from psychological and behavioural perspectives, is not yet well-explored. We assess how the personality traits of procurement professionals influence willingness to pay (WTP) for sustainability. By using a dataset already employed for a related study, we test hypotheses drawn from the Five-Factor Model with a sample of 465 procurement professionals based in European countries through partial least squares structural equation modelling. We find that agreeableness and openness are significantly associated with WTP, which underscores the influence of these traits in actualizing sustainable procurement. To bolster sustainability in supply chains, companies should actively attract and cultivate individuals who exhibit high levels of agreeableness and openness, with an emphasis on fostering a sense of community and innovation, respectively. For managers, we advance our understanding of how individual-managerial factors contribute to fostering sustainability within companies. For theory, we contribute to the literature on micro-foundations and document that WTP is the result of both cognitive and behavioural-affective components of personality.

Keywords Personality traits · PLS-SEM · Procurement professionals · Supply chain management · Sustainability · Willingness to pay

Introduction

It is impossible to deny that man-made climate change has lasting and damaging effects on the environment. It is equally impossible to deny that sustainability initiatives by the private corporate sector play a very important role in mitigating these effects (Montabon et al. 2016; Pisani-Ferry and Mahfouz 2023). Companies are key actors in the transition to a more sustainable economy. Within companies, there is, arguably, one function that plays a prominent role in the implementation of sustainability: procurement and supply chain occupy a “central” role in the diffusion of sustainability (Johnsen et al. 2022).

Consequently, the operations management (OM) and supply chain management (SCM) literature has made dramatic

progress by documenting, first of all, how supply chains can become more sustainable (Gualandris et al. 2024; Huang et al. 2022; Khizar et al. 2022) and, secondly, by highlighting, via meta-analytic reviews, that supply chain sustainability improves organisational, not only environmental, performance (Yadav et al. 2023). These studies indicate that there is no trade-off between profits and the environment.

In spite of the theoretical and arguably also practical progress towards supply chain sustainability, there is one domain that researchers in OM and SCM have hitherto not sufficiently explored: the role of individual procurement professionals’ personality traits contributing to sustainability outcomes at the organisational level. This research domain broadly summarised under the term “micro-foundations”—defined as individual characteristics and behaviours that collectively shape outcomes at the organisational level (Annosi et al. 2024; Zhao and He 2022)—is not new. More than a decade ago, Abell et al. (2008, p. 492) proposed: “Strategic management should fundamentally be concerned about how intentional human action and interaction causally produce strategic phenomena”. Research on micro-foundations in OM and SCM is, by contrast, relatively recent, but there

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is consensus among scholars that this research is useful (Shou et al. 2023): extant research shows that individual attitudes can explain new OM practice adoption (Arellano et al. 2021), insourcing behaviour (Foerstl et al. 2021), that individual intentions (or lack thereof) explain ISO 9000 adoption (Miller et al. 2018) and that individual norms are correlated with green innovation (Shou et al. 2023).

Consequently, in this study, we aim to explore how the personality traits of procurement professionals contribute to sustainable procurement through their willingness to pay (WTP). After polling 465 procurement professionals in several European countries, we find that WTP for sustainability is the result of two personality traits: agreeableness and openness.

The findings of this study hold significant practical implications. Given the consistent findings in academic research that personality traits strongly predict job performance (Barrick and Mount 1991), companies often utilise personality tests in their hiring and promotion processes. Therefore, the findings of this study offer a straightforward yet powerful suggestion for companies aiming to enhance sustainability in their procurement operations: prioritise the recruitment and development of procurement professionals who exhibit high levels of two key personality traits associated with sustainable procurement—namely, agreeableness and openness. In personnel development, aspects such as altruism/caring—related to agreeableness—and intellectual stimulation/innovation—related to openness—can be stimulated so as to foster WTP for sustainability.

Literature Review and Hypotheses

The rich literature in psychology has long argued that (a) individual psychological differences can be reliably measured via models of personality and that (b) these individual differences have direct consequences on important observable outcomes.

On the former: the most widely used model of personality is the Big Five (B5) or the Five-Factor Model (FFM) (Costa and McCrae 1992). The FFM is an empirical generalisation about the co-variance of personality traits that groups characteristics of individuals into five categories: agreeableness (warm vs. distrustful), conscientiousness (disciplined vs. disorganised), extraversion (sociable vs. introspective), openness (creative vs. conventional), and neuroticism/emotional stability (anxious vs. confident).

Specifically, agreeableness manifests itself in “selfless concern for others and in trusting and generous sentiments” (McCrae and Costa 2003). Conscientiousness reflects discipline, ambition, and work ethic (McCrae and Costa 2003). Extraversion concerns preferences for social interaction and lively activities (McCrae and Costa 2003). Central

components are interpersonal engagement, which includes valuing close bonds, enjoying leadership roles, and impulsivity (Depue and Collins 1999). Openness refers to the receptiveness to new ideas, new approaches, and new experiences (McCrae and Costa 2003): “flexible views of rules” (p. 156) and “tolerance for ambiguity” are “hallmarks” for open persons (McCrae and Costa 1997, 838). Neuroticism—also referred to as its opposite, emotional stability—reflects a tendency to experience unpleasant emotions and to view the world through a negative lens, with the two sentiments of fear and anger at its core (McCrae and Costa 2003). The FFM is universal, that is, the FFM replicates well in every culture internationally (McCrae 2017).

On the consequence of personality traits: The literature indicates that individual personality differences are strongly linked to observable outcomes. Meta-analytic reviews consistently indicate that conscientiousness is the most important trait that predicts job performance across employment categories and that extraversion is the single most important trait of effective leaders (Barrick and Mount 1991; Judge et al. 2002). More recently, a meta-analysis finds that openness, conscientiousness, and extraversion are positively linked to personal income, whereas agreeableness and neuroticism have a negative effect (Alderotti et al. 2023). These meta-analytic reviews summarising hundreds of studies thus indicate that understanding unobservable personality traits is key to predicting outcomes (job performance, income) and that, importantly, personality traits are not neutral: some personality traits are strongly linked to positive outcomes. Understanding and influencing personality traits thus allows to influence outcomes that are desirable.

Not surprisingly, personality traits are consistently linked also to pro-environmental behaviour (see Table 1). Openness and agreeableness are linked with higher environmental concern (Hirsh 2010); openness, conscientiousness, and extraversion are linked with pro-environmental behaviour (Busic-Sontic et al. 2017); openness, conscientiousness, and agreeableness are linked again with pro-environmental engagement across countries (Milfont and Sibley 2012); a meta-analysis of 38 studies finds that openness, conscientiousness, extraversion, and agreeableness correlate with pro-environmental attitudes (Soutter et al. 2020); conscientiousness, extraversion, agreeableness, and neuroticism are linked specifically to eco-friendly actions in the tourism context (Kvasova 2015); conscientiousness, extraversion, agreeableness and neuroticism (negatively) are linked to fair-trade engagement (Kutaula et al. 2022). Finally, a study examining WTP as a dependent variable finds that extraversion and agreeableness are positively linked to WTP for green hotels (Tang and Lam 2017).

In sum, the studies indicate, overwhelmingly, a positive relationship between the five traits and pro-environmental attitudes and behaviour. For pro-environmental attitudes,



Table 1 Influence of personality traits on pro-environmental attitude and behaviour

Trait	Dependant variable indicating pro-environmental attitude	Dependant variable indicating pro-environmental behaviour
Agreeableness	Environmental concern (Hirsh 2010) Pro-environmental attitudes (Soutter et al. 2020) Fair-trade engagement (Kutaula et al. 2022) WTP for green hotels (Tang and Lam 2017)	Ecological behaviour (Fraj and Martinez 2006) Pro-environmental engagement (Milfont and Sibley 2012) Eco-friendly actions (Kvasova 2015)
Conscientiousness	Pro-environmental attitudes (Soutter et al. 2020)	Pro-environmental behaviour (Busic-Sontic et al. 2017) Ecological behaviour (Fraj and Martinez 2006) Pro-environmental engagement (Milfont and Sibley 2012) Eco-friendly actions (Kvasova 2015) Fair-trade engagement (Kutaula et al. 2022)
Extraversion	Pro-environmental attitudes (Soutter et al. 2020) WTP for green hotels (Tang and Lam 2017)	Pro-environmental behaviour (Busic-Sontic et al. 2017) Ecological behaviour (Fraj and Martinez 2006) Eco-friendly actions (Kvasova 2015) Fair-trade engagement (Kutaula et al. 2022)
Openness	Environmental concern (Hirsh 2010) Pro-environmental attitudes (Soutter et al. 2020)	Pro-environmental action (Markowitz et al. 2012) Pro-environmental behaviour (Busic-Sontic et al. 2017) Pro-environmental engagement (Milfont and Sibley 2012)
Emotional stability		Eco-friendly actions (Kvasova 2015) Fair-trade engagement (neg. rel.) (Kutaula et al. 2022)

empirical support is strongest for agreeableness and openness. For pro-environmental actions, support is strongest for conscientiousness and extraversion. The only trait where findings are inconsistent is neuroticism. These studies are all about individual consumers operating in their private capacities.

What we clearly do not know is if these traits are relevant also among procurement and supply chain professionals, i.e., individuals operating in a professional context acting on behalf of an organisation.

We know very well that the behaviour of individual consumers deviates substantially from rational behaviour (Simon 1997) and that, by contrast, decision processes in organisations are designed to produce rational outcomes, thus attempting to minimise deviations from rational choice principles (Corey 1989). Investigating the influence of personality traits on WTP in the context of procurement and supply chain is thus a necessary and relevant endeavour. Our research question is thus quite simple:

Which personality traits are correlated with WTP for sustainability among procurement and supply chain professionals?

As discussed, the literature just reviewed leads to the following hypotheses (see Fig. 1):

H1 Agreeableness positively influences WTP for sustainability.

H2 Conscientiousness positively influences WTP for sustainability.

H3 Extraversion positively influences WTP for sustainability.

H4 Openness positively influences WTP for sustainability.

H5 Emotional stability positively influences WTP for sustainability.

Methodology and findings

The present study is based on a specific section of an online survey conducted in the context of the project “Communicating companies’ supply chain sustainability practices in a digital environment” funded by the European Union Next-GenerationEU—National Recovery and Resilience Plan (NRRP), awarded to one of the authors (see Funding).

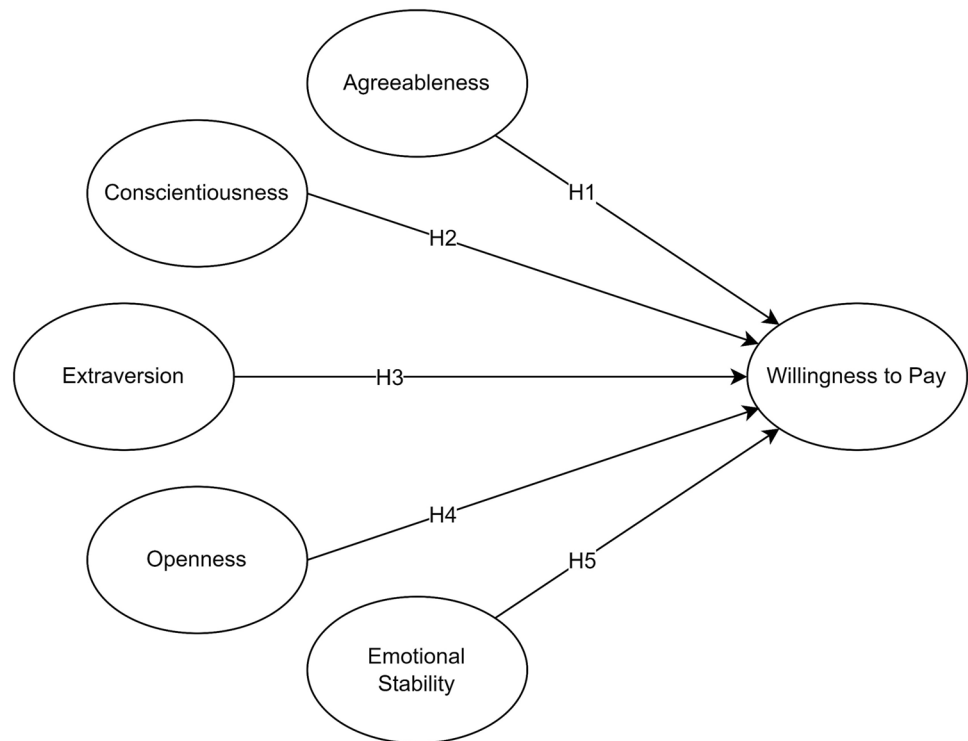
The dataset utilised in the present study has been previously employed, in part, for the main empirical study, currently under review (Hinterhuber and Khan 2024). The main empirical study, which predates the preparation of the present study, focuses on the most important and theoretically most interesting variables of the entire dataset (Hinterhuber and Khan 2024), namely antecedents of sustainable procurement in organisations. Examining antecedents of sustainable supply chains is, in fact, one important deliverable in the context of the project “Communicating companies’ supply chain sustainability practices in a digital environment”.

The present study, by contrast, analyses variables that were of secondary interest to the main empirical study and have not been previously reported, but that have been collected at the same time as the data for the main empirical study.

The main empirical study employs the theory of planned behaviour to examine antecedents of WTP and sustainable purchasing behaviour in organisations (Hinterhuber and



Fig. 1 Research model



Khan 2024). The present study, by contrast, employs the Five-Factor Model (FFM) to examine the impact of personality traits on WTP. WTP is thus a variable used in Hinterhuber and Khan (2024) as well as in the present study.

For all information on data collection and sample characteristics, we refer to Hinterhuber and Khan (2024). We reiterate that the data utilised in the main empirical study, and thus the present study, was collected with the help of a market research agency, Cint, in late 2023.

We measure all constructs via validated scales: personality traits via the Org-B5 scale (Pathki et al. 2022) and willingness to pay via the WTP scale (Habel et al. 2016). The WTP scale assesses whether respondents prioritise sustainability and value it over lower prices when making purchasing decisions. The dependent variable in this study is, as just highlighted, WTP for sustainability, an indicator of behavioural intent. It is worth noting that recent meta-analytic reviews and other studies provide converging evidence that WTP is highly correlated with auction prices indicating an actual willingness to pay (Hofstetter et al. 2021; Schmidt and Bijmolt 2020). Simply put, WTP indicates intent but correlates strongly with behaviour.

Given the exploratory nature of the research, this study, like other studies examining WTP for sustainability (Khan et al. 2024; Köhl et al. 2022), uses PLS-SEM as an analytical strategy. We employ SmartPLS 4 software for data analysis (Ringle et al. 2022). As per guidelines (Hair et al. 2022), we first assess whether loadings of indicators and average variance extracted (AVE) of constructs, which indicate

convergent validity, are under the recommended range of values. The loading values in this study are between 0.693 and 0.892 while AVE values are between 0.562 and 0.787 (see Table 2). We next assess whether Cronbach's alpha and composite reliability (CR), which indicate internal consistency, are under the recommended range of values. Cronbach's alpha values in this study are between 0.740 and 0.867 while CR values are between 0.837 and 0.917 (see Table 2).

We then assess whether the constructs in question in this study meet the discriminant validity criteria. For that, the HTMT method, which is arguably better than other methods, is applied (Hair et al. 2019). According to this method, the HTMT values must be below 0.850 (Hair et al. 2019). The HTMT values of all constructs in this study are below 0.850 (see Table 3).

We then assess the structural model. Since all variance inflation factor (VIF) values are less than 3, this study is free from collinearity issues (Hair et al. 2019). Moreover, since VIF values are less than 3.3 even with the inclusion of a random variable, this study is free from common method bias (Kock 2015). The R^2 values represent the predictive power of a model. The standard R^2 values 0.250, 0.500, and 0.750 respectively depict weak, moderate, and substantial predictive powers (Hair et al. 2019). The R^2 value of WTP, which is an endogenous construct in this study, is 0.258. The Q^2 values represent the predictive relevance of a model. The Q^2 values greater than 0.250 and 0.500 respectively imply medium and large predictive relevancy. The Q^2



Table 2 Reliability and validity of model

Constructs	Indicator code	Indicators	Loadings	Cronbach's Alpha	CR	AVE
Agreeableness (Org-B5-A)	Org-B5-A1	At work, I sympathize with others' feelings	0.841	0.867	0.909	0.715
	Org-B5-A2	I show interest in other people's problems at work	0.875			
	Org-B5-A3	At work, I feel others' emotions	0.825			
	Org-B5-A4	I care about others at work	0.841			
Conscientiousness (Org-B5-C)	Org-B5-C1	At work, I get my tasks done right away	0.765	0.770	0.851	0.589
	Org-B5-C2	I am careful to put things back in their proper place at work	0.775			
	Org-B5-C3	At work, I like order	0.693			
	Org-B5-C4	I am always prepared at work	0.831			
Extraversion (Org-B5-E)	Org-B5-E1	At work, I feel comfortable around people	0.769	0.787	0.863	0.613
	Org-B5-E2	I make friends easily at work	0.826			
	Org-B5-E3	At work, I am skilled in handling social situations	0.836			
	Org-B5-E4	I talk a lot at work	0.693			
Openness (Org-B5-O)	Org-B5-O1	At work, I enjoy hearing different ideas	0.781	0.787	0.863	0.612
	Org-B5-O2	I have a vivid imagination at work	0.822			
	Org-B5-O3	At work, I enjoy thinking about things	0.800			
	Org-B5-O4	I enjoy philosophical discussions at work	0.722			
Emotional stability (Org-B5-ES)	Org-B5-ES1	I am not easily bothered by things at work	0.699	0.740	0.837	0.562
	Org-B5-ES2	At work, I am relaxed most of the time	0.774			
	Org-B5-ES3	I don't get upset easily at work	0.781			
	Org-B5-ES4	At work, I remain calm under pressure	0.744			
Willingness to pay (WTP)	WTP1	I am willing to pay a higher price for a sustainable product than its counterpart unsustainable product	0.884	0.865	0.917	0.787
	WTP2	I would like to keep buying a sustainable product, even if its counterpart unsustainable products are cheaper	0.894			
	WTP3	For the advantages I have buying a sustainable product, I would be willing to pay a higher price	0.883			

Table 3 HTMT criterion

	Org-B5-A	Org-B5-C	Org-B5-E	Org-B5-ES	Org-B5-O	WTP
Org-B5-A						
Org-B5-C	0.631					
Org-B5-E	0.707	0.628				
Org-B5-ES	0.532	0.552	0.647			
Org-B5-O	0.786	0.625	0.828	0.719		
WTP	0.481	0.400	0.437	0.364	0.563	

HTMT < 0.85 is a threshold limit

values greater than 0.000 though imply small predictive relevancy but are yet considered meaningful (Hair et al. 2019). The Q² value of WTP, which is an endogenous construct in this study, is 0.214. This study meets the model fit criteria since the SRMR value was 0.060, which is under the recommended range (Hair et al. 2022).

We then finally test our hypotheses using the bootstrapping function. The PLS-SEM analysis reveals that

agreeableness and openness respectively influence WTP with correlation values of 0.161 (p < 0.05) and 0.291 (p < 0.001). Furthermore, conscientiousness, extraversion, and emotional stability respectively influence WTP with correlation values of 0.100 (p > 0.05), 0.014 (p > 0.1), and 0.005 (p > 0.1). Therefore, H1 and H4 are statistically supported, while H2, H3, and H5 are not statistically supported (see Table 4).



Table 4 Hypotheses testing

No	Path	Std beta	Std error	T values	P values	95% CI LL	95% CI UL	Decision
H1	Org-B5-A → WTP	0.161	0.066	2.444*	0.015	0.057	0.272	Supported
H2	Org-B5-C → WTP	0.100	0.054	1.847	0.065	0.016	0.193	Not supported
H3	Org-B5-E → WTP	0.014	0.061	0.231	0.817	-0.086	0.115	Not supported
H4	Org-B5-O → WTP	0.291	0.080	3.617***	0.000	0.153	0.418	Supported
H5	Org-B5-ES → WTP	0.005	0.057	0.093	0.926	-0.084	0.107	Not supported

*** $p < 0.001$, * $p < 0.05$, Control variables: age, academic qualification, work experience, workplace size, workplace revenue

Discussion and implications

The literature indicates that theorizing about sustainability in OM and SCM requires a multi-level approach (Khizar et al. 2022): environmental factors, organisational factors, and individual-managerial factors all contribute to sustainable supply chains. This study specifically focuses on contributing to increasing our understanding of the role that individual-managerial factors play in shaping sustainability outcomes at the organisational level.

To the best of our knowledge, this study is the first quantitative study on the relationship between personality traits and WTP for sustainability among supply chain and procurement professionals. We know, based on prior studies, that procurement managers' WTP for sustainability is an antecedent to sustainability procurement which in turn contributes to improved organisational performance (Khan and Hinterhuber 2024; Yadav et al. 2023). The present study, based on a sample of 465 European procurement professionals, suggests that individual differences in personality structure play a very important role in WTP for sustainability. More specifically, we find that agreeableness and openness are both significantly related to WTP for sustainability among procurement and supply chain professionals.

Individuals high in agreeableness tend to exhibit characteristics such as kindness, cooperativeness, helpfulness, and consideration for others. They are likely to be empathetic, compassionate, and willing to assist those in need, demonstrating a strong concern for the well-being of others (Graziano and Eisenberg 1997). Individuals high in openness tend to exhibit curiosity, creativity, and a willingness to explore new ideas and experiences. They are often imaginative, open-minded, and receptive to unconventional or novel concepts. This trait is associated with a broad range of interests, a preference for variety, and a propensity for introspection and reflection (McCrae and Costa 1997).

Personality is a "broad constellation of traits with cognitive, affective, and behavioural manifestations" (McCrae and Costa 1997, p. 832). Openness has a strong cognitive underlying component, while agreeableness encompasses affective, behavioural, and cognitive components, dominated by behaviour and affect (Zillig et al. 2002). WTP for

sustainability in supply chains is thus the result of a cognition-based personality trait—openness—and of a behavioural-affective trait—agreeableness.

Companies already make widespread use of the FFM in personnel selection and development (Rothstein and Goffin 2006), given the strong academic support for conscientiousness as a predictor of individual job performance (Barrick and Mount 1991) and for extraversion as a predictor of leadership effectiveness (Judge et al. 2002). The findings of this study can provide further guidelines.

Top management actions positively influence employees' behaviour towards sustainability resulting in improved business performance (Dey et al. 2022; F. Wei et al. 2023; Khan 2023). If top management of companies aims at improving the sustainability of their supply chains, they should attract and develop operations and supply chain managers high in agreeableness and openness. To attract individuals high in agreeableness, companies could emphasise themes of community, support, and altruism, highlighting how their products contribute to helping others or making a positive impact on society. These individuals are sensitive towards feelings of compassion, unity, and social responsibility resonating with their values and motivations. This study thus shows, empirically, that sustainability in supply chains taps into a personality facet that encompasses feelings of community—agreeableness.

To attract individuals high in openness, companies could focus on promoting opportunities for creativity, innovation, and intellectual stimulation. Companies could highlight unique and unconventional aspects of their products, along with emphasizing experiences that offer exploration and discovery. This study thus shows, empirically, that sustainability in supply chains additionally taps into a personality facet that encompasses innovation—openness.

To theory, this study makes several contributions: First, we document that psychological micro-foundations are very fertile ground for understanding and predicting outcomes at the organisational level (Tuncdogan et al. 2019). Among the five personality traits of the FFM, two, openness and agreeableness, are strongly associated with willingness to pay for sustainability which indeed leads to actualizing sustainable procurement (Khan and Hinterhuber 2024). Second,



this study contributes to our understanding of willingness to pay as a complex indicator of behavioural intentions: willingness to pay is the result of cognitive (openness) as well as behavioural-affective (agreeableness) components of personality. This thus advances our understanding of willingness to pay as a construct that incorporates both rational (openness) as well as affective (agreeableness) dimensions of the personality of procurement and supply chain professionals. Prior studies on willingness to pay for sustainability are conducted, virtually with no exception, among private consumers (i.e., B2C), and, in their contrasting findings, all suggest that, in B2C, WTP for sustainability is product-specific (S. Wei et al. 2018; Khan 2024). This study, by contrast, has data from multiple industries spanning multiple product categories: future studies will show whether, as the data in this study seem to indicate, openness and agreeableness are associated with WTP for sustainability across product categories in B2B.

In sum, this study offers empirical support on the type of individuals most likely (e.g., warm, caring, innovative) and least likely (e.g., rigid, distrustful, resistant to change, possibly similar to the stereotype of the traditional American conservative) to support sustainability in OM and SCM.

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Data availability The data that support the findings of this study are available from the corresponding author upon reasonable request.

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