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# RESEARCH ARTICLE

# Affective commitment and sustainable procurement in Chinese HEIs: Unravelling the mediated moderation of intention and knowledge

**Xue Jin*, S.M. Ferdous Azam, Jacquline Tham**

*Post Graduate Centre, Management & Science University, Selangor Darul Ehsan, Malaysia*

*** Corresponding author:** Xue Jin, ashely_edu@yeah.net

## ABSTRACT

Research on sustainable procurement has gained traction, recognizing it as an organizational transformation integrating sustainability criteria into procurement processes. Existing literature highlights the direct positive impact of affective commitment to change on sustainable procurement behaviour but overlooks the mediating role of behavioural intention and moderating effects of information environments. This study addresses this gap by constructing a mediated moderation model based on the Theory of Planned Behaviour and information asymmetry theory, investigating how affective commitment influences sustainable purchasing behaviour through sustainable purchasing intention, and how knowledge moderates this pathway under information asymmetry. This study adopts the snowball sampling method to collect data from purchasers in procurement centres of higher education institutions (HEIs) in Jiangsu, China, analysed using PLS-SEM. the results showed that sustainable purchasing intention mediates the relationship, with affective commitment exerting both direct (80%) and indirect (20%) effects on behaviour. Knowledge significantly moderates the intention-behaviour link: higher knowledge weakens the positive impact of intention on behaviour. The study enriches theoretical understanding by verifying the mediating role of intention and knowledge's moderating mechanism, while providing empirical evidence from Chinese HEIs. Practically, it informs policy design for promoting sustainable procurement and highlights the need to balance value identification and decision-making factors in organizational change.

***Keywords:*** sustainable procurement; affective commitment; theory of planned behaviour; asymmetric information; higher education institutions; China

## 1. Introduction

Sustainability has its roots in the environmental movement of the 1960s and 1970s, when people began to recognize the adverse effects of industrialization and economic growth on the environment, as well as the threats posed to human health and the future sustainability of our planet[1]. The United Nations Conference on the Human Environment in Stockholm in 1972 marked a pivotal moment for global engagement with environmental issues, laying the groundwork for sustainable development. At its core, sustainable development aims to meet present needs without compromising future generations' ability to do so. This principle was formally articulated by the Brundtland Commission in its 1987 report "Our Common Future"

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as "development that meets present needs without jeopardizing future generations' ability to meet their own needs". The triple bottom line theory suggests that an organization's success should be evaluated not only based on economic indicators but also taking into account its environmental and social impacts [2]. Introducing sustainability into procurement, involves integrating environmental, social, and economic sustainability considerations into the purchasing process. The objective of sustainable procurement is to advance sustainability across the supply chain by selecting products and services with minimal environmental impact, fulfilling social responsibilities, and demonstrating economic efficiency. Sustainable procurement encompasses a range of behaviours, and the actions of purchasing personnel at each stage of the process can significantly influence the outcome. While this study does not categorize specific sustainable purchasing behaviours, it adopts Rodriguez-Plesa [3] definition which encompasses the collective behaviours of purchasing personnel who incorporate sustainable factors such as requirements, criteria, and decision-making methods into the purchasing process to steer its outcomes in a desired direction.

Research on sustainable procurement has garnered attention from numerous scholars who perceive sustainable procurement as an organizational transformation that diverges from established behavioural practices and systems, embracing a novel approach that integrates sustainable requirements and criteria into the procurement process to achieve sustainability objectives [4–6]. In line with this research perspective, sustainable procurement represents an organizational innovation aimed at fostering sustainability in public procurement from a comprehensive life cycle standpoint [7]. When viewing sustainable procurement as a form of change, it is essential to consider commitment to change within the framework of organizational change theory. Conner (1992) characterizes commitment to change as "the adhesive that establishes the crucial connection between individuals and the objectives of change"[8]. For an organization undergoing transformation, clear goals and change plans are indispensable on one hand, while active participation and support from members are vital on the other. Commitment to change can ignite motivation and enthusiasm among organizational members, compelling them to dedicate themselves to the process of transformation and strive diligently toward achieving its objectives. Simultaneously, commitment to change can enhance members' adaptability and flexibility in response to changes [9].

The existing literature has confirmed that affective commitment to change has a significant direct positive impact on sustainable procurement behaviour [5-6,10]. Grandia [4] have regarded affective commitment to change as the attitude factor in the theory of planned behaviour (TPB) and introduced sustainable purchasing behaviour as the mediating link between affective commitment and procurement outcomes. However, in TPB, attitudes do not directly affect individual behaviour but are transmitted through behavioural intention as an intermediate variable. In addition to behavioural intention, are there other moderating variables that affect the path through which emotional commitment influences sustainable purchasing behaviour? The specific influence path of emotional commitment on behaviour is still in the research gap. Based on this gap, this study poses research questions:

**RQ.** What is the missing link between purchasers' affective commitment and sustainable purchasing behaviours?

To address this issue, this study develops a mediated regulation theory model focusing on the theory of planned behaviour and the theory of asymmetric information. This study aims to reveal the black-box mechanism that affects the relationship between affective commitment and sustainable purchasing behaviour, to establish a mediating link between commitment to change and sustainable purchasing behaviour by using intention in the theory of planned behaviour as a predictor of behaviour, and to explore the moderating role of knowledge in the process in the context of information asymmetry.

The proposed objective is to collect data by sending electronic questionnaires to purchasing staff in procurement centres of Higher Education Institutions (HEIs) in Jiangsu, China. Higher education institutions (HEIs), as important bases for knowledge dissemination, scientific research and innovation, and social services, have a far-reaching impact on the sustainable development of society through their sustainable procurement model [11]. It has become increasingly important for higher education institutions to engage in sustainable procurement with the primary objective of effectively managing their social and environmental footprints. Educational institutions play an important role as consumers of products and services, and their expenditures, in addition to their direct impacts (i.e., operating expenditures on teaching and research), have multiplier economic impacts, i.e., indirect and induced impacts, on other parts of the national economy[12–14]. Therefore, the study of sustainable procurement in higher education institutions is not only of great significance for their own operational efficiency and image building, but also has a positive effect on promoting the sustainable development of the whole society.

The theoretical significance of this study lies in its deconstruction of the chain mechanism through which emotional commitment influences sustainable purchasing behaviour, with sustainable purchasing intention serving as a mediator. By integrating the theory of information asymmetry to analyze the moderating function of knowledge, this study systematically explains how emotional commitment transforms into actual procurement behaviour in scenarios of incomplete information. This approach fills the research gap in existing studies, which predominantly focus on the direct relationship between emotional commitment and sustainable behaviour while ignoring the mediating role of behavioural intention and the moderating effect of information environments. The empirical significance lies in providing evidence from Chinese HEIs, offering a localized perspective and enhancing understanding of the relationship between commitment to change and sustainable purchasing intentions within the specific cultural and social context. Additionally, evidence from Chinese HEIs' purchasers can enrich international academic research data, provide Chinese cases for global sustainable purchasing studies, and bolster the generalization and international impact of the study.

The structure of this study was divided into 6 blocks. Part 1 describes the background of the study, the research objectives and questions, and the significance of the study. Part 2 describes the literature and theory review including commitment to change, knowledge, and their influence on sustainable purchasing intentions and behaviours, and formulates the hypotheses. Section 3 details the research methodology and questionnaire design, and Sections 4,5 show the results and discussion. Section 6 reveals the conclusions and presents the limitations of the study.

# 2. Literature review

## 2.1. Sustainable procurement in HEIs

Numerous higher education institutions globally prioritize sustainability in their procurement decision-making processes [11]. A body of scholarly work has elucidated the formidable challenges encountered by HEIs in implementing sustainable procurement practices [1,12–14]. These challenges encompass substantial financial costs conflicting with budgetary constraints within HEIs' operational frameworks, absence of tangible economic benefits [1,13]; as well as deficiencies in top-level leadership endorsement/support for transformative initiatives [12] and entrenched organizational cultures [14]; further compounded by individual factors such as a dearth of commitment towards embracing sustainable changes among purchaser [1,5]. Moreover, the presence of inadequate expertise and knowledge lack of appropriate capacities and knowledge [1,12,15] as well as conflicts arising from diverse stakeholder interests beyond institutional boundaries [11]. The precise mechanisms through which these challenging factors impact sustainable procurement remain

ambiguous, and warrant deeper investigation. Behaviour has proved as a mediating variable between organizational determinants and outcomes in procurements within human resource management and organizational change paradigms by Grandia [4]. However, the specific influence pathways linking organizational determinants to behaviour remain opaque.

## 2.2. Commitment to change theory

The organizational change perspective argues that commitment can be defined as a force (mindset) that binds an individual to a course of action related to one or more goals [8]. Individuals play a greater role in organizational change processes because individual support is more likely to lead to effective organizational change [4]. At the same time, for individuals, commitment to change can help them identify with and drive organizational change [9].

Conner (1992) has described commitment to change as "the glue that provides the vital link between people and the goals of change"[9]. The three-component model of commitment to change characterized by different mindsets was empirically tested as (a) a desire to provide support for the change based on a belief in its inherent benefits (affective commitment to change), (b) a recognition that there are costs associated with failure to provide support for the change (continuance commitment to change), and (c) a sense of obligation to provide support for the change (normative commitment to change) [16]. Affective commitment represents an emotional attachment to the organization and a personal identification with the organization's goals and values[17] . Normative commitment involves a sense of obligation to the organization, where the employee feels compelled to stay with the organization out of loyalty to the organization [18]. Continuance commitment refers to staying in the organization because of the inducements offered or the lack of alternatives, rather than because joining the organization brings positive emotions or triggers a sense of loyalty. That is, employees may feel the need to support change because they want to, have to, and/or should [3]. However, the conclusions about the three dimensions of commitment to change (affective, normative, and continuous) are not necessarily consistent. Affective commitment has frequently been shown to be strongly associated with organizationally relevant and employee-dependent outcomes that are not necessarily supportive of normative and continuance commitment [19].

Affective commitment to change in the organization is a factor that has been repeatedly highlighted as a general individual characteristic that is purported to be responsible for employees' positive response to organizational change [17]. Straatmann et al. [19] showed that affective commitment had a significant positive effect on change-supportive intentions. It has proved that if purchasers believe in the benefits of sustainable procurement change, they will be willing to change their behaviour and exhibit sustainable purchasing behaviours[4,16]. Thus, it appears that affective commitment is a direct influence on the sustainable purchasing intentions. Our first hypothesis is therefore as follows:

H1: Affective commitment has a positive impact on sustainable purchasing intentions.

Sustainable procurement practice is a requirement for procurers to change conventional procurement habits by prioritizing or making mandatory the procurement of energy-efficient and environmentally friendly goods in public procurement to replace the original goods. Previous policies have made procurers risk-averse and less likely to engage in potentially conflicting innovative programs such as sustainable procurement [6]. Therefore, sustainable procurement requires a change in the procurement behaviour of procurers to be able to engage in sustainable procurement. Affective commitment to sustainable procurement change is verified by Grandia [4] have a direct and significant effect on sustainable procurement behaviour. 100 procurement officers working in government departments (education and health) in Punjab, Pakistan indicated that affective commitment is positive support for organizational change processes. Affective commitment

occurred when procurement officers understood the value of sustainable change and individuals with organizational commitment to environmental sustainability were more actively involved in sustainable procurement activities. The same conclusion was reached by Shadrina et al. [20], who designed a survey on sustainable procurement practices in Russia, and the regression results showed that affective commitment to sustainable goals facilitated the adoption of environmental standards. This led to the second hypothesis of this study:

H2：Affective commitment has a positive impact on sustainable purchasing behaviours.

## 2.3. Knowledge

Knowledge refers to the level of awareness and understanding of purchasers of the concepts, standards, tools and practices related to sustainable procurement, and this knowledge base provides the necessary theoretical foundation and practical guidance for them to implement sustainable behaviours in their procurement decisions [21]. When purchasers have a higher level of perceived knowledge, they are able to more accurately identify sustainable procurement opportunities and challenges, and effectively apply relevant tools and methods, such as life-cycle assessment, carbon footprint calculations, and green procurement standards, to optimize the procurement process and supplier selection [4]. At the same time, the accumulation of knowledge enables buyers to better cope with the complexity and uncertainty of sustainable sourcing, and to achieve sustainable development goals through innovative and optimized sourcing strategies []. In addition, knowledge increases buyers' confidence and ability to make more sustainable decisions when faced with complex sourcing situations that balance environmental, social and economic factors. When evaluating suppliers, a knowledgeable buyer will take into account their environmental performance, social responsibility, and economic viability in order to promote a sustainable supply chain[21,23]. Therefore, knowledge as a key competency factor influences the sustainable purchasing intention and behaviour of purchasers, and hypotheses H3 is thus proposed.

H3: Knowledge has a positive impact on sustainable purchasing behaviours.

## 2.4. Theory of planned behaviour (TPB) -The mediating effect of intention

The theory of planned behaviour posits that behavioural intentions are the best way to predict and explain individual behaviour [24]. TPB posits that intentions are the primary determinants of behaviour, which in turn are dependent of attitudes toward the behaviour (overall positive or negative evaluations of performing the target behaviour), subjective norms (perceived social pressures from significant others to engage in the target behaviour), and perceived behavioural control (perceived ease or lack thereof of performing the target behaviour) [24]. Intention in the theory of planned behaviour is a measure of an individual's plan to engage in a particular behaviour [25]. Intention refers to the motivational factors that influence behaviour in the Theory of Planned Behaviour (TPB) and how much effort he is likely to exert toward that behaviour. In general, the stronger the intention to perform a behaviour, the more likely a person is to perform that behaviour and sustainable purchasing intention. There is strong empirical support for the key principles of TPB across a wide range of behavioural domains. Lai & Lv [26] conducted a quantitative study among 200 young people with higher education, and the results showed that purchase intention had a significant positive direct effect on purchase behaviour. This led to the 5th hypothesis of this study:

H4：Sustainable purchasing intention has a positive impact on sustainable purchasing behaviours.

In many studies, intention is a mediating variable between influencing factors and behaviour [ 27,28]. Yang et. al[27] collected data from 501 respondents using Google Forms. The collected data were analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM) to demonstrate the mediating effect

of willingness to use an e-wallet on the correlation between the predictors and adoption of an e-wallet. Hypotheses were developed for the mediating role of sustainable purchasing intention.

H5：Sustainable purchasing intention mediates affective commitment and sustainable purchasing behaviours.

## 2.5. Asymmetric information theory—The moderating effect of knowledge

Information asymmetry theory provides the core theoretical foundation for explaining the moderating effect of knowledge on the relationship between sustainable purchase intention and behaviour. As a key analytical framework in information economics, this theory reveals that the asymmetric distribution of information between transaction parties leads to market mechanism failure[29,30]. In the context of sustainable procurement, this principal manifests in the significant disparities in the mastery of critical information such as environmental performance data and green production standards between buyers and suppliers[31]. In the decision-making process of sustainable behaviour, information asymmetry can cause two types of typical problems. On the one hand, due to the lack of comprehensive information about suppliers' environmental practices, purchasers may fall into "adverse selection" and mistakenly include suppliers with poor environmental performance in their cooperation scope [31]. On the other hand, suppliers may take advantage of their information superiority to engage in opportunistic behaviours, concealing their true environmental performance through means such as "Green-washing", thus giving rise to commercial ethical risks. [32].

Knowledge, as the core variable for addressing information asymmetry, plays a crucial role. When purchasers lack knowledge of sustainable development, even if they have a clear intention for green procurement, they may miss purchase "pseudo-green" products[33,34] due to their inability to identify the authority of "green certifications". In contrast, specialized knowledge enables purchasers to see through suppliers' marketing strategies, decode the true meaning of authoritative certifications, and then translate abstract environmental commitments into specific procurement decisions [33].

Moreover, the accumulation of professional knowledge can reduce the information verification costs for purchasers, allowing them to more efficiently screen out suppliers that truly meet sustainable standards [39]. Meanwhile, the contract design capabilities empowered by knowledge prompt purchasers to embed quantifiable environmental indicators (such as carbon emission reduction targets) into procurement agreements, alleviating the problem of information asymmetry through institutional design [30].

Existing research provides empirical evidence for the above theoretical logic: Sinha and Annamdevula [35] conducted an empirical study based on the Indian market and found that environmental knowledge significantly weakens the negative impact of "perceived greenwashing" on sustainable procurement behaviour. Although more universal evidence regarding the moderating effect of knowledge is still needed, the information asymmetry theory has clearly established a logical chain of "knowledge enhancing information processing capabilities - promoting the transformation of purchase intention into actual behaviour." Based on this, this study proposes Hypothesis H6.

*H6: Knowledge moderates the effect of sustainable purchasing intentions on behaviours.*

Based on the above assumptions, the conceptual framework developed in this study is shown in **Figure 1.**

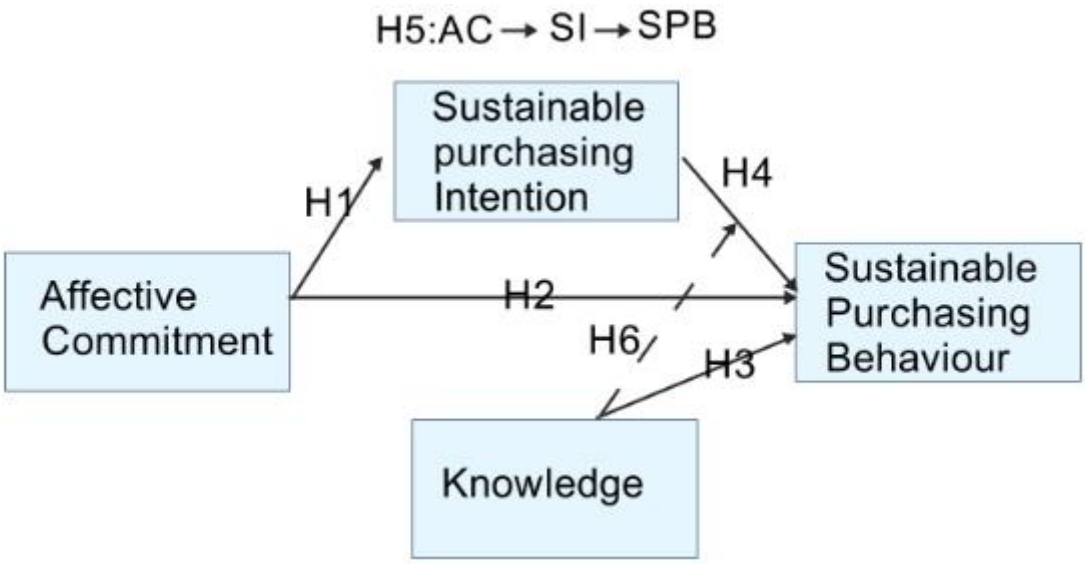


**Figure 1.** Conceptual framework.

# 3. Research methodology

## 3.1. Data collection

The main target of this survey is procurement staff with more than 1 year of working experience in China's HEIs procurement centres for several reasons. On the one hand, Chinese HEIs are facing changes in sustainable procurement to meet the needs of national strategies. By implementing sustainable procurement in HEIs, the concept and practice of sustainable development can be effectively promoted to influence a wider social group. Since Jiangsu Province has the largest number of higher education institutions in China, its higher education system is not only large - scale but also highly diversified in types. Playing a crucial role in regional economic and social development, it can provide rich and representative sample resources for the research. Therefore, this study selects higher education institutions in Jiangsu Province as the research objects. This choice helps to deeply explore the operation mechanism of sustainable procurement within the higher education ecosystem. The research conclusions can provide more universal and targeted references for relevant decision - making in the national higher education field, which has significant theoretical and practical implications.

This study employed a systematic non-probability snowball sampling approach [40,41], detailed as follows: Initially, through the Jiangsu provincial higher education institution directory, government procurement platform data, contact information on institutional official websites, and preliminary field research, 15 procurement managers from public institutions across diverse cities and educational levels in Jiangsu were identified as the initial sample group. Researchers reached out to these initial participants via phone and email, presenting the study's objectives, confidentiality assurances, and other key information, and inviting them to recommend 2 - 3 procurement peers from other public higher education institutions in the province who had at least one year of work experience. The sampling process was rigorously structured with a four-tier referral system: In the first tier, initial samples were required to recommend procurement personnel from different institutions and provide contact details upon the recommended individuals' consent. For the second tier, recommended candidates underwent identity verification through official website information checks and telephone confirmations before being eligible to recommend new, previously unreferred participants. The same verification and referral rules were applied to the third and fourth tiers. To prevent sample

duplication, an Excel spreadsheet meticulously documented the hierarchical relationships and connections within the referral chain. Additionally, the questionnaire was designed to collect information on institutions type, work experience, and procurement centre size, thereby ensuring the sample's representativeness and validity.

To minimize social expectations and consistent bias, respondents are informed that the survey is anonymous and that this survey is for academic research only. The data was collected from October 08, 2024 to November 28, 2024. After excluding unqualified questionnaires (less than 1 year of work experience), duplicate cases, and extreme values, 260 valid questionnaires were used for the follow-up study. The limitations of the sampling method made it impossible to measure the actual number of questionnaires sent, and therefore the questionnaire return rate could not be estimated.

It shows that there is no serious gender bias in the distribution of personnel in the procurement department of HEIs. The majority age group of the respondents of this study is 20 to 49 years old, which is 93.1 % of the whole population. This may also be due to the bias in the form of electronic questionnaires, which young people are more familiar with and operate more proficiently. In terms of the overall distribution, this percentage distribution is in line with the purpose of the survey in this study, and the age distribution is more reasonable. The population of college diploma accounted for 24.2%, university undergraduate accounted for 65.4 %, and postgraduate accounted for 10.4%, which was consistent with the education level required for procurement clerk vacancies. Moreover, due to the nature of HEIs, the high level of education is more significant. The respondents' work experience is centrally distributed within the range of 3-10 years, with only 10.8% having more than 10 years and 6.2% having less than 3 years. This group is in the middle stage of their career development. This study categorizes HEIs (higher education institutions) into three main types based on their schooling levels and talent cultivation orientations: Research-oriented (17.3%), Teaching-research-oriented (47.7%), and Applied (35%). Demographic information is presented in **Table 1**.

**Table 1.** Demographic information.

| Variables | Definitions | Frequency | Percent % |
|---|---|---|---|
| **Gender** | Female=1 | 144 | 55.4 |
| | Male=2 | 116 | 44.6 |
| **Age** | 20-29=1 | 66 | 25.4 |
| | 30-39=2 | 110 | 42.3 |
| | 40-49=3 | 66 | 25.4 |
| | 50-59=4 | 12 | 4.6 |
| | 60 and above=5 | 6 | 2.3 |
| **Education** | College diploma=1 | 63 | 24.2 |
| | University undergraduate degree =2 | 170 | 65.4 |
| | Postgraduate degree =3 | 27 | 10.4 |
| | Doctorate=4 | 2 | 0.76 |
| **Working experience** | 1 to 3 years=1 | 16 | 6.2 |
| | 3 to 5 years=2 | 129 | 49.6 |
| | 5 to 10 years=3 | 87 | 33.5 |
| | 10 years above=4 | 28 | 10.8 |
| **Procurement center size** | 1-5 staff=1 | 21 | 8.1 |

| Variables | Definitions | Frequency | Percent % |
|---|---|---|---|
| | 6-10 staff =2 | 85 | 32.7 |
| | 11-15 staff =3 | 95 | 36.5 |
| | 16-20 staff =4 | 34 | 13.1 |
| | 21 staff and above=5 | 25 | 9.6 |
| | Research-oriented | 45 | 17.3 |
| **Type** | Teaching-research-oriented | 124 | 47.7 |
| | Applied | 91 | 35 |
| **Total** | | 260 | 100 |

**Table 1.** (*Continued*)

***Source***：*Own elaboration*

## 3.2. Measures

The design steps of the instrument are the most important part of the process of designing the instrument, and the development of the instrument should follow certain design rules and steps. The instrument design procedure is to ensure that the instrument is a strong guarantee of the reasonableness of the questionnaire, ignoring the instrument design procedure will easily lead to the questionnaire survey lacks a high degree of reliability and validity. In this study, data were collected through an electronic questionnaire to test the hypotheses. The questionnaire items were obtained by adapting existing validated scales appropriately for the purpose of the study.

The questionnaire consisted of three parts. The first part provides a brief background information about the study, including the concept of sustainable procurement, the current situation, and the purpose of this study. The second part of the questionnaire measures the latent variables. The questionnaire used in this study was designed by adopting and adapting measurement items from previous studies. The scale items measuring commitment to change were adopted from Herscovitch & Meyer's [16] 18-item scale. The knowledge variable was adapted from Zhu et al. [42] and 6 items from Jaiswal & Kant[61] studies for measurement. Sustainable purchasing intention was used as well as appropriately adapted from Jaiswal & Kant[61] and Vu et al. [43] with 7 items to measure; sustainable purchasing behaviour used scale items from Jaiswal & Kant's[61] study on sustainable purchasing behaviour. A 5-point Likert scale [44] was used for all measurements. The third section contains demographic information about the sample as well as business information.

To reduce respondent bias, we modified the questions to be specific and concise. Before formally distributing the questionnaire, we invited two experts in the field of procurement management to assess the content validity of the questionnaire. Based on their feedback, we revised the questionnaire. Then, we conducted an offline pilot test in the purchasing centres of eight HEIs in Jiangsu, China, and moderately revised the questionnaire based on the feedback. The main components of the survey questionnaire are provided in **Appendix A**.

## 3.3. Common method bias

To reduce common method bias, we used the following practices. First, all questions were drawn from previous studies to reduce item ambiguity. Second, the questionnaire was answered anonymously to reduce social desirability bias. Additionally, common methodological biases were explored through both Harman's single-factor test [45] and the Heterotrait-Monotrait Ratio (HTMT). Harman's single-factor test involved

conducting an exploratory factor analysis (unrotated) on all items, which revealed multiple single factors with eigenvalues greater than 1.0. The maximum factor explained 39.248% of the variance (less than 50%), indicating that the issue of common methodological bias was not significant. HTMT is suitable for testing the discriminant validity among multiple variables in structural equation modelling (SEM). The HTMT values for all items were less than 0.85, confirming the absence of common method bias.

### 3.4. Non-response bias

To reduce the non-response bias, analysis of variance (ANOVA) was used to verify the differences between early respondents and late respondents. The results showed that there was no statistically significant difference ($p > 0.05$) between the different variables including respondents' age and gender, job position, and work experience. Based on the determination criteria given by Armstrong & Overton [46], the results showed that the non-response bias of the survey data was not significant.

### 3.5. Data analysis

The analysis was conducted using SMART-PLS 3.3.1version. PLS is an SEM technique based on an iterative approach that maximizes the explained variance of endogenous constructs [47]. Unlike CB-SEM, which aims to confirm theory by determining the model's ability to estimate the covariance matrix of the sample data, PLS-SEM maximizes the explained variance of the endogenous latent variables by estimating some of the model relationships in an iterative sequence of Ordinary Least Squares (OLS) regressions, and as such, it requires the least amount of sample size and assumptions about the normal distribution of the data but still achieves a high level of statistical capability [48].

## 4. Results

The study used SPSS 27 to determine the suitability of the study variables for factor analysis. The KMO value of 0.931 (greater than the judgmental criterion of 0.7) and Bartlett's Test of Sphericity (BTS) results showed a high degree of significance (p-value of less than 0.001), indicating that the original items were suitable for factor analysis. SEM includes measurement modelling and structural modelling. The measurement model is a measure of the reliability, convergent validity and discriminant validity of each latent variable.

### 4.1. Measurement model

**Table 2** shows the results of construct validity and reliability. Reflectance indicators are related to structures through loads, which are a binary correlation between the indicator and the structure [49]. Therefore, the first step in the assessment of a reflectometry model is to examine the indicator loadings. Loads higher than 0.708 are recommended as they indicate that the structure explains more than 70% of the indicator variance and thus provide acceptable project reliability[50–52]. The standardized factor loadings for all items in the study model ranged from 0.763 to 0.935, which indicated acceptable convergent validity for each item [46]

#### 4.1.1. Construct reliability

The reliability of construct measures is typically measured using Cronbach's alpha [53] and composite reliability (CR) [54]. Cronbach's alpha is a measure of reliability that relies on the number of items in the measure and tends to underestimate the internal consistency reliability. internal consistency reliabilities. Unlike Cronbach's alpha, the calculation of CR values does not assume that all indicators in the population load equally, which is consistent with the workings of the PLS-SEM algorithm, which prioritizes individual indicators based on their reliability during model estimation, and therefore is higher than Cronbach's alpha. The Cronbach's alpha values for all constructs in this study (see **Table 2**) ranged from 0.890 to 0.942, and

the composite reliability ranged from 0.911 to 0.948, validating the reliability of each latent variable in the model, which exceeds the recommended value of 0.7 [54,55].

### 4.1.2. Convergent validity

Convergent validity is the extent to which the construct converges to explain its project variance [43]. The Average Variance of Extraction (AVE) was used as an indicator to assess the convergent validity of the construct. An acceptable AVE of 0.50 or higher indicates that the construct explains at least 50% of its project variance [55]. The average variance extracted (AVE) for all the constructs in **Table 2** exceeded the critical value of 0.5, which confirms the convergent validity.

**Table 2.** Construct reliability and validity.

| Construct | Indicators | Loadings (>0.708) | Alpha (>0.7) | CR (>0.7) | AVE (>0.5) |
|---|---|---|---|---|---|
| **KL** | KL1 | 0.772 | 0.890 | 0.913 | 0.601 |
| | KL2 | 0.756 | | | |
| | KL3 | 0.792 | | | |
| | KL4 | 0.794 | | | |
| | KL5 | 0.760 | | | |
| | KL6 | 0.769 | | | |
| | KL7 | 0.783 | | | |
| **SI** | SI1 | 0.821 | 0.883 | 0.911 | 0.631 |
| | SI2 | 0.792 | | | |
| | SI3 | 0.786 | | | |
| | SI4 | 0.764 | | | |
| | SI5 | 0.818 | | | |
| | SI6 | 0.784 | | | |
| **SPB** | SPB1 | 0.787 | 0.908 | 0.925 | 0.608 |
| | SPB2 | 0.764 | | | |
| | SPB3 | 0.795 | | | |
| | SPB4 | 0.762 | | | |
| | SPB5 | 0.749 | | | |
| | SPB6 | 0.787 | | | |
| | SPB7 | 0.796 | | | |
| | SPB8 | 0.797 | | | |
| **AC** | AC1 | 0.839 | 0.903 | 0.925 | 0.674 |
| | AC2 | 0.847 | | | |
| | AC3 | 0.785 | | | |
| | AC4 | 0.821 | | | |
| | AC5 | 0.820 | | | |
| | AC6 | 0.814 | | | |

***Source***：*Own elaboration*

### 4.1.3. Discriminant validity

The discriminant validity of the constructs in this study was confirmed using the Fornell-Lacker criterion, which showed that the square root of the AVE for each construct was greater than the square root of the correlation between all the constructs [56]. Thus, the discriminant validity of the measurement model was confirmed (see **Table 3.** Finally, all VIF values ranged from 1.891 to 3.121, which is less than the critical value of 5 (Hair et al., 2019), indicating that there are no serious covariance issues.

**Table 3.** Fornell-Lacker criterion.

| | AC | KL | SI | SPB | VIF |
|---|---|---|---|---|---|
| AC | 0.821 | | | | 2.137-3.121 |
| KL | 0.327 | 0.775 | | | 1.927-2.279 |
| SI | 0.400 | 0.415 | 0.794 | | 1.897-2.206 |
| SPB | 0.610 | 0.507 | 0.566 | 0.780 | 1.891-2.355 |

***Source***：*Own elaboration*

## 4.2. Structural model

When the assessment of the measurement model provides evidence of reliability and validity, several steps are required to evaluate the structural model (**Figure 2**). The processes to be evaluated include (1) covariance; (2) coefficient of determination ($R^2$), which indicates the rate of variance explained; (3) predicted correlation $Q^2$; (4) effect size ($q^2$); (5) overall fit and (6) path coefficient.

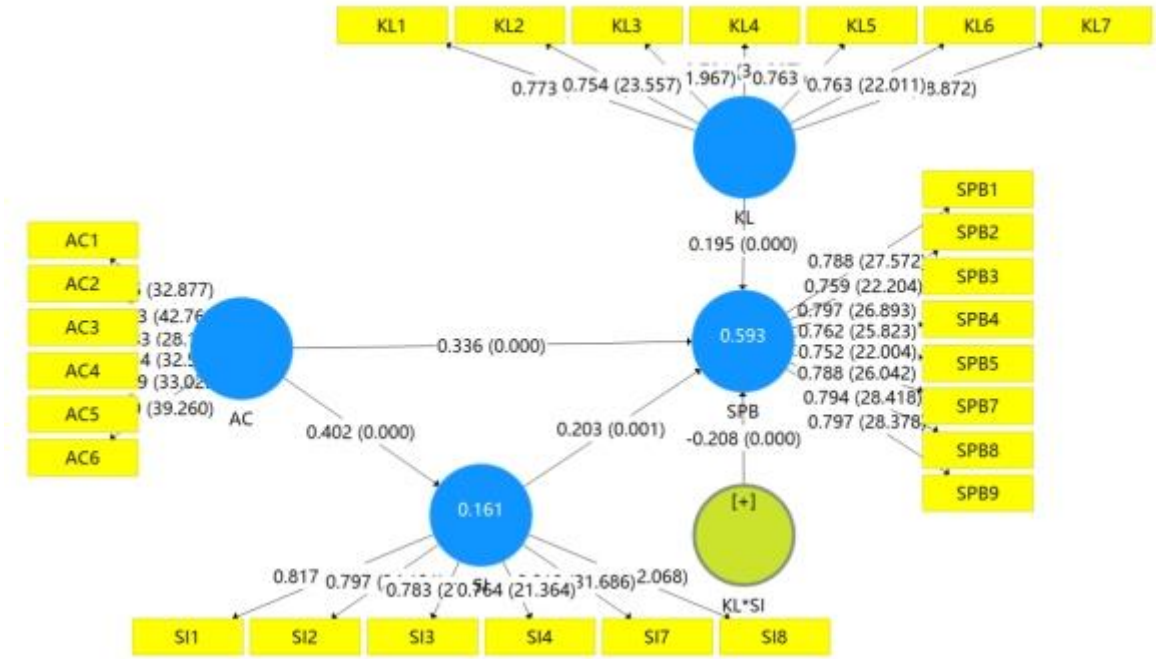


**Figure 2.** Structural model with path coefficient and p-value.

### 4.2.1. Covariance

The first step in assessing structural models is to evaluate potential covariance issues in testing structural models. Since the structural model coefficients for the relationships between structures are derived by estimating a series of regression histories, their values and significance may be affected by bias if the structures are highly correlated (Hair et al., 2012). In this study, the Variance Inflation Factor (VIF) value

was used to assess the constructed multicollinearity. **Table 4** shows that the model has the highest VIF value of 1.622. this value is below the critical value and therefore confirms that the model does not suffer from the problem of covariance.

**Table 4.** Inner VIF values.

| | AC | KL | KL*SI | SI | SPB |
|---|---|---|---|---|---|
| AC | | | | 1.000 | 1.353 |
| KL | | | | | 1.312 |
| KL*SI | | | | | 1.622 |
| SI | | | | | 1.524 |
| SPB | | | | | |

***Source***：*Own elaboration*

### 4.2.2. The coefficient of determination (R2)

The coefficient of determination ($R^2$) indicates the amount of variance explained for each of the internal growth potential variables and represents the combined effect of the exogenous variables on the endogenous variables [50], with benchmark thresholds of 0.250 (weak), 0.500 (moderate), and 0.750 (strong) (Hair et al., 2019). The results indicated moderate-to-strong predictive power for both constructs: SPB ($R^2$ = 0.593).

### 4.2.3. Predictive relevance (Q2)

$Q^2$ is not a measure of out-of-sample prediction, but combines aspects of out-of-sample prediction and in-sample explanatory power. Predictive relevance was evaluated via $Q^2$, where values greater than 0.000, 0.250, and 0.500 signify small, medium, and large effects, respectively [51]. Both constructs demonstrated substantial predictive relevance: SPB ($Q^2$ = 0.348) and SI ($Q^2$ = 0.095).

### 4.2.4. Effect size (q2)

The effect size ($q^2$), is a comparison of the relative influence of predicted correlations and is calculated by $q^2$ = ($Q^2$ included − $Q^2$ excluded) / (1 - $Q^2$ included). Critical values of 0.02, 0.1, and 0.35 indicate that the structure has a small, medium, or large predicted correlation to the endogenous structure. q2 values are not provided within the Smart-PLS and must be calculated manually. Results are shown in **Table 5**.

**Table 5.** The coefficient of determination ($R^2$), Predictive relevance ($Q^2$) and effect size (q2).

| Construct | R2 | Q2 | | Q2excluded | q2 | Rating |
|---|---|---|---|---|---|---|
| SPB | 0.593 (moderate) | 0.348 (medium) | KL->SPB | 0.294 | 0.083 | small |
| | | | AC->SPB | 0.241 | 0.164 | medium |
| | | | SI->SPB | 0.281 | 0.103 | medium |
| | | | KL*SI-> SPB | 0.241 | 0.164 | medium |

***Source***：*Own elaboration*

### 4.2.5. Overall fit (SRMR)

As an absolute fit index, SRMR quantifies the discrepancy between the observed and predicted covariance matrices, thereby providing an objective measure of how well the proposed model reproduces the empirical data. The index ranges from 0 to 1, with lower values indicating better model fit. Following the recommendation [57], we adopted the threshold of SRMR < 0.10 as indicative of acceptable model fit. Our

analysis yielded SRMR values of 0.057, which fall below the recommended cutoff value, thus demonstrating satisfactory model fit.

## 4.3. Hypothesis test

There are 4 direct，1 mediating and 1 moderating hypothesis. The path coefficients and their significance were calculated using Smart-PLS for 5000 iterations. The hypothesis was accepted if T ⩾ 1.96 and the significance level (p-value) was less than 0.05. Regarding the results of the direct effects are shown in **Table 6**.

**Table 6.** Hypotheses test.

| | BETA | 2.5% | 97.5% | T Statistics | P Values | Result |
|---|---|---|---|---|---|---|
| AC -> SI | 0.402 | 0.261 | 0.535 | 5.676 | 0.000 | H1 support |
| AC -> SPB | 0.336 | 0.221 | 0.449 | 5.698 | 0.000 | H2 support |
| KL -> SPB | 0.195 | 0.104 | 0.296 | 3.946 | 0.000 | H3 support |
| SI -> SPB | 0.203 | 0.085 | 0.317 | 3.463 | 0.001 | H4 support |
| KL*SI -> SPB | -0.208 | -0.297 | -0.125 | 4.753 | 0.000 | H6 supported |

***Source***：*Own elaboration*

This paper explores the mechanisms by which purchasers' affective commitment to sustainable change influences procurement behaviour. The findings show that affective commitment has a significant positive effect on both sustainable purchasing intention and behaviour, supporting Hypothesis 1 (β =0.402; T=5.676, p=0.000) and Hypothesis 2 (β =0.336; T=5.698, p=0.000). The impact of knowledge on positively influencing sustainable purchasing behaviour were also both significant, with hypotheses 3 (β =0.195; T=3.946, p=0.000) being supported. The direct effects of sustainable purchasing intention on behaviours is positively significant (β =0.203; T=3.463, p=0.001). H4 has been supported.

## 4.4. Mediation

The Bootstrap method, originally developed by Efron (1979) and later applied to mediation analysis [55], represents a nonparametric statistical approach based on data resampling. In mediation research (**Table 7**), the Bootstrap 5000 resampling procedure involves drawing repeated samples (with replacement) from the original dataset - typically performing 5,000 iterations with each resample maintaining the same size as the original sample. For each bootstrap sample, researchers calculate the mediation effect estimate, ultimately generating a distribution of 5,000 mediation effect values. This empirical distribution then serves as the basis for statistical inference, enabling researchers to construct confidence intervals and make more reliable conclusions about the population mediation effect [58].

**Table 7.** Mediation.

| | Indirect effects | T | P | Direct effects | Total effect | VAF | Result |
|---|---|---|---|---|---|---|---|
| AC -> SI -> SPB | 0.082*** | 2.623 | 0.009 | 0.336*** | 0.418*** | 20% | Partial Mediation |

*Note: *p<0.10, ** p<0.05, and *** p<0.01.*

*Source：Own elaboration*

The results of the Bootstrap 5000 mediation analysis are presented in **Table 7**. The analysis revealed that both the direct effect (β = 0.336; T=5.698, p=0.000) and the indirect effect (β = 0.082; T = 2.623, p = 0.009) of purchasers' affective commitment on sustainable purchasing behaviour (mediated by sustainable purchasing intentions) were positive and statistically significant. This suggests that sustainable purchasing

intentions partially mediate the relationship between affective commitment and sustainable purchasing behaviour, supporting a complementary mediation effect.

### 4.5. Moderation

To examine the moderating effect of knowledge related to sustainable procurement (KL) on the relationships between the drivers and behaviours, we employed the product term method [47,49,55]. The results, presented in **Table 6**, indicate that KL exerts a significant negative moderating effect on the relationship between sustainable purchasing intention (SI) and sustainable purchasing behaviour (SPB) (β=-0.208; T = 4.753, p=0.000). In addition, a simple slope analysis (**Figure 3**) shows that the slope of SI on SPB shows a decreasing positive effect at three different levels of the moderating variable KL, and decreases from positive to negative, which also shows a negative moderating effect in addition to KL.

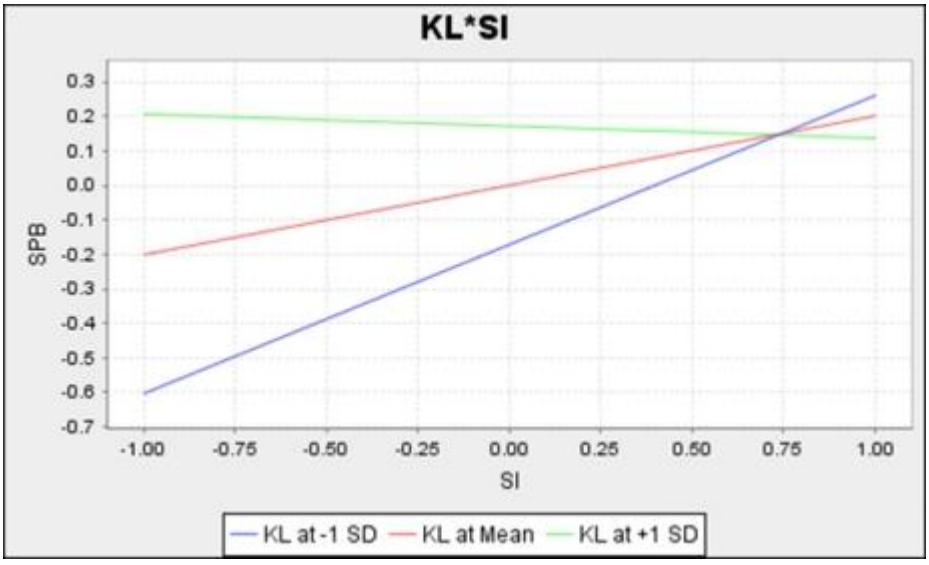


**Figure 3.** Simple slope analysis.

## 5. Discussion

### 5.1. Main findings

This study focuses on the mechanisms by which affective commitment influences the sustainable purchasing behaviours in an attempt to fill the missing link between affective commitment and sustainable purchasing behaviours in Grandia[4] study. The results of the study show that affective commitment has a clear driving effect on the sustainable purchasing intentions (H1 supported) and behaviours (H2 supported) of purchasers in HEIs in Jiangsu, China, which is in line with the findings of previous studies on this matter [4,59,60]. The statistics show that the stronger the buyers' identification with the change, the more pronounced is their intentions to choose sustainable procurement methods (influence intensity of about 40.2%) and the higher is the likelihood of adopting environmentally friendly measures in practice (direct influence intensity of about 33.6%).The results also show that knowledge has a significant positive effect on the sustainable purchasing behaviours (H3 supported), which is in line with the findings [21,23].

Hypothesis 5 verified the mediating role of sustainable purchasing intention in this study. It is worth noting that this driving effect is realized in two ways: on the one hand, the commitment to change directly motivates procurement behaviour to shift to a sustainable mode (direct effect of 80%); on the other hand, it produces a secondary effect by enhancing the sustainable purchasing intentions (indirect effect of 20%). This suggests that psychological identification not only drives behavioural change by itself, but also further

strengthens action by enhancing subjective intention. This finding suggests that in promoting sustainable procurement, it is important to focus both on fostering personnel's value identification with the change and to pay simultaneous attention to other potential factors that may influence decision-making.

Hypotheses 6 validate the moderating effect of knowledge on sustainable purchasing behaviour. Hypotheses 6 passed the significance test, which is consistent with the view of knowledge in the theory of asymmetric information[33,34]. A scrutinizing can find that the main effect coefficient of SI on SPB (β =0.203; T=3.463, p=0.001) is significantly positive, while the coefficient of the cross-term KL*SI (β=-0.208; T = 4.753, p=0.000) is negative, which indicates that the moderating variable KL weakens or inhibits the positive influence of SI on SPB, i.e., it can be expressed as a significant negative moderating effect of the variable KL on the influence of SI on the relationship between SI and SPB. Specifically, the higher the level of knowledge, the lower the effect of procurement intention on behaviour instead.

# 6. Conclusion

This study is dedicated to finding the missing link between affective commitment and sustainable purchasing behaviour in order to fill an important theoretical gap in the field of sustainable procurement. This study constructs an innovative path model, based on the theory of planned behaviour, and introduces the psychological factor-intention-as a mediating link between affective commitment and behaviour, and the results show that behavioural intention serves a dual function: it is both a core predictor of actual procurement behaviour and an intermediary bridge connecting affective commitment and operational practices. This finding refines the paradigm of the application of the theory of planned behaviour in organizational settings and confirms the pivotal role of mental intentions in strategy execution. The moderating role of knowledge in the context of information asymmetry was verified. The study found that the knowledge element exhibits nonlinear moderating characteristics. In an interesting conclusion, it was found that although the knowledge base of purchasers can enhance the ability to recognize sustainable information, when the knowledge level exceeds the critical threshold, the speed of environmental protection intention into action will be reduced. This “knowledge speed bump” effect reveals the double-edged nature of information processing capabilities: moderate knowledge accumulation can enhance environmental decision-making efficiency, but excessive knowledge accumulation can lead to analysis paralysis and reduced action.

## 6.1. Theoretical contribution

The study reveals that affective commitment promotes sustainable procurement through both direct effects and indirect effects via sustainable purchasing intention. This enriches the understanding of how "commitment" drives behavioural change in the sustainability context, supplementing the theoretical framework of behavioural decision-making in supply chain management. It provides empirical support for the Theory of Planned Behaviour (TPB) in sustainable procurement scenarios, demonstrating that psychological commitment must be translated into specific intentions to fully realize behavioural outcomes. The study also identified that knowledge weakens the conversion of intention into action under information asymmetry. This challenges the traditional assumption of Theory of Planned Behaviour (TPB), behaviour is influenced by intention through a single pathway and introduces the concept of information asymmetry as a boundary condition, enriching the theoretical discourse on "knowledge-behaviour gaps" in sustainability research. It may inspire the development of new theories (e.g., the "knowledge paradox" model) to explain why enhanced awareness does not always translate into practice, particularly in complex supply chain environments.

### 6.2. Practical implication

This study holds significant practical implications for policymakers and HEIs. For policymakers, it is crucial to design targeted knowledge intervention programs, such as standardized training modules and national knowledge repositories, to reduce information asymmetry. They should also incentivize behavioural intention through policy tools like performance ratings and funding links, while promoting information transparency via public data platforms and green scorecards to mitigate the "knowledge paradox". For HEIs, should cultivate affective commitment by aligning procurement goals with institutional visions and recognizing staff efforts, optimize knowledge management through tailored internal bases and refresh programs, and design structured decision-making tools like pre-approved sustainable supplier lists to bridge the gap between intention and behaviour, thereby fostering effective sustainable procurement practices.

### 6.2. Limitations and future research scope

There are several limitations of this study that point to improvements for subsequent research. In terms of sample representativeness, the snowball sampling method, while enhancing the efficiency of data collection, may lead to the concentration of the sample in specific regions or organizations. This sampling bias may reduce the generalizability of the study findings. In addition, the sample area selected for this study or survey is only limited to Jiangsu Province, China. Although Jiangsu Province has certain regional characteristics in terms of economic development, population structure, etc., China has a vast territory, and significant differences exist among provinces and cities in multiple dimensions such as natural environment, social economy, and cultural customs. Using only Jiangsu Province as the sample area, due to the excessively narrow coverage of the sample and the lack of broad national representativeness, it is obviously impossible to comprehensively and objectively reflect the overall actual situation or characteristics of China.

Future studies may adopt stratified sampling method to construct a balanced sample pool in dimensions such as industry type and enterprise size. Meanwhile, conducting cross-regional tracking and comparison studies may enhance the external validity of the research findings.

In terms of theoretical modelling, the existing framework focuses on the mediating role of intention and the moderating effect of knowledge, but the actual procurement decision is influenced by the interweaving of multiple factors, and the explanatory power of the theoretical model needs to be expanded. Future research could introduce institutional theory or social network analysis to explore the cross-level effects of organizational norms and stakeholder interactions on sustainable behaviours. These additions will enhance the explanatory power of the theoretical model.

Future research improvement directions can focus on three levels: first, constructing a multi-dimensional matrix of influencing factors to incorporate organizational environment variables into the analytical framework; second, developing dynamic monitoring tools to capture the process mechanism of purchasing decision-making; and lastly, establishing a differentiated theoretical model to provide customized solutions for enterprises of different sizes and stages of development. These explorations will promote the evolution of sustainable procurement theory from static explanation to dynamic guidance.

## Abbreviations

AC=Affective Commitment;

KL=Knowledge;

SI=Sustainable purchasing intentions;

SPB=Sustainable purchasing behaviours

## Author contributions

Conceptualization, Xue Jin and S.M. Ferdous Azam; methodology, Xue Jin and Jacquline Tham; software, Xue Jin.; validation, S.M. Ferdous Azam, and Jacquline Tham; formal analysis, Xue Jin; investigation, Xue Jin; All authors have read and agreed to the published version of the manuscript.

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## Conflict of interest

The authors declare no conflict of interest.

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# Appendix Table A1. Constructs and item sources

| No | Items | Remark | Source |
|---|---|---|---|
| Affective commitment | | | |
| AC1 | I believe in the value of the change represented by the procurement of sustainable goods or services. | Adopted | Herscovitch & Meyer [16] |
| AC2 | The procurement of sustainable goods or services is a good strategy for the organization. | Adapted | |
| AC3 | I think that management is right to introduce sustainable procurement. | Adopted | |
| AC4 | The procurement of sustainable goods or services serves an important purpose. | Adapted | |
| AC5 | Things would be better with purchasing sustainable goods or services. | Adapted | |
| AC6 | Purchasing sustainable goods or services is necessary. | Adopted | |
| Knowledge | | | |
| KL1 | I know which laws and regulations support sustainable procurement | Adapted | Zhu et al. [42] |
| KL2 | I have a good understanding of the benefits of sustainable procurement | Adapted | |
| KL3 | I am very knowledgeable about environmental issues | Adapted | |
| KL4 | I know more about recycling than the average person. | Adopted | Jaiswal & Kant [61] |
| KL5 | I know how to select products and packages that reduce the amount of landfill waste. | Adopted | |
| KL6 | I understand the environmental phrases and symbols on product package | Adapted | |
| KL7 | I know that I buy products and packages that are environmentally safe. | Adapted | |
| Sustainable purchasing intentions | | | |
| SI1 | I would consider buying products because they are less polluting. | Adapted | Jaiswal & Kant [61] |
| SI2 | I would consider switching to other brands for ecological reasons. | Adapted | |
| SI3 | I intend to switch to a green version of a product. | Adapted | |
| SI4 | I would not hesitate to purchase sustainable goods or services. | Adapted | |
| SI5 | I will make efforts to minimize the environmental harm caused by the goods or services I purchase. | Adapted | Vu et al.[43] |
| SI6 | I plan to contribute to the procurement of sustainable goods or services. | Adapted | |
| Sustainable purchasing behaviours | | | |
| SPB1 | When purchasing a product, I look at the ingredients label to see if it contains environmentally damaging things | Adopted | Jaiswal & Kant [61] |
| SPB2 | When I have a choice between two equal functionality products, I purchase the one less harmful to other people and the environment | Adopted | |
| SPB3 | I prefer sustainable products over unsustainable products when their product qualities are similar | Adopted | |
| SPB4 | I buy sustainable products even if they are more expensive than unsustainable products | Adopted | |
| SPB5 | I have avoided buying a product because it had potentially harmful environmental effects | Adapted | |
| SPB6 | When purchasing a product, I look if the supplier has obtained environmental certifications | Adapted | |
| SPB7 | I choose green suppliers (14001 ISO certified) over regular suppliers | Adapted | |
| SPB8 | I have suggested to my organization to adopt more packaging-saving logistics | Adapted | |