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From Intent to Impact: Analysing Circular Economy and Sustainable Marketing Trends in the UAE

Muhammad Tahir Jan[1], Kashif Hussain[2]*, Samer Yaghmour[3], Gamal Sayed Ahmed Khalifa[4,5], and Murali Raman[6]

[1]*Department of Business Administration, Kulliyyah of Economics and Management Sciences, International Islamic University Malaysia, 50728 Kuala Lumpur, Malaysia*
[2]*School of Global Hospitality and Tourism, Asia Pacific University of Technology and Innovation, 57000 Kuala Lumpur, Malaysia*
[3]*Department of Travel and Tourism Management, King Abdulaziz University, 21589 Jeddah, Saudi Arabia*
[4]*Faculty of Business, Higher Colleges of Technology, 17155 Al-Ain, Abu Dhabi, United Arab Emirates*
[5]*Faculty of Tourism and Hotels, Fayoum University, 63514 Al-Faiyum, Egypt*
[6]*School of Business, Asia Pacific University of Technology and Innovation, 57000 Kuala Lumpur, Malaysia*

ABSTRACT

This study undertakes the challenge of proposing and empirically investigating a comprehensive model of the circular economy and sustainability marketing within the Gulf region, utilising the UAE as a representative case of the GCC countries. To achieve this objective, factors influencing consumer intention were identified through an extensive review of marketing literature and tested with the data collected from consumers of circular economy products in the UAE. The Theory of Planned Behaviour was considered appropriate and further extended by incorporating two additional variables pertinent to the circular economy and sustainability marketing: convenience and environmental impact. Subsequently, the proposed comprehensive model was empirically tested through data collection from 450 consumers in the UAE using a convenience sampling technique. Complex statistical analyses, encompassing descriptive analysis, exploratory factor analysis, confirmatory factor analysis, structural model testing, and nested modelling, were conducted. The most interesting finding was the significant positive impact of environmental impact on the purchase intention of circular economy products. The remaining hypotheses did not emerge with significant outcomes. These findings are expected to aid policymakers in the Gulf region, particularly in the UAE, in formulating strategies that are not only aligned with the principles of the circular economy and sustainability

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E-mail addresses:
tahirjan@iium.edu.my (Muhammad Tahir Jan)
kashif.hussain@apu.edu.my (Kashif Hussain)
yaghmour@kau.edu.sa (Samer Yaghmour)
gkhalifa@hct.ac.ae (Gamal Sayed Ahmed Khalifa)
murali@apu.edu.my (Murali Raman)
* Corresponding author

marketing but also foster positive consumer behaviour. The novelty of this research is underscored by the fact that these concepts are infrequently studied in marketing, and the nested modelling resulted in some unexplored causal linkages, which could add value to the existing body of knowledge.

Keywords: Circular economy, consumer purchase intention, structural equation modelling, sustainability marketing, theory of planned behaviour, UAE

INTRODUCTION

Contemporary society, characterised as post-modern, grapples with formidable global issues and challenges stemming from human and social activities that exert pressure on the environment (O'Leary & Tsui, 2023). Consequently, there is a pressing call to re-evaluate the economic blueprint and societal organisation in a world still entrenched in conventional technologies and regulatory frameworks governing supply chains within institutional and microeconomic structures (Tamasiga et al., 2022). To attain global sustainability standards and foster a circular economy, policy initiatives are indispensable for developing innovative strategies that promote environmental sustainability and green economic practices. However, achieving a sustainable transition requires a multifaceted, long-term process that establishes social-technical systems to facilitate a shift towards more sustainable production models for consumers within the circular economy framework (Sohal et al., 2022). Therefore, it is crucial to explore the evolution of the circular economy from both a consumer's perspective and the ecosystem's standpoint, recognising the interdependence of these dimensions in the circular economy transformation. In contrast, the prevailing mainstream economy operates on a linear structure, perceiving natural materials as mere commodities that undergo assessment based on their environmental impact before being sold to consumers, with minimal consideration given to the post-use disposal of these goods (i.e., waste or unwanted materials) (Llorente-González & Vence, 2020; Wackernagel & Rees, 1997). In contrast, the circular economy initiative prioritises the extraction of value from unwanted materials and pollutants through recycling and reuse, thereby mitigating environmental pollution and minimising reliance on landfills, with the ultimate objective of regenerating resources that are not subject to depletion (Aiguobarueghian et al., 2024; Gupta et al., 2022; Jan, 2022; Karim et al., 2025; Yang et al., 2023).

Drawing on the consumer perspective, the concept of a circular economy aims to emulate the natural processes of the biosphere, guided by the principles of biomimicry, to address sustainability challenges (Jan, 2022; 2023; Karim et al., 2025; Puntillo, 2023; Verga & Khan, 2022). In natural ecosystems, materials follow an unbroken circular flow, characterised by sustainable designs that are not compromised by consumer use. However, the circular economy seeks to replace the traditional consumer supply chain with a network that

incorporates recycled materials throughout the production system, thereby transforming consumer goods into higher-value products that serve as inputs for other specified products (Jan, 2022; 2023; Srivastava et al., 1999). These principles emphasise recycling and upcycling (Karim et al., 2025; Park & Lin, 2020) and aim to enable consumers to collaboratively plan and manage resources for a sustainable future (Hecht et al., 2014; Somlai, 2022). By doing so, a circular economy can facilitate transformative reforms that integrate emerging innovations with human activities in the environment (Aiguobarueghian et al., 2024; Pla-Julián & Guevara, 2019).

Gulf countries, particularly the United Arab Emirates (UAE), are renowned for their high levels of consumption, with the UAE leading the list. In 2021, the UAE reported a per capita consumption rate exceeding USD 21,675 per person. This alarmingly high consumption rate, however, exacts a significant toll on the environment, leading to its degradation. Marketing is often blamed for this high consumption rate, as it typically encourages frequent purchasing, usage, and upgrades. Nonetheless, this perspective overlooks the recent shift towards "Sustainability Marketing." The concepts of the "Circular Economy" and "Sustainability Marketing" offer potential solutions to this environmental decline by emphasising exploration, investigation, and education, particularly within the Gulf region. These concepts, which focus on fulfilling present needs without compromising the ability of future generations to meet their own needs through closed-loop systems, aim to eliminate waste and conserve resources through reuse, repair, refurbishment, and recycling. Interestingly, these marketing philosophies resonate with Islamic principles of moderation and avoiding wasteful spending, suggesting that they could serve as potent driving forces to further the adoption of the circular economy and sustainability marketing in the region.

The transition towards a circular economy has gained global policy attention, highlighting the need for businesses to engage in this transformative process (Aiguobarueghian et al., 2024; Jan, 2021; Kern et al., 2020; Zhu et al., 2022). Nevertheless, several challenges need to be addressed, taking into consideration the roles of society and consumers. In a circular economy, consumers become integral links in the supply chain, and their participation extends beyond product purchases to compliance with planned obsolescence rules (Frei et al., 2020; Hofstetter et al., 2021; Moreno et al., 2016). The consumer perspective holds particular significance in developing nations, where a large population contributes to environmental impacts, making their active engagement crucial for the success of circular economy initiatives (Gonella, 2025; Govindan & Hasanagic, 2018).

LITERATURE REVIEW

The concept of the circular economy has garnered significant attention in both academic and practitioner circles. However, there remains limited comprehension of its meaning, particularly from a marketing

standpoint (Jan, 2021; 2022; 2023). The circular economy encompasses biological and technical cycles, which involve various actors and activities (Kanda et al., 2021; Karim et al., 2025; Lüdeke-Freund et al., 2019). The biological cycle focuses on the perspectives of consumers and users, while the technical cycle involves service providers, product manufacturers, and other stakeholders, all operating within the framework of the circular economy principle. This principle emphasises the sustainable management of natural resources and the continuous circulation of products in both cycles.

Sustainability marketing plays a pivotal role within the framework of the circular economy by actively promoting consumption behaviours that are environmentally responsible and advocating for the adoption of sustainable products and services. This approach involves the deliberate and strategic integration of environmental and social considerations into marketing practices, with the aim of satisfying consumer needs and desires while minimising negative impacts on the environment and society. By embracing the fundamental principles of the circular economy, namely reducing, reusing, recycling, and recovering materials, sustainability marketing aligns itself with the overarching objective of achieving long-term resource preservation and waste reduction (Kotler et al., 2020). It recognises the significance of consumer attitudes, values, and subjective norms in influencing choices towards sustainable consumption (Roh et al., 2022). Through effective communication strategies and targeted messaging, sustainability marketing empowers businesses to educate and engage consumers, catalysing a transformative shift towards more sustainable lifestyles and bolstering the circular economy paradigm (Overman, 2016). By employing these multifaceted approaches, sustainability marketing creates a conducive environment for fostering sustainable consumption behaviours, facilitating the transition towards a more environmentally conscious and circular society.

Academic research characterises the circular economy as an economic system that fundamentally challenges the traditional "obsolescence concept" by prioritising the reduction, reuse, recycling, and recovery of materials throughout the production and consumption processes (RamHormozi, 2019). This comprehensive perspective operates on multiple levels: the micro level, encompassing individual products, companies, and consumers; the meso level, involving environmental industry parks; and the macro level, addressing cities, regions, and nations. All these levels collectively aim to achieve sustainable development, enhance environmental quality, foster economic prosperity, ensure social equality, and promote responsible consumer behaviour (Camacho-Otero et al., 2018; Kirchherr et al., 2017)

To achieve circularity, businesses should prioritise activities such as circular resource recovery, resource sharing, sustainable supply chains, product life extension, and product-as-a-service approaches (Chen, 2020).

Encouraging sufficiency and extending the value of resources have been suggested as circular business strategies to foster purchase intention (Camacho-Otero et al., 2018). Considering these considerations, this study examines the consumer perspective through the lens of the Theory of Planned Behaviour (TPB) model, focusing on five key factors: attitude, subjective norms, perceived behavioural control, convenience, and environmental impact (Ajzen, 1991; Jan, 2021; 2022; 2023). By applying this model, the study seeks to enhance the understanding of consumers' attitudes towards circular products and their willingness to engage in circular consumption practices, thus contributing to the advancement of sustainability marketing research.

This study introduces attitude as a key component within the Theory of Planned Behaviour (TPB) framework, considering it to be of paramount importance. Ajzen (1991) defines attitude as individuals' positive or negative evaluations of the intended behaviour. Within behavioural studies, the attitude has been consistently identified as a crucial predictor of purchasing intentions, particularly towards green products (Gonella et al., 2024; Jakubowska et al., 2024; Sreen et al., 2018). Prior research has explored the association between attitudes and purchase intentions in the context of green products, providing support for a significant relationship (Gonella et al., 2024; Kusuma & Handayani, 2018; Kumar et al., 2021). However, in the context of the circular economy, limited attention has been given to examining attitudes. Hence, this study formulates the hypothesis as follows:

> H1: From a circular economy perspective, attitude will exert a positive influence on purchase intention.

The subsequent exogenous factor in the Theory of Planned Behaviour (TPB) to be considered is subjective norms. Subjective norms refer to the perceived social influence and pressure, as well as individuals' beliefs and norms derived from peers or groups when making purchasing decisions for a specific product (Jakubowska et al., 2024; Sreen et al., 2018). It represents an individual's perception of what others would think about their engagement in a particular behaviour (Ajzen, 1991). Like individual attitudes, subjective norms also positively influence a person's intention to perform or not perform a specific action towards a particular object. Family members, friends, and societal influences play a significant role in shaping subjective norms (Ajzen, 1991). Previous research has consistently highlighted subjective norms as a robust predictor of purchase intention, including in the context of green products (Haro, 2016; Jakubowska et al., 2024; Ling et al., 2024; Sreen et al., 2018). In the present study, subjective norms have been included as an exogenous variable within the model, influencing the purchase intention of circular products, and are conceptualised as a unidimensional factor. However, in the context of the circular economy and comparative analysis, subjective norms and purchase intention have received relatively

limited attention. Therefore, the following hypothesis is proposed:

H2: From a circular economy perspective, subjective norms will exert a positive impact on purchase intention.

Furthermore, perceived behavioural control is a critical component within the TPB framework, significantly influencing consumer purchase intention. This construct evaluates the degree to which consumers perceive the ease or difficulty of executing a specific behaviour in a circular environment (Jan, 2022). According to Ajzen (1991), both individual intention and actual behaviour are directly impacted by the perceived ease or difficulty associated with performing a particular task. A consumer's purchase intention is shaped by their assessment of the ease and challenges involved in making a purchase. Numerous scholars (Bruijns et al., 2022; Jakubowska et al., 2024) have identified a positive correlation between perceived behavioural control and purchase intention. For instance, Kumar et al. (2022) found a strong positive association between perceived behavioural control and purchase intention in the context of eco-friendly apparel. Similarly, Vafaei-Zadeh et al. (2022) demonstrated that perceived behavioural control positively affects the intention among Generation Y and Generation Z (Jakubowska et al., 2024). In this study, perceived behavioural control is considered an exogenous variable, conceptualised as unidimensional, and is anticipated to positively influence the purchase intention of circular products. Therefore, the following hypothesis is proposed:

H3: From a circular economy perspective, perceived behavioural control will have a positive impact on purchase intention.

The current study integrates two factors, namely (i) convenience and (ii) environmental impact, in alignment with empirical recommendations from previous literature, to evaluate their positive influence on consumer purchase intention of circular products (Jan, 2021; 2022; Karim et al., 2025; Sreen et al., 2018; Ogiemwonyi, 2022). Firstly, convenience pertains to consumers' perception of the time and effort required to obtain a circular product, distinct from the ease or difficulty of acquisition (Saha et al., 2022; Shashi et al., 2024), and has emerged as a competitive dimension within the circular economy perspective (Jan, 2022). Constraints on time and effort that consumers face regarding a specific product may impose external limitations influencing their purchase intention. Given the pivotal role of consumer convenience in shaping purchase intention (Roy et al., 2018; Shashi et al., 2024), it is unsurprising that retailers strive to enhance their services to offer greater convenience. Previous research has argued that convenience impacts service offerings within the circular economy (Saha et al., 2022; Shashi et al., 2024), and consumer convenience has consistently demonstrated a significant predictive effect on purchase intention (Saha et al., 2022; Shashi et al., 2024). Several prior studies

(Jan, 2022; Saha et al., 2022; Shashi et al., 2024) have incorporated convenience as a prominent factor in investigating the TPB framework concerning purchasing intention. Therefore, it is crucial to emphasise the influence of convenience within the context of the circular economy, particularly from the consumer perspective. Consequently, the following hypothesis is proposed:

H4: From a circular economy perspective, convenience will have a positive impact on purchase intention.

According to Zhuang et al. (2021), individuals' environmental impact positively influences their purchase intention for green products. Within the framework of the circular economy, the significance of environmental impact in driving purchase intention is rooted in the production and consumption of sustainable products that exert minimal adverse effects on the environment (Dangelico et al., 2024; Le et al., 2025; Zhuang et al., 2021). Environmental impact can be understood from two perspectives. Firstly, it encompasses the consumer perspective, wherein consumers consider the environmental consequences before intending to purchase a product. Secondly, it encompasses the producer perspective, wherein producers or manufacturers comply with environmental protection and sustainability guidelines by embracing green and environmentally friendly practices (Dangelico et al., 2024; Jan, 2022; Jo & Kwon, 2021; Le et al., 2025). The current study focusses on the consumer perspective within the circular economy, aligning with the scope of examining how consumers' awareness of the positive and/or negative impacts of a product significantly influences their purchase intention (Dangelico et al., 2024; Jan, 2021, 2022; Ogiemwonyi et al., 2022). This finding is corroborated by Dangelico et al. (2024) and Ruangkanjanases et al. (2020), who identified a significant influence of environmental variables on consumers' intentions. Therefore, if products are produced following the principles of the circular economy, consumer purchase intention may be positively influenced. This is further substantiated by a recent study by Dangelico et al. (2024) and Kumar et al. (2022), which revealed a correlation between pro-environmental purchase intention and environmental impact within the TPB framework. Numerous studies have demonstrated a robust relationship between environmental impact and purchase intention using the core variables of the TPB model (Gul & Ahmed, 2024; Johnston et al., 2023; Kumar et al., 2022; Zhang et al., 2019). Additionally, research has shown that environmental impact directly influences attitudes, subjective norms, and perceived behavioural control, which subsequently affect consumer decisions regarding circular products and their purchase intention for green products (Gul & Ahmed, 2024; Zhang et al., 2019). It is, therefore, crucial to understand the impact of environmental impact on purchase intention within the setting of the circular economy, particularly from the consumer perspective.

Consequently, the following hypothesis is proposed:

> H5: From a circular economy perspective, environmental impact will have a positive impact on purchase intention.

Notwithstanding the ever-expanding research corpus on sustainability marketing, there persists a scarcity of studies that incorporate the circular economy paradigm within the Gulf region, particularly those that delve into consumer behavioural patterns and preferences. This strategic approach will not only bolster the timeliness and relevance of the current research but it will also pave a distinct path for the subsequent methodological framework, ensuring a targeted and purposeful exploration of the subject matter.

Theoretical Framework

The present study uses the Theory of Planned Behaviour (TPB) as the underlying theory because it is considered the most appropriate theory in understanding human behaviours. Crucial variables, like attitude, subjective norm, and perceived behavioural control, have been researched over the last few decades to understand people's intention and their subsequent behaviour towards various endeavours. However, from a sustainability marketing perspective and specifically from a circular economy perspective, more variables should be added and tested in the existing TPB to offer a more robust and comprehensive model in the settings of the circular economy. The current research undertakes this challenge and adds two critical factors, as extracted from the extant literature, related to the circular economy. These variables are convenience and environmental impact. These new variables have already been tested in other countries with significant differences compared to the Gulf (see for example, Jan 2021; 2022; 2023). The proposed model of this study is presented in Figure 1.

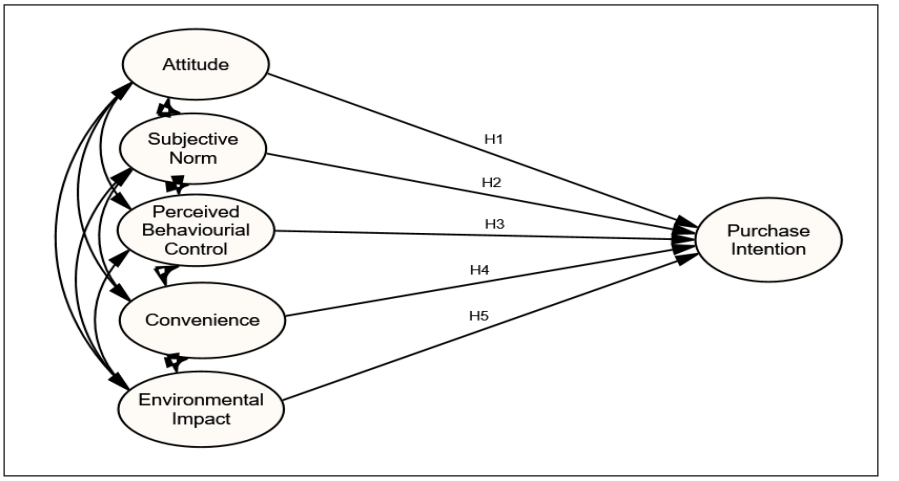

Figure 1. Proposed model (Jan, 2021; 2022; 2023)

METHODOLOGY

Sampling and Data Collection

For the present study, data were collected from those customers who reside in the UAE. A structured self-administered questionnaire was utilised for this purpose. Keeping in mind the scope, appropriateness, and limitations of the study, a non-probability convenience sampling method was considered appropriate. It is due to the wide spread of the population of the study and due to the nature of the sample. A total of six hundred (600) questionnaires were distributed, out of which four hundred and fifty (450) questionnaires were used for data analysis, yielding a response rate of 75%. The sample size of four hundred and fifty is considered suitable for proceeding with data analysis, based on the recommendation of various scholars (see e.g., Hair et al., 2013). The respondents were approached by the appointed enumerators in various places (e.g., shopping malls and universities), and then they were asked to scan a QR or use a link to the questionnaire and fill it out using their smart devices. This method of data collection signifies the researchers' attempt to appreciate the circular and green approach and to establish a culture of collection via soft copies compared to hard copies. During the data collection process, respondents were requested to think of those factors that will influence their behaviour of buying circular products like reusable straws, edible straws, reusable water bottles, paper and/or reusable shopping bags, etc.

As the study relies on self-reported data collected at a single point in time, the possibility of common method bias (CMB) was considered. To address this concern, both procedural and statistical remedies were employed. Procedurally, respondent anonymity was assured, question wording was kept neutral and unambiguous, and scale items were distributed such that items measuring independent and dependent variables were visually separated to reduce consistency bias. Statistically, EFA was undertaken to ensure that all the items and variables load, as envisaged. Data cleaning followed a systematic protocol, which included a Completeness Check, Responses with >20% missing data were excluded, Attention Check Items, in which two attention-check items were embedded in the questionnaire. Respondents who failed both checks were excluded. Further, Outlier Detection was incorporated, in which Multivariate outliers were identified using Mahalanobis distance ($p < 0.001$).

SPSS and AMOS software were used to analyse the collected data. After screening and cleaning of the data collected, which is a usual and imperative process before full-fledged data analysis, descriptive analysis was undertaken. This was followed by reliability tests, exploratory factor analysis (EFA), confirmatory factor analysis (CFA), hypothesis testing, and full structural model testing. Usually, SPSS is used for data analysis before the researcher employs structural equation modelling (SEM). In this case, the two-stage SEM started with CFA, using AMOS software. Drawing upon the established methodology, the subsequent findings delve into the postulated

relationships within the consumer landscape of the UAE, providing valuable perspectives on the feasibility and practicality of circular economy products. The results are presented in the next sections.

Instrument Development and Validation

The survey instrument employed in this study encompassed two primary sections. The initial section, labelled Part 1, aimed to elicit information regarding the characteristics of the participants. The subsequent section, denoted as Part 2, sought to gather data pertaining to the various variables under investigation, namely attitude, subjective norms, perceived behavioural control, convenience, environmental impact, and their association with purchase intention, as illustrated in Figure 1. All the questionnaire items were derived from previous research (Ajzen, 1991; Jan, 2023) and were slightly modified to align with the specific context of the present study. Further, the adapted questions, even though taken from previously established research studies, went through content validation by acquiring experts' comments on the questionnaire. A total of 5 field, linguistic, and statistics experts were chosen for this purpose. After validation, the items in the questionnaire were fine-tuned to suit the scope of the present study. A five-point Likert scale, ranging from "1," indicating a strong agreement, to "5," signifying strong disagreement, was employed across the instrument to gauge the extent of agreement or disagreement with the items pertaining to the variables. The instrument of the study, along with the codes, is provided in the appendix.

FINDINGS

Respondents' Profile

Data related to many important demographic variables were collected from the respondents. For example, data related to age, highest educational level, marital status, and income were considered the most appropriate for this study. Most of the cases were from the age bracket of 27 and above, with a 42.7% contribution in the total usable responses. Another important variable was education. Interestingly, about 43.3% (or 195) of respondents reported having completed a postgraduate degree. This shows that our survey was replied to by mostly highly educated consumers. The majority of the respondents with a postgraduate degree were not intentionally planned, but as mentioned earlier, the data was collected from universities, and that could be the reason that most of the filled questionnaires were from those with postgraduate degrees. Moreover, according to Miao et al. (2020) and the UAE Ministry of Education, the UAE boasts one of the highest tertiary education attainment rates in the region, with a growing share of the population completing higher education, particularly in urban centres such as Abu Dhabi and Dubai. The reason that this segment resulted in a high response is due to their greater awareness of sustainability issues and their tendency to be early adopters of digital and circular economy solutions, aligning well with the objectives of this study. In a similar manner, most of the respondents (288 or 64%) were married. Lastly, most of the respondents (129 or 28.7%)

are from a reasonably high-income level. In this case, they were from the income bracket of Dhs 7000 – 9999. A detailed breakdown of respondents' profiles is provided in Table 1.

Table 1
Respondents' profile

Items	UAE (n= 450)
	Frequency (%)
Age	
18 - 21	68 (15.1%)
22 - 24	96 (21.3%)
25 – 27	94 (20.9%)
27 and above	192 (42.7%)
Status	
Single	154 (34.2%)
Married	288 (64.0%)
Divorced	8 (1.8%)
Education	
Undergraduate	98 (21.8%)
Postgraduate	195 (43.4%)
Doctoral PhD	37 (8.2%)
Others	120 (26.7%)
Income	
Dhs 1000 and Below	54 (12.0%)
Dhs 1001 – 3999	77 (17.1%)
Dhs 4000 – 6999	110 (24.4%)
Dhs 7000 – 9999	129 (28.7%)
Dhs 10000 and Above	80 (17.8%)

Reliability Tests

Reliability and validity tests are considered an extremely important part of data analysis. It reflects the stability and consistency of the instrument used for data collection. In the present study, Cronbach's alpha is used to establish the reliability and validity of the questionnaire. The threshold recommended for social sciences is 0.70 or above (Nunnally, 1975). In this research, Cronbach's alpha was 0.955, attesting to the reliability and validity of the instrument (Table 2).

Table 2
Reliability test result

Cronbach's Alpha	Cronbach's Alpha ased on Standardised Items	No. of Items
.955	.955	27

Exploratory Factor Analysis

The subsequent stage in the data analysis process deemed appropriate was to undertake exploratory factor analysis (hereafter, EFA). This is to ensure the number of factors underlying the data. As highlighted earlier, the Theory of Planned Behaviour (TPB) has been extended to incorporate variables related to the circular economy and sustainability marketing. It was, therefore, considered suitable to see if the data also results in the same number of extended factors. The initial stage of EFA is to test Kaiser-Meyer-Olkin (KMO) and Bartlett's Test of Sphericity. Both the results were acceptable at 0.938 for KMO, and the p-value was significant at <0.001, indicating an acceptable correlation between the variables. EFA resulted in six clean factors, as envisaged, with a cumulative variance of 72.216%. The criteria of eigenvalue value 1.0 and above were considered. All the items are loaded on their respective factors, which also signifies the discriminant validity of the instrument. The result of EFA is presented in Table 3.

Table 3
Exploratory factor analysis

Variables	Rotated Component Matrix					
	Component					
	Factor 1 Convenience	Factor 2 Attitude	Factor 3 Purchase Intention	Factor 4 Perceived Behavioural Control	Factor 5 Environmental Impact	Factor 6 Subjective Norm
CON2	0.800					
CON6	0.778					
CON3	0.776					
CON1	0.763					
CON5	0.747					
CON4	0.737					
ATT3		0.655				
ATT4		0.642				
ATT2		0.613				
ATT1		0.577				
PI3			0.837			
PI1			0.810			
PI2			0.774			
PI4			0.717			
PI5			0.572			
PBC4				0.826		
PBC2				0.741		
PBC1				0.727		
PBC3				0.697		
ENV1					0.811	
ENV3					0.801	
ENV2					0.782	
ENV4					0.776	
SN2						0.781
SN4						0.763
SN1						0.723
SN3						0.719
Initial Eigenvalues	16.575	2.766	2.311	1.996	1.649	1.423
% of Variance	18.623	12.518	11.925	11.925	11.158	10.562
Cumulative Variance	18.623	31.141	43.067	54.224	64.786	72.216

Confirmatory Factor Analysis

The next stage in the data analysis was to confirm the extracted factors using Confirmatory Factor Analysis (hereafter, CFA). AMOS software was used to perform CFA using Maximum Likelihood Estimation. The fitness of the measurement model was observed using goodness-of-fit indices suggested by scholars (Hair et al., 2013). The common indices used to test the fitness of the measurement model are chi-square ($\chi 2$), normed chi-square ($\chi 2/df$), the comparative fit index (CFI), and the root mean square error of approximation (RMSEA). All the accepted thresholds were kept in mind to proceed with further data analysis. The results of CFA are provided in Figure 2, and as can be seen, the measurement model results in an acceptable fit, indicating to proceed with testing a full-fledged structural model.

In addition to Cronbach's alpha (all constructs exceeded $\alpha > 0.70$), Composite Reliability (CR) and Average Variance Extracted (AVE) were computed for each construct during the Confirmatory Factor Analysis (CFA) phase. All constructs demonstrated CR > 0.70 (indicating good internal consistency) and AVE > 0.50 (indicating adequate convergent validity).

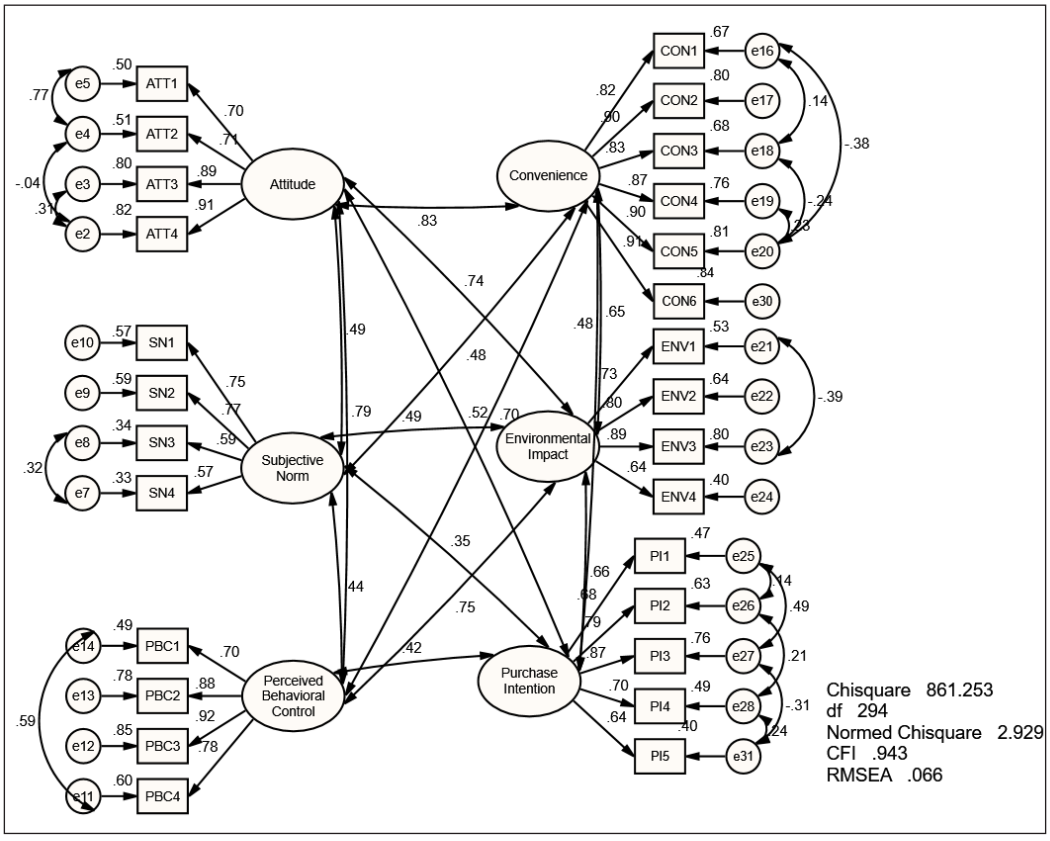

Figure 2. Result of confirmatory factor analysis (CFA)

Structural Analysis and Hypotheses Testing

Since the two-stage SEM approach was adopted in this study, where the measurement model is fitted before full-fledged structural model fitness, the next step in the current data analysis was to fit the final structural model and test the hypotheses. For the fitness of the final structural model, the normed chi-square (χ^2/df), the comparative fit index (CFI), and the root mean square error of approximation (RMSEA) were considered, as suggested by Hair et al. (2013). Figure 3 depicts the result of the final structural model, where it can be clearly seen that the χ^2/df, CFI, and RMSEA emerged with an acceptable outcome. In this case, χ^2/df = 2.929 (acceptable at <5.0), CFI = 0.943 (acceptable at >0.9), and RMSEA = 0.066 (acceptable at <0.08), attesting to a good fit of the structural model.

The hypotheses are also tested in this stage. The results revealed that only one out of the total five hypotheses can be supported. The supported causal link with both practical and statistical significance was between environmental impact and purchase intention. The other two hypotheses with a positive impact were the causal link between attitude and purchase intention and between convenience and purchase intention. However, these two were not statistically significant but resulted in some positive influence, as proposed.

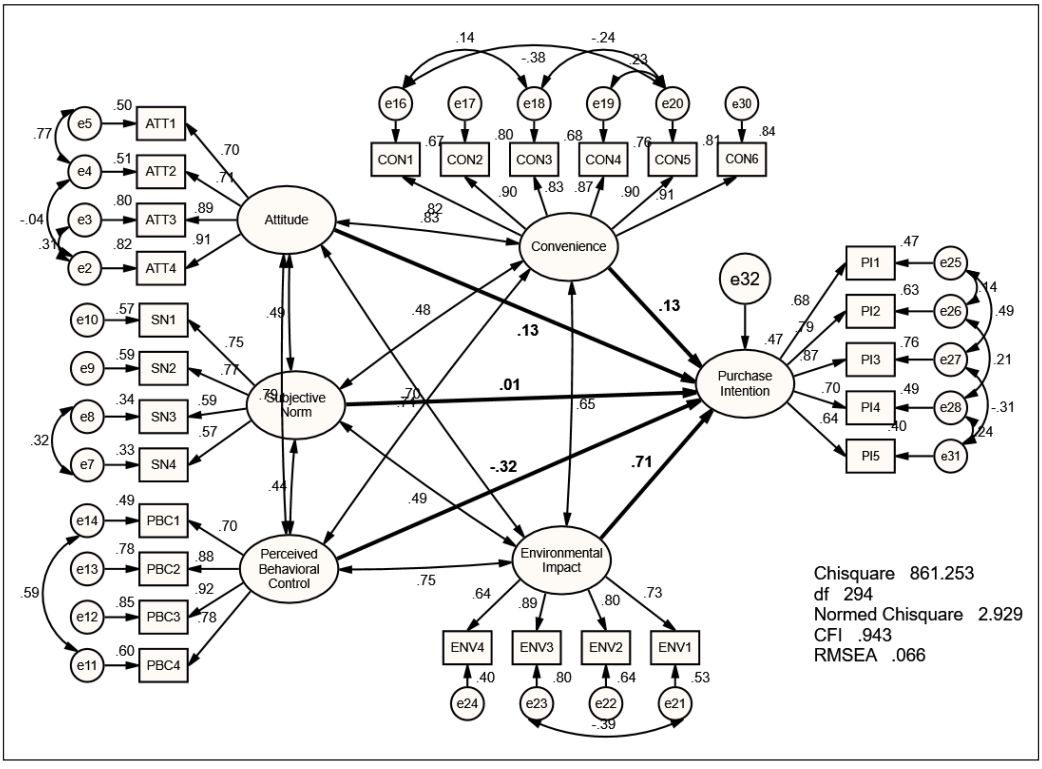

Figure 3. Final structural model

Surprisingly, perceived behavioural control resulted in a strong negative impact on purchase intention, which contradicts previous studies that support a positive influence of perceived behavioural control on purchase intention (see e.g., Jan, 2021; 2022). This study's finding of a negative impact of perceived behavioural control on purchase intention contradicts the established positive association found in prior research. Future research may explore cultural or contextual factors unique to the UAE that could explain this discrepancy. Detailed results of the hypotheses are provided in Table 4.

Table 4 presents the structural path coefficients, standard errors, critical ratios, and p-values for each hypothesised relationship. Among the five predictors of purchase intention, Environmental Impact exerted the strongest and most significant positive effect ($\beta = 0.713$, $p < 0.001$), suggesting a large and meaningful effect in the context of the Theory of Planned Behaviour (TPB). This finding highlights the critical role of environmental impact in shaping consumers' behavioural intentions towards circular products in the UAE.

In contrast, Perceived Behavioural Control showed a negative and statistically significant influence on purchase intention ($\beta = -0.315$, $p < 0.001$). While this direction contradicts previous research, it demonstrates a moderate-to-strong inverse relationship, meriting further contextual analysis.

The relationships of Attitude ($\beta = 0.131$, $p = 0.279$), Subjective Norm ($\beta = 0.008$, $p = 0.885$), and Convenience ($\beta = 0.130$, $p = 0.145$) with purchase intention were statistically non-significant, indicating weak effects that may not be practically meaningful in this specific study context.

Nested Model

A novel attempt of the present study was to find other promising models and causal linkages in the proposed model of the study, technically called Nested Modelling. An interesting model was found with some new, previously unexplored, and important linkages among variables. The nested model can be found in Figure 4. In this attempt, three unique causal linkages were empirically tested. These linkages

Table 4
Result of hypotheses testing

Structural Path	Std. Reg Weight	Estimate	S.E.	C.R.	P
Attitude → Purchase Intention	0.131	0.122	0.113	1.082	0.279
Subjective Norm → Purchase Intention	0.008	0.006	0.042	0.145	0.885
Perceived Behavioural Control → Purchase Intention	-0.315	-0.219	0.063	-3.464	***
Convenience → Purchase Intention	0.130	0.091	0.062	1.458	0.145
Environmental Impact → Purchase Intention	0.713	0.64	0.093	6.863	***

are between "attitude and environmental impact", between "perceived behavioural control and environmental impact", and between "convenience and environmental impact".

First, this nested model was tested for its fitness, and as can be seen in the provided results, the model emerged with very strong fitness. In this case, $\chi 2/df = 2.988$ (acceptable at <5.0), CFI = 0.941 (acceptable at >0.9), and RMSEA = 0.067 (acceptable at <0.08). New and acceptable causal linkages of this new model were between "attitude and environmental impact", and between "perceived behavioural control and environmental impact". The results obtained confirmed both the statistical and practical significance of these linkages.

In the case of the impact of attitude on environmental impact, a value of 0.391 (acceptable at >0.20) and a value of 0.0001 (acceptable at <0.05) clearly attest to both practical and statistical significance, respectively. Similarly, the influence of perceived behavioural control on environmental impact resulted in a value of 0.413 (acceptable at >0.20) and a value of 0.0001 (acceptable at <0.05), which also confirms practical and statistical significance. The nested model is presented in Figure 4.

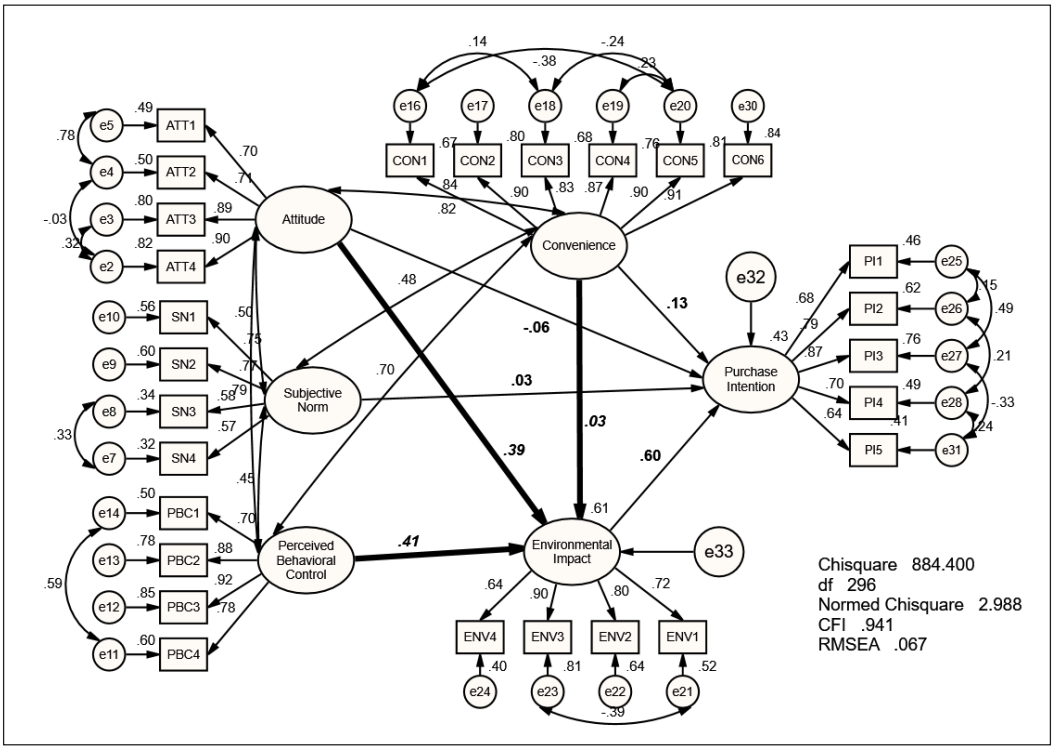

Figure 4. Nested model

DISCUSSION AND CONCLUSIONS

This study contributes to the literature by extending the Theory of Planned Behaviour (TPB) through the integration of two contextually relevant variables—convenience and environmental impact—within the framework of consumer purchase intention towards circular products. While TPB is well-established, limited research has tested its extension in emerging market contexts, particularly in Gulf countries like the UAE.

By empirically validating environmental impact as the strongest predictor of circular purchase intention, this study advances theoretical understanding by demonstrating that environmentally conscious behaviour is deeply embedded in consumer ethics in the UAE, potentially influenced by Islamic values of sustainability and moderation. Additionally, the inclusion of convenience—although not statistically significant in this study—acknowledges infrastructural and logistical barriers in circular consumption that are especially relevant in emerging economies. These theoretical extensions provide a foundation for refining behavioural models in the context of sustainable consumption across similar cultural and economic landscapes.

The findings derived from the final structural model reveal a noteworthy pattern among consumers in the United Arab Emirates (UAE), with a pronounced emphasis on the environmental impact of the products they choose to purchase, surpassing the influence of other factors. This implies that consumers in the UAE exhibit a higher likelihood of selecting products that have minimal or no adverse effects on the environment. Furthermore, while the remaining variables in this study did not yield significant outcomes, it is worth noting the positive influence observed in terms of "attitude" and "convenience". This signifies that consumers in the UAE who possess a favourable attitude towards circular economy products are more inclined to positively shape their purchase intention. Similarly, the presence of circular economy offerings and sustainable products that are conveniently accessible to consumers in the UAE significantly enhances the likelihood of their purchase.

Interestingly, the finding that perceived behavioural control (PBC) has a negative and significant impact on purchase intention contradicts much of the extant literature, which generally reports a positive association between the two (e.g., Ajzen, 1991; Kumar et al., 2022). This unexpected outcome could be contextually explained by unique socio-cultural dynamics within the UAE. One possible reason is the relatively high level of consumer dependence on external validation and institutional guidance in making novel or unfamiliar purchases—particularly those related to sustainability and the circular economy. In such contexts, even if individuals perceive control or ability over their actions, it may not translate to actual purchase intentions due to uncertainty, social hesitation, or lack of trust in emerging eco-products. Moreover, in high-income, high-service environments like the UAE, consumers may

outsource decisions to experts, rely on brand trust, or expect seamless convenience. Thus, high perceived control might paradoxically reduce purchase intention by increasing the perceived burden of decision-making. Additionally, cultural tendencies towards risk aversion and status-driven consumption may also weaken the influence of PBC on intention. Future studies should further explore this inverse relationship by incorporating variables such as uncertainty avoidance, cultural value orientation, and trust in institutional information sources. Furthermore, conducting longitudinal and/or experimental studies to track actual purchase behaviour, repeat purchase, and habitual sustainable consumption could be a promising attempt.

Moreover, the results obtained from the nested model emerged with fascinating findings that should not be overlooked. Specifically, consumers in the UAE demonstrate a strong positive attitude towards environmental impact, which, in turn, exerts a significant influence on their purchase intention for circular economy and sustainable products. Additionally, consumers in the UAE possess high levels of control over their purchasing intention, particularly when the products have environmental impacts.

Overall, these findings underscore the significance of environmental consciousness and the role it plays in shaping consumer behaviour and purchase decisions in the UAE. They emphasise the need for businesses and policymakers to align their strategies with the principles of the circular economy, offering sustainable and environmentally friendly products while ensuring convenience and fostering positive attitudes among consumers. By capitalising on these factors, stakeholders can promote a more sustainable and environmentally responsible consumption pattern in the UAE.

Policymakers should also keep in mind that in the context of the UAE, environmental impact resulted in a significant impact on consumer buying intention, which eventually translates into actual purchase (aka actual behaviour). Therefore, more emphasis should be given to planning, producing, and marketing those products that have a lower to nil adverse effects on the environment.

It is of importance to note that the positive influence of environmental impact on purchase intention corroborates previous findings (see e.g., Dangelico et al., 2024; Le et al., 2025; Zhuang et al., 2021); however, the unexpected negative impact of perceived behavioural control warrants further investigation and may suggest a unique consumer behaviour pattern within the UAE market. It is important to note that previous studies have found no significant impact of perceived behavioural control on purchase intention in various settings (see e.g., Aslan, 2023; Dangelico et al., 2024). Perhaps future researchers can adopt the framework of the present study and further explore and investigate it in different settings and industries. A qualitative approach, like in-depth interviews, would also be promising to see the reasons behind some of the unsupported variables of this study and

the strongly supported and unique variable, which is environmental impact. Moreover, the emphasis on environmental impact and convenience in consumer purchase intention suggests that infrastructure policies promoting accessible and eco-friendly product offerings may foster a more sustainable consumer behaviour in the UAE. We recommend that future studies formally test religiosity or Islamic ethical orientation as moderating variables to enhance the cultural specificity of the TPB model in Muslim-majority contexts.

The Way Forward

The findings of this study offer several actionable insights for UAE-based marketers and policymakers. First, the strong influence of environmental impact on consumer purchase intention suggests a clear opportunity for firms to adopt and emphasise eco-labelling, green certifications, and transparent disclosures of environmental benefits on product packaging. Policymakers may also consider developing Standardised sustainability ratings or environmental indices to guide consumer choices.

Second, although convenience was not statistically significant, it remains a key practical consideration. Retailers and supply chain managers should strive to improve the availability, accessibility, and visibility of circular products, such as through prominent shelf placement, user-friendly return or recycling processes, and integration into mainstream retail platforms or e-commerce apps.

Third, public campaigns and digital awareness initiatives targeting behavioural change through education, testimonials, and gamified sustainability rewards could further influence environmentally responsible behaviour, especially among younger consumers. These findings may also inform urban planning and waste management policy by promoting localised recycling infrastructures and community-based circular initiatives.

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APPENDIX

Table S1
Codes and items used in the study

Codes	Study Variables and Items
	Attitude
ATT1	I believe that the use of environmentally sustainable products (circular economy products) will help in reducing pollution and also help in improving the environment.
ATT2	I believe that the use of environmentally sustainable products (circular economy products) will help in reducing the wasteful use of natural resources.
ATT3	I believe that the use of environmentally sustainable products (circular economy products) will help in conserving natural resources.
ATT4	I feel good about myself when I use environmentally sustainable products (circular economy products).
ATT5	I look forward to using circular economy products.
	Subjective Norm
SN1	I am influenced by your family members to use circular economy products.
SN2	I am influenced by my friends to use circular economy products.
SN3	I am influenced by my social circle to use circular economy products.
SN4	I am influenced by the government to use circular economy products.
SN5	My society expects me to engage in environmentally sustainable product usage behaviour.
SN6	Using circular economy products is a social trend.
	Perceived Behavioural Control
PBC1	Using circular economy products are entirely within my control.
PBC2	I have the resources to buy circular economy products.
PBC3	I have the knowledge to use circular economy products.
PBC4	I have the ability to buy circular economy products.
PBC5	Whether to buy or not to buy circular economy products is up to me.
	Convenience
CON1	I think there is not much difference between circular economy products and conventional products.
CON2	I think it is easy to find circular economy products.
CON3	I think the use of circular economy products is not complicated.
CON4	I think circular economy products are conveniently available
CON5	I believe purchasing circular economy products saves me time and effort.
CON6	I find it convenient to access information about circular economy products when I need it.
	Environmental Impact
ENV1	Using environmentally sustainable products (circular economy products) is a primary means to reduce pollution.
ENV2	Using environmentally sustainable products (circular economy products) is a substantial approach to reducing wasteful use of natural resources.
ENV3	Using environmentally sustainable products (circular economy products) is one great approach to conserving natural resources.
ENV4	It is very important to promote consumers' attention to environmental issues.

Table S1 (*continued*)

Codes	Study Variables and Items
	Attitude
	Purchase Intention
PI1	I would like to use environmentally sustainable products (circular economy products).
PI2	I would buy environmentally sustainable products (circular economy products) if I happen to see them in a store.
PI3	I would actively seek out environmentally sustainable products (circular economy products) in a store to purchase it.
PI4	I would patronize the use of environmentally sustainable products (circular economy products).
PI5	I would recommend the use of environmentally sustainable products (circular economy products).