International Journal of Accounting and Economics Studies, 13 (1) (2026) 436-445

International Journal of Accounting and Economics Studies

Website: www.sciencepubco.com/index.php/IJAES
https://doi.org/10.14419/jwpefg44
Research paper



Circular Economy in Retail Spaces: Behavioral Drivers Of Mall Selection in Malaysia

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Received: December 5, 2025, Accepted: January 12, 2026, Published: January 24, 2026

Abstract

Kuala Lumpur's retail sector, with revenue reaching $142.5 billion in August 2023, includes over 20 large shopping malls integrating Circular Economy (CE) practices to enhance sustainability. CE focuses on minimizing waste and maximizing resource efficiency through reusing, recycling, and composting. This study examines the impact of CE initiatives on consumer behavior in these malls, utilizing primary data from 614 respondents across 9–10 high-traffic malls. The research measures consumer awareness, preferences, engagement, loyalty, and satisfaction with CE practices. Preliminary findings indicate that consumer awareness, engagement, and satisfaction significantly influence mall selection, while preferences and loyalty show negligible impact. Applying the Theory of Planned Behavior, the study highlights the importance of promoting environmental benefits, consumer responsibility, and empowering consumers through education and accessible participation options. This research offers critical insights for mall developers, retailers, and policymakers, aiding them in aligning strategies with growing consumer inclinations towards sustainability. By focusing on Kuala Lumpur, the study contributes a regional perspective to the global discourse on sustainable retail, fostering a more environmentally responsible retail environment.

Keywords: *Circular Economy (CE); Sustainability; Consumer Behavior; Recycling; Upcycling; Waste Management.*

1. Introduction

Kuala Lumpur, Malaysia's economic hub, has experienced a significant transformation in its retail landscape over recent decades. This dynamic growth has substantially contributed to the country's GDP, with the retail sector demonstrating robust performance. According to Huri et al. (2022), the wholesale and retail trade in Malaysia reached a sales value of $142.5 billion in August 2023, reflecting the sector's vitality. The city boasts over 20 large shopping malls, which have become recognisable landmarks and draw both locals and tourists from around the world (Albattat et al., 2019). These malls are not just commercial centres but also cultural and economic assets. The integration of digital technologies, such as augmented reality and smart retail solutions, has enhanced consumer experiences, aligning with the global trend of technologically enriched shopping environments (Chen et al., 2022). In addition, large retail shopping malls have become integral to Malaysian life, offering multifaceted solutions that cater to diverse consumer needs, including groceries and entertainment (Ibrahim et al., 2018). However, the retail industry is evolving, particularly in mall construction, with CE playing a more significant role (Chen et al., 2022). This growing focus on sustainability in retail strategies is increasingly influencing consumer behaviour, with global CE sales projected to double by 2026, having already reached an estimated $339 billion in 2022, as highlighted by Smith (2022).

The concept of the CE, dating back to the 19th century, has evolved significantly to encompass practices such as recycling and resource conservation (Debasa, 2022). In Kuala Lumpur, there is a noticeable trend towards adopting CE practices in the retail sector. For example, IPC Shopping Centre has integrated recycling and buy-back programmes since 2009, extending to clothing recycling and other environmentally conscious options for consumers (Zolkfele et al., 2022). Additionally, Lotus's shopping mall aims for zero food waste in landfills and sustainable packaging by 2030 (Circular Economy, 2023). The 118 Mall, poised to be the world's second-tallest building, is leading in adopting green and sustainable investment frameworks (Na'im et al., 2022). According to Ortegón-Cortázar & Royo-Vela (2017), consumer preferences are increasingly shifting towards green spaces and eco-friendly amenities in shopping centres, reflecting a broader societal move towards environmental sustainability.

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The rapid increase in global population and consumption has made the CE a vital response to environmental challenges. Kumar (2013) noted that the planet's population has quadrupled over the last century, with projections indicating it will exceed nine billion by 2050. This growth has led to a substantial rise in resource consumption and a simultaneous decline in available reserves. Didenko et al. (2018) emphasise that the CE represents a significant shift from the traditional linear economic model, which involves resource extraction, production, consumption, and disposal. Instead, the CE focuses on recycling, reusing, and prolonging the lifespan of products and materials, as described by Morseletto (2020). These practices are designed to preserve resources, mitigate waste, and reduce environmental impacts. According to Idle (2021), a consumer survey conducted in 2020 across 27 markets revealed that 74% of consumers agreed on the urgent need to reduce consumption to protect the environment, a significant increase from 66% the previous year. This trend underscores a growing awareness and commitment to sustainability among consumers.

The CE framework addresses important environmental issues in Malaysia by focusing on reducing waste and pollution, circulating goods and materials, and regenerating nature. Ibn-Mohammed et al. (2021) highlight that this paradigm is built on the biological and technological cycles of reusing, mending, remanufacturing, recycling, and composting. Despite the challenges posed by an underdeveloped legal framework, with only parts of the Environmental Quality Act 1974 supporting resource circulation, Malaysia demonstrates a robust commitment to sustainability. Agamuthu & Mehran (2020) point out that the legal limitations do present obstacles, but efforts are underway to integrate CE principles into the national agenda, as outlined in the 12th Malaysia Plan (Ishak & Thiruchelvam, 2023). As consumer preferences continue to evolve towards sustainability, understanding the influence of CE practices on consumer behaviour in Kuala Lumpur's retail sector becomes increasingly important.

1.1. Problem statements

The bustling retail landscape of Kuala Lumpur, Malaysia, epitomises the fierce competition among shopping centres vying for consumer attention. According to Ying & Aun (2019), these modern retail destinations, including Pavilion Kuala Lumpur and Suria KLCC, are in a constant battle to capture shoppers' attention by offering everything from luxurious international designer brands to unique local boutiques and specialty stores (Miah et al., 2022). However, this fierce competition often comes at a significant cost that is frequently overlooked: the substantial use of resources for the construction and ongoing maintenance of these sprawling shopping centres, as pointed out by Barchi et al. (2018) and further detailed by Barchi et al. (2019).

One of the key factors contributing to this competition among shopping centres in Kuala Lumpur is their strategic location. Wong & Nair (2018) assert that centres situated in prime areas with easy accessibility, high foot traffic, and reasonable parking rates have a distinct advantage. Nevertheless, the combination of high visitor traffic and demands for lower parking rates intensifies resource use in parking structures and transportation systems, leading to increased energy demands and waste management challenges (Feldman et al., 2022). For example, Avenue K Shopping Mall, located across the road from the Petronas Twin Towers, offers slightly lower parking rates, making it a preferred choice among consumers (Ikhwan, 2022).

Apart from location, the mix of tenants, retail offerings, and entertainment options plays a crucial role in intensifying competition among shopping centers. Those that can offer a wide variety of brands and products catering to diverse consumer preferences are more likely to draw a larger customer following. For instance, Pavilion Bukit Jalil, Berjaya Times Square, and Sunway Pyramid offer diverse and unique experiences to shoppers, making them popular choices (Google, 2023; Jamaludin & Kadir, 2012; Albattat et al., 2019). However, it's worth underlining that these malls invest a lot in crafting a welcoming and cosy environment, which involves using a lot of lighting, air conditioning, and other facilities that greatly affect the consumption of resources, as pointed out by Said et al. (2016). To stand out in this competitive landscape, shopping centres in Kuala Lumpur employ various strategies to attract shoppers. Hosting events and promotions, such as fashion shows, celebrity meet-and-greets, and exclusive discounts, generates excitement and keeps shoppers engaged (Wong & Nair, 2018).

Moreover, shopping centres are investing in creating aesthetically pleasing and immersive environments with meticulous interior design, strategic lighting, and thoughtful landscaping (Sharma, 2020). In the pursuit of enhancing the shopping experience, Qadir et al. (2018) emphasise the utilisation of technology in shopping malls. They underscore the integration of amenities like complimentary Wi-Fi, interactive digital signage, and mobile apps providing personalised shopping suggestions and discounts. Saleem et al. (2022) have conducted research that elucidates a potential downside of technological advancements within shopping malls. Their studies centre on the integration of virtual reality (VR) and augmented reality (AR) technologies, which undoubtedly enhance the shopping experience. However, it's noteworthy to emphasise that these innovations also result in increased resource consumption.

2. Literature Review

Consumer awareness, preference, and satisfaction are closely tied to consumers' attitudes toward engaging with circular economy malls. Higher awareness of sustainability, stronger preference for eco-friendly alternatives, and satisfaction with previous experiences contribute to a more favourable evaluation of such malls. Second, consumer engagement aligns with the subjective norm component, as interactions within communities and participation in environmentally conscious activities influence social expectations and perceived social support for choosing circular economy shopping options. Third, consumer loyalty and satisfaction can enhance perceived behavioural control by reinforcing consumers' confidence in continuing to patronize circular economy malls.

Therefore, the five constructs (awareness, preference, engagement, loyalty, and satisfaction) serve as extended antecedents of behavioural intention within the TPB framework. Collectively, they help explain consumers' selection behaviour toward circular economy shopping malls, supporting the hypotheses proposed in this study.

2.1. Circular economy practices in shopping malls

The adoption of circular economy (CE) practices in shopping malls reflects a broader shift in retail towards resource efficiency and environmental responsibility (Singh & Giacosa, 2019). Prior studies document the growing presence of recycling and upcycling facilities, and investments in renewable energy and energy-efficient systems (Singh & Giacosa, 2019; Peng et al., 2021; Islam et al., 2022). International cases, such as ReTuna Återbruksgalleria in Sweden and sustainability programs in large integrated malls at Marina Bay Sands in Singapore (Berglund, 2022; Moore, 2021), demonstrate the feasibility of embedding CE principles within retail environments. However, existing literature also indicates that these initiatives are often selective and operationally focused, rather than representing fully integrated circular systems.

In the Malaysian context, shopping malls in Kuala Lumpur, such as Suria KLCC, Pavilion K.L, and Publika Shopping Gallery and IPC Shopping Centre in Selangor, have implemented limited CE-related initiatives, including recycling programs and energy efficiency upgrades (Eco Knights, 2018; Zolkfele et al., 2022). While such efforts signal increasing institutional awareness, scholars note that CE adoption remains fragmented and largely driven by compliance or cost reduction motives rather than systemic circular design. This suggests that Malaysian malls are still in an early transition phase, with sustainability practices functioning more as supportive features than as core strategic orientations.

From a consumer behaviour perspective, the literature highlights mixed responses to CE initiatives in retail settings. Although sustainability awareness is increasing, pro-environmental attitudes do not consistently translate into behavioural change, particularly when convenience and price considerations dominate decision-making (Slabá, 2019; McCausland, 2021). Younger consumers tend to show stronger environmental concern, yet their engagement with CE practices depends on the visibility, accessibility, and perceived value of such initiatives (Khan et al., 2023).

Technology and communication strategies are frequently identified as enablers of consumer engagement with CE practices. Digital platforms, in-mall displays, and interactive tools can improve awareness and participation (Shevchenko et al., 2023). Nevertheless, the literature remains limited in assessing the long-term effectiveness of these tools in sustaining circular consumption behaviours. Overall, existing studies suggest that while CE practices in shopping malls are expanding, their impact on consumer behaviour and mall attractiveness remains constrained by partial implementation and insufficient integration into the retail experience.

2.2. Consumer awareness

Consumer awareness of circular economy (CE) practices has been widely recognized as an important factor influencing retail-related decision-making. CE principles, particularly waste reduction, reuse, and recycling, have gained relevance among environmentally conscious consumers and are increasingly considered in shopping mall selection (Ouro-Salim & Guarnieri, 2022). However, the literature suggests that awareness levels vary substantially and are often shaped by external media rather than direct consumer understanding of CE concepts.

Media exposure is frequently identified as a primary driver of consumer awareness. Studies highlight the role of news outlets, online platforms, and digital media in communicating sustainability-related information and framing CE practices as socially desirable (Daou et al., 2020; Patel et al., 2022). Shopping malls also contribute by promoting eco-friendly brands and sustainability initiatives through in-mall displays and digital signage. While such strategies enhance visibility, prior research questions whether increased exposure necessarily translates into deeper understanding or sustained behavioral change, suggesting that awareness may remain superficial in many cases.

In addition, educational initiatives by governments and non-governmental organizations further support consumer awareness by emphasizing the environmental benefits of sustainable consumption (Fiksel et al., 2021). Technology and social media have amplified the reach of these efforts, enabling malls to showcase sustainability initiatives more effectively (Liu et al., 2023). Nevertheless, existing studies provide limited empirical evidence on the extent to which awareness alone influences shopping mall choice, particularly in emerging urban retail contexts such as Kuala Lumpur. This gap highlights the need to empirically examine the relationship between consumer awareness of CE practices and shopping mall selection. Thus, the following hypothesis was formed for further investigation:

H1: There is a significant relationship between consumer awareness about CE practices in shopping malls and the selection of shopping malls in Kuala Lumpur.

2.3. Consumer preference

Recent studies suggest that consumer preferences on circular economy (CE) practices are increasingly shaping their behavioural intention toward shopping malls, particularly among environmentally conscious segments. Preferences for low-waste retail formats, sustainable product offerings, and reuse-oriented shopping experiences indicate a gradual shift away from purely convenience- or price-driven consumption (Bagui & Arellano, 2021; Brown et al., 2021). Align with TPB perspective, consumer preference can be understood as a function of attitudes towards CE—such as waste reduction, reuse, and sustainable consumption—that contribute to favourable evaluations of malls that offer low-waste retail formats and environmentally friendly products. However, these attitudes are not uniformly held across consumer groups (Brown et al., 2021), suggesting that CE-oriented preferences are more pronounced among individuals with stronger environmental values rather than the general mall-going population.

Beyond mall attributes, other factors such as location and infrastructure play an important role in shaping consumer preferences. Accessibility via public transportation has been associated with positive consumer perceptions, as it supports convenience while aligning with sustainability-related mobility goals (Olszewski & Wibowo, 2005). Similarly, the availability of recycling facilities and waste management infrastructure within malls enables consumers to participate more directly in CE practices (Rilfi & Kanchana, 2021). Despite this, existing studies provide limited evidence on whether these facilities function as primary drivers of mall preference or merely as complementary features. Retailers within malls have also expanded offerings of environmentally friendly and ethically sourced products in response to shifting consumer expectations (Černikovaitė et al., 2021; Hong et al., 2019). Nevertheless, existing studies provide limited empirical evidence on whether these factors directly influence shopping mall selection or merely enhance overall shopping satisfaction. This limitation is particularly evident in emerging urban retail contexts such as Kuala Lumpur, where research on CE-driven consumer preference remains underdeveloped. Accordingly, the following hypothesis was formed in this study for further investigation.

H2: There is a significant relationship between consumer preference for CE practices in shopping malls and the selection of shopping malls in Kuala Lumpur.

2.4. Consumer engagement

Consumer engagement with circular economy (CE) practices in retail settings reflects the consumers' active participation in sustainable consumption. Consistent with TPB, engagement reflects the translation of intention into observable behaviour. Prior studies show that consumers engage with CE practices such as recycling, purchasing second-hand goods, and choosing environmentally responsible products, particularly when supportive infrastructure is available (Kim et al., 2021). Shopping malls facilitate such engagement by providing recycling facilities, hosting sustainability-related activities, and integrating second-hand or repair-oriented retail formats. However, the literature suggests that engagement levels remain uneven and often depend on situational convenience rather than sustained commitment.

Moreover, past studies further indicate that the visibility and normalisation of CE practices within malls can encourage consumer participation and engagement by reinforcing socially acceptable consumption behaviours (Mohammad et al., 2021; Pérez-Bou et al., 2021; Zamri

et al., 2020). The presence of eco-friendly and ethically positioned brands in the shopping malls further lowers participation barriers by simplifying sustainable choices for consumers (Chairunnisa et al., 2019; Norton et al., 2023). Despite these facilitating conditions, existing studies provide limited empirical evidence on the mechanisms through which consumer engagement with CE practices is sustained over time, particularly in shopping mall contexts within emerging urban economies. This highlights the need for further investigation into consumer engagement as a behavioural outcome of CE-oriented retail environments. Accordingly, the following hypothesis was formed for investigation.

H3: There is a significant relationship between consumer engagement with CE practices in shopping malls and the selection of shopping malls in Kuala Lumpur.

2.5. Consumer loyalty

Consumer loyalty is recognised as a key driver for the adoption of circular economy (CE) practices in shopping malls. Studies indicate that loyalty strengthens when consumers perceive alignment between their environmental values and the sustainability initiatives implemented by malls, including recycling programmes, second-hand retail options, and eco-friendly products (Khan & Fatma, 2019), hence influencing the consumer's choice for shopping malls. Loyalty is further reinforced when individual brands within malls actively promote CE principles, such as Starbucks' reusable cup initiatives, which enhance both brand and mall attachment (Ngah et al., 2023).

Additionally, the mall design and infrastructure also influence loyalty by integrating sustainable and accessible features. Environmentally conscious architecture, including natural lighting, green spaces, and energy-efficient designs, can strengthen consumer identification with the mall's sustainability commitment (Varol & Özçelik, 2022; The Gardens Mall, 2023). Likewise, convenience factors such as location and parking accessibility support sustained patronage while reducing barriers to pro-environmental behaviour (Kumar et al., 2021; Chow et al., 2021). Despite these insights, empirical research on the mechanisms linking consumer loyalty to CE initiatives to mall selection decisions in urban retail contexts remains limited, highlighting a critical gap for future investigation. Thus, the following hypothesis was formed for further investigation.

H4: There is a significant relationship between consumer loyalty to CE practices in shopping malls and the selection of shopping malls in Kuala Lumpur.

2.6. Consumer satisfaction

Consumer satisfaction in shopping malls is increasingly influenced by the implementation of circular economy (CE) practices. Evidence suggests that zero-waste initiatives, sustainable product offerings, and infrastructure supporting reuse and recycling enhance consumers' perceptions of shopping experiences and align with their environmental values (Sunway, 2018; Zaman, 2022; Cao et al., 2019). Accessibility, such as connections to public transport, further contributes to satisfaction by enabling convenient and environmentally conscious shopping (KLIA2, 2018). These CE practices significantly enhanced consumer satisfaction and influenced their choice of shopping destinations Cao et al., 2019).

Besides, mall design and environmental features also affect satisfaction. As highlighted by Choi and Kandampully (2019), sustainable architecture, natural lighting, and integrated green spaces enhance aesthetic appeal while reinforcing consumers' commitment to sustainability. For instance, the eco-friendly design in the Garden Mall in Kuala Lumpur, featuring natural lighting and integrated green spaces, exemplifies how aesthetic appeal and sustainability could merge to create a fulfilling shopping experience (The Gardens Mall, 2023). Active consumer engagement through workshops, recycling programs, and ethical product offerings supports informed decision-making and participation in CE practices, further increasing satisfaction and affecting the consumer decision in selecting the shopping malls (Kim et al., 2021; Pérez-Bou et al., 2021). Additionally, loyalty toward sustainability-oriented brands, such as Starbucks and The Body Shop, can amplify satisfaction and reinforce positive shopping behaviour (Ngah et al., 2023; Chairunnisa et al., 2019). As suggested by Khan and Fatma (2019), consumer satisfaction with CE practices in Kuala Lumpur's shopping malls reflected a broader societal shift toward sustainability practices as the key driver in consumer behavioural intention towards the shopping malls. Thus, the following was formed for investigation.

H5: There is a significant relationship between consumer satisfaction with CE practices in shopping malls and the selection of shopping malls in Kuala Lumpur.

3. Research Methodology and Framework

The research methodology employed a structured approach to systematically collect and analyse data, guided by the "research onion" framework (Saunders et al., 2019). The study's purpose was to investigate the impact of CE initiatives on consumer behavior in Kuala Lumpur's shopping malls. A quantitative research design was adopted, emphasising the use of empirical evidence and objective measurement, consistent with positivism. This philosophy focuses on quantitative data and aims to generate generalisable knowledge. A deductive approach was utilised, starting with existing theories about CE practices and consumer behavior to formulate hypotheses and research questions. Data collection was conducted through an online questionnaire designed to capture demographic information and insights on participants' perspectives. The survey method allowed for a broad and diverse sample, ensuring reliable and generalisable results. The sampling technique targeted adults aged 18 and above in Kuala Lumpur, representing approximately 77.4% of the population. A total of 670 responses were collected, exceeding the required sample size of 664 to achieve a 99% confidence level. The questionnaire was distributed through high-traffic shopping centres, social media, and other communication channels, utilising a QR code and web link for accessibility.

Data preparation involved logging, verifying accuracy, and coding the data for analysis, which was conducted using SPSS. The analysis included frequency distribution, normality tests, and various statistical techniques such as Pearson correlation and regression analysis to examine the relationships between variables. Ethical considerations were adhered to, ensuring voluntary participation, informed consent, and the integrity of the survey data. This methodology provided a rigorous framework for exploring consumer behavior in relation to CE practices.

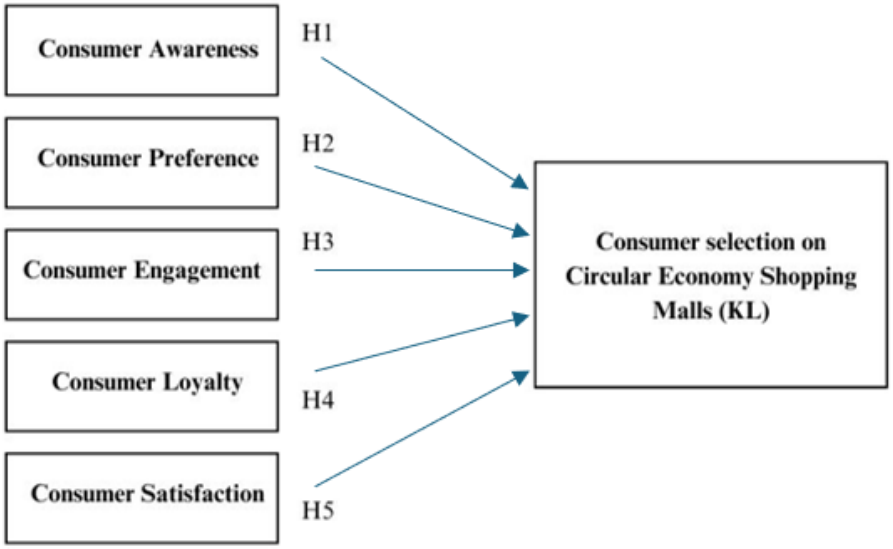


Fig. 1: Research Framework of the Study.

4. Results

The normality test in this study assessed the skewness and kurtosis values of all research variables (dependent and independent) using both visual and statistical methods. Descriptive statistics revealed that the skewness and kurtosis for all variables, including DV (skewness: 0.288, kurtosis: 0.253), Consumer Awareness (IV1: skewness: -0.116, kurtosis: -0.174), Consumer Preference (IV2: skewness: -0.145, kurtosis: -0.322), Consumer Engagement (IV3: skewness: -0.047, kurtosis: -0.482), Consumer Loyalty (IV4: skewness: 0.45, kurtosis: -0.535), and Consumer Satisfaction (IV5: skewness: 0.176, kurtosis: -0.429), fell within the acceptable range of +1 to -1, as recommended by Hair et al. (2015). This indicates a relatively normal distribution of the variables.

4.1. Reliability test

Ensuring robust reliability is a key aspect of research quality, with Cronbach's alpha values ranging from 0.762 to 0.828, all exceeding the acceptable threshold of 0.700 and demonstrating good reliability. The initial target was to collect 664 responses to achieve a 99% confidence level with a 5.7% margin of error. Following data cleaning, the sample size slightly decreased to 614. Normality tests were performed to evaluate the data distribution, and outliers were identified and removed to ensure the data adhered to the assumptions required for statistical analyses. Despite this reduction, the adjusted sample size maintained the desired confidence level and margin of error, thereby supporting a robust and reliable analysis.

Table 1: Reliability Test

Variables	Cronbach's Alpha	No. of Items
Consumer Awareness	.762	6
Consumer Preference	.807	6
Consumer Engagement	.828	6
Consumer Loyalty	.811	6
Consumer Satisfaction	.799	6

4.2. Normality test

The study assessed the normality of the error terms and all research variables to determine whether they conformed to a normal distribution. Both visual (Q-Q plot) and statistical methods were employed. Descriptive statistics, including skewness and kurtosis, were used to evaluate the shape of the data distribution. As suggested by Hair et al. (2015), skewness and kurtosis values should ideally range between +1 and -1 to indicate normality. Table 2 demonstrates that the skewness and kurtosis values for the dependent variable and independent variables were within this range, suggesting a relatively normal distribution. For instance, DV had a skewness of 0.288 and a kurtosis of 0.253, while consumer awareness had a skewness of -0.116 and a kurtosis of -0.174. Other variables, including consumer preference, engagement, loyalty, and satisfaction, also exhibited skewness and kurtosis within acceptable limits, confirming normality across all variables.

Table 2: Normality Test

Descriptive Statistics									
	N	Mini	Maxi	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic					Statistic	Std. Error	Statistic	Std. Error
DV	614	1.00	3.25	1.8974	.44914	.288	.099	.253	.197
Awareness	614	1.67	4.83	3.2305	.65815	-.116	.099	-.174	.197
Preference	614	2.33	5.00	3.9145	.60357	-.145	.099	-.322	.197
Engagement	614	2.00	5.00	3.5901	.69556	-.047	.099	-.482	.197
Loyalty	614	2.67	5.00	3.8618	.61295	.045	.099	-.535	.197
Satisfaction	614	2.67	5.00	3.8529	.55923	.176	.099	-.429	.197
Valid N (list-wise)	614								

The Pearson correlation analysis measures the strength of the relationship between two variables on an interval scale (Sekaran & Bougie, 2016). The correlation coefficient ranges from -1.0 to +1.0, where -1.0 signifies a perfect negative relationship, +1.0 indicates a perfect positive relationship, and 0.00 suggests no relationship between the dependent and independent variables.
The Pearson correlation coefficients between the dependent variable, 'Selection of CE shopping malls,' and the independent variables are presented. Consumer awareness shows a strong positive correlation (0.548**), consumer preference demonstrates a moderate positive correlation (0.334**), consumer engagement reflects a low positive correlation (0.293**), consumer loyalty shows a moderate positive correlation (0.394**), and consumer satisfaction also demonstrates a moderate positive correlation (0.363**).

Table 3: Pearson Correlation Test

Correlations							
		Dependent Variable	IV1	IV2	IV3	IV4	IV5
DV	Pearson Correlation	1	.548**	.334**	.293**	.394**	.363**
	Sig. (2-tailed)		<.001	<.001	<.001	<.001	<.001
	N	614	614	614	614	614	614
IV1	Pearson Correlation	.548**	1	.292**	.445**	.412**	.400**
	Sig. (2-tailed)	<.001		<.001	<.001	<.001	<.001
	N	614	614	614	614	614	614
IV2	Pearson Correlation	.334**	.292**	1	.758**	.699**	.688**
	Sig. (2-tailed)	<.001	<.001		<.001	<.001	<.001
	N	614	614	614	614	614	614
IV3	Pearson Correlation	.293**	.445**	.758**	1	.764**	.729**
	Sig. (2-tailed)	<.001	<.001	<.001		<.001	<.001
	N	614	614	614	614	614	614
IV4	Pearson Correlation	.394**	.412**	.699**	.764**	1	.802**
	Sig. (2-tailed)	<.001	<.001	<.001	<.001		<.001
	N	614	614	614	614	614	614
IV5	Pearson Correlation	.363**	.400**	.688**	.729**	.802**	1
	Sig. (2-tailed)	<.001	<.001	<.001	<.001	<.001	
	N	614	614	614	614	614	614

**. Correlation is significant at the 0.01 level (2-tailed).

4.4. Multiple regression test

This study utilises multiple regression analysis to test the predictive power of the research model. The results, as shown in Table 4, reveal that five predictors (IVs) together explain a significant portion of the variance in consumer selection behaviour, with an R-squared value of 0.371. The finding suggests that 37.1% of the variability in consumer selection is explained by the independent variables. The adjusted R-squared, accounting for the number of predictors, is 0.366, demonstrating a good model fit.

Table 4: Multiple Linear Regression Test

Model Summary				
Model	R	R Square	Adjusted R-Square	Std. Error of the Estimate
1	.609[a]	.371	.366	.50565
a. Predictors: (Constant), Awareness, Preference, Engagement, Loyalty, Satisfaction				
b. Dependent Variable: Consumer selection in Circular Economy shopping malls				

Table 5: ANOVA

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	91.819	5	18.364	71.824	<.001[b]
	Residual	155.452	608	.256		
	Total	247.270	613			
a. Dependent Variable: Consumer selection in Circular Economy shopping malls						
b. Predictors: (Constant), Satisfaction, Awareness, Preference, Engagement, Loyalty						

The ANOVA results presented in Table 5 confirm a significant overall model fit. The sum of squares, 91.819, represents the total variability in the dependent variable, 'Consumer Selection in Circular Economy Shopping Malls,' explained by the independent variables. The F-statistic of 71.824 indicates a strong relationship between the predictors and the dependent variable, demonstrating that the model is statistically significant. Furthermore, the p-value of less than 0.001 reinforces the significance of the model, suggesting that the observed results are highly unlikely to be due to chance.

4.6. Hypothesis result

Table 6: Hypothesis Testing

Developed Hypotheses	Significance	Association/ Degree of association	Impact	Developed hypothesis
(H1) There is a significant relationship between consumer awareness of CE practices in shopping malls in Malaysia and the selection of shopping malls in KL	P <.001 β = 0.548	Positive / Strong	Positive impact	Accepted
(H2) There is a significant relationship between consumer preferences for CE practices in shopping malls in Kuala Lumpur and the selection of shopping malls in KL	P < .001 β = 0.334	Positive/ Moderate	Positive impact	Accepted
(H3) There is a significant relationship between consumer engagement of CE practices in shopping malls in Malaysia and the selection of shopping malls in KL	P <.001 β = 0.293	Positive / Weak	Positive impact	Accepted

(H4) There is a significant relationship between consumer loyalty of CE practices in shopping malls in Malaysia and the selection of shopping malls in KL	P <.001 β = 0.394	Positive / Moderate	Positive impact	Accepted
(H5) There is a significant relationship between consumer satisfaction with CE practices in shopping malls in Malaysia and the selection of shopping malls in KL	P <.001 β = 0.363	Positive / Moderate	Positive impact	Accepted

5. Discussion

Consumer behavior is increasingly influenced by heightened awareness of sustainability and circular economy (CE) principles. As consumers place greater emphasis on environmentally responsible practices, the factors shaping retail selection decisions—particularly in shopping malls—have gained scholarly attention. With regards hypothesis 1 (H1), consumer awareness has the greatest impact (β = 0.55) on the selection of shopping malls in KL. The result is consistent with Almulhim and Abubakar's (2021) report that awareness of CE practices is generally important in making purchasing decisions. In addition, Daou et al. (202) identified media as an effective mechanism for promoting consumer awareness on CE practices, while social media has become a key channel for communicating sustainability-related information. Similarly, Liu et al. (2023) observe that shopping malls, such as Pavilion Kuala Lumpur, employ digital signage to promote eco-friendly brands. These communication tools can help address the awareness gap identified in this study by increasing consumer exposure and awareness to sustainability initiatives and supporting more informed purchasing decisions.

Hypothesis 2 (H2), which proposed a direct relationship between consumer preference for CE practice and shopping mall selection, was also supported. Consumer preference for CE practice has only a moderate impact (β = 0.33) on their choice of shopping malls. Consistent with this study, Bagui and Arellano (2021) and Rilfi and Kanchana (2021) highlight that the consumer preferred to see the availability of sustainable products, effective waste management, and eco-friendly packaging that influence their choices for shopping malls. However, these factors are not the dominant factor for many consumers when selecting shopping venues. Kulkarni and Khan (2023) asserted that convenience remains a dominant consideration in urban retail environments. Indeed, proximity to public transportation, accessibility, and range of amenities heavily influence consumers' decisions. On the other hand, Idoko and Nkamnebe (2017) found that many consumers continue to gravitate toward traditional malls that offer lower prices and discounts, often overshadowing the allure of sustainable options. Yet, the findings in this study show that a shift toward sustainable preferences and behaviour is evident.

Hypothesis 3 (H3) was also validated, confirming a significant positive relationship between consumer engagement of CE practices in selecting shopping malls. Yet, the impact was weaker (β = 0.29) compared to other predictors. Kim et al. (2021 stated that educational initiatives on sustainability did extend the consumer engagement during shopping mall selection, where some consumers seek out opportunities to participate in sustainable practices during their purchase in the shopping mall. Similarly, Mohammad et al. (2021) highlighted the trend toward second-hand shopping and the rise of thrift stores, the emergence of zero-waste stores in KL East Mall's Ecology @ East Recycling Centre (Sunway, 2018; KL East Mall, 2023), which reflects a growing consumer engagement with more environmentally responsible shopping practices.

The study also supported Hypotheses 4 (H4) and Hypotheses 5 (H5), confirming a moderate impact of loyalty (β = 0.394) and customer satisfaction (β = 0.364) on consumer selection of shopping malls. As stated by Kumar et al. (2021), loyalty toward CE practices suggests that consumers who consistently support sustainability initiatives are more inclined to choose malls that align with their environmental values. Although the effect size is moderate, this result highlights that commitment to CE principles contributes meaningfully to mall choice decisions, rather than serving as a marginal or symbolic factor.

Similarly, customer satisfaction demonstrates a moderate positive effect on mall selection, indicating that favourable shopping experiences increase the likelihood of consumers preferring a particular mall. Alavi et al. (2016) found that satisfied customers are more likely to revisit and recommend malls that meet their expectations in terms of services, facilities, and overall experience. The moderate magnitude of this relationship suggests that while satisfaction is important, it operates alongside other influencing factors such as awareness, preferences, and engagement in shaping mall selection decisions. Overall, these findings imply that sustainability-oriented loyalty and customer satisfaction jointly support mall attractiveness (Tan, 2015), though neither acts as a sole determinant of consumer choice.

5.1. Implications of the study

This study applies two key frameworks: the Theory of Planned Behaviour (TPB) (Ajzen, 2011), which emphasises the importance of consumer attitudes, social norms, and perceived behavioural control. For effective CE strategies, businesses should focus on promoting environmental benefits (attitudes), encouraging consumer responsibility (social norms), and making participation easy through education and accessible options (behavioural control). The diffusion of innovations theory (Rogers et al., 2014) helps analyse how CE practices spread in Kuala Lumpur's retail sector. It highlights five factors: relative advantage, compatibility, complexity, trialability, and observability. By addressing these, mall operators and policymakers can remove barriers and make CE practices more appealing. Understanding how different consumer groups adopt innovations also allows for more targeted communication and strategies to engage early adopters (Bag et al., 2022).

6. Conclusion and Recommendation

As sustainability becomes a central focus in modern retail, understanding the complexities of consumer behaviour towards CE practices is more crucial than ever. This study highlights several promising avenues for future research. Expanding the sample to include older demographics and using diverse data collection methods, like in-person interviews, will enhance the generalisability of the findings. Moreover, addressing the gap in consumer awareness calls for further exploration of the impact of educational initiatives, such as workshops or digital campaigns, to boost engagement with CE practices. Future studies should also consider external influences, including cultural norms, socioeconomic factors, and government policies, to offer a more comprehensive view of sustainable consumer behaviour. These broader insights can guide both policymakers and businesses in shaping effective strategies for fostering sustainability within retail.

In conclusion, although the research provides valuable insights into consumer behaviour and CE practices in Kuala Lumpur's shopping malls, future studies should address these gaps to further promote the development of sustainable retail environments.

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