Circular Economy Engagement: Unveiling Consumer Perspectives in Qatar

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Abstract

*The circular economy (CE) necessitates a shift in consumer behavior, prompting a reassessment of traditional consumption patterns. This research delves into the consumer perspective, examining perceptions and pro-environmental behaviors to analyze various aspects of circularity through participatory research with individual consumers in Qatar. Logistic regression estimates from survey data highlight the positive impact of education and awareness on consumer engagement in the circular economy. Many consumers actively participate in circular economy practices like choosing eco-friendly products, self-repair, energy conservation, reuse, repurposing, and resource sharing. However, adopting public transport to reduce carbon emissions and purchasing second-hand products remains limited. Durability, environmental concerns, and price are equally crucial in purchasing decisions. Participants note the lack of repair services as the main reason for replacement, alongside high repair costs and a preference for new items due to affordability. Consumers prioritize eco-friendly products based on quality and price satisfaction. Religious motivation is significant in driving engagement in the circular economy, followed by ethical and financial incentives. Survey respondents show willingness to pay for environmentally friendly and reusable products, indicating responsiveness to monetary incentives. Educating and involving consumers in the benefits of circular practices can propel Qatar towards a sustainable and resource-efficient future, with recommendations focusing on addressing consumer concerns to enhance their participation in the circular economy.*

1. **Introduction**

Human-induced climate change and biodiversity loss pose significant threats to the well-being of current and future generations. This has led to a global shift towards prioritizing sustainable development, driven by increasing environmental, economic, and social concerns. Sustainability focuses on conserving resources and promoting sustainable consumption and production practices by reshaping societal norms and behaviors. The CE, introduced in recent decades, is an ecological-economic model that emphasizes maximizing the recycling and utilization of products while recovering resources. The Ellen MacArthur Foundation defines the CE as a system where materials are continuously reused, regenerated, and kept in circulation through maintenance, reuse, refurbishment, remanufacture, recycling, and composting.[[4]](#footnote-4)

The CE minimizes resource demand, extends resource life, and maximizes waste value. It offers business models for value capture in the supply chain, preparing companies for a resource-constrained future. CE focuses on preserving functions, products, materials, and embodied resources, contrasting the linear take-make-waste model (Lacy and Rutqvist, 2015).

Qatar has shown significant strides in sustainability with sustainability city projects, hosting a carbon-neutral FIFA 2022 and implementing 36 climate change adaptation measures. However, the CE concept is still emerging in Qatar and is often linked with broader sustainability efforts. There is a call for a deeper understanding of CE beyond waste management. CE offers transformative business strategies by reshaping material distribution and enhancing productivity (Ellen MacArthur Foundation,2015). Integrating CE principles into Qatar's sustainable growth strategy, especially in economic diversification, holds substantial potential for the country's development.

Qatar can advance its sustainability efforts by adopting CE practices for a more efficient and resource-conscious future. Earthna, a nonprofit research center affiliated with the Qatar Foundation, has released insightful reports on the CE in Qatar. Based on expert and stakeholder input, these reports stress the need for a shift towards circular practices and advocate for a comprehensive strategy to support this transition. Earthna's research suggests that implementing circular principles and targeted policies can lead to significant savings across various sectors. The reports highlight consumer awareness as a key driver for promoting CE in Qatar and recommend behavior change campaigns to encourage resource reuse.

Understanding consumer needs, preferences, and behavior can lead to more impactful and successful policies promoting circular practices. Consumer engagement is vital for rapidly adopting CE business models ( Lacy et al.,2020). Consumers are crucial drivers of change in the CE, impacting product demand, maintenance, reduction, and reuse. Consumers contribute to the CE by sharing resources, recycling, and responsible waste disposal. This sustainable consumption aligns with ethical values, promoting environmental awareness. Tailoring policies to consumer needs and behaviors can enhance the effectiveness of circular practices. The study underhand is conducted from this perspective.

This study delves into the link between consumer awareness, education, and CE participation. It examines consumer perceptions of environmental care based on religious values, purchase decisions, pro-environmental motivation, willingness to pay, and sustainable consumption practices within CE elements like recycling, repair, and green labels. Primary data is gathered through a survey to capture diverse community perspectives on consumer behavior and engagement in the CE. The study uncovers how Islamic teachings, emphasizing resource optimization, sharing, and moderation, align with CE principles in Qatar's society. By considering socio-economic, religious, and cultural dimensions, the research aims to promote circular practices among consumers.

The findings highlight the significant role of awareness and education in fostering consumer participation in CE. The research outcomes offer insights for practitioners to address obstacles to consumer involvement in circular practices and support awareness campaigns aligned with Qatar National Vision 2030, national climate action plans, and global Sustainable Development Goals (SDGs). The paper is structured as follows. Section two provides a relevant literature review. Section three outlines the research methodology and data collection procedures. Section four focuses on the results and subsequent discussion. Finally, in section five, the paper concludes and provides policy recommendations.

1. **Literature Review**

The literature review highlights a scarcity of research on the demand side of the Circular Economy (CE) compared to the supply side(Elzinga et al., 2020). Existing literature lacks firsthand data on consumer participation in CE, their concerns about circular businesses, barriers to engagement, and everyday CE practices. Studies often combine consumer perception and engagement with broader sustainability concepts, making it challenging to isolate the consumer's role in CE (Kolling et al., 2023; Lakatos et al., 2016; Ahmad et al., 2023). The review focuses on empirical research articles related to consumer perspectives and CE, covering consumer behavior in recycling, consumer involvement in remanufacturing, repair businesses, the sharing economy, and the impact of information and awareness. Relevant and recent papers in these areas are discussed, emphasizing studies based on consumer survey data.

The sources highlight the transformative nature of the CE, emphasizing the need for new business models, product redesign, and shifts in consumer behavior (Ellen MacArthur Foundation, 2014). Recent research has focused on the relationship between the CE and consumers, underlining the importance of customer purchase intentions and behavior in implementing CE models (Vidal-Ayuso et al., 2023; Mostaghel & Chirumalla, 2021) (Piscicelli, L., & Ludden, G. 2016). Industries recognize consumers as key influencers in adopting circular practices, shaping decision-making toward sustainability (Piscicelli, L., & Ludden, G. 2016). Encouraging everyday circular behaviors like resource efficiency, second-hand purchases, and waste reduction is crucial. Consumer engagement in the CE extends beyond recycling and shopping to encompass daily and social circular practices, promoting a holistic approach to sustainability (Hobs,2020).

Recycling is a vital component of the CE, where materials are transformed back into valuable economic resources. It involves breaking down materials into basic components for reuse in production processes (Lacy and Rutqvist, 2015). Consumers play a critical role in recycling practices, with their knowledge impacting recycling efficiency. Lack of information among the public can lead to lower recycling rates (Liu et al.,2022; Sarath et al.,2015). De Aguiar Hugo et al. ( 2023) find that consumers do not consider recycled clothing a shopping priority. Guo & Huang's (2023) findings on Electric Vehicle (EV) battery recycling highlight the influence of government policies and environmental attitudes on consumers' recycling intentions. The perceived benefits have a significant positive mediating effect, while perceived losses have a negative impact. The variables age, income, education, area of residence, recycling experience, and ownership of EV have significant moderating effects.

Remanufacturing is restoring products into new products, and it involves disassembly, refurbishing, and reassembly. Wang & Hazen (2016) explored the effect of different knowledge attributes about remanufactured products on perceived value and risk and the impact of these perceptions on consumer purchase intentions. Their findings show that Consumers' perceptions of remanufactured products are influenced mainly by quality knowledge, compared to green and cost knowledge. The perceived value of remanufactured products positively influences consumers' purchase intention, while perceived risk negatively influences purchase decisions.

Consumers play a significant role in the Circular Economy (CE) through repair activities, which extend the life of products. Repair involves fixing product faults to restore functionality rather than discarding them. Consumer repair engagement encompasses self-repair and professional repair services, requiring knowledge, time, energy, expertise, and resources. The benefits of repair, such as value preservation and waste reduction, often outweigh those of replacement. Barriers to consumer involvement in repair include limited access to spare parts, subpar product design, material quality issues, lack of expertise, unavailable repair services, and time constraints (Cooper and Salvia, 2018).

Terzioğlu (2021) introduced a repair motivation and barrier model integrating various individual factors influencing user product repair behavior. Their research identified key barriers to user engagement in repair, including lack of repair knowledge and access to necessary materials, product design and quality issues, negative perceptions of repair, and risk of irreversibility. Factors like time, effort, endurance, financial considerations, and aesthetic value can act as barriers and motivations. On the other hand, pleasure from repair, environmental concerns, functional value, and emotional attachment to the product serve as motivators for repair. These factors are interconnected within a comprehensive model, emphasizing the complexity of user behavior in product repair.

Russell et al. (2023) explore the temporal dimensions of repair, emphasizing the sequential nature of the repair process and the critical role of time. They highlight how care for the product, attitude, skills, and experience influence repair decisions. The timing between product acquisition and damage can indicate its perceived obsolescence, impacting repair initiation. Similarly, the time between damage and repair is influenced by the product's importance to the user, financial considerations, and available facilities. These temporal considerations are key determinants of repair occurrences, particularly significant in today's fast-paced world with time constraints and financial considerations, especially in countries with high per capita income like Qatar.

Building on Russell et al.'s analysis (2023), the importance of time and information access in repair processes in Qatar is emphasized. Limited access to repair information, services, expertise, and spare parts for items like clothing articles, vegetable choppers, and toasters can hinder repair efforts, even when individuals are willing to engage in repair activities. Challenges in repair services are evident, such as the difficulty in finding small replacement parts, leading to the potential discarding of items like pressure cookers. Korsunova et al. (2023) further explore repair experiences and the inclination to repair, highlighting the significant role of past experiences in shaping repair behavior among Finnish consumers. Negative repair experiences, such as spare parts unavailability, can deter individuals from engaging in repair activities.

The sharing principle within the CE promotes resource, service, and product sharing to enhance utility, extend lifespan, and reduce waste. It optimizes resources, fosters collaborative consumption, and builds community connections. Technology, particularly digitalization, plays a crucial role in enabling resource sharing. Consumers actively participate in the sharing platform of the CE, which involves accessing services without ownership. Frenken & Schor (2017) define the sharing economy as a system where consumers provide temporary access to underutilized physical assets, often for a fee, promoting efficient use of resources.

The sharing economy strongly emphasizes user perspectives, with extensive research focusing on user motivations. Studies highlight perceived benefits such as cost savings, ecological sustainability, and trust in other users (Mont et al., 2020). Stofberg et al. (2021) suggest that users in the sharing economy seek both utilitarian and relational value, emphasizing the importance of belonging to a community and engaging in transactions based on balanced reciprocity. This communal outlook influences behavior within the sharing economy, fostering community and participant equality (Qureshi et al., 2021).

Lieder et al. (2018) found that consumers strongly prefer using products as a service rather than owning them, with service-related attributes having a more significant impact on consumer utility than price, payment scheme, and environmental friendliness. Additionally, in certain situations, the perceived economic benefits outweigh environmental concerns for consumers engaged in sharing, as highlighted by Khan & Rundle‐Thiele (2019).

Another aspect of consumer engagement in CE is eco-labeling and consumer behavior. Boyer et al. (2021) studied consumer willingness to pay for products with varying levels of circularity based on a circularity score. They found that consumer's willingness to pay increases at a low level of circular content but decreases as the proportion of circulated content increases in some cases. The research suggests that consumers may perceive a trade-off between high circularity and product quality.

Hiller & Woodall (2019) and Hosta & Zabkar (2021) highlight the impact of information on behavioral change in the context of the CE. Shaw et al. (2016) found that while environmental awareness can alter attitudes, it may not significantly influence behavior. In contrast, Di Iorio et al. (2023) emphasized the role of sustainability information in stimulating consumer participation in CE. Ratner et al. (2021) identified a lack of information as a key barrier to adopting pro-environmental behavior in Russia, emphasizing the importance of knowledge in promoting sustainable consumption.

The studies reviewed above show the importance of awareness and education in adopting sustainable behavior and engaging in CE. However, awareness and actual participation in CE have not been assessed. We intend to fill the gap in the literature by exploring the role of awareness, education, and consumer participation in CE using participatory data from individual consumers, which has not been studied. Considering the religious and cultural aspects, we explore consumer perceptions, habits, and willingness to pay among the residents and Qatari citizens.

1. **Methodology**

3.1 Regression model

The study investigates consumer involvement in the CE transition in Qatar, focusing on awareness, education, and consumer participation. It utilizes a logistic model to analyze how awareness and education influence consumer engagement in the CE. The research aligns with previous studies that have employed logistic models in consumer perception research, such as Büyükkaragöz et al. (2014), Zhang et al. (2021), Hinojo et al. (2022), and Lu et al. (2023). The binary logistic regression model is used to predict the likelihood of consumer participation in the CE based on awareness and education levels.

Following (Mendako et al., 2022), we specify the binary logistic regression model to estimate participation as:

In the above equation, is the probability of the outcome, is the intercept term, and are the co-efficient associated with each explanatory variable , …. . The result of logistic regression is commonly interpreted as odd ratios. The odd ratios are the exponential of logistic coefficients. For exponent of greater than one is interpreted as the odd of the outcome occurring are "exp ( times larger", and for the exponent of less than one is interpreted as the odd is "exp ( times smaller". The odd ratio is computed by changing one variable and holding another variable constant (Long and Freese, 2014).

The remainder of the survey results are presented through descriptive statistics, including frequency distribution tables and cross-tabulations.

3.2 Variable Description:

We examine the relationship between the binary dependent variable, consumer participation in CE, and explanatory variables, awareness about CE (binary), awareness about the role of consumers (binary), and level of education (categorical). The following variables are used in the binary logistic regression analysis.

Consumers participate in CE; 1: Consumers participate in CE activities; otherwise, 0.

Awareness about CE, 1: Consumers possess knowledge of CE; otherwise, 0.

Awareness about the role of consumers in CE: 1: Consumers are aware of their role in CE; otherwise, 0.

Education, Secondary School=0, Bachelors=1, Master=2, PhD=3

The responses were assigned a value of 0 from the base category, to which the other categories were compared. The dependent variable participation is derived from the consumers' responses after they are introduced to CE and are asked if they think they are currently participating in CE.

3.3 Questionnaire development

The questionnaire is structured into three sections: Perception, habits, and willingness to pay, with varying distribution throughout the survey. Following the framework by Colasante & D'Adamo (2021), the questionnaire begins by assessing consumer awareness and perception of the CE, including aspects like religious considerations, networking, and resource usage. The second part focuses on pro-environmental behavior and circularity components, while the third part introduces CE concepts and explores barriers to participation, responses to incentives, motivation, current participation status, and demographic information.

The study comprehensively evaluated consumer engagement in building the CE (CE) in Qatar. Data collection took place online and offline from May to July 2023, utilizing SurveyMonkey with 402 randomly selected respondents from residents and citizens. An equal number of respondents from expatriates and Qataris were included to ensure a balanced perspective. Anonymity and confidentiality were maintained during data collection, with a bilingual questionnaire in English and Arabic to prevent contextual errors. A pilot test was conducted before the survey distribution, leading to questionnaire adjustments based on feedback from the research team.

1. **Results and discussion**

The study utilized a logistic model to quantitatively analyze the impact of awareness and education on CE participation. Descriptive statistics were employed to offer insights into consumers' perspectives based on the collected data. The results are divided into two sections: Section 4.1 presents the regression outcomes, while Section 4.2 provides a descriptive overview of respondents' perspectives on CE.

4.1 Demographic Characteristics

The study includes a diverse sample of respondents from various nationalities, ensuring equal representation of both Qatari and non-Qatari individuals. Half of the participants are Qatari, while the other half comprises 29 nationalities (Table 1). Expatriates respondents represent 29 nationalities, with the highest percentage from Egypt (9.20), Pakistan (8.21), and India (5.22), enabling an exploration of cultural values and social norms' influence on consumer engagement in the CE.

Table 1: Nationalities of Survey participants

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Nationality | Frequency | Percentage | Nationality | Frequency | Percentage |
| Qatar | 202 | 50.25 | Syria | 3 | 0.75 |
| Egypt | 37 | 9.20 | Turkey | 3 | 0.75 |
| Pakistan | 33 | 8.21 | Canada | 2 | 0.50 |
| India | 21 | 5.22 | Malaysia | 2 | 0.50 |
| Jordan | 17 | 4.23 | Iran | 2 | 0.50 |
| Palestine | 14 | 3.48 | Sri Lanka | 2 | 0.50 |
| USA | 14 | 3.48 | UAE | 2 | 0.50 |
| Nigeria | 13 | 3.23 | Azerbaijan | 1 | 0.25 |
| EU | 6 | 1.49 | Bangladesh | 1 | 0.25 |
| Tunisia | 5 | 1.24 | Ghana | 1 | 0.25 |
| British | 4 | 1.00 | Iraq | 1 | 0.25 |
| Algeria | 3 | 0.75 | Oman | 1 | 0.25 |
| Philippines | 3 | 0.75 | Russia | 1 | 0.25 |
| Afghanistan | 3 | 0.75 | Tajikistan | 1 | 0.25 |
| Sudan | 3 | 0.75 | Yemen | 1 | 0.25 |

Table 2 displays the demographic characteristics of the respondents. The survey achieved a reasonable gender balance, with 44% male and 56% female participants. Regarding education, 56% hold bachelor's degrees, 35.5% have master's degrees, 4.48% possess Ph.D. degrees, and 3.98% completed secondary school. Regarding age distribution, approximately 46% of respondents are aged 31-40, 35% fall within 21-30 years, and 15% are in the 41-50 age range.

Regarding monthly income distribution among the respondents, approximately 32% chose not to disclose their income. Among those who did disclose, 9% fall into the lowest income bracket (less than QAR 5,000), while around 16% earn between QAR 20,000 and QAR 25,000. Additionally, about 11% of the respondents earn between 15,000 and 20,000 QAR, and 10% are in the income range of 30,000 and above.

In terms of employment distribution among the respondents, approximately 29% work in the education and research sector, while around 30% are in the engineering or information technology fields. About 15% are employed in the health sector, and 13% are business owners. The survey also includes students not currently working (7.71%) and individuals engaged in other occupations (5.72%).

Table 2: Profile of respondents

|  |  |  |  |
| --- | --- | --- | --- |
| Characteristics N=402 | Percentage |  | Percentage |
| **Gender** |  | **Income** |  |
| 1. Male | 44.03 | 1. Less than QAR 5000 | 9.20 |
| 1. Female | 55.97 | 1. QAR 5000 to QAR 10,000 | 5.72 |
|  |  | 1. QAR 10,000 to QAR 15,000 | 8.46 |
| **Education** |  | 1. QAR 15000 to QAR 20,000 | 11.19 |
| 1. Secondary School | 3.98 | 1. QAR 20,000 to QAR 25,000 | 16.42 |
| 1. Bachelors | 55.97 | 1. QAR 25,000 to QAR 30,000 | 7.21 |
| 1. Master | 35.57 | 1. Above QAR 30,000 | 9.95 |
| 1. PhD | 4.48 | 1. Prefer not to mention | 31.84 |
| **Age** |  | **Employment** |  |
| 1. Less than 20 | 2.74 | 1. Education/ Research | 28.61 |
| 1. 20 years to 30 years | 34.58 | 1. Health Science professional | 15.17 |
| 1. 31 years to 40 years | 46.27 | 1. Engineering/IT | 29.60 |
| 1. 41 years to 50 years | 14.68 | 1. Business owner/ partner | 13.18 |
| 1. 51 years to 60 years | 0.75 | 1. Student (not working) | 7.71 |
| 1. Above 60 years | 1.0 | 1. Other job | 5.72 |

4.2 Regression Results

In this sub-section, we present the regression estimates to see the effect of awareness and education on consumers' participation in CE. Table 3 describes the descriptive statistics of the dependent and explanatory variables included in the regression.

Table 3: regression variables: descriptive statistics

|  |  |  |
| --- | --- | --- |
| Characteristics N=402 | Frequency | Percentage |
| Participation | | |
| Yes | 304 | 75.63 |
| No | 98 | 24.38 |
| Knowledge of CE | | |
| Yes | 166 | 41.29 |
| No | 236 | 58.71 |
| Familiarity with consumer role | | |
| Yes | 378 | 94.03 |
| No | 24 | 5.97 |

The variable "knowledge of CE" assesses respondents' awareness of the CE before its introduction in the questionnaire. "Familiarity with consumer role" is a binary response indicating whether consumers believe they can contribute to environmental protection through eco-friendly behaviors in Qatar. Table 3 reveals that approximately 59% of respondents lack knowledge of CE, while 94% are aware of consumers' role in addressing environmental issues. Only around 24% of respondents actively participate in CE. The upcoming section will delve into reasons for low participation, barriers, and the frequency of engagement in CE activities. The variable "education" is detailed in Table 2.

Table 4. Logit model results: odd ratios

|  |  |  |  |
| --- | --- | --- | --- |
| Participation | Coef. | 95% LCI | 95% UCI |
| Edu |  |  |  |
| Bachelor | 3.711\*\*  (2.040) | 0.234 | 2.389 |
| Masters | 7.695\*\*\*  (4.472) | 0.902 | 3.180 |
| PhD | 5.878\*\*  (5.020) | 0.098 | 3.445 |
| Knowledge of CE | 2.485\*\*\*  (0.692) | 0.364 | 1.456 |
| Familiarity with consumer role | 6.064\*\*\*  (2.831) | 0.887 | 2.717 |
| \_cons | 0.097\*\*\*  (0.068) | -3.706 | -0.951 |

\* Signiﬁcant at 10%. \*\* Signiﬁcant at 5%. \*\*\* Signiﬁcant at 1%. LCI: lower conﬁdence interval. UCI: upper conﬁdence interval.

Table 4 in the study presents the binary logistic regression results, including odds ratios, standard errors, and 95% confidence intervals for each variable. The likelihood ratio test indicates the statistical significance of the regression model, with a Chi-Square statistic of 50. The model is considered a good fit as the p-value is less than 0.05. The Hosmer-Lemeshow test confirms the model's fitness, with a p-value of 0.8123, suggesting that the selected explanatory variables are significantly related to participation in the CE. Interpreting the odds ratios from Table 4 reveals a positive association between participation and the predictors. For consumers with a bachelor's degree, the odds of participating in CE are 3.7 times higher than those with a secondary school education. Similarly, individuals with a master's degree have odds 7.7 times higher, and Ph.D. holders have odds 5.8 times higher than those with secondary school education, indicating a strong likelihood of participation with higher education levels.

The odds of participation in the CE for consumers aware of CE are 2.48 times higher than those without knowledge of CE. Additionally, individuals familiar with the role of consumers in addressing environmental issues have odds of participation 6 times higher than those unaware. This indicates a higher likelihood of participation for consumers aware of their role. The logistic regression model demonstrates a significant positive impact of education and awareness on consumer participation in CE in Qatar.

4.3 Circular Economy from consumers' perspectives: Descriptive statistics

This section includes a descriptive overview of respondents' opinions, attitudes, and preferences.

4.3.1 Consumer Engagement in CE

Based on the information gathered from the respondents, we discuss consumer engagement in different CE activities. Table 5 presents the percentage of individual responses in each category.

Table 5: Consumer Engagement in the Circular Economy

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Never | Rarely | Sometimes | Often | Always | Other (please specify) |
| *Buying environmentally friendly products (labeled as green products)* | 1.99% | 13.43% | 50.25% | 26.12% | 7.96% | 0.25% |
| *Buying reusable goods* | 1.24% | 13.68% | 38.31% | 33.33% | 13.18% | 0.25% |
| *Using public transport to reduce emissions* | 38.31% | 25.87% | 22.89% | 9.70% | 3.23% | 0.0 |
| *Switch lights off while leaving your room/office* | 1.00% | 2.99% | 22.39% | 25.37% | 46.02% | 2.24% |
| *Buying second-hand items* | 41.54% | 22.39% | 26.87% | 5.97% | 3.23% | 0.0 |
|  | Repair | Throw away | Repurpose for other use | Donate | other | |
| *Attitude towards possessions no longer in use* | 1.99% | 13.43% | 29.35% | 54.48% | 0.75% | |
|  | yes | | | No | | |
| *Practiced self-repair at least once in life* | 77.11% | | | 22.89% | | |

From Table 5, approximately 50% of consumers sometimes shop for environmentally friendly products, while 26% often do so. A negligible percentage (0.25%) indicated they do not prioritize environmentally friendly labeling. The majority of respondents exhibit environmentally conscious shopping habits. Regarding reusable items, data reveals that around 38% sometimes buy, 33% often buy, and 13% always buy reusable items, with 14% never having purchased such items. Despite varying frequencies, there is a notable interest in shopping for reusable products.

Regarding public transportation in Qatar, approximately 38% of respondents never use it, and about 26% rarely do. The data suggests that car owners are hesitant to utilize public transport due to cultural factors, such as car ownership, which symbolize lifestyle and status. In Qatar's affluent society, owning multiple cars is common, contributing to reluctance to adopt pro-environmental behaviors like public transport. Additionally, the low walkability in Qatar, influenced by extreme weather conditions, further impacts transportation choices.

In a survey regarding energy conservation habits, 46% of respondents consistently turn off lights, 25% do so often, and 22% sometimes. Notably, in Qatar, where many households do not pay for electricity, this conscientious behavior of actively conserving energy, even without direct cost implications, is commendable.

In a study on consumer behavior towards surplus items, approximately 54% of respondents mentioned donating such items, aligning with the sharing principle of the CE and reflecting Islamic principles of charity. Donation plays a significant role in supporting marginalized communities and those in need, resonating with cultural values in Qatar. Qatar Charity's initiatives further highlight the importance of donation at a national and international level, showcasing community involvement in aiding global crises. Additionally, 29% of respondents engage in repurposing items, demonstrating adherence to the reuse principle of the CE.

In the study, approximately 77% of respondents reported practicing self-repair at least once, highlighting the importance of repair in the CE framework. The data indicates a departure from a throwaway culture, with only 23% of respondents admitting to discarding surplus items. When it comes to shopping from second-hand stores, around 42% of respondents have never engaged in this practice, likely due to the limited availability of second-hand markets in Qatar and cultural preferences. However, 22% rarely purchase second-hand items, while 27% do so occasionally.

The findings from Table 5 suggest active consumer engagement in eco-friendly practices like buying reusable products, energy conservation, repurposing items, and resource sharing. Nonetheless, participation in purchasing from second-hand stores and using public transport for emission reduction appears relatively low.

4.3.2 Consumer Perception, Attitude, and Purchase Decisions

Table 6 shows the percentage distribution of religious affiliation. It reveals that 94 percent are Muslims, 5 percent are non-Muslims, 0.50 percent do not believe in any religion.

Table 6: Percentage distribution of religious affiliation

|  |  |  |
| --- | --- | --- |
|  | Percentage | Frequency |
| Muslim | 94.28 | 379 |
| Non-Muslim | 5.22 | 21 |
| Non-believers | 0.50 | 2 |

Tables 7 and 8 in the study provide insights into the significance of religious, ethical, and cultural values in purchasing decisions. Table 7 indicates that for most respondents, religious values are moderately important (47%) or very important (27%) in their purchase choices. Similarly, about 42% find religious values moderately important in waste minimization, and 34% consider them very important. Islamic principles align with CE ideals, emphasizing cleanliness, waste reduction, environmental care, modest living, and resource sharing.

The survey also reveals that durability is moderately important for 55% of respondents, environmental factors for 52%, and price for 53% when purchasing. This suggests consumers value price alongside durability and environmental considerations, indicating that eco-friendly products should be competitively priced. Regarding repair services, 52% find the availability of repair services moderately important, while 25% consider it very important, highlighting the influence of their availability on consumer engagement in repair practices.

Table 7 Consumer perception, attitude, and purchase decisions

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Not important at all | Slightly important | Neutral | Moderately important | Very important |
| *Importance of religious teachings while making purchase decisions* | 1.74 | 11.94 | 11.94 | 47.01 | 27.36 |
| *Importance of religious teaching about minimizing waste.* | 1.49 | 13.68 | 9.20 | 41.79 | 33.83 |
| *Importance of religious teaching in caring for the environment* | 0.75 | 19.65 | 7.46 | 37.56 | 34.58 |
| *The importance of durability while making purchase decisions* | 0.00 | 6.22 | 11.69 | 54.98 | 27.11 |
| *The importance of environmental factors while making purchase decisions* | 0.25 | 14.93 | 13.93 | 51.99 | 18.91 |
| *The importance of price while making purchase decisions* | 0.00 | 11.19 | 7.71 | 52.99 | 28.11 |
| *importance of the availability of repair services in Qatar while buying good quality items* | 1.49 | 12.69 | 8.71 | 52.24 | 24.88 |

Respondents were surveyed on the feasibility of living a healthy and comfortable life in Qatar with fewer resources, reflecting everyday circularity. Approximately 49% agreed, 18% strongly agreed that such a lifestyle is achievable, and 23% expressed indifference. This indicates a willingness among consumers to embrace circular practices for resource conservation and sustainable living in Qatar. Moreover, respondents emphasized the significance of religious values in environmental care, purchase decisions, and waste minimization. Around 50% agreed, and 28% strongly agreed that environmental stewardship is a religious duty. Additionally, 53% agreed that religious values should guide purchase choices, with 25% strongly supporting this notion, as shown in Table 8.

Table 8 Consumer perception, attitude, and purchase decisions

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Strongly disagree. | Disagree | Undecided | Agree | Strongly agree. |
| *Possibility of living a healthy and comfortable life in Qatar on fewer resources* | 1.74 | 9.45 | 22.64 | 48.51 | 17.66 |
| *Caring for the environment is part of our religion* | 1.24 | 2.74 | 18.16 | 50.25 | 27.61 |
| *We should practice religious values when buying and consuming daily-use products* | 1.49 | 3.48 | 16.67 | 53.48 | 24.88 |

Table 9 presents insights on recycling and environmental labeling preferences among respondents. Approximately 87% of respondents favor recycling daily used items, while 12% do not. Open responses highlight considerations like resource efficiency and recycling service availability, noting the absence of a strong recycling culture in Qatar compared to countries like Japan. In terms of eco-labeling, around 35% of respondents express interest in purchasing eco-labeled products. However, 47% prioritize price, quality, and variety over eco-labeling. Only 18% show indifference towards eco-labeling. An open response indicates a preference for eco-labeled products after ensuring satisfaction with price and quality.

Table 9: Percentage distribution of responses to recycling and environmental labeling

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Yes | | No | Other |
| Daily used items should be recycled | 87.06 | | 12.19 | 0.75 |
|  | Prefer to buy | , look for other factors, too. | don't care about environmental labels while shopping | Other |
| *Attitude toward environmental labeling* | 35.32 | 46.77 | **17.66** | 0.25 |

4.3.3 Barriers to participation in CE.

The consumption of environmentally friendly products supports CE strategies. Among participants, approximately 31% identified higher prices as the main deterrent for not purchasing eco-friendly items, while 32% mentioned a lack of variety. In comparison, 26% cited unavailability, and 7% noted insufficient information about repair services as key reasons. Table 7 displays open responses from 10 participants, highlighting concerns such as unclear labeling, indifference towards eco-labeling, and encountering multiple obstacles to eco-friendly shopping. These responses underscore the significance of local perspectives in understanding consumer behavior towards eco-friendly products.

Table 10 highlights that high prices, limited variety, and unavailability are key factors deterring consumers from eco-friendly shopping. Addressing these issues can meet the demand for environmentally friendly products, as indicated in Table 4. Consumers' preference for replacement over repair is influenced by factors like unavailability of repair services (52%), high repair costs (18%), and affordability (15%), as shown in Table 10. Open responses in Table 7 further emphasize challenges related to repair services, high costs, and irreparable items, leading some consumers to seek repairs outside Qatar. Previously, Table 5 indicates that 77% of consumers have engaged in self-repair at least once, suggesting a reliance on professional repair services in Qatar. Factors like material unavailability, lack of expertise, and time constraints may hinder self-repair efforts, contributing to a culture of replacement over repair and discouraging sustainable practices.

Table 10: Barriers to participation in CE based on consumers' responses.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | |  | Percentage | | Frequency | |
| 1 | *What is the main reason you do not shop for environmentally friendly products in Qatar?* | | | | | |
|  | Lack of information | | | 7.46% | | 30 |
|  | They are mostly not available. | | | 26.62% | | 107 |
|  | They are more expensive than regular items. | | | 31.09% | | 125 |
|  | Limited variety | | | 32.34% | | 130 |
|  | Other (please specify) | | | 2.49% | | 10 |
|  | 1. *If it is wallet-friendly, then okay; I must reconsider the decision if it is very expensive.* | | | | | |
|  | 1. *All the above* | | | | | |
|  | 1. *Sometimes non-affordable, which is also not financially sustainable* | | | | | |
|  | 1. *Not prominently labeled* | | | | | |
|  | 1. *I do not care.* | | | | | |
|  | 1. *Other reason* | | | | | |
|  | 1. *I don't look for them.* | | | | | |
|  | 1. *All the factors listed* | | | | | |
|  | 1. *More expensive and not always clearly labeled* | | | | | |
|  | 1. *Either too expensive and beyond my budget, or limited variety, sometimes not available nearby, depending on the situation* | | | | | |
| 2 | *The main reason for the replacement* | | | | |  |
|  | High cost of repair | | | 18.41% | | 74 |
|  | I can afford to buy a new one. | | | 15.42% | | 62 |
|  | I do not like using repaired products | | | 12.69% | | 51 |
|  | Unavailability of repair service in the region | | | 52.24% | | 210 |
|  | Other (please specify) | | | 1.24% | | 5 |
|  | 1. When an item cannot be repaired, I buy a new one. | | | | | |
|  | 1. Both the unavailability of repair services and the high cost of repair when I do find repair services | | | | | |
|  | 1. All the reasons | | | | | |
|  | 1. Sometimes, I buy items outside Qatar that are not possible to repair in Qatar. | | | | | |
|  | 1. Both high cost and unavailability of repair services | | | | | |

Obstacles to consumer engagement in the CE can stem from diverse factors such as policy frameworks, recycling service accessibility, incentive structures, and market dynamics. This study, tailored for a public audience, focuses on two key aspects: barriers to repair practices and obstacles to eco-friendly shopping behaviors.

4.3.4 motivation to participate in CE.

Table 11 presents the ranking of ethical, religious, and financial motivations for contributing to the CE on a Likert scale ranging from "not important at all" to "very important." Most respondents assigned a moderate level of importance to all three motivational factors. Among the participants, 51% considered financial motivation moderately important, with 29% viewing it as very important. Regarding religious motivation, 37% found it moderately important, and 39% highly important. For ethical motivation, 44% rated it moderately important, while 35% deemed it very important. Less than 10% of respondents viewed these motivations as unimportant or slightly important. When comparing the "very important" category across all three motivations, religious motivation received the highest percentage (39%), followed by ethical motivation (35%) and financial motivation (29%).

Consumer perception of religious motivation as a significant driver for engaging in the CE and environmental care highlights the importance Muslims place on ethical and moral principles derived from faith. This underscores the influential role of religious leaders and institutions in promoting environmental awareness and engaging the public. Policymakers can benefit from considering these perspectives when developing environmental agendas.

Table 11: Motivation to participate in CE.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Not important at all | Slightly important | Neutral | Moderately Important | Very important |
| *Financial motivation is important for you to contribute to a CE as a consumer/buyer* | 0.25% | 8.71% | 10.70% | 51.00% | 29.35% |
| *Religious motivation is important for contributing to a CE as a consumer/buyer*. | 1.00% | 14.18% | 8.71% | 37.06% | 39.05% |
| *Ethical motivation is important for contributing to a CE as a consumer/buyer.* | 0.75% | 12.19% | 7.96% | 44.53% | 34.58% |

4.3.5 Willingness to pay and respond to incentives.

The willingness to pay for environmentally friendly products and income levels in the provided sources are analyzed. Table 12 presents data on respondents' willingness to pay, showing that approximately 54% are willing to pay an adequate amount, while about 36% are willing to pay less. The comparison across different income groups in Table 9 reveals no significant disparity in willingness to pay for eco-friendly products. Income differences do not appear to influence respondents' willingness to pay strongly.

Table 12: Willingness to pay for eco-friendly products.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Income Range | Willingness to Pay for eco-friendly products | | | | |
|  |  |  | Nothing | Less amount | Adequate amount | Large amount | Total |
|  |  |  | % | % | % | % | % |
| *-* |  | *Prefer not to disclose* | 2.34 | 46.88 | 50.00 | 0.78 | 31.84 |
| *1st* |  | *Less than QAR 5000* | 2.70 | 35.14 | 48.65 | 13.51 | 9.20 |
| *2nd* |  | *QAR 5000 to QAR 10,000* | 0.00 | 30.43 | 65.22 | 4.35 | 5.72 |
| *3rd* |  | *QAR 10,000 to QAR 15,000* | 2.94 | 20.59 | 67.65 | 8.82 | 8.46 |
| *4th* |  | *QAR 15,000 to QAR 20,000* | 0.00 | 46.67 | 37.78 | 15.56 | 11.19 |
| *5th* |  | *QAR 20,000 to QAR 25,000* | 3.03 | 33.33 | 57.58 | 6.06 | 16.42 |
| *6th* |  | *QAR 25,000 to QAR 30,000* | 6.90 | 31.03 | 51.72 | 10.34 | 7.21 |
| *7th* |  | *More than QAR 30,000* | 7.50 | 22.50 | 65.00 | 5.00 | 9.95 |
|  |  | Total | 2.99 | 36.82 | 53.73 | 6.47 | 100.00 |

Table 13 presents the willingness to pay for reusable products compared to disposable ones. Approximately 57% of respondents are willing to pay an adequate amount for reusable products, while 33% are willing to pay less, 6% are willing to pay a large amount, and 4% are not willing to pay at all. When examining different income ranges, most respondents across income groups are willing to pay an adequate amount for reusable products, with figures exceeding 50%. This trend is understandable given reusable products' environmental and economic sustainability, promoting item reutilization.

Table 13: Willingness to Pay for Reusable Products.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Income Range |  | Willingness to Pay for reusable product | | | |
|  |  |  | Nothing | Less amount | Adequate amount | Large amount | Total |
|  |  |  | % | % | % | % | % |
| *-* |  | *Prefer not to disclose* | 4.69 | 43.75 | 50.78 | 0.78 | 31.84 |
| *1st* |  | *Less than QAR 5000* | 2.70 | 24.32 | 54.05 | 18.92 | 9.20 |
| *2nd* |  | *QAR 5000 to QAR 10,000* | 0.00 | 17.39 | 73.91 | 8.70 | 5.72 |
| *3rd* |  | *QAR 10,000 to QAR 15,000* | 0.00 | 20.59 | 70.59 | 8.82 | 8.46 |
| *4th* |  | *QAR 15,000 to QAR 20,000* | 0.00 | 26.67 | 68.89 | 4.44 | 11.19 |
| *5th* |  | *QAR 20,000 to QAR 25,000* | 4.55 | 36.36 | 56.06 | 3.03 | 16.42 |
| *6th* |  | *QAR 25,000 to QAR 30,000* | 13.79 | 24.14 | 55.17 | 6.90 | 7.21 |
| *7th* |  | *More than QAR 30,000* | 5.00 | 30.00 | 52.50 | 12.50 | 9.95 |
|  |  | Total | 3.98 | 32.59 | 57.46 | 5.97 | 100.00 |

Participants in the survey showed varying responses to using financial incentives for CE involvement. Approximately 55% were open to incentives, 33% were unaffected by them, 9% were unresponsive, and 3% were neutral (Table 14). Across income brackets, over 50% in each group, except the second-highest, were willing to participate with incentives, emphasizing the importance of an incentive policy.

Table 14: Response to financial incentives

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Income Range | *Attitude toward financial incentives to participate in CE* | | | | |
|  |  |  | yes | No | Incentives will not affect my participation. | Neutral | Total |
|  |  |  | % | % | % | % | % |
| *-* |  | *Prefer not to disclose* | 57.81 | 8.59 | 31.25 | 2.34 | 31.84 |
| *1st* |  | *Less than QAR 5000* | 59.46 | 8.11 | 24.32 | 8.11 | 9.20 |
| *2nd* |  | *QAR 5000 to QAR 10,000* | 60.87 | 8.70 | 17.39 | 13.04 | 5.72 |
| *3rd* |  | *QAR 10,000 to QAR 15,000* | 61.76 | 8.82 | 23.53 | 5.88 | 8.46 |
| *4th* |  | *QAR 15,000 to QAR 20,000* | 51.11 | 6.67 | 37.78 | 4.44 | 11.19 |
| *5th* |  | *QAR 20,000 to QAR 25,000* | 51.52 | 7.58 | 40.91 | 0.00 | 16.42 |
| *6th* |  | *QAR 25,000 to QAR 30,000* | 37.93 | 20.69 | 41.38 | 0.00 | 7.21 |
| *7th* |  | *More than QAR 30,000* | 57.50 | 7.50 | 35.00 | 0.00 | 9.95 |
|  |  | Total | 55.22 | 8.96 | 32.59 | 3.23 | 100.00 |

1. **Conclusion**

Consumers are key drivers of the CE's success by adopting its core principles in daily decisions. The study delves into sustainable consumption and consumer engagement in the CE, examining consumer perception, awareness, attitude, and pro-environmental behavior through a survey questionnaire.

The binary logistic regression analysis reveals a positive significant association between consumer participation in the CE, awareness, and education level. Education and awareness increase the likelihood of consumer participation, with those knowledgeable about the CE having 2.48 times higher odds of participation. Awareness of their role in environmental issues boosts participation odds by 6 times, and respondents with bachelor's degrees and above show higher participation likelihood than those with secondary school education.

The detailed assessment of consumer perception habits and participation reveals that many consumers buy eco-friendly, reusable, energy-saving products, repurposing resources, and participating in the sharing economy. However, purchasing from second-hand stores and using public transport for emission reduction is low. Despite high waste generation per capita due to excessive consumerism in Qatar, most respondents believe in the possibility of leading a healthy and happy life in Qatar while using fewer resources.

Half of the respondents consider environmental factors, price, durability, and repair service availability moderately important in their purchasing decisions. While 87% support recycling, some note its absence in Qatar. Consumers prioritize eco-friendly products after price and quality satisfaction. Repair services are popular, with 77% engaging in self-repair at least once. Lack of repair services is cited as the primary reason for replacing consumer items.

Most respondents cite higher prices of regular items as the main reason for not shopping for environmentally friendly products, followed by lack of variety and availability. The study explores consumer perceptions of religious, ethical, and cultural values in purchasing. Findings indicate that religious values, particularly among Muslims (94%), play a crucial role in environmental care and waste reduction, with religious motivation being the primary driver for contributing to the CE and environmental care compared to ethical or financial motivations. Consumers show willingness to pay for environmentally friendly and reusable products, indicating a positive response to incentives.

Consumers respond well to financial incentives, with income variations not affecting willingness to pay or responses to incentives. The consumer perspective in Qatar reflects an optimistic view toward building the CE, indicating a positive attitude and perception. Despite challenges, transforming everyday practices aligns well with Qatar's culture and lifestyle, highlighting the need to address critical issues to enhance consumer engagement.

1. **Policy Recommendation**

Educating and engaging consumers on circular practices can drive Qatar towards a sustainable future. Recommendations include addressing consumer concerns to boost engagement. Improving repair services through initiatives like the EU right to repair and Repair Cafés, providing repair information with product packaging, ensuring the availability of repair materials in the market, and keeping repair costs low are suggested actions for promoting self-repair and sustainability.

Consumers show a preference for environmentally friendly products but encounter constraints. Improvements can be made through appropriate pricing policies, increased product variety, and reduced price gaps. Promoting recycling benefits can involve incorporating recycling information on online retail platforms, local business advertising campaigns, and implementing incentive programs.

Introducing policies to promote recycling and providing transparent information to the public is crucial. Lack of clarity on recycling processes can undermine consumer confidence in eco-labeling and increase waste. Addressing the high household food waste of 95 kg per year compared to the global average of 75 kg is essential. Increasing awareness and educational programs focusing on integrating religious teachings into consumer lifestyles can effectively encourage environmentally conscious behaviors and support CE initiatives.

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