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Unveiling the Circular Behavior of Product Appreciation: An Exploratory Study

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Abstract: Product appreciation is defined as valuing and sustaining the use of a functional, energy-efficient product. This study adopted a user perspective to understand the circular behavior of product appreciation and explore the factors influencing it. Employing a qualitative exploratory approach, in-depth, cross-language (English and Arabic) interviews were conducted with participants from different nationalities. The collected data were then subjected to an adapted and augmented version of reflexive thematic analysis, allowing for a thorough examination of the underlying motivations and barriers to product appreciation. Our analysis revealed 60 motivation factors and 30 barrier factors. More importantly, six motivation themes emerged: attachment due to sentimental value, user satisfaction, holistic positive engagement, product ingenuity and enduring value, economic mindfulness, and retention and status quo tendency. In contrast, four barrier themes were identified: changes in user preferences, user dissatisfaction, craving newness, and free upgrades. This study accentuates the delineation of the newly identified circular behavior of product appreciation and highlights its significance in extending product life cycles and slowing resource loops. The findings provide valuable insights for designers, researchers, business strategists, and policymakers aiming to foster sustainable consumption and production patterns through product design, sustainable value propositions, and extended producer responsibility policies. Furthermore, the proposed adapted version of the reflexive thematic analysis method is expected to be a significant contribution to the qualitative research literature.

Keywords: circular economy; slowing resource loops; sustainable consumption; SDG 12; product appreciation; thematic analysis

Citation: Ali, M.I.M.; Choe, P. Unveiling the Circular Behavior of Product Appreciation: An Exploratory Study. *Sustainability* **2024**, *16*, 10063. https://doi.org/10.3390/su162210063

Academic Editor: Arminda Paço

Received: 5 September 2024
Revised: 11 October 2024
Accepted: 15 October 2024
Published: 19 November 2024

1. Introduction

The concept of a circular economy offers a promising, transformative framework to achieve sustainable goals [1]. It operates across multiple levels of the economy, with businesses and consumers constituting the microlevel. As such, business models and consumers are deemed key enablers of a circular economy [2]. Under a circular business model, the success (or failure) of circular economy objectives is influenced by consumer choices and the extent to which users adopt circular behaviors (or fail to do so) [3].

Within the domain of circular user behaviors, the CURA model encompasses independent user circular behaviors (Figure 1). These can be performed by a product user independently during the use phase or at the end of the product life. They specifically pertain to shopping products owned under a product-oriented or pure product business model. The acronym CURA—in Latin "cura" means "cure"—stands for care, upgrade, repurpose, and appreciate [3]. Each behavior within this model represents a distinct, user-driven practice that supports the objectives of the circular economy. The three behaviors care, upgrade, and appreciate are related in their common outcome: reducing unnecessary consumption and waste, contributing to slowing resource loops by extending the lifespan of products (i.e., reducing the rate at which resources are extracted and consumed) [4]. However, they differ in the level of activity and intervention required. Appreciation stands

out for its simplicity and non-intrusive nature. It advocates for the uninterrupted use of a product in its present state, provided it remains functional and energy-efficient [3]. Unlike the other CURA behaviors, appreciation does not necessitate physical alterations or enhancements to the product, nor does it require additional input of resources or labor [5–8]. Eventually, repurposing culminates the product's sustainable journey by giving the product, its components, or materials a new function, thereby closing the resource loop and retaining material value [9–12].

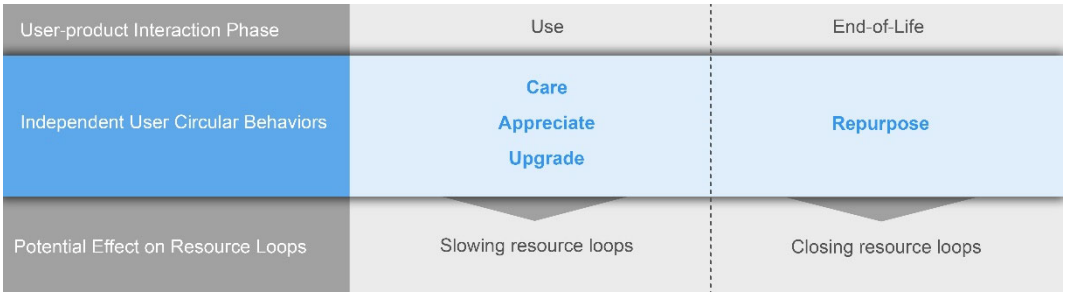

Figure 1. CURA model. Source: Adapted from [3].

Product appreciation manifests a stark opposition to the pervasive "throwaway culture", which is characterized by rapid consumption followed by immediate disposal [13]. And while the behavior of appreciation may not originate from a conscious desire to mitigate environmental impacts, its practice inherently promotes the principle of environmental responsibility. It does so by emphasizing the durability and persistent relevance of our belongings [3], which in turn reduces the demand for raw material and energy in manufacturing new products and lowers the associated waste and emissions [14]. The review of the literature covered several studies on consumer behaviors related to appreciation, for instance, the research by Hou et al. [15] and van Nes and Cramer [16], which investigated the factors influencing product replacement behavior. In a related manner, Cox et al. [17] followed a qualitative approach, employing discussion groups, to investigate the factors influencing longer product lifetime, while Jensen et al. [18] identified the barriers to product longevity from the perspectives of businesses, designers, and users. A particular focus has been placed on the replacement of electronic goods, as evidenced by studies from Fernandez [19] and Magnier and Mugge [20]. Product disposal behavior was investigated by Vieira et al. [21], who developed a taxonomy of consumer disposal decisions. Beyond merely investigating the reasons for product replacement, some scholars (such as Mugge et al. [22] and van Nes and Cramer [16]) have ventured into examining design strategies aimed at deferring product replacement. The authors observed that the fundamental difference between product appreciation and the act of postponing product replacement lies in the user's intentions towards their possessions. "Postponement" implies that the consumer acknowledges a need, a desire, or even a decision to replace a product but chooses to delay this transition. It is a decision made despite an acknowledged pull towards acquiring something new, making it a temporary measure. Appreciation, in contrast, lacks this inherent implication of desire for replacement. It is not so much a deferral of action as it is an absence of the intention to discard or replace the product. Furthermore, appreciation is about valuing and continuing to use products that are functional and energy-efficient, implying that these products are environmentally friendly [3], whereas the practice of postponing the replacement of products is not always advantageous from an environmental standpoint: in some scenarios, newer, more energy-efficient products could offer greater environmental benefits than continuing to use older, less efficient ones [16]. Another study of note, conducted by Haws et al. [23], introduced the concept of product retention tendency, characterizing it as a consumer lifestyle trait centered on retaining possessions related to consumption. The investigation explored the relationship between clinical compulsive hoarding and product retention tendency. It is vital to highlight that this

concept goes beyond the mere holding of functional items to also embracing the retention of non-functional ones [23]. Contrastingly, appreciation refers to the recognition of the value or significance of a functioning product and deliberately continuing its use.

By definition, the products deemed worthy of appreciation are not technically obsolete—they are operational. However, in relation to relative obsolescence (whether economic, technological, and psychological) [24], a nuanced relationship emerges. Primarily, the attribute of being "energy-efficient" distinguishes appreciated products as possessing significant value, both environmentally and in terms of cost–value perspective. Thus, products worthy of appreciation are typically not economically obsolete. On the other hand, technological obsolescence presents a significant hurdle to product appreciation, especially in the fast-paced realms of electronics and appliances. This type of obsolescence largely stems from a user's preference for the advanced features and superior technology offered by newer product models [25]. Such preference often diminishes the perceived desirability of existing functional products, leading to a cycle of obsolescence where the pursuit of technological progress eclipses the appreciation of current possessions. Finally, psychological obsolescence arises when fashion, aesthetic qualities, symbolic meanings, or social status associated with the current product no longer align with the user's perceived needs or aspirations [6,24,26]. Appreciation, therefore, emerges as a potent remedy against the erosive forces of psychological obsolescence.

Despite the significant and far-reaching implications of product appreciation, the factors that motivate users to appreciate products or discourage them from doing so are yet to be uncovered. The presented study aims to fill this gap by exploring the factors influencing the behavior of product appreciation through an exploratory series of conversational, semi-structured, in-depth interviews with participants from different nationalities. To that end, the accounts of the interviewees were reflexively and thematically analyzed to address four key research questions: (1) How common is the appreciation practice? (2) What are the shopping products that are usually appreciated by users? (3) What factors motivate users to appreciate a product? (4) What are the barriers that deter users from appreciating a product?

The remainder of this paper is organized as follows. Section 2 outlines the materials and methods employed in the study, detailing the interviews and the analytical procedures. Section 3 reports the study's results and discusses them. Section 4 summarizes the conclusions, highlights their implications, and suggests avenues for future research.

2. Theoretical Framework

Behavioral reasoning theory (BRT) was considered as a theoretical framework to explore the motivators and barriers influencing product appreciation from the users' perspective. The theory posits that reasons function as pivotal linkages between people's beliefs, global motives (such as attitudes, subjective norms, and perceived control), intentions, and their subsequent behaviors. These reasons—defined as "the specific subjective factors people use to explain their anticipated behavior"—include anticipated, concurrent, and post hoc reasons [27]. A key strength of BRT is its ability to address a common limitation in most other research and behavioral models, which have often been criticized for focusing on motivation (or acceptance) factors while neglecting barrier (or resistance)-related factors. BRT, facilitates a clear distinction between the "reasons for" (motivators of) and "reasons against" (barriers to) the exhibition of a specific behavior while allowing for analysis within a single framework [28].

3. Materials and Methods

This section outlines the materials used and the methods employed in conducting this study. The overall research process is depicted in Figure 2. It illustrates and provides a visual summary of the steps and the stages undertaken in our investigation.

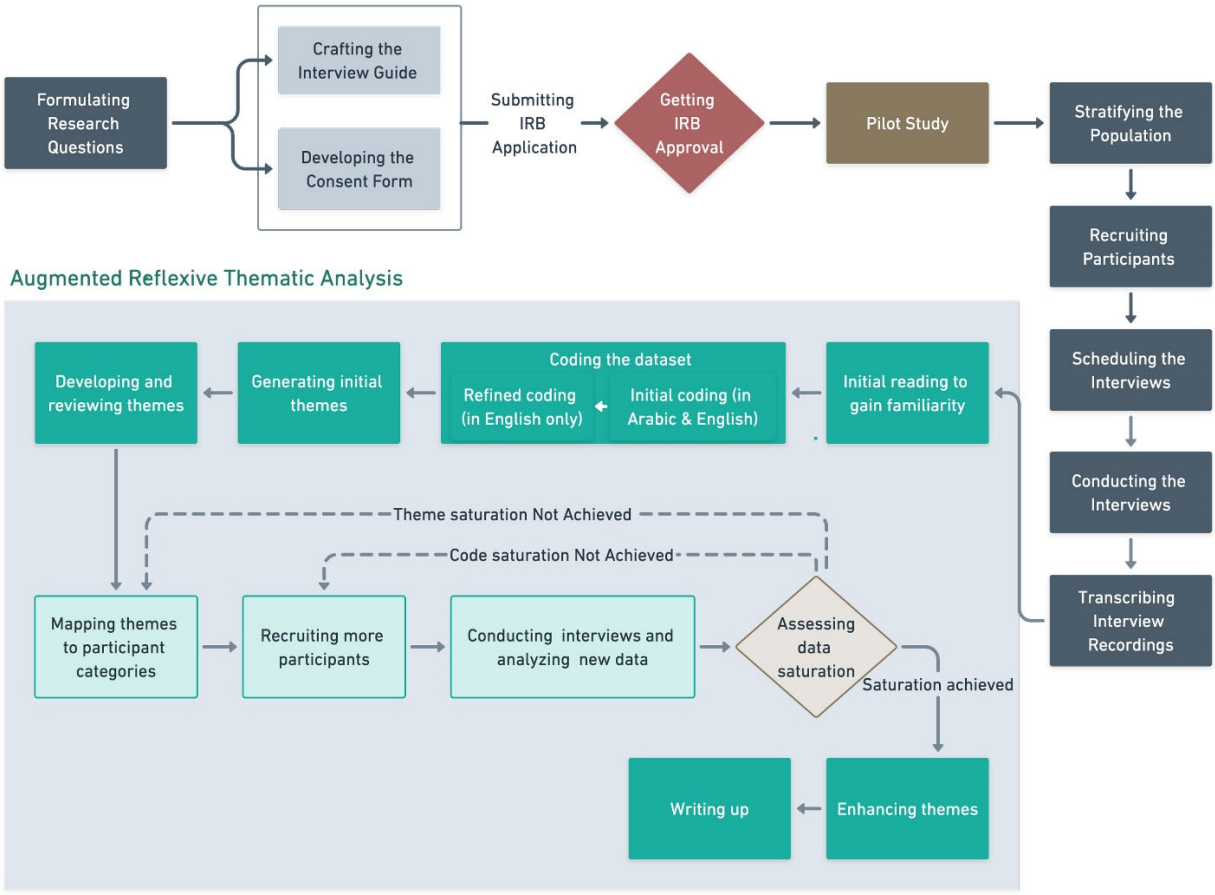

Figure 2. Research process flowchart.

3.1. Ethical Approval

Building on the established research questions, the authors crafted the interview guide and developed the interview consent forms in both English and Arabic. These documents were essential to the application for the institutional review board (IRB). The process was extensive, spanning several months and involving numerous exchanges with the IRB committee. Various concerns and requirements had to be addressed to obtain approval.

3.2. Pilot Study

After receiving the IRB approval, a pilot study was conducted with two participants (their data were excluded from the final analysis). This small-scale study was instrumental for testing the study protocols, data collection and analysis tools, recruitment strategies, and other research techniques in preparation for the full study. Additionally, the pilot study helped the primary investigator become familiar with the entire procedure, ensuring a more seamless execution of the primary investigation.

3.3. Main Study

The main study was carried out through conversational, face-to-face, in-depth, semi-structured interviews. This enabled a relatively informal interaction with the participants and allowed the researcher to ask the same general questions of all the interviewees while maintaining some flexibility (for the full set of interview questions, see Appendix B). More importantly, semi-structured interviews are effective for investigating complex behaviors, opinions, and emotions and for gathering a variety of experiences [29].

Stratified purposeful sampling served as the primary sampling strategy to ensure diversity in sex, age, occupation, and educational background. The researchers utilized the technique proposed by Trost [30] to generate a non-probabilistic stratified sample that

aligns with and supports the study's objectives (see Table 1). Regarding this sample, it should be noted that the type of occupation is assumed to be an indirect determinant of the income level (low or high). The sampling strategy was further complemented by purposeful snowball criterion sampling to make sure that the participants came from different geographical locations.

Table 1. The categories and items of the non-probabilistic stratified sample.

Occupation	**Students**				**Employees**			
Type of Occupation	Undergraduate		Graduate		Non-academic		Academic	
Sex	female	male	female	male	female	male	female	male

Twelve individuals (six males, six females) from 12 countries (Sudan, Qatar, India, Yemen, Bangladesh, Zimbabwe, Pakistan, Syria, Egypt, Algeria, Jordanian, and Senegal) participated in the main study. They had a mean age of 29 years, with a standard deviation of 9.5 years. The participants were recruited from the primary researcher's social and professional networks as well as via referral. The interviews were carried out in two languages (English and Arabic) in the participants' own environments (place of study, work, or residence). This fostered a more comfortable atmosphere that was conducive to evoking memories associated with certain products and recounting related behaviors. The interviews were lengthy, lasting around 50 min on average. Prior to the interviews, each participant was presented with an informed consent form and encouraged to ask any questions regarding the interview or the study. The researcher then answered any possible questions before having the participant sign two copies of the consent form—one was given to the participant and the other retained by the researcher. Due to the extended duration of the interviews, participants had ample opportunity to expand on their responses and ask additional questions. Furthermore, it became evident that longer conversations prompted participants to recall a greater number of relevant products and experiences.

In harmony with the exploratory nature and objectives of this study, the authors adopted the Big Q qualitative approach, which emphasizes meaning [31]. Thematic analysis (TA) was subsequently selected as the analytical method for its exceptional flexibility and adaptability to various theoretical frameworks [32]. Specifically, the authors employed Braun and Clarke's reflexive approach to TA [33] (also known as reflexive TA [31]) because it adheres to the Big Q principles [34] by valuing researcher subjectivity and reflexivity [31]. Finally, the authors took an inductive (critical) realist approach to reflexive TA, enabling a nuanced, in-depth exploration that is essential for uncovering the factors influencing a recently identified behavior such as appreciation.

Braun and Clarke reflexive approach to TA involves six phases of analysis: (1) familiarization with the dataset, (2) coding the dataset, (3) generating initial themes, (4) developing and reviewing themes, (5) refining, defining, and naming themes, and finally (6) writing up [35]. However, the authors devised an augmented version of reflexive TA (exhibited in Figure 2) to suit the cross-language aspect of our study and our purposeful stratified and criterion sampling methodologies.

The initial non-probabilistic stratified sample consisted of eight participants (four males, four females), each representing one of the eight diverse cells exhibited in Table 1. The eight interviews were transcribed utilizing *Whisper*—an automatic speech recognition system (ASR) developed by OpenAI—on the *Google Colab* platform. Following this, both the transcripts and audio recordings were imported into *MAXQDA Analytics Pro 2022* software for manual review and enhancement. Errors were rectified, and annotations were added to improve clarity and accuracy. Throughout this process, each transcript was segmented, and each segment was synchronized with the corresponding part in the recording. Additionally, images of the appreciated products were imported and linked to the respective transcript segments. Following the completion of this preparatory process, the augmented TA was conducted in 10 phases, as follows.

(1) *Initial reading to gain familiarity:* Within the *MAXQDA* software, each transcript underwent thorough and careful reading and rereading. Throughout this process, highlights were made, and pertinent notes (utilizing the *MAXQDA* memo function) were integrated into the text. The researcher relied upon the linked images to enrich his recollection of the mentioned products and the associated experiences. This phase facilitated the primary researcher's deep immersion and intimate familiarity with the dataset.

(2) *Coding the dataset:* This phase involved systematically labeling segments of data with codes (basically labels) that captured analytically significant aspects of the data relevant to addressing one of the research questions. The primary researcher applied inductive coding (grounded in the data, not pure induction, and without the use of a pre-established codebook or a coding framework [36]). The phase was completed in two stages, as follows.

    1. *Initial coding:* In this stage, preliminary in vivo codes were generated for each transcript in its respective language. As noted by Esfehani and Walters [37], relying on the researcher's native language at this early stage helps minimizes the risks of misunderstanding socio-cultural nuances and misrepresenting the textual message.
    2. *Refined coding:* This subsequent stage involved an in-depth review and analysis of the in vivo codes, followed by the generation of new, descriptive, refined codes through detailed line-by-line coding. The initial Arabic codes were refined directly in English to avoid complicating code reuse and the need for extensive merging of potential duplicates after translation. Nevertheless, our approach remains aligned with Esfehani and Walters' [37] underlying recommendation that translation should occur only after gaining comprehensive familiarity with the text, achieved through verbatim transcription and focused reading during the early phases of TA. The stage also involved splitting or merging codes to create a more abstract and nuanced set of codes.

(3) *Generating initial themes:* During this stage, potential themes, or "significant broader patterns of meaning" [35] were developed from codes and collated data after examining them.

(4) *Developing and reviewing themes:* Here, the initial themes were evaluated in relation to both the coded data and the entire dataset to verify that each theme told a compelling story relevant to the corresponding research question. Furthermore, in this phase, themes underwent additional refinement and enhancement. This entailed splitting, merging, renaming, and transforming certain themes into subthemes. The refinement and improvement extended to the codes as well, with both researchers taking part in this review process.

(5) *Mapping themes to participant categories:* The generated motivations and barrier themes were mapped to the eight participant categories of the stratified sample. This resulted in two cross-reference tables, which are abstractly represented in Tables 2 and 3. After examining the actual cross-reference tables, two notable observations emerged: firstly, the theme represented as theme 4 in Table 3 was unique to the academic employee category, and secondly, the analysis of data from the female graduate yielded only one barrier theme. Consequently, the categories to which these two participants belonged were considered outliers, warranting further investigation due to the potential for uncovering new insights.

Table 2. Abstract representation of the mapping of motivation themes to participant categories.

Motivation Theme	Students				Employees			
	Undergraduate		Graduate		Non-Academic		Academic	
	F	M	F	M	F	M	F	M
Theme 1		•	•	•	•		•	•
Theme 2		•			•	•	•	•
Theme 3	•	•	•	•	•	•	•	•
Theme 4	•	•		•	•	•	•	•
Theme 5	•	•	•	•	•	•	•	•
Theme 6		•	•	•	•		•	

Table 3. Abstract representation of the mapping of barrier themes to participant categories.

Barrier Theme	Students				Employees			
	Undergraduate		Graduate		Non-Academic		Academic	
	F	M	F	M	F	M	F	M
Theme 1	•	•	•	•		•	•	•
Theme 2	•	•		•	•	•	•	•
Theme 3				•	•			•
Theme 4								•

(6) *Recruiting more participants from the outlier categories:* A male academic employee and a female graduate student (from the outlier categories) were recruited through snowball criterion sampling.

(7) *Conducting interviews and analyzing new data:* Interviews were conducted with the two recruited participants from the identified outlier categories. The data gathered from these additional interviews were integrated into the dataset within *MAXQDA* software and subjected to reflexive analysis.

(8) *Assessing data saturation:* When data saturation was assessed, no new themes emerged from the additional interviews; however, the interview with the academic male contributed a new code to an existing theme. We considered this an indication of the necessity for further data collection. Thus, two more interviews were conducted and analyzed, yet neither produced new codes or themes. It is crucial to note that if the additional interviews had revealed new themes or if incorporating the data from those interviews resulted in changes (such as splitting, merging, or transforming subthemes into new themes), a re-mapping of themes to categories would have been required. The re-mapping would facilitate the identification of any new outlier categories, which would in turn guide the recruitment of participants from these groups.

(9) *Enhancing the themes:* In this phase, the generated themes were refined and defined. This involved comprehensively analyzing each theme to clarify its scope and focus and to articulate its narrative. Furthermore, theme names were meticulously reviewed, ensuring that an informative and relevant name was assigned to each theme.

It is important to highlight that our interview questions covered both behavioral and situational (hypothetical) scenarios (see Appendix B). As such, the analysis, within *MAXQDA*'s code system, was divided into two primary sections: one dedicated to codes and themes pertaining to participants' responses to behavioral questions, and the other addressing those related to situational questions. The codes and themes derived from the "hypothetical section" were ultimately used to validate those in the "behavioral section", serving as a form of methodological triangulation to enhance

the study's rigor. Ultimately, upon comparison, there were no themes exclusive to the hypothetical section and not present in the behavioral section.

(10) *Writing up*: In this concluding phase, the analytic narrative was interwoven with data excerpts and the analysis contextualized within the existing literature. This will be presented in detail in the next section.

As illustrated, the augmented reflexive TA method employed in this study incorporated simultaneous data collection and analysis, with an ongoing evaluation of data saturation. The design of this method was inspired by Guest et al.'s [38] method for assessing saturation in qualitative research, which utilizes a "base size" (minimum number of interviews analyzed) and "run length" (the number of consecutive interviews assessed for new information). Guest et al. [38] observed that the base size has almost no effect on the outcome of saturation assessment. Additionally, the literature recommends a sample size of 6 to 16 interviews to achieve saturation in TA [39]. Taking that into account, we opted for a base size of eight interviews (as illustrated in Section 3.3), corresponding to the number of categories within the non-probabilistic stratified sample generated using Trost's [30] technique, which ensured variation within the sample.

4. Results and Discussion

On average, each participant recalled appreciating six products over the course of their lives, including those that they, at the time, appreciated. This is not a significant number, given the multitude of items typically owned throughout one's life. Female participants primarily reported appreciating jewelry and clothing, especially those with sentimental value, while both male and female participants commonly appreciated electronic devices for a similar reason. Notably, all employed male participants reported appreciating a car they had either owned in the past or currently owned. All these products, along with others that were mentioned less frequently, fall under the shopping products category. This aligns with Ali and Choe's [3] demarcation of CURA behaviors, as they identified shopping products as the category most pertinent to and most worthy of product appreciation and other independent user circular behaviors.

In examining the motivations for and barriers to product appreciation, the authors generated a rich array of themes, encapsulating the overarching story of the dataset. Six motivation themes emerged: (1) attachment due to sentimental value, (2) user satisfaction, (3) holistic positive engagement, (4) product ingenuity and enduring value, (5) economic mindfulness, and (6) retention and status quo tendency. On the other hand, four barrier themes were identified: (1) changes in user's preferences, (2) user dissatisfaction, (3) craving newness, and (4) free upgrades. Moreover, the barrier theme "changes in user's preferences" subsumed five subthemes: (i) aging, (ii) changes in physical characteristics, (iii) changes in user's circumstances, (iv) market advancements, and (v) social influences (Figure 3).

Each theme will be discussed in detail, enriched with extracts from the data to provide deeper insights. However, to protect participant privacy, structured codes were generated for all participants and will be used throughout the next section instead of names. Furthermore, the Arabic extracts were translated into English with a focus on capturing the meanings and sentiments, rather than adhering strictly to the literal wording.

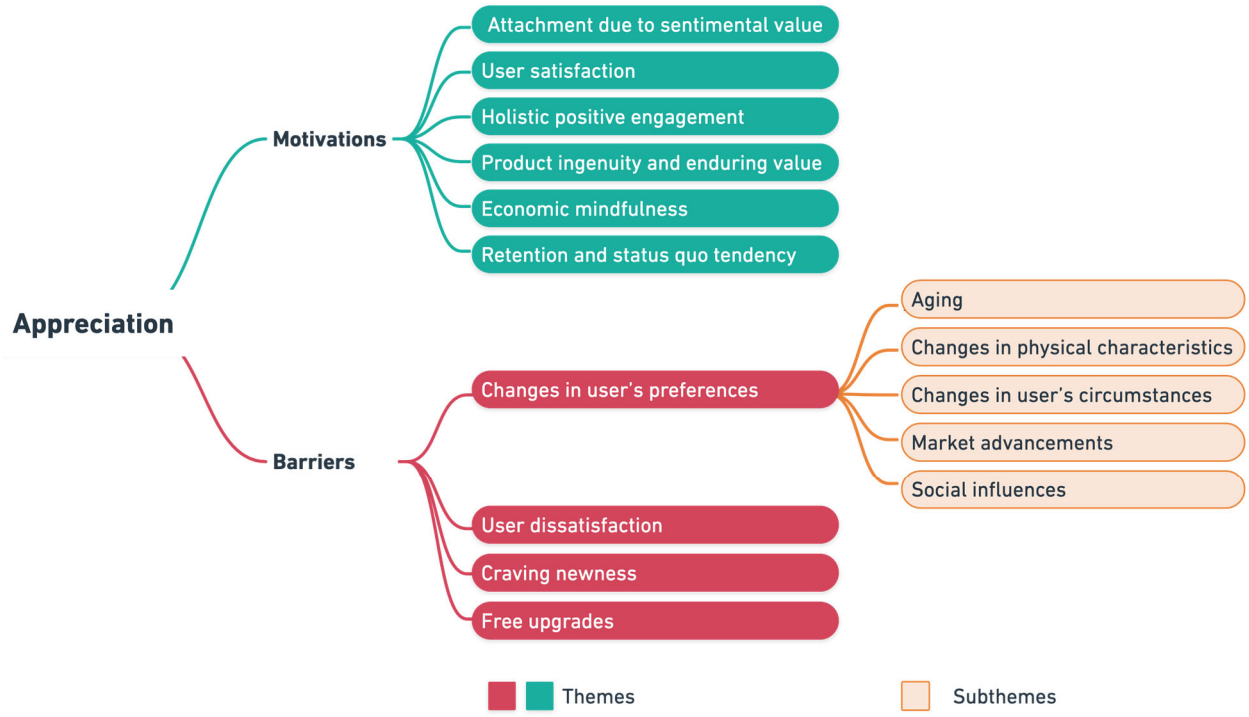

Figure 3. Motivation and barrier themes and subthemes of product appreciation.

4.1. Motivation Themes

In this research, "motivation factors" or simply "motivators" refer to the reasons provided by participants for product appreciation (Table A1 in Appendix A), whereas a motivation theme encapsulates a coherent narrative that ties together various motivating factors, offering a comprehensive understanding of what drives the behavior. In the following sections, each of the six motivation themes will be explored and discussed.

4.1.1. Attachment Due to Sentimental Value

This theme was built upon repeated emergence of emotional attachment to a product with sentimental value as a key driver of product appreciation. It encompasses the intangible elements (personal, emotional, and historical) that elevate a product's sentimental value and transform the user's relationship with the product from purely utility-based to one of deep appreciation.

A particularly prominent source of attachment that stimulates product appreciation was the emotional significance of gifts and presents (especially those from admired or loved ones). This was best articulated by:

> *The idea that someone has taken the time to think about you and decided to gift you something is one of the reasons that make you cherish the item before you.*
>
> (P511)

> *It is a gift. So, it is dear to me. . . And a gift from your mother is different; it means you must keep it.*
>
> (P112)

Another equally impactful source of attachment that fostered appreciation was the association with positive memories. This notion was emphasized in numerous accounts. For example:

> *[The ring] was very faint, like I got it from a bazaar, it wasn't even that expensive, but I just liked it a lot because it was so attached to a lot of memories.*
>
> (P167)

Here, it is worth noting that P167's response illustrates how positive memories associated with a specific product can infuse it with emotional value that transcends its monetary value.

P118 shared a sentimental and intriguing story about an oven that had held a special place in his heart for many years. He purchased this oven during his bachelor days, and it has since become a symbol of cherished memories. He said during the interview:

I love this oven. . . it is the only product that moved with me from single life to married life.

When his wife finally joined him in Qatar, she prepared the first meal they shared together using that very same oven. This event further solidified the oven's sentimental value in his life. He emphasized:

To this date, I have it, and I don't want to change it. . . I truly consider it a heritage.

Additionally, inter alia, shared experiences in selecting the product (such as coordinated purchase with a friend), the sentimental value of a purchase from one's first salary, and personalized or religious touches (such as the user's name or a religious inscription engraved on the product) were also mentioned as factors contributing to the product's sentimental value and fostering appreciation, for instance:

> *I have a ring that I share with my best friend. And it actually was because we were ordering something and I told her pick a ring and make it two. . . most of the time, whenever we see each other, we're wearing it, and every time we'll go ooh! *Excited expression**
>
> (P167)

Moreover, an intriguing source of increased attachment due to sentimental value was the product's capacity to evoke memories of past challenges and triumphs:

> *Honestly, sometimes I set my phone wallpaper to things that remind me of certain moments. . . Even though [the memories] are all related to the stress of university, these memories are why I keep the phone.*
>
> (P114, a male undergraduate student)

"Attachment due to sentimental value" emerged as the most prevalent motivation theme, resonating throughout all the interviews without exception. It is important to emphasize that this theme was not about product attachment in general, but specifically focused on attachment driven by the sentimental value of the product.

4.1.2. User Satisfaction

The second theme profoundly encapsulated the story of user satisfaction with a product serving as a crucial motivation for continued use. It reflected contentment or delight with a product's functionality, economic value, technological sophistication, aesthetic appeal, or social endorsement.

Many responses have reflected the salient role of user satisfaction in fostering product appreciation. Nevertheless, the specific factors contributing to satisfaction varied among individuals. Several interviewees remarked on how the aesthetic design made them appreciate certain products. This was exemplified by P465's response when asked about his appreciation of a watch he owns:

It's a mechanical watch. So, it just looks cooler.

Another frequently reported dimension of user satisfaction was satisfaction with the product's ergonomics, particularly in relation to clothing and footwear. The perfect fit and exceptional comfort of these items were frequently cited as strong reasons for product appreciation. This was illustrated in numerous accounts and clearly articulated in P118's response when asked about the reasons that made him appreciate an old pair of shoes he had previously owned:

Because they were really comfortable to an incredible degree. Honestly, I kept wearing them until they completely worn out.

Satisfaction with the product's overall quality was highlighted as one of the factors contributing to product appreciation:

It is because of the quality, honesty, these glasses have lasted with me for a long time. (P114)

Other factors encompassed by the "user satisfaction" theme included the product being economical, reliable, easy to use, or suitable for various purposes. Additionally, some accounts highlighted satisfaction with the product's low maintenance, satisfaction with the product's technology, the value they placed on its versatile compatibility, and their acceptance of its capabilities.

Certain motivators were particularly intriguing. P565's account of his appreciation of a pair of shoes revealed how, over time, the patina and character developed by the product could lead to appreciation when they aligned with the user preferences:

Because even if it has worn out, it has its own character now. Like a bit more scuffed and like. . . shoes have a thing where the more you wear it, it just grows more respect for the shoes.

The other interesting factors included receiving endorsements from one's social circle, the product's compatibility with other users' belongings, and the product's alignment with the user's social preferences. The latter was best illustrated by P646's reflection on his appreciation for his glasses:

You know, they are not very stylish. . . I don't want to look too stylish. I'm an old man. There's no need for me to.

In terms of prevalence, this theme comes second after "attachment due to sentimental value". It showed up in most of the interviews.

4.1.3. Holistic Positive Engagement

This theme richly captures a comprehensive interaction and a meaningful connection between the user and the product. It highlights a relationship that starts before product acquisition and extends beyond mere functional utility: the product becomes a vital part of the user's lifestyle and identity. Such engagement spans various dimensions—social connectivity, work, study, daily routines, the user's persona, the user's health and well-being, mindful usage, pre-purchase customization, and post-purchase integration.

Multiple accounts revealed that product appreciation is significantly enhanced when acquiring a product that meets user preferences and needs, offers customization options for aesthetics or functionality before purchase, and integrates well within an existing preferred setup. Furthermore, several interviewees shared that they tended to appreciate products that become essential to their study, work, or daily life. When asked about a product she appreciated or had been appreciating, P313's response was:

It's my laptop because it's more important for me for work and for study.

She disclosed that she had used the same laptop for seven years, only replacing it when the hard disk failed beyond repair.

P167, on the other hand, commented on how a pair of headphones had become part of her persona:

Not a day goes by where you won't see me [wearing them]. To the point that people recognize me by my headphones more than my face.

Another motivation factor within this theme is the user's reliance on the product for social connectivity. One participant described how he valued and continued to use his laptop for six years because it enabled him to stay in touch with his family in a different country. The theme also encompasses the factors of "mindful use" and "limited usage". In

the words of P1111, one reason she appreciated her dress (and all her dresses in general) was that she only wore them occasionally:

> *I might buy a dress and wear it to one event a year. So, it stays with me for years because the dress is only worn once a year, and it lasts, lasts, lasts.*

P118's account of a car he appreciated indicated that his mindful use was the main factor that influenced his appreciation:

> *And the car remained with me. I took care of the car, changing the oil and not putting too much strain on it. So, it lasted with me.*

4.1.4. Product Ingenuity and Enduring Value

The story conveyed by this theme effectively reflects two key product aspects that motivate users to appreciate and continue utilizing it: its innovative features (ingenuity) and its lasting worth or utility (enduring value). It indicates that sustained positive perception and continuous usage over time is motivated by both the product's uniqueness at the time of purchase and its continued relevance or utility over time.

The "product physical endurance" emerged as the main motivator within this theme. Numerous participants shared their appreciation for various "durable" products. This perfectly aligns with common understanding that durability is a fundamental prerequisite for long-lasting products. Additionally, some participants noted that the uniqueness of their products fostered appreciation. Design timelessness and the product remaining in trend were also significant factors. Several participants' comments linked these two aspects:

> *Because it's classic. I mean, it's a classic piece. Its style never goes out of fashion.*
>
> (P112's remark about her gold bracelet)

Also, it was observed that products that were the latest models upon purchase were likely to be appreciated. The same went for products that had revolutionary features. For example, P118 had appreciated his smartphone for six years because, according to him:

> *It was the first colored phone with a camera in the market [when I purchased it].*

4.1.5. Economic Mindfulness

This theme aptly encapsulates a significant motivational aspect for users to continue using a functioning, energy-efficient product. It suggests that the decision to maintain usage is influenced by economic considerations, highlighting a practical and deliberate choice based on financial prudence: users are driven by the economic implications of their choices. This theme encompassed three key motivation factors. The first was frugality. Some users thought that it was wasteful to buy a new product while the current one was still functional. For instance, P313 emphasized that aside from fashion, she strongly opposed buying new products just to follow trends, stating:

> *We need to respect money.*

The second motivator is the user's perception that the prices of new models are prohibitively high, leading them to appreciate the current product. P646 explained:

> *Most of the time what happens when a new model comes in, the cost is usually high. So that was one of the reasons why I discouraged myself from buying [a new device].*

Remarkably, the third motivation factor was recognizing the substantial initial cost of the product. Many responses stated that the main reason behind their appreciation of the product was its high value or purchase price. When asked why he had been appreciating his glasses, P114 responded:

> *It lasted with me for a long time, honestly, because of its price. It cost about eight hundred, so I thought I must preserve it.*

4.1.6. Retention and Status Quo Tendency

Reflecting a natural human tendency to prefer the known and trusted over the new and uncertain, this theme captures a significant behavioral pattern among users. It highlights the psychological and practical factors that motivate users to continue using their existing products, showing resistance to the constant cycle of consumerism. This is the story of users who place a great value on functionality and familiarity that outweighs the perceived benefits of newer alternatives.

The analysis uncovered a connection between the general tendency to retain possessions (regardless of their functionality) and the behavior of appreciation. Additionally, some participants just demonstrated a natural inclination towards product appreciation. This propensity was best expressed by P313 when asked why she still appreciated her old phone:

> *Because it's still working. Then why I should change?*

Other individuals reported an inclination to appreciate only certain products. Interestingly, while some users emphasized this behavior particularly with electronics, P114 offered an opposing view:

> *Non-electronic items last with me much longer, honestly, than electronic ones.*

When it came to technology, it turned out that several interviewees appreciated their devices due to the comfort of familiarity or aversion to technological changes:

> *Honestly, when I become familiar with using something and it performs its function, I usually don't want to get rid of it.*
>
> (P1512 talking about his experience with his smartphone)

> *When it comes to technology, I don't like to change because of the software issue. I don't understand much about software, so having to install programs and check if they work or not is something I don't like. I don't like new things in technology.*
>
> (P112)

Finally, anti-consumerism emerged as an important factor within this theme. The different accounts reflecting this sentiment were best summed up by P1512's comment:

> *My principle in using these products, whether they are devices, electronic gadgets, or electrical appliances, or anything, is that I consider them a means. As long as these tools perform their functions, I don't need to change them.*

4.2. Barrier Themes

In the context of this study, a "barrier factor", or simply a "barrier", was defined as any reason provided by a participant against their continuous valuation and use of a functioning and energy-efficient product. On the other hand, each "barrier theme" presented a coherent narrative that encapsulated various factors contributing to the discontinuation of product appreciation. Among the four distinct barrier themes identified, one theme encompassed five subthemes. The barrier factors, subthemes, and themes are comprehensively detailed in Table A2 in Appendix A. The subsequent sections will explore each barrier theme, along with its subthemes and some specific barrier factors, illustrating them with relevant data extracts.

4.2.1. Changes in User's Preferences

Changes in user preferences create a compelling narrative that highlights a significant barrier to continued product use. This narrative underscores the dynamic interplay between individuals and their environment, emphasizing the fluidity of user–product relationships and their dependency on various internal and external factors. These include aging, changes in physical characteristics, changes in user circumstances, market advancements, and social influences, as revealed through this study. The theme encapsulated five subthemes, each of

which highlighted a notable specific element of the overarching theme. Each subtheme will be highlighted by the account or quote that reflects it best.

1. *Aging*

   So, as I was growing up, I thought that maybe this is not very good for me. It's better to just be modest.

   (P646 on the reason he stopped wearing his "sportish" glasses)

2. *Changes in physical characteristics*

   I used to be overweight and then lost weight, gained weight and lost it again. So, I throw away the clothes that become too big or too small.

   (P7210)

3. *Changes in user's circumstances*

   I wanted a new car that doesn't give me trouble, something nice, comfortable, and suitable for a married person, especially for family outings.

   (P118 on why he changed his car before getting married)

4. *Market advancements*

   I think I just got tired of just carrying a lot of devices. I think phone is… all-in-one, where you can use it for other purposes and take pictures. And the new phones do as good as those DSLR cameras regardless.

   (P465 on replacing his camera with a smartphone)

5. *Social influence*

   Because suddenly, most of the people that I know here in Qatar, they started going for the iPhones. So that was the time when I acquired one.

   (P646 on why he stopped appreciating his old phone and bought a new one)

4.2.2. User Dissatisfaction

User dissatisfaction with a product acts as a significant deterrent to continued use. This theme represents a spectrum of issues ranging from maintenance challenges to functional limitations that lead to user frustration and potential discontinuation of use. It encompasses both the practical aspects of a product's operation and its alignment with user expectations and needs. About 53% of the barrier factors to appreciation are included within this theme (Table A2 in Appendix A).

The number one factor in this theme was dissatisfaction with product performance. This was noted in many participant accounts. P1512 had appreciated his previous laptop for around 10 years, but he had had to replace it with a new one because:

It started to have battery issues, and its performance was no longer good.

Other participants mentioned "frequent malfunctions" and "product unreliability" as a source of dissatisfaction, leading to them not appreciating the product for long. P114 described an unfortunate incident with his previous laptop that led him to stop appreciating it:

The previous laptop had a problem with the memory disk. So, I changed the laptop entirely out of fear that the same issue might happen again because when that incident happened, I lost everything.

Usability limitations also led some users to stop appreciating functional products. P511 mentioned that one of the reasons she stopped using her iPad and switched to a laptop was the inconvenience of needing an external keyboard for writing. Also, products that were worn out or had suffered damage caused dissatisfaction and prompted replacement, even if they were still operational. This was also true for outdated products, those in poor condition, and items with operational issues.

Two interesting barriers overarched by this theme were the "poor product functionality" and "training required for proper usage". This was captured by P646's experience with progressive lens glasses. He was initially motivated to buy them, but then it was difficult for him to use them:

Every time I want to read, I find it easier to actually remove them and read without them.

Subsequently, he decided to go back to using conventional glasses instead of the progressive lens glasses he acquired because the latter required training for proper usage.

Furthermore, dissatisfaction with the product ecosystem, aesthetic design, or ergonomics was also a key deterring factor within the user dissatisfaction theme. The latter was best expressed through P511 response about the reason she replaced her iPad with a laptop:

I don't like small screens.

4.2.3. Craving Newness

At its core, this theme captures humans' attraction to the novel and the urge to explore the new. It tells the story of the appeal of innovation, the attraction to new experiences, and the promise of enhanced features in new products as a barrier to sustained product appreciation. The main barrier within this theme was "user desire for novelty". One of P465's accounts, explaining the reason for discontinuing the use of his old phone and buying a new one, perfectly articulated this barrier:

Because there's nothing new to it. It's just the same thing I'm using. . . And maybe I want to try out a bit of new specifications and see if they have new cameras on the phone, better cameras. I want to try those out and see other stuff they're providing in their new phones.

The theme also encapsulated the barrier "user tendency for quick boredom':

It's very difficult for me to use the same thing for more than three years.

(P646 talking about the reason he stopped using his old phone)

P646 expressed his inability to use any product for an extended duration. However, the code captured the underlying reason: propensity for rapid boredom.

4.2.4. Free Upgrades

This theme captures a particularly salient aspect of the dataset. Several interviewee accounts illustrated how receiving gifts or awards led them to stop appreciating the products they already had:

And even my previous phone, I was not planning to upgrade it, but my brother gifted me this phone.

(P111)

And then I got rid of it just because I was given a prize, an award. . . And so, they gave me a phone that was the latest one those days.

(P646)

This theme concludes the discussion of all the resulting themes (motivations and barriers), subthemes, and the individual factors they encompass. Figure 4 showcases pictures of products that were highly appreciated by the participants. These images provide visual context and further illustrate the diversity of appreciated products.

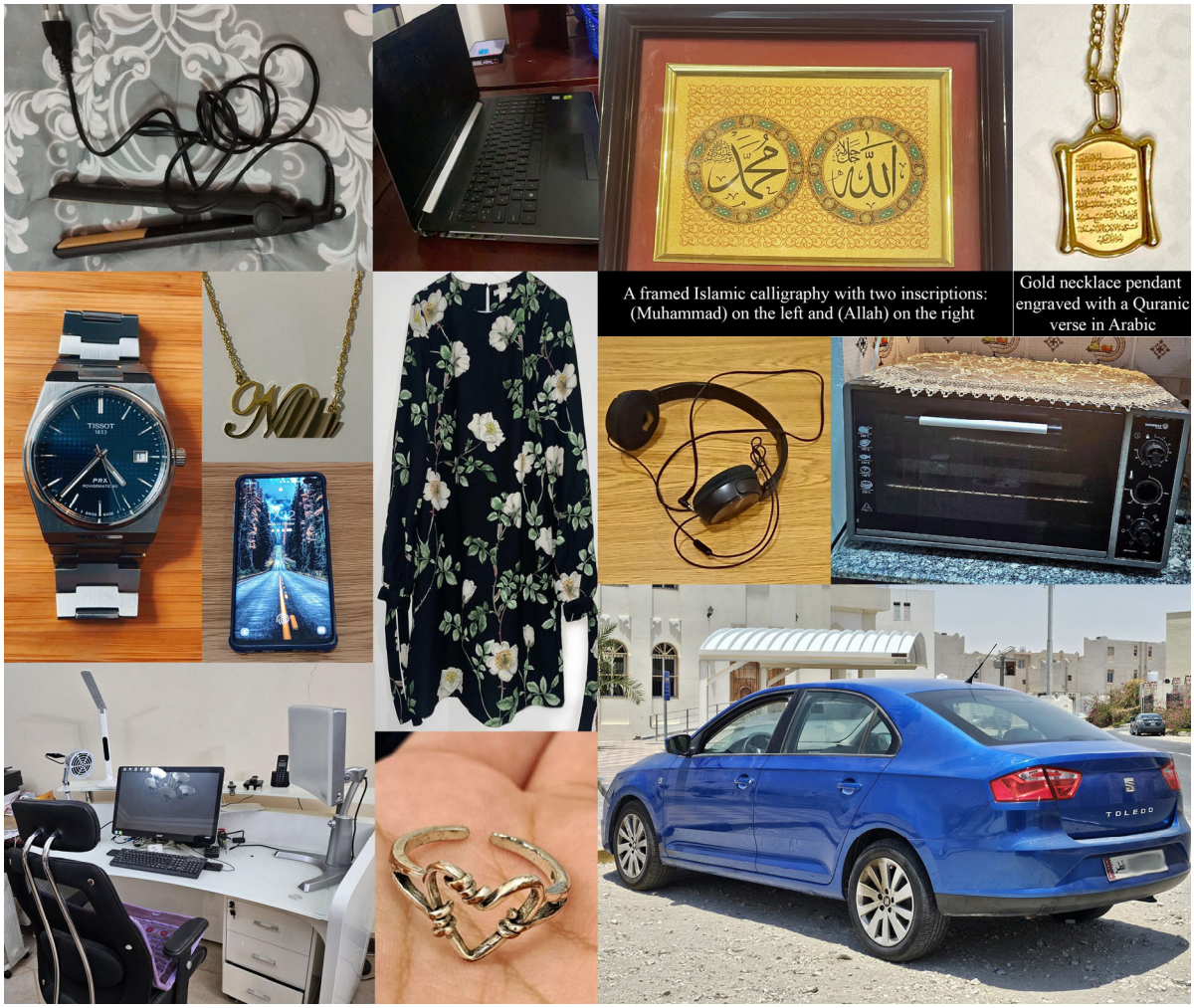

Figure 4. Pictures of some of the products appreciated by the participants.

5. Conclusions

Following a qualitative, exploratory approach, this investigation aimed to understand the circular behavior of product appreciation from users' perspectives and uncover the factors that influence it. In-depth, cross-language (English and Arabic), conversational, face-to-face interviews were conducted, and reflexive TA was employed to identify what motivates users to appreciate products and what discourages, hinders, or prevents them from doing so. This study expands the current understanding of sustainable and circular user behaviors by accentuating the delineation of the newly identified behavior of product appreciation.

During the interviews, rapport was established early through general questions related to the participants' backgrounds, daily routines, occupations, studies, and future aspirations. This created a friendly, open atmosphere that helped the interviewees feel at ease and share their thoughts more freely and candidly (not only through their words but also through non-verbal cues such as body language, gestures, and variations in tone of voice). It was also observed that as the interviews progressed, participants became more engaged and eager to share more of their experiences and ideas. As a result, many interviews were longer than initially anticipated, averaging 50 min per interview, which increased the richness and depth of the collected data.

The subsequent analysis revealed 60 motivation factors and 30 barrier factors that influenced users' appreciation. More importantly, six motivation themes emerged: attachment due to sentimental value, user satisfaction, holistic positive engagement, product

ingenuity and enduring value, economic mindfulness, and retention and status quo tendency. On the other hand, four barrier themes were identified: changes in user preferences, user dissatisfaction, craving newness, and free upgrades. The first barrier theme, "changes in user preferences", encompassed five subthemes: aging, changes in the physical characteristics, changes in user's circumstances, market advancements, and social influences. Each of the subthemes illustrated a significant facet within the encompassing theme. Moreover, the study advocates for the utilization of reflexive TA in research exploring user behavior and makes a valuable contribution to the qualitative research literature by introducing an adapted and augmented version of reflexive TA, tailored for cross-language interview studies.

Attachment due to sentimental value was the most prevalent motivation theme, consistently present across the dataset without exception. Products appreciated in relation to this theme were often those received as gifts, especially from an admired or a dear person. Furthermore, associations with positive memories and having the user's name on the product were significant drivers of attachment that led to product appreciation.

On the other hand, the most dominant barrier themes were "user dissatisfaction" followed by "changes in user preferences", with the latter's most influential subthemes being "changes in user circumstances" and "market advancements". These were followed by "social influences", "changes in physical characteristics", and, lastly, the "aging" subtheme (which was the least prominent subtheme). Within the "user dissatisfaction" theme, prominent barrier factors included dissatisfaction with product performance, unreliability, and usability limitations.

This study facilitates naturalistic generalizability and transferability by offering in-depth details, direct participant quotations, visual materials, and overall a rich reflexive TA [40]. Future research could build upon the proposed methodology to not only extend the findings but also enhance them by exploring product appreciation behaviors across additional regions worldwide. Furthermore, the study's results could serve as a foundation for a complementary quantitative study. The identified factors and the generated themes can be translated into measurable constructs for a large-scale survey. The questionnaire can further incorporate open-ended questions to gather additional qualitative data. Such a survey study would validate or refine the exploratory insights while ensuring greater consistency across different global populations.

This study makes a substantial contribution to the theoretical, practical, and policy dimensions of sustainable consumption within the circular economy. Theoretically, it accentuates the distinction between product appreciation and related behaviors, such as product retention or the postponement of replacement. This paves the way for future research to explore the relationships and dynamics between these behaviors as well as between the factors that drive them. On the practical level, the study provides instrumental, actionable insights for designers and researchers dedicated to slowing resource loops and fostering sustainable consumption patterns (in alignment with the United Nations Sustainable Development Goal 12 [41]). They can draw upon the identified factors and the generated themes to develop circular design concepts that encourage and facilitate product appreciation. Additionally, business strategists can capitalize on the findings to devise profitable circular value propositions that foster appreciation. From a policy perspective, the study's findings provide a basis for crafting extended producer responsibility (EPR) schemes that promote product appreciation within a broader framework of sustainable consumption practices. For instance, companies could be incentivized to produce durable products of high sentimental value (potentially through customization) that encourage positive user interaction and long-term utilization. Overall, the findings provide valuable understanding that support sustainable design strategies and contribute to the transition towards circular systems and a more sustainable future.

Author Contributions: Conceptualization, M.I.M.A. and P.C.; methodology, M.I.M.A. and P.C.; software, M.I.M.A.; formal analysis, M.I.M.A. and P.C.; investigation, M.I.M.A. and P.C.; resources, M.I.M.A. and P.C.; data curation, M.I.M.A.; writing—original draft, M.I.M.A.; writing—review and editing, M.I.M.A. and P.C.; visualization, M.I.M.A.; supervision, P.C.; project administration, P.C. Both authors have read and agreed to the published version of the manuscript. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki and approved by the Institutional Review Board of Qatar University.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: To protect the privacy of the study participants, the data supporting the findings of this study cannot be made publicly accessible.

Conflicts of Interest: The authors declare no conflicts of interest.

Appendix A. List of Factors (Codes) and Themes

Table A1. The motivation factors (codes) and themes of product appreciation.

Number	Motivation Factors	Motivation Theme
1	The product was a gift/present (especially from someone dear)	Attachment due to sentimental value
2	Product's association with positive memories	
3	The product has the user's name on it	
4	The product recalls past challenges and triumphs	
5	The product symbolizes a special presence	
6	Product's status as first acquisition in its category	
7	Attachment due to a religious inscription	
8	Product significance as a memory	
9	Coordinated product selection with a friend	
10	The product evokes nostalgia	
11	Significance of purchase from first salary	
12	Satisfaction with product's aesthetic design	User satisfaction
13	Satisfaction with product ergonomics	
14	Satisfaction with product's performance	
15	The user is content or impressed with product's overall quality	
16	The user finds the product reliable	
17	Positive user perception of product's condition	
18	The product matches user's other belongings	
19	The user has an affinity for the product type/category	
20	The user finds the product economical	
21	The user became fond of the product	
22	The user finds product's capabilities acceptable	
23	User satisfaction with product technology	
24	Satisfaction with product's utility for multiple purposes	
25	The user finds the product easy to use	
26	Satisfaction with product's craftsmanship	
27	The product matches the user's style	
28	User's fondness of the product's patina and character over time	
29	Product design aligns with user's social preferences	
30	The user admires the functional design aesthetics	
31	Receiving endorsements from the social circle	
32	User contentment with product's low maintenance	
33	User values product's versatile compatibility	
34	Increased comfort with the product over time	

Table A1. *Cont.*

Number	Motivation Factors	Motivation Theme
35	User incorporated the product within a preferred setup	Holistic positive engagement
36	The product is integral to user's daily life	
37	The product is essential for work	
38	The product is essential for study	
39	The product is suitable for certain social events	
40	Mindful use	
41	The product was customized to user's preferences	
42	The product has become part of the user's persona	
43	The product is integral to the user's health and well-being	
44	Limited usage	
45	The user acquired the product of their preference	
46	Reliance on the product for social connectivity	
47	Product physical endurance	Product ingenuity and enduring value
48	The product is distinct	
49	Product design is timelessness	
50	The product is still a trend	
51	The product has revolutionary features	
52	The product was the latest model upon purchase	
53	The user recognizes the product's purchase cost	Economic mindfulness
54	The user exhibits frugality	
55	The user finds new models' prices high	
56	User's propensity to appreciate products	Retention and status quo tendency
57	User's tendency to retain possessions	
58	User's anti-consumerism	
59	User's comfort in familiarity with technology	
60	User's aversion to change in technology	

Table A2. The barrier factors (codes), themes, and subthemes.

Number	Barrier Factors	Barrier Subtheme	Barrier Theme
1	Shifting towards modesty with age	Aging	Changes in user's preferences
2	The product no longer fits the user's body	Changes in physical characteristics	
3	Starting a new job	Changes in user circumstances	
4	A change in the user's educational level		
5	A change in the user's marital status		
6	A change in the user's financial ability		
7	Market availability of enhanced-feature alternatives	Market advancements	
8	Market introduction of a multifunctional product		
9	Market availability of a more practical alternative		
10	Product acquisition elevates social status	Social influences	
11	Peer influence on product choice and purchase		
12	Dissatisfaction with product performance		User dissatisfaction
13	Product unreliability		
14	Usability limitations		
15	The product has worn out or suffered some damage		
16	Operational issues with product		
17	The product became outdated		
18	Poor product functionality		
19	Frequent malfunctions		
20	The product was in a bad condition		
21	Operational expensiveness of product		
22	Training was required for proper usage		

Table A2. *Cont.*

Number	Barrier Factors	Barrier Subtheme	Barrier Theme
23	User dissatisfaction with difficult and costly maintenance		
24	Limited availability of spare parts		
25	Dissatisfaction with product ecosystem		
26	Dissatisfaction with product ergonomics		
27	Dissatisfaction with product's aesthetic design		
28	User desire for novelty		Craving newness
29	User tendency for quick boredom		
30	Receiving a new version of the product as a gift/award		Free upgrades

Appendix B. Supplementary Data

Table A3. Mapping research objectives and interview questions.

Research Objectives	Research Questions	Interview Questions
Understand users' current product appreciation behaviors	How common is the appreciation practice? What are the products that are usually appreciated by users?	***Q1.*** *I want you to think of a product that you have been using for a long period of time . . . Tell me about this product.* ***Q5.*** *Are there any other products that you have been using for a long period of time?* If the respondent answers "yes", the probe will be: *Tell me about that product [the only product they mentioned or the first in a list of products].*
Determine the motivators of product appreciation	What factors motivate users to appreciate a product?	***Q2.*** *Why are you still using this product?*
Uncover the barriers to product appreciation	What are the barriers that deter users from appreciating a product?	***Q3.*** *What are the reasons or situations that would make you stop using that product?* OR ***Q4.*** *Why don't you keep using products for a long period of time?*

Table A4. The interview guide (English version).

Opening
• Thanking the participant for accepting to be interviewed. • Asking ice-breaking questions to build rapport. • Restating the purpose of the study and the goal from the interview. • Reading the consent form to the participant and having him or her read it and sign it. • Letting the participant know that their participation is valuable and very much appreciated. • Encouraging the participant to answer the questions as accurately as possible.

Table A4. *Cont.*

Main
Research Objective (1): *To understand users' current product appreciation behavior:*
Q1. *I want you to think of a product that you have been using for a long period of time. . . Tell me about this product.* • *When did you acquire the product?* • *How did you acquire this product?* • *[If the product was bought by the suer] Why did you buy this product?* • *How often do you use this this product?*
Research Objective (2): *Determine the motivators of product appreciation:*
Q2. *Why are you still using this product?* • *Can you think of any other reason?* ○ *Why?* • *Do you usually keep using similar products for such a long period of time?* *[If the answer is "yes", then] Why?* ** If the interviewee cannot think of, or they say they don't have, any product that they have been using for a long period of time, a variation of Q3 will be asked (Q3*)—below.*
Research Objective (3): *Uncover the barriers to product appreciation:*
Q3. *What are the reasons or situations that would make you stop using this product?* • *Why would that [based on the respondent's answer to Q3] make you stop using the product?* ** To investigate each reason/situation further, this question will be repeated as many times as the number of reasons/situations mentioned by the respondent in their answer to Q3.* • *Can you think of any other reasons or situations? . . . Tell me more about that.* *OR:* ***Q4.*** *Why don't you keep using products for a long period of time?* • *Did you ever discard a functioning product? Why?*
To know more: **Q5.** *Are there any other products that you have been using for a long period of time?* If the respondent answers "yes", the probe will be: Tell me about that product [the only product they mentioned or the first in a list of products].
Closing
• Asking the participant if there is anything they would like to add. • Thanking the participant and letting them know, once again, the value of their contribution to the research. • Telling the participant what will be done with the collected data. • Asking the participant if it would be OK to call them again to clarify something or to answer other questions, if needed.

Note: An Arabic version of this guide was also produced and utilized in the Arabic interviews.

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