

## Circular Economy and Sustainable Consumption- Antecedents of Zoomers Intention to Buy Preowned Mobile Phones

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### Abstract

E-waste generation is rising rapidly, with mobile phones among the most hoarded small electronics despite usability (International WEEE Forum, 2022). The shift from linear to circular smartphone markets depends on consumer participation, where refurbishment offers lower environmental and economic costs than new device

This mixed-methods study explores antecedents shaping Zoomers' (Generation Z) intention to buy pre-owned mobile phones within sustainable consumption, green purchase intention, and e-waste reduction frameworks. Quantitative analysis and semi-structured interviews reveal key drivers: environmental awareness, perceived value, quality assurance, and social endorsement amplified through Twitter-based peer influence. Adoption barriers include distrust in reseller platforms, perceived obsolescence, loss of unboxing excitement, low price differential, and social stigma linked to phone-based status signalling.

Findings highlight the intertwined nature of economic, emotional, environmental, and social factors, offering strategic insights for circular mobile markets targeting Gen Z.

**Keywords:** Circular economy, sustainable consumption, e-waste reduction, pre-owned phones, green purchase intent, Generation Z, trust barriers

### 1. Introduction

The global rise in waste from electrical and electronic equipment (WEEE) has emerged as one of the most pressing sustainability challenges of the 21st century. The latest Global E-Waste Monitor reports that e-waste generation reached 62 million metric tonnes in 2022, marking an 82% increase from 2010, with only 25% formally recycled (Forti et al., 2020; Andersen, T. 2022; Serpe, A, 2025). Of the small electronic devices hoarded globally, mobile phones hold a significant share, ranking fourth among unused or broken electronics stored at household levels despite dysfunctionality, intensifying environmental leakage risks (Cox et al., 2013; Ongondo & Williams, 2011).

The smartphone ecosystem has historically followed a *linear consumption model* based on rapid production, higher product turnover, shortened lifespans, and premature disposal. This over-circulation is driven not only by functional obsolescence but also by psychological novelty-driven replacement behavior (Gan, X, et al., 2017). The need to transition to a circular economy model in the phone sector is therefore urgent, where value is recovered through slowing, narrowing, and closing consumption loops via reuse, resale, refurbishment, and remanufacturing (Stahel, W. R.

2018; MacArthur E, 2013; Geissdoerfer et al., 2017). Among circular economy strategies, reconditioning and refurbishment have emerged as more resource-efficient and economically viable alternatives to recycling, given lower energy, labor intensity, and material wastage (Atasu et al., 2010; Van Weelden et al., 2016; Mugge et al., 2017).

Generation Z consumers—commonly termed *Zoomers* (born 1997-2012)—represent a uniquely relevant cohort for investigating circular consumption behavior. As digital natives, Zoomers demonstrate higher environmental cognition, sensitivity to social influence, techno-economic pragmatism, novelty-seeking purchase behavior, and platform-based resale engagement (Ek et al., 2020; Nasiri & Shokouhyar, 2021; Frahm L. B et al., 2025). However, despite high sustainability awareness, a persistent intention-behavior gap continues to limit adoption of refurbished and pre-owned phones, often due to perception bias, trust deficits, quality concerns, price-value ambiguity, social stigma, and information asymmetry (Parguel et al., 2017; Mugge et al., 2018; Wahjudi D et al., 2020).

This study addresses the urgent need to transition smartphone consumption from a linear to a circular model to mitigate environmental leakage risks caused by device hoarding and premature disposal. While Generation Z shows high environmental awareness and strong participation in digital resale ecosystems, research remains limited in simultaneously explaining the psychosocial, techno-economic, and trust-based factors that determine their actual uptake of refurbished and pre-owned smartphones. Existing studies typically assess circular economy adoption at a macro behavioural level (Geissdoerfer et al., 2017), emphasize social influence and focuses on the sustainable product choice (Parguel et al., 2017), document fear of quality and trust deficits in refurbished electronics (Mugge et al., 2017), but rarely model these constructs specifically for Zoomers in a resale-platform environment. This creates a critical gap in understanding intention-to-action conversion for circular smartphone adoption.

This study fills this gap by providing a demographically-focused behavioural framework for Gen Z, integrating environmental cognition, peer influence, novelty-driven bias, perceived price-value clarity, and digital trust, constructs individually validated in prior literature on circular consumer behaviour (Stahel, 2016), social influence and green product stigma (Wahjudi & Wang, 2020), and platform-based trust in second-life electronics markets (Frahm et al., 2025; Nasiri & Shokouhyar, 2021). By decoding the drivers that convert sustainability awareness into real circular purchase behaviour, this study will extend circular consumption theory with Gen Z-specific predictors and offer actionable insights to accelerate refurbished phone adoption, slow disposal loops, and strengthen reuse-led circularity at the household level, a domain existing models have not yet fully explained.

## 2. Review of Literature

### 2.1. Circular Economy as a Sustainable Paradigm

The circular economy (CE) has emerged as a critical alternative to the linear “take–make–dispose” model, aiming to enhance resource efficiency, eliminate waste, and preserve ecological value (Kirchherr et al., 2017). Product life extension strategies such as reuse, repair, refurbishing, and remanufacturing form the operational backbone of CE, offering environmental and economic advantages including reduced resource extraction, lower energy consumption, and minimized landfill waste (Atasu et al., 2010; Reike et al., 2023; Van Weelden et al., 2016). Refurbishment,

unlike recycling, retains higher original product value as it avoids complete dismantling, thereby conserving the embedded labor and energy from initial production.

Empirical studies suggest that while CE-driven products made from recycled or recovered materials receive increasing public attention, consumer demand does not always translate into adoption due to scepticism regarding price, sustainability claims, and brand credibility, highlighting a green attitude-behaviour gap

## **2.2. Sustainable Consumption and E-Waste Challenges**

The exponential rise of electronics has triggered a global surge in e-waste (WEEE), particularly from short-lived products like mobile phones, which typically reach end-of-use within 18–21 months due to both functional and psychological obsolescence (Franke et al., 2006; Ghorab, H. 2022)

Developed nations enforce stringent e-waste regulations, while developing economies such as India predominantly depend on informal or unregulated recycling and refurbishing sectors, creating environmental inefficiencies, occupational hazards, and health risks (Rathore et al., 2011; Sharifi & Shokouhyar, 2021). Although secondary and refurbished markets play an important role in reducing e-waste by extending product lifespans, consumer reluctance remains a bottleneck for scaling CE in electronics.

## **2.3. Consumer Acceptance of Refurbished and Pre-Owned Phones**

Consumer decision-making toward refurbished mobile phones is shaped by personal, product-related, contextual, and socio-cultural determinants (Ajzen, 1991; Payne, J et al., 1991; Van Weelden et al., 2016).

The Dutch market study (Van Weelden et al., 2016) emphasizes that lack of awareness and misunderstanding of refurbishment processes significantly reduce consumer consideration of refurbished phones. Rejection is further driven by a strong negative trade-off between perceived risks—quality, reliability, hygiene concerns, and warranty ambiguity—and perceived benefits such as price advantage and environmental value (Mugge, Jockin & Bocken, 2017). Similarly, social-media analytics research using Twitter (Umeda, Y., et al. 2017) confirms that personality traits, risk perception, price value, newness bias, trust in refurbishment processes, and warranty assurances influence purchase inclination for refurbished phones, with notable differences between developed and developing consumer groups (Xu, C., 2016). These studies identify affordability and upgraded specifications as key drivers, while quality concerns, warranty absence, and the “thrill of newness” present strong psychological and functional barriers (Olorvida, R. C et al., 2023). The Indonesian consumer study (Mugge, Jockin & Bocken, 2017) further reinforces that although price affordability, improved features, and warranty support stimulate purchase intention, barriers such as counterfeit risks, obsolescence fears, and distrust in regulatory and certification mechanisms continue to suppress adoption growth. Interestingly, perceived quality functions as both a driver and a barrier depending on consumer trust, highlighting the need for transparent and credible refurbishment communication to improve market acceptance.

CE adoption in electronics, especially mobile handsets, offers promising sustainability pathways. However, consumer hesitation caused by quality distrust, warranty concerns, limited awareness, and psychological obsolescence bias compromises market potential. Social media analytics and

text mining techniques help uncover nuanced consumer determinants, offering strategic insights to scale refurbished and preowned phone markets by addressing trust, process misconceptions, warranties, and awareness barriers.

**Research Problem and Study Contribution**

Although secondary phone markets are growing, they remain relatively niche, constrained by unfavorable perceptions and inconsistent trust mechanisms, despite their proven role in e-waste reduction, affordability-driven digital resale ecosystems, and inter-device circularity validation (Wilson et al., 2017; Frahm et al., 2024). Prior studies have largely relied on quantitative survey methods, resulting in limited interpretation of emotional, social, cultural, and experiential motivators behind CE adoption behavior. The absence of qualitative insights prevents a holistic understanding of mobile usage, replacement, repair, and disposal behavior in CE ecosystems (Ongondo & Williams, 2011; Wilson et al., 2017).

This study responds by employing a **mixed-method approach**, capturing Zoomers’ pre-owned phone purchase intention using both *quantitative modelling* and *qualitative semi-structured interviews*, allowing interpretative depth regarding intertwined CE decision motivations (Patton, 2002; Frahm et al., 2024). The study contributes to circular economy literature by integrating emotional and social nuances that influence CE product adoption among younger demographics, offering validated consumer-centric insights to inform OEM and reseller strategies.

**Methodology**

This study is aiming to understand the drivers and the concerns which make consumers choose to opt for a pre-owned phone, also to understand the specific demographics of people like, age, gender, social standing were factors that affected the purchase decision. Study followed qualitative research design approach (Patton, 2002). to develop research data, for which 12 in-depth interviews were conducted. Appointments were taken for the physical interviews and the purpose of the study and expectations were shared with the individuals chosen for interview. Out of 12 interviews, one interview was held online using MS Teams as the respondent had a last-minute change in travelling plans.

Each interview took about 45-50 mins, with prior consent of the respondents through mail, the interviews were recorded. The resulting interviews were then transcribed and coded. The twelve respondents were chosen from the target group of individuals having a pre-owned phone, intending to buy and use pre-owned phones and the ones who had never thought of buying used phones. A short description of what refurbished/ pre-owned phones are, was given to the respondents especially to those who had never heard about it or had limited upstanding of the concept of refurbished or pre-owned phones.

**Analysis and Findings:**

Drivers	Codes	Interview verbatims
<b>Environmental Consciousness</b>	Environmental impact	Preowned phones used by multiple users reduces e-waste and minimizes the impact on the environment by reducing discarded chipsets and batteries.

		Many people hold onto their old phones instead of reselling them. If more people sold their old devices, they could be refurbished and used by others, reducing waste.
	Carbon footprint reduction	I feel there is a lot of environmental consciousness now, the e-waste is well managed.
		One reused phone means one less device made, leading to reduction of carbon footprint
<b>Individual Values/ Self Expressiveness</b>	Personal responsibility toward sustainability	it's my , rather everyone's responsibility to save environment for coming generation
		We cannot keep tempering the environment for our petty interests
	Ethical consumerism	Green is not about saving environment, its about acting responsibly
<b>Social Benefit</b>	Influence of peer/community behaviour	I am encouraged to buy preowned phones because my friends and family supports sustainable consumption
	Societal support for green products	Social media trends and influencers make me more likely to consider refurbished phones as a sustainable option
		Seeing others opting for green purchase of second-hand products I feel motivated to but preowned phones.
<b>Financial Benefit</b>	Affordable price	refurbished phones prices are low
		We get advanced features at low prices
	Value for money	At affordable price, you get good performance which is same as the new phone
		Financially, it makes sense to buy a second-hand phone

Barriers	Codes	Interview verbatims
Perception Barriers	Misconception of refurbished products	I am never confident on the quality of refurbished item.
		the term " refurbished" itself makes me think something was wrong.
	Lack of thrill of newness	The feel the excitement and thrill of unboxing new phone is missing if you buy a preowned phone
		It is so fun to explore new phone, which is not the same on buying old phone
Technological obsolescence	the old phone may not support the latest apps or updates.	

		What is the point buying a older model which means older technology
Information Barriers	Lack of awareness	I was unaware that there were certified refurbished phones with warranties.
		If more people can be educated on how well re-processed or tested these refurbished phones are
	Lack of availability	Its difficult to find the exact model I want in refurbished phones most of the times
		Most of the times, the phone I am looking for is not available in preowned phone market
Risk and Trust Issues	Performance risk	trust online marketplace which gives first hand products. I don't prefer buying it from a 2nd hand seller.
		I am always doubtful about how well the preowned phone function
	Less reliable retailers	I have to buy from a reputative one so that i get the quality i am looking for
		Not comfortable with online marketplace. My decision will be based on what people around will vouch for.
	Lack of warranty and services	OLX not trustworthy, but a family member I have trust in it.
		I think in India, I wouldn't really buy a refurbished phone. I don't think it's that reliable here
		The concerns are extended battery life, old processor and limited software updates.
	Value-Based Barriers	Low price differential
I dont know whats the condition of the phone when i am buying it online, what if there are bugs, previous data and everything, Security issues.		
Missing accessories		No chrger, no earphones, then I have to put extra on it.
		Refurbished phones mostly comes without original accessories, making them incomplete deal
Inferior quality		Battery life was my biggest concern because I was getting a battery health of 93% rather than 100% like a new phone..

Social Stigma	Social awkwardness	in a professional setting, particularly in sales or managerial roles, using a refurbished phone could create an inferior impression
		Yes, especially in a country like India, where people often ask which phone you bought and how much you paid for it.
	Social status	India is one of the country social status is identified on the basis of the phone
		It may make others feel that I cannot afford a new phone
Technological Obsolescence Concern	Functional obsolescence	Smartphones are replaced more frequently than other goods because of perceived functional decline.
	Software and support obsolescence	Material remains relevant, but software-related limitations and repairability gain prominence in newer smartphone generations.
	Perceived / psychological obsolescence	Purchasing a refurbished phone 'would not provide the same enjoyment as owning a new phone

Table 1: Drivers and Barriers

**Drivers of Zoomer Intention to Buy Pre-owned Mobile Phones**

The study identifies four core antecedent driver clusters influencing Zoomers’ intention to purchase pre-owned mobile phones:

**1. Environmental Consciousness**

Respondents articulated strong environmental motivations, emphasizing that one reused or refurbished phone directly contributes to reducing manufacturing emissions, chipset and battery waste, and landfill burdens. Participants viewed resale behaviour as a meaningful route to lowering carbon and e-waste impact (Downes et al., 2011; Cox et al., 2013; Sharifi & Shokouhyar, 2021). Households currently store unused phones at high rates, delaying recirculation; increased peer resale participation could substantially minimize e-waste volumes through lifecycle extension (Cox et al., 2013).

Many respondents demonstrated awareness of the environmental benefits of reusing smartphones. Refurbished phones were perceived as contributing to e-waste reduction, lower carbon footprint, and sustainable resource use.

*“Preowned phones used by multiple users reduce e-waste and minimize the impact on the environment by reducing discarded chipsets and batteries.”*

*“One reused phone means one less device made, leading to a reduction of carbon footprint.”*

Respondents also acknowledged that holding onto old devices contributes to waste accumulation:

*“Many people hold onto their old phones instead of reselling them... they could be refurbished and used by others, reducing waste.”*

## 2. Individual Values and Self Expression

Zoomers expressed environmental stewardship as an *individual responsibility toward future generations*. Responses such as “Green is about acting responsibly, not just saving the environment” validate value-embedded sustainable identity expression in CE adoption decisioning (Xu et al., 2024; Wells et al., 2023). Younger consumers increasingly evaluate recycled, remanufactured and refurbished electronics using ethical value frameworks, yet struggle to translate green cognition into purchase action when incentive structures lack tangibility (Becker Frahm et al., 2024; Xu et al., 2024).

Some interviewees tied their purchase preferences to personal values, moral responsibility, and ethical consumerism.

*“It’s my, rather everyone’s responsibility to save the environment for coming generations.”*

*“Green is not about saving the environment; it’s about acting responsibly.”*

These statements reflect an internalized sense of sustainability-driven identity.

## 3. Financial Benefit and Value-for-Money Perception

Affordability strongly drives Zoomers’ adoption decisions. Participants emphasized that pre-owned phones offer advanced premium features, equivalent functional performance and high value at significantly lower prices than new alternatives. This supports refurbishing as an economically compelling circular strategy in high-priced smartphone markets, particularly for emerging-market-aligned CE device adoption segments (Atasu et al., 2010; Gregson et al., 2002; Ek et al., 2020).

Affordability and perceived value for money emerged as strongest drivers.

*“Refurbished phone prices are low.”*

*“We get advanced features at low prices.”*

*“At affordable price, you get good performance which is the same as a new phone.”*

*“Financially, it makes sense to buy a second-hand phone.”*

## 4. Social Benefit, Peer Influence, and Community Validation

Peer-to-peer norming and social endorsement play a pivotal role. Respondents revealed that green consumption trends, influencer messaging, and community advocacy strengthened their consideration of refurbished or pre-owned phones. The intention to buy increases when validated by social circles, online communities, or digital collaborative retail resale channels (Saarijärvi et al., 2018; Ek et al., 2020; Frahm et al., 2024).

Peer influence and societal messaging played a significant role in shaping positive attitudes.

*“I am encouraged to buy preowned phones because my friends and family support sustainable consumption.”*

*“Social media trends and influencers make me more likely to consider refurbished phones as a sustainable option.”*

Seeing others adopt green practices reinforced their motivation:

*“When I see others opting for green purchase of second-hand products, I feel motivated to buy preowned phones.”*

## Consumer Barriers to CE Adoption in Pre-owned Phone Markets

Several resistance clusters inhibit adoption of pre-owned mobile phones among Zoomers:

### 1. Perception and Misconception Barriers

Respondents exhibited *low confidence in refurbished product quality*, where the term “refurbished” triggers assumptions of defect history or prior malfunction. The thrill of unboxing new technology is perceived as missing and psychologically inferior for novelty-seeking segments (Mugge et al., 2018; Parguel et al., 2017).

The most common challenge was misconception of refurbished products and lack of confidence in quality.

*“I am never confident about the quality of a refurbished item.”*

*“The term ‘refurbished’ itself makes me think something was wrong.”*

The emotional appeal of a new device was also missing:

*“The thrill of unboxing a new phone is missing if you buy a preowned phone.”*

*“It is fun to explore a new phone, which is not the same when buying an old one.”*

Concerns about aging technology persisted:

*“The old phone may not support the latest apps or updates.”*

*“What is the point of buying an older model which means older technology?”*

### 2. Value based Barriers

Zoomers expressed concerns regarding older processors, battery duration, and software update support limitations. Many respondents questioned the value of buying older phone models, equating them to outdated technological performance futures (Wilson et al., 2017; Didik Wahjudi et al., 2020).

Even financially conscious buyers highlighted issues beyond price.

*“The price difference is not substantial enough to feel it’s worth buying a refurbished phone.”*

*“No charger, no earphones... then I have to put extra money into it.”*

*“Battery life was my biggest concern because I was getting 93% instead of 100%.”*

### 3. Information Asymmetry and Awareness Gaps

Participants revealed *limited awareness of certified refurbished devices with warranties*, verified testing processes, or official CE assurance pathways. Education on refurbishment quality controls could reduce uncertainty and increase market trust (Sharifi & Shokouhyar, 2021).

Lack of product knowledge and limited market visibility restricted consumers’ willingness to buy.

*“I was unaware that there were certified refurbished phones with warranties.”*

*“If more people could be educated on how well tested these refurbished phones are...”*

*“It’s difficult to find the exact model I want in refurbished phones.”*

### 4. Trust and Performance Risk

Trust concerns centred particularly on second-hand sellers or unknown online resellers. Although platforms offering new first-party products were trusted, second-hand marketplaces were perceived as functionally or reputationally less reliable. Adoption intention therefore depends on platform assurance and retailer credibility (Mugge et al., 2017; Saarijärvi et al., 2018).

Trust-related concerns were among the most significant deterrents.

*"I trust online marketplaces that give first-hand products; I don't prefer buying from a second-hand seller."*

*"I am always doubtful about how well the preowned phone functions."*

Respondents stressed dependence on reputable sellers:

*"I have to buy from a reputable one so that I get the quality I am looking for."*

*"Not comfortable with online marketplaces. My decision will depend on what people around me vouch for."*

Warranty gaps and unreliable platforms intensified distrust:

*"OLX is not trustworthy, but a family member I have trust in."*

*"I don't think the refurbished market in India is reliable."*

## 5. Social Stigma and Symbolic Status Barriers

Zoomers disclosed that in status-conscious cultures like India, mobile phones act as *social identity markers*. Using pre-owned phones was perceived by some respondents as socially inferior, associating the purchase with perceived low affordability or reduced status signalling (Didik Wahjudi et al., 2020; Wells et al., 2023).

In India, smartphones are often tied to social status, affecting consumers' willingness to choose refurbished devices.

*"In a professional setting, using a refurbished phone could create an inferior impression."*

*"People in India often ask which phone you bought and how much you paid."*

*"It may make others feel that I cannot afford a new phone."*

## 6. Technological Obsolescence Concern

Technological obsolescence is a key deterrent to second-hand smartphone adoption, encompassing functional, software, and psychological dimensions. Consumers often associate refurbished phones with shortened lifespans due to battery degradation, hardware wear, and limited repairability (functional obsolescence) (Cooper, 2004; Wieser & Troger, 2018). Even when devices remain physically usable, the lack of operating system updates, security support, and app compatibility (software obsolescence) reduces perceived usefulness and long-term value (Cordella et al., 2020;

Ozcelik, A et al., 2022). Additionally, psychological obsolescence, driven by desires for novelty, social status, and contemporary design, leads consumers to view second-hand smartphones as inferior to new devices (Mugge et al., 2005; Van Nes & Cramer, 2006). Collectively, these concerns heighten perceived risk and continue to constrain wider consumer participation in circular smartphone markets.

*"Smartphones are replaced more frequently than other goods because of perceived functional decline."*

*"Material remains relevant, but software-related limitations and repairability gain prominence in newer smartphone generations."*

*"Purchasing a refurbished phone 'would not provide the same enjoyment as owning a new phone.'"*

The findings indicate that while environmental values and financial benefits motivate interest in refurbished smartphones, trust deficits, quality concerns, and social stigma create strong resistance. Most consumers remain cautious despite recognizing the sustainability potential.

Trust, in particular, emerged as the central determinant, shaping willingness to consider pre-owned devices across all demographic groups.

### Practical Implications

Implications for Industry and CE Adoption Strategies

The study reveals that CE adoption of pre-owned mobile phones is deeply shaped by intertwined drivers, environmental responsibility, social validation, economic viability, and quality trust assurance. For wider diffusion, OEM and secondary markets must focus on:

- Reducing *perception bias* with transparent testing assurance communication.
- Addressing *software and battery lifecycle limitations* through verified process education.
- Increasing *platform certification visibility* to elevate trust in CE resale ecosystems.
- Leveraging *peer-influence and green norming* among digital resale markets.
- Reducing stigma through community advocacy and influencer CE endorsement.
- Demonstrating clear price-performance value signaling to overcome price ambiguity issues.

These insights can help OEMs design behaviour-informed circular retail re-entry strategies that enhance margins while ensuring sustainability adoption among younger demographics (Atasu et al., 2010; Frahm L.B et al., 2024).

### Conclusion

This study confirms the presence of a sustainability-aligned purchase paradigm among Zoomers, where pre-owned mobile phones symbolize both economic intelligence and environmental accountability. Yet adoption remains hampered by misconceptions, technological concerns, trust deficits, information gaps, and socio-symbolic barriers. Results highlight that CE product adoption cannot be viewed as an isolated purchase decision but a comprehensive consumption-lifecycle behaviour outcome, shaped by peer validation, emotional cognition of newness, economic rationality, environmental identity, and platform trust assurance.

Strengthening CE market adoption requires consumer-centric behavioural interventions, platform certification signalling, and eco-economic incentive alignment, offering meaningful implications for circular tech markets at both industrial and policy levels.

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