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Factors affecting young consumer's purchase intention of refurbished electronic devices in the Netherlands: a preliminary study

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Abstract: Electronic and electrical waste (e-waste) is growing fast. The purpose of this study is to examine young consumers' purchase intention of refurbished electronic devices (REDs) such as laptop, tablet, mobile phone and game console. From literature review the factors that influence young consumers' purchase intention were identified as 'environmental awareness', 'social acceptance', 'seller/brand reputation and availability', and 'affordability and value'. For each factor a few statements were developed and used as independent variables in a questionnaire. One statement was added about purchase intention as dependent variable. A Pearson correlation coefficient test showed a clear positive correlation of 'environmental awareness' and 'affordability and value' with the intention to purchase REDs, but not for the other two factors. This analysis contributes to knowledge on young consumers' perceptions of refurbished electronic devices and can inform the design of innovative value propositions and new business models for REDs that contribute to a circular economy.

Keywords: E-waste; refurbished electronic devices; young consumer; purchase intention; business model.

1 Introduction

The world is changing at a rapid speed and new technologies emerge every single day. While more and more people rely on information and communications technologies (ICT) to improve access to infinite information and to interact in the digital world, subsequently increasing number of people now own more than one ICT device (such as mobile phones, tablets, laptops, etc.). Even though this electronic device is increasingly in demand in today's society, the lifetime of these devices is becoming shorter and "this

phenomenon leads to a rapidly increasing rate of generating electrical and electronic waste (e-waste)" (Nguyen et al., 2019, pp. 1-2).

Although it is widely recognized that studying consumer behaviour such as consumer awareness, intention to purchase and consume of the refurbished electronic devices (REDs) are central to successful e-waste management (Islam et al., 2021; Kumar, 2019), however, to date, there is no or very limited studies available which involve the consumer's perceptions and purchase intention of REDs. Unexceptionally, there is a lack of academic literature which focuses on the young consumers' purchase intention and consumption of REDs even though the past research has indicated that the number of electronic items (such as mobile phone, laptop, tablet, etc.) in use were significantly associated with age and the younger consumers tend to change their mobile phones almost every year (Islam et al., 2021).

Because of the above reasons, it is necessary to have a comprehensive study to help understand what factors will normally affect today young consumers in purchasing REDs. We believe that this study is the first one which researches on factors affecting young Dutch consumers purchase intention of REDs. The objectives of this study are to:

- Get a better understanding of different factors that could affect the young consumers' perceptions and purchase intention of REDs;
- Make suggestions and recommendations of any comprehensive/relevant business models that could be used by marketers who are promoting REDs to their customers and contribute to achieving a circular economy (CE).

2 Literature review

Since limited research has been done in this area specifically targeting the young consumers, therefore, when reviewing relevant literature, we can only review the past literature which focuses on

- consumer behaviour toward e-waste (Islam *et al.,* 2021) and mobile phone recycling (Yin *et al.,* 2014)
- consumers' perceptions of seller reputation, distribution and buying intention of refurbished products (Agostini *et al.,* 2021)
- consumers' perceptions of buying refurbished smartphones (Nasiri and Shokouhyar, 2021), and
- residents' perceptions and behaviour of e-waste recycling (Akhtar *et al.,* 2014; Nguyen *et al.,* 2019).

Environmental awareness and refurbished electronic devices

A research study performed by Nasiri and Shokouhyar (2021) investigates the significant factors in consumer perceived value about purchasing refurbished mobile phones. Nasiri and Shokouhyar (2021) implied that the attractiveness of owning a refurbished mobile phone is positively related to the user's green perception. Research conducted by Yin and his colleagues focusing on Chinese consumers' behaviour of waste mobile phone reviewed that when consumers' level of environmental awareness was low, they will be less likely to concern about e-waste recycling or purchasing any used mobile phones (Yin *et al.,* 2014).

A quantitative research project supervised by Nguyen and his colleagues in Vietnam reviewed that citizens with high environmental awareness tend to be more active in e-waste recycling and reduction initiative. In other words, it shouldn't be surprised to claim that these citizens are also more comfortable with e-waste product. Furthermore, these citizens are willing to accept e-waste product "because they understand that such behaviour contributes to save natural resources and eliminate the environmental problem" (Nguyen *et al.*, 2019, p. 19). Aktar *et al.* (2014) offers a similar view by pointing out that consumers are more "willing to purchase refurbished or environmentally friendly product to reduce the impact of e-waste on environment". (p. 38).

Social acceptance and refurbished electronic devices

An empirical study conducted by Agostini and his colleagues examined the young consumers' perceptions of seller reputation, distribution and intention to purchase refurbished mobile phones in Italy. Their findings reviewed that most of the young consumers "have a favourable attitude towards purchasing refurbished smartphones" (Agostini *et al.,* 2021, p.6). Other than that, many users of refurbished mobile phones claimed that they will encourage their relatives and friends to buy refurbished phones (Agostini *et al.*, 2021).

Both Islam et al. and Nguyen et al. offer their comparable views to the above statement. While recommendations from friends and family members is always an important factor behind purchase decisions (Islam *et al.,* 2021), social pressure and acceptance always had a positive impact on e-waste recycling which might lead to accepting of e-waste products (Nguyen *et al.,* 2019).

Reputation and availability of refurbished electronic devices

Many researchers argued that both reputation of seller and location convenience are the two main factors positively affect attitude and the intention to purchase refurbished products (Agostini *et al.,* 2021; Yin *et al.,* 2014). Agostini *et al.* (2021) further explained that it is important that refurbished smartphone can be easily accessible by the potential buyers. Hence, any sellers of refurbished mobile phones should consider distributing their products in more channels.

In a simple term, inconvenience or the nonavailability may have negative impacts on consumer willingness and intention to adapt REDs. Nguyen and his colleagues supported the above statement and argued that inconvenience plays a weak impact on the behavioural intention of accepting any recycled and REDs (Nguyen *et al.,* 2019).

Affordability and value of refurbished electronic devices

As pointed out by Yin *et al.* (2014), only about 12.4% of used mobile phones were sold by the second-hand market for reuse. These used phones are particularly popular among the customers within rural areas after reassembly or refurbishment (Yin *et al.,* 2014). In brief, the refurbished mobile phone can always attract many customers in rural areas who cannot afford or unwilling to purchase a brand-new phone. In a same vein, Islam *et al.* (2021) noted that "Consumers prefer to buy cheap (nonbrand) electronics, despite a shorter lifespan" (p. 11).

While lower prices are the main reason and motivation for purchasing REDs (Nasiri and Shokouhyar, 2021), perceive of value is another factor which could encourage

customers in buying REDs. As pointed out by Agostini *et al.* (2021), many refurbished mobile phones buyers agreed that "acquiring a refurbished smartphone meets both my quality and price requirement" (p. 6).

In summary, environmental awareness can lead to the purchase of REDs because consumers are becoming increasingly concerned about the impact of e-waste on the environment, they want to reduce their impact on the environment, it can be a more financially sustainable option, and it can have a positive impact on the environment. By choosing to purchase refurbished electronics, consumers can contribute to a more sustainable future while also saving money and reducing their overall consumption.

3 Theoretical framework and hypotheses development

In this study, we were focused on the factors influencing young consumer's attitude toward their intention to purchase refurbished electronic products. The literature review from the previous section has helped us to discover four main factors, 'Environmental Awareness', 'Social Acceptance', 'Seller/Brand Reputation and Availability', and 'Affordability and Value' that could influence individual in accepting the idea of reducing e-waste and considering a refurbished product. These factors (which then turn into variables for current research) had widely been studied in different countries and contexts but not in the Netherlands. This research aims to analyse these variables quantitatively among young consumers of the Netherlands. A research model is then developed (see Figure 1) based on these factors.

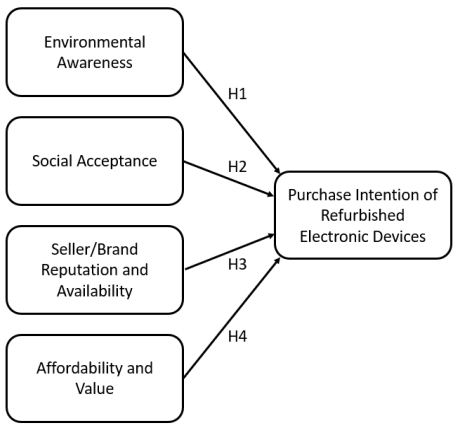

Figure 1 Research model

According to the research model (see Figure 1) and the related previous studies, the hypotheses of the study are developed as below:

Hypothesis 1 (H1) When it comes to young consumers in the Netherlands, there is an association between their perceptions of likeliness to purchase refurbished electronic devices in the near future and their perceptions of the overall environmental awareness. These include:

- *H1a: Recycling of electronic devices improves the quality of the environment.*
- *H1b: Recycling of electronic devices is useful to create a better living environment*
- *H1c: I am willing to change my lifestyle to reduce the damage I cause to the environment.*
- *H1d: Everyone must be willing to change our lifestyle to reduce the damage we cause to the environment.*
- *H1e: Giving old electronic devices a second life is a great way to respect the environment.*
- *H1f: Acquiring refurbished electronic devices is everyone's responsibility to reduce the volume of e-waste generated.*

Hypothesis 2 (H2) When it comes to young consumers in the Netherlands, there is an association between their perceptions of likeliness to purchase refurbished electronic devices in the near future and their perceptions of the social acceptance of these devices. These include:

- *H2a: If my family and friends were buying refurbished electronic devices, I will also engage in it.*
- *H2b: Those who have important influences on me (such as my boss and teachers) think that I should buy refurbished electronic devices.*
- *H2c: Those who are important to me (such as families and friends) support me to buy refurbished electronic devices.*
- *H2d: The community where I live could influence me in buying refurbished electronic devices.*
- *H2e: The media influences me in buying refurbished electronic devices.*
- *H2f: The government policies influence me in buying refurbished electronic devices.*

Hypothesis 3 (H3) When it comes to young consumers in the Netherlands, there is an association between their perceptions of likeliness to purchase refurbished electronic devices in the near future and their perceptions of the importance of seller reputation as well as the availability of the product. These include:

- *H3a: it is important for me that the seller has a good reputation.*
- *H3b: it is important for me that the seller has a reputation for offering good services.*
- *H3c: it is important for me that the manufacturer brand has a good reputation.*
- *H3d: it is important for me that the seller has a reputation for being fair in its relationship with its customers.*
- *H3e: it is important for me that these devices are widely available.*
- *H3f: it is important for me that these devices can be bought online.*

Hypothesis 4 (H4) When it comes to young consumers in the Netherlands, there is an association between their perceptions of likeliness to purchase refurbished electronic devices in the near future and their perceptions of the affordability and value of these devices. These include:

- *H4a: I rather purchase a refurbished electronic device since it is cheaper than a brand new one.*
- *H4b: I choose a refurbished electronic device mainly because I cannot afford a brand new one.*
- *H4c: Price is always the most important consideration when I make a purchase decision of any electronic devices.*
- *H4d: If I bought a refurbished electronic device, I think I would be getting good value for the money I spend.*
- *H4e: I feel that acquiring a refurbished electronic device meets both my quality and price requirement.*

4 Methodology

A descriptive research design was suitable for this study as it frequently uses data collection methods such as questionnaire survey that involves "asking respondents structured questions about what they think, feel and do" (Hair, et al., 2021, p. 109). Data was collected from primary sources through a structured questionnaire survey. Some benefits of using a questionnaire survey are to make sure that the responses were gathered in a standardized way (Ho and Browers, 2019) and large amounts of information can be collected from a large number of respondents in a short period of time and a relatively cost-effective way (Hair, et al., 2021).

Research instrument and variables

The questionnaire was adopted, modified and localized from multiple studies done by Agostini et al. (2021); Akhtar et al. (2014); Nasiri and Shokouhyar (2021), Nguyen et al. (2019) and Yin et al. (2014). It consists of 29 questions that assess research variables. Five questions are in relation to the demographic aspects by selecting multiple choices; one question is based on the purchase intention of the refurbished electronic devices (dependent variable) and the rest of the questions (23) are based on the 'environmental awareness', 'social acceptance', 'seller/brand reputation and availability', and 'affordability and value' (independent variables of the study). Except the demographic questions, all questions are designed according to the five-point Likert scale for example, how strongly subjects agree or disagree with the statements (1 = strongly disagree and 5 = strongly agree).

To improve the reliability of the research instruments, we employed content and face validity by randomly inviting several undergraduate students (a.k.a. young consumer) from different Dutch universities to judge the preliminary questionnaire followed by

providing reviews and enhancements on the content of the questionnaire. These processes allow us (the researchers) to improve our questionnaire to be valid regarding its content (Hair et al., 2021).

Data collection and analysis

The survey was administered from March 6 to March 31, 2023, through mall-intercept approach. Target respondents were intercepted in the main entrances of two Saxion University of Applied Sciences (Saxion) campuses in Enschede and Deventer. Saxion's campuses was chosen mainly because of the majority of their students are between 18 and 24 years old (a.k.a. undergraduate students or young consumers). The process involved randomly intercepting the students, screening them for appropriateness, and inviting them to complete the paper-based survey on the sport.

The collected data was analysed using IBM's SPSS statistics software, version 28. In addition to descriptive statistics, the Pearson correlation coefficient test were also used to interpret the data, which came from 172 completed surveys over the 4-week data collection period.

5 Results

Demographic Information

The demographic questions asked respondents to state their gender, age, their highest level of education they have completed, their income and if they have ever purchased any REDs in the past. The results showed that almost all respondents (90.1%) were between 18-24 years of age. Gender of respondents was slightly unevenly distributed, with 54.1% indicated for female, 41.9% male and 2.9% preferred not to answer to this question. More than 69% of the young respondents stated that they have completed their secondary education followed by 28.5% that indicated that they have completed either an associate or bachelor's degrees, respectively. In terms of net income per month, the majority of the respondents (over 84.9%) claimed that their income is less than €1000 per month. For the question of whether they have ever purchased any REDs in the past, over 49% of the respondents claimed that they have never bought any REDs previously.

Respondents were also asked to indicate their level of agreement with the statements as shown in Table 1. The intention of these questions was to establish young consumers' viewpoint of buying REDs.

Table 1. Young Dutch consumers' purchase intention of refurbished electronic devices

No.	Statement	Mean	Standard Deviation (SD)
1	I am likely to purchase refurbished electronic devices in the near future.	3.20	1.087
2	Recycling of electronic devices improves the quality of the environment.	4.16	.596
3	Recycling of electronic devices is useful to create a better living environment.	3.96	.760
4	I am willing to change my lifestyle to reduce the	3.54	.881

	damage I cause to the environment.		
5	Everyone must be willing to change our lifestyle to reduce the damage we cause to the environment.	3.42	1.015
6	Giving old electronic devices a second life is a great way to respect the environment.	4.21	.782
7	Acquiring refurbished electronic devices is everyone's responsibility to reduce the volume of e-waste generated.	3.35	.842
8	If my family and friends were buying refurbished electronic devices, I will also engage in it.	3.35	1.052
9	Those who have important influences on me (such as my boss and teachers) think that I should buy refurbished electronic devices.	2.63	.992
10	Those who are important to me (such as families and friends) support me to buy refurbished electronic devices.	3.08	.994
11	The community where I live could influence me in buying refurbished electronic devices.	3.12	.975
12	The media influences me in buying refurbished electronic devices.	2.63	1.015
13	The government policies influence me in buying refurbished electronic devices.	2.39	1.029
14	When shopping for any refurbished electronic devices, it is important for me that the seller has a good reputation.	4.27	.864
15	When shopping for any refurbished electronic devices, it is important for me that the seller has a reputation for offering good services.	4.30	.803
16	When shopping for any refurbished electronic devices, it is important for me that the manufacturer brand has a good reputation.	4.12	.815
17	When shopping for any refurbished electronic devices, it is important for me that the seller has a reputation for being fair in its relationship with its customers.	4.27	.779
18	When shopping for any refurbished electronic devices, it is important for me that these devices are widely available.	3.68	.877
19	When shopping for any refurbished electronic devices, it is important for me that these devices can be bought online.	3.74	1.005
20	I rather purchase a refurbished electronic device since it is cheaper than a brand new one.	3.45	1.110
21	I choose a refurbished electronic device mainly because I cannot afford a brand new one.	2.73	1.185
22	Price is always the most important consideration when I make a purchase decision of any electronic devices.	3.38	1.050
23	If I bought a refurbished electronic device, I think I would be getting good value for the money I spend.	3.59	.864
24	I feel that acquiring a refurbished electronic device meets both my quality and price requirement.	3.41	.948

(Five-point Likert scale with 1 = strongly disagree and 5 = strongly agree), n=172

As indicated in Table 1, even though not all the respondents will buy REDs in the near future (q1 mean is 3.20), most of them indicated that recycling of electronic devices

will improve and create a better living environment hence, everyone should change our lifestyle to reduce the damage we have caused to the environment (q2-q5). In addition to that, many respondents claimed that they are not influenced by the external environmental factors (such as friends, media, government policies, etc.) in considering buying REDs (q8-q13).

In response to questions regarding seller/brand reputation and availability of the product, the young consumers pointed out that it is important to them that the seller (or manufacturer brand) has a good reputation and being fair in its relationship with its customers. Also, they claimed that when shopping for any REDs, it is important for them that these devices can be bought online (q14-q18). Lastly, many respondents indicated that price is the most important consideration when they make a purchase decision of any electronic devices (q21 mean is 3.38) in addition to acquiring a refurbished electronic device meets both their quality and price requirement (q23 mean is 3.41).

Hypothesis testing

> *Hypothesis 1 When it comes to young consumers in the Netherlands, there is an association between their perceptions of likeliness to purchase refurbished electronic devices in the near future and their perceptions of the overall environmental awareness.*

The Pearson correlation coefficient test was used to assess the relationship between the variables in H1. According to the test results, there was a (low to medium) positive correlation between the variables of likeliness to purchase REDs in the near future and those of

- H1a: Recycling of electronic devices improves the quality of the environment ($r = 0.230$, $p < .005$).
- H1b: Recycling of electronic devices is useful to create a better living environment ($r = 0.201$, $p < .05$).
- H1c: I am willing to change my lifestyle to reduce the damage I cause to the environment ($r = 0.227$, $p < .005$).
- H1d: Everyone must be willing to change our lifestyle to reduce the damage we cause to the environment ($r = 0.171$, $p < .05$).
- H1e: Giving old electronic devices a second life is a great way to respect the environment ($r = 0.115$, $p < .05$).
- H1f: Acquiring refurbished electronic devices is everyone's responsibility to reduce the volume of e-waste generated ($r = 0.304$, $p < .001$).

H1 is generally supported, as the relationship is positive (i.e., likeliness to purchase the REDs in the near future and their overall environmental awareness are positively correlated), meaning that these variables tend to increase together.

> *Hypothesis 2 When it comes to young consumers in the Netherlands, there is an association between their perceptions of likeliness to purchase refurbished electronic devices in the near future and their perceptions of the social acceptance of these devices.*

For a second time, the Pearson correlation coefficient test was used to examine the relationship between the variables in H2. As indicated in the test results, likeliness to purchase REDs in the near future and

- H2a: If my family and friends were buying refurbished electronic devices, I will also engage in it were found to be moderately positively correlated, $r = 0.495$, $p < .001$.
- H2b: Those who have important influences on me (such as my boss and teachers) think that I should buy refurbished electronic devices were found to be moderately positively correlated, $r = 0.347$, $p < .001$.
- H2c: Those who are important to me (such as families and friends) support me to buy refurbished electronic devices were found to be moderately positively correlated, $r = 0.396$, $p < .001$.
- H2d: The community where I live could influence me in buying refurbished electronic devices were found to be moderately positively correlated, $r = 0.391$, $p < .001$.
- H2e: The media influences me in buying refurbished electronic devices was not significant, $r = 0.090$, $p = .239$.
- H2f: The government policies influence me in buying refurbished electronic devices was not significant, $r = 0.075$, $p = .327$.

H2 is not generally supported as the relationship is not significantly positive for all statements. Only the likeliness to purchase the REDs in the near future and the social acceptance of people nearby, e.g., friends and family, are positively correlated, meaning that these variables tend to increase together.

Hypothesis 3 When it comes to young consumers in the Netherlands, there is an association between their perceptions of likeliness to purchase refurbished electronic devices in the near future and their perceptions of the importance of seller reputation as well as the availability of the product.

The Pearson correlation coefficient test was used to establish relationships between the aforementioned variables in H3. According to the test results, likeliness to purchase REDs in the near future and those of 'When shopping for any refurbished electronic devices',

- H3a: it is important for me that the seller has a good reputation were found to be weak but positively correlated, ($r = 0.272$, $p < .001$).
- H3b: it is important for me that the seller has a reputation for offering good services were found to be weak but positively correlated, $r = 0.137$, $p = .073$).
- H3c: it is important for me that the manufacturer brand has a good reputation ($r = 0.105$, $p = .170$).
- H3d: it is important for me that the seller has a reputation for being fair in its relationship with its customers was not significant, $r = 0.101$, $p = .187$.
- H3e: it is important for me that these devices are widely available was not significant, $r = 0.069$, $p = .370$

- H3f: it is important for me that these devices can be bought online was not significant, r = -0.048, p = .528.

H3 is not generally supported as the relationship is not significantly positive for all statements. Only the likeliness to purchase the REDs in the near future and the perceived seller and manufacturer reputation are positively correlated, meaning that these variables tend to increase together.

Hypothesis 4 When it comes to young consumers in the Netherlands, there is an association between their perceptions of likeliness to purchase refurbished electronic devices in the near future and their perceptions of the affordability and value of these devices.

Once again, the Pearson correlation coefficient test was used to measure the correlation (r) between the variables in H4. The test results disclosed a (medium to high) positive correlation between the variables of likeliness to purchase REDs in the near future and those of

- H4a: I rather purchase a refurbished electronic device since it is cheaper than a brand new one (r = 0.545, p < .001).
- H4b: I choose a refurbished electronic device mainly because I cannot afford a brand new one (r = 0.257, p < .001).
- H4c: Price is always the most important consideration when I make a purchase decision of any electronic devices (r = 0.271, p < .001).
- H4d: If I bought a refurbished electronic device, I think I would be getting good value for the money I spend (r = 0.445, p < .001).
- H4e: I feel that acquiring a refurbished electronic device meets both my quality and price requirement (r = 0.554, p < .001).

H4 is generally supported, as the relationship is positive (i.e., likeliness to purchase the REDs in the near future and the affordability and value of these devices are positively correlated), meaning that these variables tend to increase together.

6 Discussion of findings and recommendations

The first hypothesis (H1) asserts that there is a significant relationship between the young consumers likeliness to purchase REDs and their environmental awareness level. In other words, if the young consumer's environmental awareness level increase, their likeliness to purchase REDs will also increase. This result conforming to Aktar *et al.* (2014); Nasiri and Shokouhyar (2021); Nguyen *et al.* (2019); and Yin *et al.* (2014) argument where citizens in general are more willing to consider and purchase refurbished electronic products when their level of environmental awareness is high.

The findings from the second hypothesis (H2a, H2b, H2c and H2d) disclose that peers like family members, friends and colleagues could positively influence our young consumers to consider REDs. This result is encouraging as it can be used as a solid evident of why marketers of refurbished goods should consider using word of mouth

(WOM) and opinion leader to help them reach new audiences and build a positive brand reputation. Additionally, this result also adds credibility to the findings of Agostini *et al.* (2021); Islam *et al.* (2021); and Nguyen *et al.* (2019) that friends and family members are always an important factor behind purchase decisions of e-waste products.

One of the critical research findings is that the young Dutch consumers reveal that making REDs available in multiple channels (including online) will not encourage them to consider REDs (see H3e and H3f). This finding is an opposite from what we have learnt from the past research where location convenience is one of the main factors positively affect attitude and the intention to purchase refurbished products (Agostini *et al.,* 2021; Yin *et al.,* 2014). Perhaps, more research (such as in-depth interview) should be conducted in order to understand why location 'is' or 'is not' important from the young consumer's viewpoint.

The fourth hypothesis findings establish a significant relationship between the likeliness to purchase REDs and the affordability and value of owning REDs. This result agrees with a study focused on different factors in consumer perceived value about purchasing refurbished mobile phones by Nasiri and Shokouhyar (2021). However, this result is not surprising considering that majority of the respondents in this research are not a 'high income owner' (for e.g., over 84.9% of these young consumers claimed that their monthly income is within or less than €1000).

When considering the development of (new) business models for refurbished electronic devices, these findings bring useful suggestions for designing the different business model dimensions, i.e., Value Proposition, Value Delivery, Value Capture and Value Creation (Lüdeke-Freund et al., 2019). In particular for the Value Proposition, the key message in the offering should focus on the quality and price of REDs as fitting the young consumers' needs and purchasing power. Secondly, the offering should stress the environmental benefit that REDs bring over new devices as the young consumers interested in buying REDs are found to place considerable value on buying environmentally aware. With regard to the Value Delivery dimension, sales channels that stimulate peers to positively influence awareness on REDs will support purchase intend with young consumers.

7 Conclusion, limitations and future research directions

There is a growing stream of electronic and electric waste (e-waste). As a strategy to reduce or slow-down this waste stream refurbishing may be considered. This paper examined young consumers' purchase intention of refurbished electronic devices (REDs) such as laptop, tablet, mobile phone and game console. The results shed light on what young consumers value and find important when it comes to decisions on purchasing REDs in the near future. This knowledge about young consumers' perceptions of value and benefits of REDs can inform the design of innovative value propositions and new circular business models based on re-use strategies. This can also be used to better align the value chains and business models for e-waste management that provide such propositions.

This study is subject to some limitations, providing new directions for further studies. First, the survey was conducted over a relatively short period (four weeks), so the

sample size may be restricted. If there had been more time, more respondents might have completed the survey (Hair et al., 2021; Ho, 2019). Second, the quantitative method used in this study might be a limitation as well. Surveys are good tools for building a general understanding of certain topics, but they cannot go into further detail because every respondent completes the same set of questions. Diving deeper into the reasoning behind the young people's responses would require qualitative approaches, such as focus groups or in-depth interviews.

As this was just a first-stage study, the authors limited the investigation to the young consumers of a single university in the east of the Netherlands. In future research, it would be interesting to build on this by undertaking parallel studies at other higher education institutions, both inside and outside of the Netherlands, to compare the results and identify differences in approach. Future research may also be conducted through the lens of the theory of planned behaviour (TPB), which is widely accepted and looks at other dimensions such as how personal beliefs and attitudes influence purchase intentions and behaviour.

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