

# **Seller Market Growth Strategy for the Circular Electronics Start-up, Valyuu**

***Appendix***

**Master Thesis**

November 2022, in Delft, the Netherlands

**Author**

Luxin Huang

## Master Thesis Appendix

November 2022, in Delft, the Netherlands

MSc. Strategic Product Design  
Faculty of Industrial Design Engineering  
Delft University of Technology

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Luxin Huang

## Client

Valyuu BV

## Supervisory Team

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Mentor:	Dr. P. Cankurtaran (Pinar) Faculty of Industrial Design Engineering Department of Design, Organization and Strategy
Company mentor:	J. Ren (Jingwei) Chief Experience Officer (CXO) & Co-Founder at Valyuu

# Seller Market Growth Strategy for the Circular Electronics Start-up, Valyuu

*Appendix*






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# Appendix A

## Project Brief

DESIGN  
FOR OUR  
future



## IDE Master Graduation

Project team, Procedural checks and personal Project brief

This document contains the agreements made between student and supervisory team about the student's IDE Master Graduation Project. This document can also include the involvement of an external organisation, however, it does not cover any legal employment relationship that the student and the client (might) agree upon. Next to that, this document facilitates the required procedural checks. In this document:

- The student defines the team, what he/she is going to do/deliver and how that will come about.
- SSC E&SA (Shared Service Center, Education & Student Affairs) reports on the student's registration and study progress.
- IDE's Board of Examiners confirms if the student is allowed to start the Graduation Project.

### ! USE ADOBE ACROBAT READER TO OPEN, EDIT AND SAVE THIS DOCUMENT

Download again and reopen in case you tried other software, such as Preview (Mac) or a webbrowser.

### STUDENT DATA & MASTER PROGRAMME

Save this form according to the format "IDE Master Graduation Project Brief\_familyname\_firstname\_studentnumber\_dd-mm-yyyy". Complete all blue parts of the form and include the approved Project Brief in your Graduation Report as Appendix 1!

<p>family name <u>Huang</u></p> <p>initials _____ given name <u>Luxin</u></p> <p>student number <u>5335817</u></p> <p>street &amp; no. _____</p> <p>zipcode &amp; city _____</p> <p>country _____</p> <p>phone _____</p> <p>email _____</p>	<p>Your master programme (only select the options that apply to you):</p> <p>IDE master(s): <input type="radio"/> IPD <input type="radio"/> Dfl <input checked="" type="radio"/> SPD</p> <p>2<sup>nd</sup> non-IDE master: _____</p> <p>individual programme: - - (give date of approval)</p> <p>honours programme: <input type="radio"/> Honours Programme Master</p> <p>specialisation / annotation: <input type="radio"/> Medisign</p> <p><input type="radio"/> Tech. in Sustainable Design</p> <p><input type="radio"/> Entrepreneurship</p>
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### SUPERVISORY TEAM \*\*

Fill in the required data for the supervisory team members. Please check the instructions on the right!

<p>** chair <u>Erik-Jan Hultink</u></p> <p>** mentor <u>Pinar Cankurtaran</u></p> <p>2<sup>nd</sup> mentor <u>Jingwei Ren</u></p> <p>organisation: <u>Valyuu B.V.</u></p> <p>city: <u>Gorinchem</u> country: <u>the Netherlands</u></p>	<p>dept. / section: <u>DOS/MCR</u></p> <p>dept. / section: <u>DOS/MCR</u></p>	<p>Chair should request the IDE Board of Examiners for approval of a non-IDE mentor, including a motivation letter and c.v.</p> <p>! Second mentor only applies in case the assignment is hosted by an external organisation.</p>
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comments (optional) EJ has expertise in sustainable consumption and circular economy, while Pinar has more experience in consumer research and branding. They can coach me on different topics that are essential to this project.

! Ensure a heterogeneous team. In case you wish to include two team members from the same section, please explain why.

### Personal Project Brief - IDE Master Graduation

Seller market growth strategy for the circular electronics start-up Valyuu project title

Please state the title of your graduation project (above) and the start date and end date (below). Keep the title compact and simple. Do not use abbreviations. The remainder of this document allows you to define and clarify your graduation project.

start date 01 - 07 - 2022 08 - 11 - 2022 end date

### INTRODUCTION \*\*

Please describe, in a concise yet complete manner, the context of your project, and address the main stakeholders (interests) within this context in a concise yet complete manner. Who are involved, what do they value and how do they currently operate within the given context? What are the main opportunities and limitations you are currently aware of (cultural- and social norms, resources (time, money,...), technology, ...).

Nowadays, the faster release speed of consumer electronics (CE) with new features in the market makes them more replaceable for consumers than ever. As a consequence, it increases the consumption rates, decreases the product's useful lifespan, pushes the product obsolescence, and accelerates the generation of Electronic Waste (e-waste). According to a report by Forti et al. (2020), the amount of e-waste generated globally is estimated to reach 74.7 Mt by 2030. In 2019, the Netherlands generated 21.6 kg of e-waste per capita. However, a large amount of 'e-waste' can still be reusable, re-marketable, or recycled for materials recovery. Hence, many retailers and manufacturers have noticed this opportunity and joined this business field.

Valyuu is one of those retailers. Their current business is to collect and sell 5 categories of end-of-use (EOU) electronics that are still functional with 2C profits, by providing testing, cleaning, and a minimum level of refurbishing services. Compared to other competitors, their strength is to link sellers directly to the buyers, so that there are no other intermediaries that drive up the commission fees in between. However, they are currently facing a conflict between their wishes and the status quo: they wish to grow their seller market by absorbing more sellers and expanding service categories; but they noticed a problem that the current second-hand electronics market is in short supply, because people who are aware or willing to sell their used electronics (at a right time) are limited, in other words, the customer involvement is low.

This is because consumers are not managing their e-waste properly. Most of them tend to store their EOU electronics in homes (Ylä-Mella et al., 2022). In fact, the storage behavior is suggested to be perceived as an 'anti-green' behavior because the product will depreciate over time, and it could cause a lower possibility of the product being reused, and thus lower profitability for retailers to collect and sell. Therefore, finding actual reasons behind the storage behavior and designing solutions to enhance consumers' willingness to hand over their EOU electronics for reuse, can remove the barrier for Valyuu to grow their seller market, and also fill in the current research gap.

#### Reference:

Forti V., Baldé C.P., Kuehr R., Bel G. The Global E-waste Monitor 2020: Quantities, flows and the circular economy potential. United Nations University (UNU)/United Nations Institute for Training and Research (UNITAR) – co-hosted SCYCLE Programme, International Telecommunication Union (ITU) & International Solid Waste Association (ISWA), Bonn/Geneva/Rotterdam.

Ylä-Mella, J., Keiski, R. L., & Pongrácz, E. (2022). End-of-Use vs. End-of-Life: When Do Consumer Electronics Become Waste? Resources 2022, Vol. 11, Page 18, 11(2), 18. <https://doi.org/10.3390/RESOURCES11020018>

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Personal Project Brief - IDE Master Graduation

introduction (continued): space for images



image / figure 1: the picture of e-waste (source: PQ Magazine)

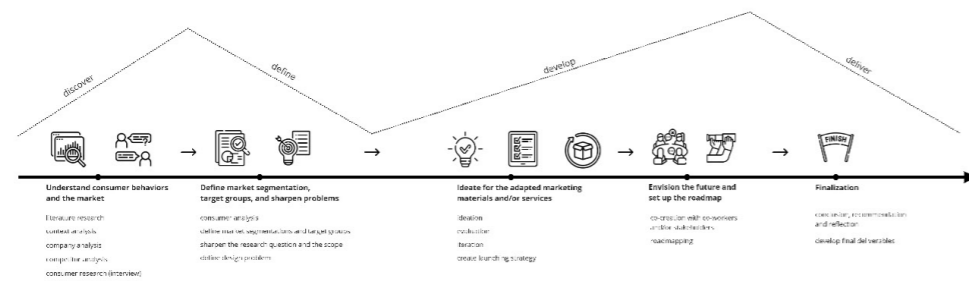


image / figure 2: the approach

Personal Project Brief - IDE Master Graduation

**PROBLEM DEFINITION \*\***

Limit and define the scope and solution space of your project to one that is manageable within one Master Graduation Project of 30 EC (= 20 full time weeks or 100 working days) and clearly indicate what issue(s) should be addressed in this project.

The main research question of this project is: how might we help Valyuu grow its seller market by identifying and motivating potential sellers (customers) who just store their consumer electronics(CE) when the use ends, so as to continuously collect more EOU(end-of-use) CE with a higher level of profitability and circularity?

The main research scope will be limited to Valyuu's current service scope (the Netherlands, the 2C sellers, and 2C profits, 5 categories of functional products). The focused category of CE might be further narrowed down during the progress if necessary.

The main research question is broken down into 7 sub-questions as followed:

1. What are the customers' ownership situation and their product lifetime preferences of CE?
2. Why do customers stop a certain CE's usage and how to accordingly classify different reusable levels of 'e-waste'?
3. What are the reasons behind customers' storage behavior?
4. How should Valyuu identify different groups of potential sellers?
5. How should Valyuu adapt marketing materials and/or current services in order to motivate those target groups of potential sellers to hand over their EOU CE for reuse right after their use end, aiming for diminishing the storage time as much as possible?
6. In what ways can Valyuu approach those target groups of potential sellers?
7. How should Valyuu further grow its seller market and maintain customer loyalty in a long run?

**ASSIGNMENT \*\***

State in 2 or 3 sentences what you are going to research, design, create and / or generate, that will solve (part of) the issue(s) pointed out in "problem definition". Then illustrate this assignment by indicating what kind of solution you expect and / or aim to deliver, for instance: a product, a product-service combination, a strategy illustrated through product or product-service combination ideas, ... . In case of a Specialisation and/or Annotation, make sure the assignment reflects this/these.

Research and understand the market and electronics consumer behaviors. Accordingly, design a solution to motivate and approach more sellers, and thus develop a seller market growth strategy for Valyuu.

The seller market growth strategy for Valyuu will mainly explain which market segments of potential sellers should Valyuu target first and how, with a brief explanation of the roadmap bridging the first step into the future vision. It will be developed based on mainly consumer research with a little market research.

The possible deliverables are as follows: (1 and 2 are more essential deliverables compared to 3 and 4)

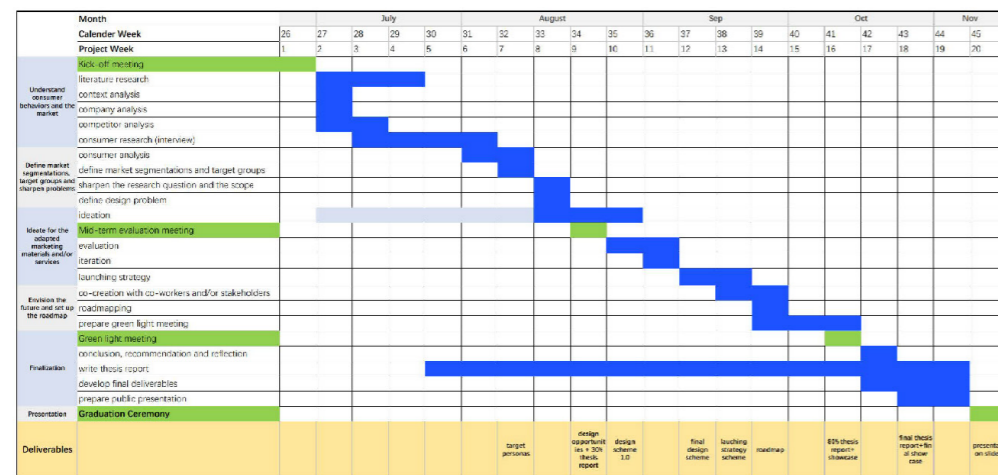
1. The market segmentation and the main target personas of potential seller groups;
2. The adapted marketing materials and/or service scheme;
3. The launching strategy;
4. The roadmap and future vision.

Personal Project Brief - IDE Master Graduation

PLANNING AND APPROACH \*\*

Include a Gantt Chart (replace the example below - more examples can be found in Manual 2) that shows the different phases of your project, deliverables you have in mind, meetings, and how you plan to spend your time. Please note that all activities should fit within the given net time of 30 EC = 20 full time weeks or 100 working days, and your planning should include a kick-off meeting, mid-term meeting, green light meeting and graduation ceremony. Illustrate your Gantt Chart by, for instance, explaining your approach, and please indicate periods of part-time activities and/or periods of not spending time on your graduation project, if any, for instance because of holidays or parallel activities.

start date 1 - 7 - 2022 end date 8 - 11 - 2022



The project will follow the design thinking approach as shown in Figure 2 above. The overall process contains 5 stages and the arrangement might evolve during the progress:

1. Discover: stage 1 (Understand consumer behaviors and the market) aims at using interview methods and Fogg behavior model to find out factors that influence consumers' behaviors, as well as using context, company, and competitor analysis to understand the market;
2. Define: stage 2 (Define market segmentation, target groups, and sharpen problems) aims at classifying market segments, defining target personas and design problems;
3. Develop: stage 3 (Ideate for the adapted marketing materials and/or services) and stage 4 (Envision the future and set up the roadmap) aim at ideating and iterating the design solution, and setting up launching strategy and roadmap;
4. Deliver: stage 6 (Finalization) aim at wrapping up all the insight, result, and deliverable.

The tentative important meeting dates are:  
 the kick-off: 1st July;  
 the mid-term: 26th Aug;  
 the greenlight: 13th Oct;  
 the graduation ceremony: 8th Nov.

Personal Project Brief - IDE Master Graduation

MOTIVATION AND PERSONAL AMBITIONS

Explain why you set up this project, what competences you want to prove and learn. For example: acquired competences from your MSc programme, the elective semester, extra-curricular activities (etc.) and point out the competences you have yet developed. Optionally, describe which personal learning ambitions you explicitly want to address in this project, on top of the learning objectives of the Graduation Project, such as: in depth knowledge on a specific subject, broadening your competences or experimenting with a specific tool and/or methodology, ... . Stick to no more than five ambitions.

I have already been a big fan of the circular economy since my bachelor. I have ever developed an abandon umbrella upcycling system myself before. Now I meet Valyuu, who is striving to revitalize used electronics with a second life. They want to expand their seller groups but they lack consumer insights and strategic suggestions, which strongly belongs to my strength and interest fields. So we decided to cooperate together and head towards a future where there are no electronics that are not fully used till their end of life.

By taking on this assignment, I would like to prove my ability and skills that are learned through my 2-year SPD master's programme. Especially the methods and skills learned from BPC and SPD research courses, such as qualitative research, customer research, branding, and launching strategy. What I intend to learn more is about how to set up market segmentation and personas rigorously by using research insights. Because in my previous project, I developed personas very roughly and randomly, usually not very convincing. In addition, researching and designing for changing consumer behavior is rather a new topic to me, but is also very promising and useful in my future career. So I would like to acquire more knowledge in this area through this project.

- So there are 2 personal learning ambitions I would like to address:
- (1) learn to segment customer groups rigorously;
  - (2) acquire more experience on designing for consumer behavior change;

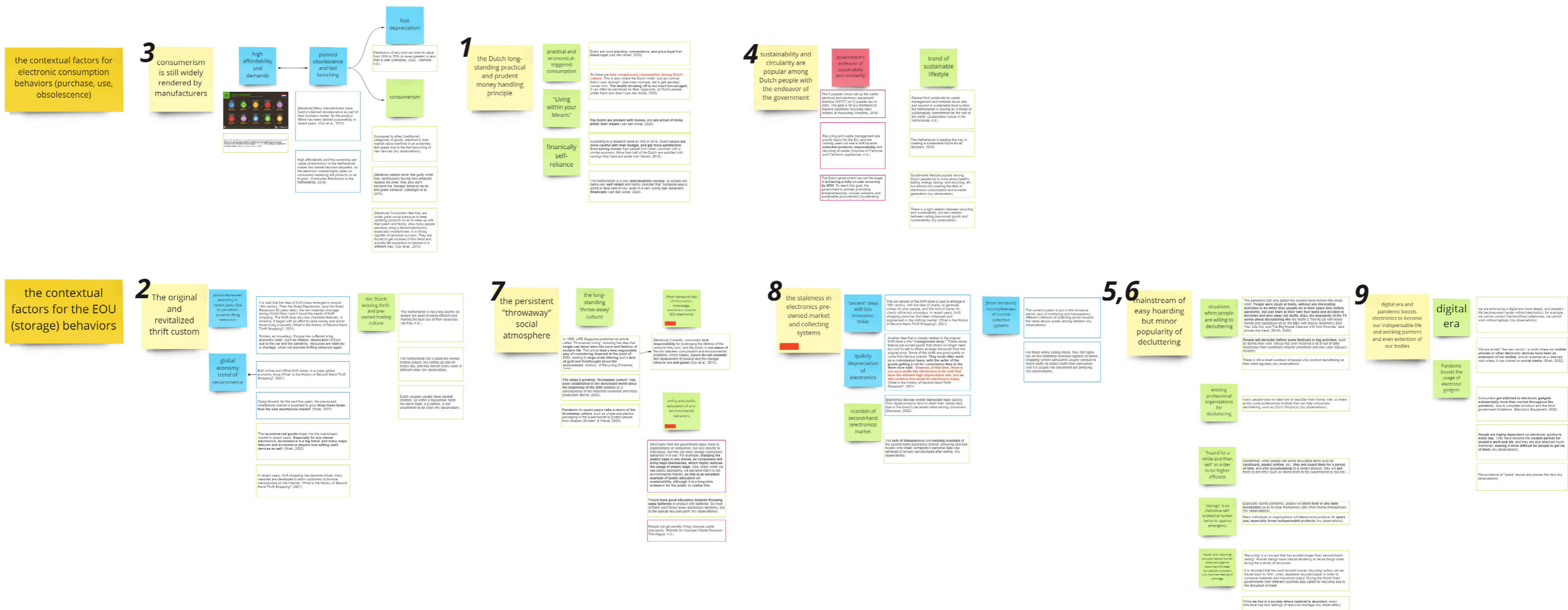
FINAL COMMENTS

In case your project brief needs final comments, please add any information you think is relevant.

# Appendix B

## Context analysis

### The overview of the clusters



## The dimension of scenarios



I also provided another way to categorize each scenario, as shown in the figure above. It can hint at the scope and priority of the scenarios. **The long-term dimension** means that the scenario has been existing for a long time and might not disappear immediately in the future, and it is a bit harder to disrupt it but easier to conform to it. While **the short-term dimension**, similar to the concept of recent trends, means that the scenario should be highly paid attention to instantly in the recent two to three years, otherwise the scenario will change “in a flash”, and the company may miss the best time to seize the opportunity or confront the threat. As for the scope, **the global dimension** means that this scenario happens globally, including in the Netherlands, which sets up a contextual basis for Valyuu to expand into other countries. While **the Netherlands dimension** means the scenario is identified specifically in the Netherlands, and might not be suitable for other countries. In addition, whether the scenario is a threat or opportunity to Valyuu is differentiated by colors.

## Reference list for the context analysis

Accelerating the transition to a circular economy. (n.d.). Government.NL. Retrieved August 14, 2022, from <https://www.government.nl/topics/circular-economy/accelerating-the-transition-to-a-circular-economy>

Barral, M. (2020, September 15). History of Recycling: From Living With Scarcity to Coping With Excess. BBVA OpenMind. <https://www.bbvaopenmind.com/en/science/environment/history-of-recycling-from-living-scarcity-to-coping-excess/>

Consumer Electronics in the Netherlands. (2018, November). Marketline. <https://store.marketline.com/report/consumer-electronics-in-the-netherlands-2/>

Cormand, D. (2021). Report towards a more sustainable single market for business and consumers | A9-0209/2020. [https://www.europarl.europa.eu/doceo/document/A-9-2020-0209\\_EN.html#title2](https://www.europarl.europa.eu/doceo/document/A-9-2020-0209_EN.html#title2)

Cox, J., Griffith, S., Giorgi, S., & King, G. (2013). Consumer understanding of product lifetimes. Resources, Conservation and Recycling, 79, 21–29. <https://doi.org/10.1016/J.RESCONREC.2013.05.003>

de Pau, B. (n.d.). Are the Dutch stingy, greedy, economical or just thrifty? Experiences from expats! Learn Dutch. Retrieved August 12, 2022, from <https://www.learn dutch.org/dutch-culture/are-the-dutch-stingy-greedy-economical-or-just-thrifty-experiences-from-expats/>

Dempsey, B. (2022, April 25). Consumer Products That Depreciate The Most. Investopedia. <https://www.investopedia.com/financial-edge/0211/consumer-products-that-depreciate-the-most-and-least.aspx>

Disposal of electrical and electronic appliances. (n.d.). Business.Gov.NL; Business.gov.nl. Retrieved August 14, 2022, from <https://business.gov.nl/regulation/electrical-electronic-equipment/#article-collection-point-waste-electrical-and-electronic-equipment>

Electronic Equipment Repair Service Market Outlook (2022-2032). (2022). <https://www.futuremarketinsights.com/reports/electronic-equipment-repair-service-market>

Garrison, D. (2022, July 2). The future of sustainable electronics. Wevolver. <https://www.wevolver.com/article/the-future-of-sustainable-electronics>

Hammer, J. (n.d.). Why Do Gadgets Lose Value Quickly? The Tech Depreciation Guide. Gizbuyer Guide. Retrieved August 22, 2022, from <https://gizbuyerguide.com/why-do-gadgets-lose-value-quickly-the-tech-depreciation-guide/>

History of Recycling [Timeline]. (2018, September 25). Hintons. <https://www.hintonswaste.co.uk/news/history-of-recycling-timeline/>

Inghels, D., & Bahlmann, M. D. (2021). Hibernation of mobile phones in the Netherlands: The role of brands, perceived value, and incentive structures. Resources, Conservation & Recycling, 164. <https://doi.org/10.1016/J.RESCONREC.2020.105178>

Liao, J. (2019, January 25). Here's how drone delivery will change the face of global logistics. World Economic Forum. <https://www.weforum.org/agenda/2019/01/here-s-how-drone-delivery-will-change-the-face-of-global-logistics>



Mulhern, O. (2020, June 10). Netherlands - Ranked 13th in the Global Sustainability Index. Earth.Org. [https://earth.org/global\\_sustain/netherlands-ranked-13th-in-the-global-sustainability-index/](https://earth.org/global_sustain/netherlands-ranked-13th-in-the-global-sustainability-index/)

Penalty for improper waste disposal - The Hague. Retrieved August 11, 2022, from [https://www.denhaag.nl/en/waste-and-recycling/household-rubbish/penalty-for-improper-waste-disposal.htm#Improper\\_disposal\\_of\\_waste-anchor](https://www.denhaag.nl/en/waste-and-recycling/household-rubbish/penalty-for-improper-waste-disposal.htm#Improper_disposal_of_waste-anchor)

Proske, M., Winzer, J., Marwede, M., Nissen, N. F., & Lang, K. D. (2016). Obsolescence of Electronics-the Example of Smartphones. 2016 Electronics Goes Green 2016+ (EGG), 1–8. <https://doi.org/10.1109/EGG.2016.7829852>

Sabbaghi, M., Esmailian, B., Raihanian Mashhadi, A., Behdad, S., & Cade, W. (2015). An investigation of used electronics return flows: A data-driven approach to capture and predict consumers storage and utilization behavior. *Waste Management*, 36, 305–315. <https://doi.org/10.1016/J.WASMAN.2014.11.024>

Schaart, E., & Wanat, Z. (2020, April 14). Coronavirus risks a return of the throwaway culture . POLITICO. <https://www.politico.eu/article/coronavirus-risks-shift-back-to-throw-away-culture/>

Shah, M. (2022, January 11). The Rise Of Recommerce: How The Secondhand Electronics Market Is Growing In The GCC And Beyond. *Entrepreneur Middle East*. <https://www.entrepreneur.com/article/412449>

Smith, B. (2022). The rise of the second-hand market. William George. <https://www.williamgeorge.com/blog/the-rise-of-the-second-hand-market>

Sustainable Future in the Netherlands. (n.d.). Invest in Holland. Retrieved August 25, 2022, from <https://investinholland.com/why-invest/sustainable-future/>

van den Akker, M. (2020, May 29). How the Dutch Handle Money. Money on the Mind - Blog. <https://www.moneyonthemind.org/post/how-the-dutch-handle-money>

van Velzen, J. (2018, February 8). En w er blijkt: Nederlanders zijn zuinig, en daar zijn ze blij mee. *Trouw*. [https://www.trouw.nl/nieuws/en-weer-blijkt-nederlanders-zijn-zuinig-en-daar-zijn-ze-blij-mee\\_b9755055/?referrer=https%3A%2F%2Fwww.google.com%2F](https://www.trouw.nl/nieuws/en-weer-blijkt-nederlanders-zijn-zuinig-en-daar-zijn-ze-blij-mee_b9755055/?referrer=https%3A%2F%2Fwww.google.com%2F)

What is the History of Second Hand Thrift Shopping? (2021, September 9). Trvst. <https://www.trvst.world/sustainable-living/fashion/history-of-second-hand-thrift-shopping/>

Yeung, P. (2021, January 29). The country rejecting throwaway culture. *BBC Future*. <https://www.bbc.com/future/article/20210128-right-to-repair-how-the-french-are-fighting-avoidable-waste>

## Appendix C

### Analysis of the company's strengths and weaknesses

Valyuu's current resources and capabilities	V	R	I	O	competitive implications
customer foundation	Yes	NO			competitive parity
standardized service quality	Yes	NO			competitive parity
concept attractiveness to talents	Yes	NO			competitive parity
service convenience	Yes	NO			competitive parity
customer-centered service principle	Yes	Yes	NO		temporary competitive advantage
response efficiency of communication with customers	Yes	Yes	NO		temporary competitive advantage
good base of positive customer reviews	Yes	Yes	NO		temporary competitive advantage
total capital	Yes	Yes	NO		temporary competitive advantage
attractiveness to investors	Yes	Yes	Yes	Yes	sustainable competitive advantage
service innovation	Yes	Yes	Yes	Yes	sustainable competitive advantage
payment speed	Yes	Yes	Yes	Yes	sustainable competitive advantage
payment amount	Yes	Yes	Yes	Yes	sustainable competitive advantage

Table 1. VRIO analysis of Valyuu's existing capabilities and resources

technology development
brand story, recognition, and reputation
operation experience
labour requirement when scales up business
business network
standardized team training
service scope and variety

Table 2. Valyuu's current weaknesses

**How I did this analysis:** I first discussed with the co-founders of Valyuu about the resources and capabilities that they currently already have. Then, we together continuously compared these with its competitors' by using the competition circle (Figure 3.1 in the report) as an overview of its competitive environment. The conclusion of the "Yes" and "No" in the VRIO model (Table 1) could be drawn. And Valyuu's competitive parities, temporary and sustainable competitive advantages could be identified. Also, helps to notice the competitors' highlighted capabilities and resources intuitively. So during the comparison, what Valyuu is relatively weak in could emerge. This is how Valyuu's weaknesses (Table 2) were derived. **And the texts with the red-color highlight are ones that were built on in the main text of the report in Chapter 3.**

# Appendix D

## Electronics consumption behaviors (part of the literature review)

Note: all of the references of the citations below could be found in the reference list in the main report.

### The expected and actual product lifetime

As mentioned before, it has been noticed that the lifespan of electronics has become incredibly shorter in recent years. Cox et al. (2013) have done a qualitative discussion group about consumers' expected product lifetime across England. It covers a wide range of product categories not only including electronics. To mention those relevant categories of electronics, on average, consumers tend to expect mobile phones to be used for up to 2 years, computers for around 3-4 years, and cameras for around 5-6 years. The expected product lifetime is generally consistent with the actual product lifetime at least in Europe. For instance, in the category of mobile phones, another research in Germany demonstrates that 42% of users replace their mobile phones around 2 years or earlier, but also 30% use their devices longer than 5 years (Inghels et al, 2021).

### The reasons for product replacement and obsolescence

#### (1) Replacement due to the desire for the "new"

The main replacement reason for consumers is the desire for a new device with updated functions (Proske et al., 2016). Similarly, Cox et al. (2013) propose a product typology, where most electronic devices are perceived to belong to the up-to-date type, especially mobile phones. They usually have a less expected lifetime, are not always treated carefully, and typically come to EOU point before the end of their functional life, due to consumers' feeling of being "out-of-date". Also, to some consumers, these products play an important role in social identity (Jackson, 2005), and are perceived as "lifestyle products and status symbols within a peer group" (Proske et al., 2016). This is closely related to psychological obsolescence (Figure 1), which means "the subjective aging of products because of fashion, technical trends, and consumption patterns" (Proske et al., 2016). So consumers replace products because of those reasons or impulse purchases (van Nes, 2010). There are three other types of obsolescence, corresponding with the device status, as demonstrated in Figure 13. Among them, functional obsolescence is also related to the up-to-date type of products as it is partly caused by market pressure, which means consumers subjectively attach importance to new features published by manufacturers (Proske et al., 2016). So that the owned device is not technically new anymore, resulting in promoting their motivation to replace it.

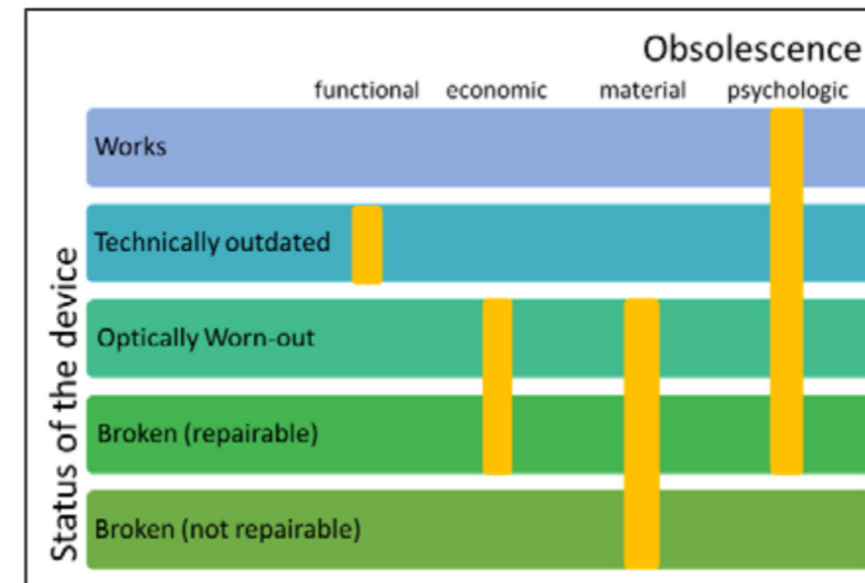


Figure 1. Different types of obsolescence according to the electronic device status, as adapted from Proske et al. (2016)

Another relevant product type to this project according to Cox et al. (2013) is the investment type, which means consumers would invest time, finance, and emotions in the product. They will, for example, conduct tiny research on product performance before purchase, treat it well in use, or even wish to find a "good home" for it at the point of disposal. Also, repair behavior is not uncommon to be seen in this product type, as the initial "investment" makes the repair value more evident.

#### (2) Replacement due to technical failures

This leads to another reason for replacement, which is technical failure that accounts for around or less than 50% of the reason for replacement (Proske et al., 2016; Sabbaghi et al., 2015). The most frequent broken components of the device are the display and battery, coming after the case, board, and button (Raihanian Mashhadi et al., 2016). According to Proske et al. (2016), a broken display accounts for 52% of the most common damage, while a weak or broken battery accounts for 40%. As stated before, the common behavior of consumers after failures happen is to replace a new one. In case this happens, only 34% of consumers have tried or asked for repair before replacement, in other words, among consumers who replace devices after failures, more than 60% without even trying or asking for repair as they assume that a repair would be too cost-intensive (Proske et al., 2016).

# Appendix E

## Semi-structured interview guide

### [Attention and preference]

- As our topic is related to electronics, so firstly I wonder do you have any preference for a certain category of electronics?
- for example, compared to other categories (e.g. eating, traveling, clothing, cosmetics, etc.) or any other hobbies you have? Do you pay more attention or money to electronics?
- [what category?] do you pay more attention to:
- the whole category of electronics?
- only some specific categories? can you give some examples of the categories you pay more attention to? and why?
- people who like it:
- how do you pay more attention? examples? (e.g. pay attention to online information/trends of electronics, watch videos from Youtubers)
- why do you like it? what kind of features of electronics really attract you?
- do you have any other hobbies?
- people who don't like it / just so-so:
- in addition, can you give some examples of your hobby?

### [Ownership and EOU disposal]

- then let's talk about what electronics you own (smartphone, laptop, tablet, game console, smartwatch, drone, camera, speaker, headphone).
- current (you can think of those currently at your hands, and in your home), what categories and how many electronics do you have?
- you can start with those you still use very often now?
- and then comes to those you seldom use now (store)
- why store?
- before (then, let's think about those electronics you previously had but were not yours anymore)
- can you name some of them?
- what was their fate? how did you deal with your EOU electronics before? (e.g. sell, give it free away, store at home, throw it away)
- why?
- Have you ever thought of how to deal with those obsolete electronics (carefully)?
- Yes-how?
- No-never
- Have you ever sold any other categories of second-hand products other than electronics?
- Yes
- what?
- why do you think you would sell them?

- Compared to selling electronics, what is the difference between selling XXX and selling electronics?
- future (plan to have)
- do you have any electronics you plan to buy in the near future? why?

### [Purchasing, replacement, and maintenance]

- Okay, we are now talking about purchasing electronics, so in general, I wonder
- what you think triggered you to (intend to) buy new electronics / replace an old one?
- how often did you buy a new one?
- when you bought a new one, how long did you expect it to be used by you? can you give some examples?
- then, if you had an older device being replaced when you bought a new one, what was its status? (e.g. still functional, broken) can you give some examples?
- what did you do before you decided to buy which type/version/brand of electronics?
- (compare price, ask people who know more about it, search on the internet for feedback and comments, KOL) the mental effort of buying and selling is almost the same
- where and how did you usually buy electronics?
- after buying, how did you usually treat them? did you maintain your electronics sometimes? (e.g. use it carefully, buy a screen protector, phone case, or some peripherals; upgrade your system, clean or sort out your data periodically)
- Yes-how did you maintain your electronics? can you give some examples
- No-then how did you treat them, can you give some examples
- have you ever experienced any broken down of a device? and what did you do if some devices broke down? examples?
- did you take it apart or repair it yourself?
- how did you feel when a device broke down?
- How did you feel when you needed to learn new features or acquire new information about electronics?

## For people who usually sell

### [Ability & motivation & trigger]

- Okay, as you have ever sold your products on Valyuu
- I wonder was it the first time you sold your electronics?
- **\*\*\*[first-time seller]** Have you ever heard of any other platforms to sell electronics?
- **\*\*\*why** didn't you sell your products on those platforms but choose Valyuu?
- **\*\*\*[first-time seller]** What kinds of selling platforms have you ever used before, other than Valyuu?
- name?
- why did you choose Valyuu this time to sell?
- what are the differences in selling experience compared to Valyuu? (e.g. the process of handing over your products and getting money)
- how do you feel about using Valyuu compared to other platforms?
- **\*\*\*[not first-time seller]** How often did you sell your products?

- e.g. did you sell it every time when it is obsolete / right after you buy a new product?
- What did you do before selling? (e.g. compare price)
- How did you deal with the device before selling it?
- What moments do you think triggered you to decide to sell? / when did you intend to sell?  
any storage time? (Trigger)
- e.g. before a new product launch, the moment to buy new products
- What do you think are the most significant motivation for your selling? (motivator)
- e.g. money, sustainability, helping others in need
- Do you think you have any considerations that might prevent you from selling? (demotivator,  
e.g. concerns about the data security, or personal attachment)
- [evaluation] Could you grade your general willingness to sell from 1 to 10 (1 means absolutely  
don't want to sell, 10 means willing to sell it every time when it is obsolete)
- Do you talk to others about your selling? and why? (e.g. share information, and benefits, call  
on other people to sell, etc.)
- Have you ever heard of any recycling platforms? and what is your opinion towards recycling  
compared to selling?

## For people who usually store

### [Ability & motivation & trigger]

- why do you think you usually don't sell? / what is your consideration of not selling?  
(demotivator)
- how much money can motivate you to sell? percentage
- Have you ever heard of any second-hand electronics platforms that allow you to sell?
- name?
- where did you hear from?
- Have you ever heard of any recycling platforms? and what is your opinion towards recycling  
compared to selling?
- [evaluation] Could you grade your general willingness to sell from 1 to 10 (1 means absolutely  
don't want to sell, 10 means willing to sell it every time when it is obsolete)
- In case you would sell someday, what do you think will be the (most important) motivation for  
you to sell? (motivator)
- and at what moment? (Trigger)
- [After I present Valyuu's existing services to them] Do you think you want to have a try of  
Valyuu's services someday in the future?

Then the last question is: based on your observation, what about the situation of your friends or families? Do they sell or store their electronics? Do they replace or buy very often, etc..can you give some examples (e.g. parents, siblings, cousins, other relatives; peer friends)

Ending: Alright, that's all for the interview. Your answers are really valuable to us, I hope we can stay in contact later. Thanks again for your participation!

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### Segment D

**online selling costs too much time and effort**

**might be useful in the future**

**It's like, you use it for the last time, but you don't know that is the last time that you use it. - P10**

**reserve iconic designs**

**worry about data security**

**I really hate the dispute with annoying buyers. -P9**

**prefer / first consider to give it free away to friends or family members**

**this can only be done when the device is in good status**

**customers are aware that throwing away randomly is not good for the environment**

**familiar with recycling**

**Apple trade in service**

**deep stereotypes, bad impressions on electronics pre-owned market formed by famous market players**

**deep stereotypes, bad impressions on electronics pre-owned market formed by famous market players**

**don't sell because of money incentives are so low**

**don't sell because of bad status of the device**

**emotional attachment**

**consider money incentives**

**I bought my phones in a very low price. I don't think it can be sold in a good value. -P9**

**If the money incentive is too low, I would rather keep it myself. - P9**

**I will balance between the selling price between the emotional value to me. - P16**

**Also a reason that I don't sell the things is that I can't let go of it. So like my Windows Phone, I attached to it because it was my first smartphone. And I really liked it. - P10**

**I never consider sell some of the device because of emotional values. - P16**

**I will just store the data and photos in the original smartphone, as it represents the memory, and the relationship between me and other people. It also makes me feel safe when I keep it. - P16**

### Segment A

**selling motivators**

**the most important motivation for this to sell, for example would be a balance among a very transparent process, a very good price, and a very convenient process. -P14**

**store in the drawer and totally forget when and where**

**think we have a lot of electronics at home that we just don't use. They might stay in some drawers but I couldn't remember clearly. -P13**

**the reason why I don't sell is because it's not that much of a hassle. Because these buyers aren't really serious. Let's say you have a piece of your advertisement marketplace. There are plenty of those like buyers or people that are buying. How could you want to sell? -P14**

**prefer / first consider to give it free away to friends or family members**

**this can only be done when the device is in good status**

**customers are aware that throwing away randomly is not good for the environment**

**familiar with recycling**

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**don't sell because of bad status of the device**

**emotional attachment**

**consider money incentives**

**sell the phone if you're selling a product to reduce the use of things made with toxic substances. These things can be toxic to you, to your children. They can be toxic to the environment. You can't just cash it out immediately, even though that will be much easier and really attractive. -P14**

**And the final one is the convenience. If you have things that are selling you, and you can just cash it out immediately, even though that will be much easier and really attractive. -P14**

**it also contains some files or photos that might be useful in the future - P11**

**selling purpose**

**The most important thing for me to sell is to know if it is valuable for someone else. - P7**

**I also feel it takes so much effort to sell in online platform. - P11**

**I only try to sell in the group chat of my schoolmates. It is really convenient. - P11**

**I will consider give those expensive ones like iPhones, MacBooks, laptops away to my family members. But probably selling those things online. - P11**

**For other obsolete products, I couldn't remember everyone's phone. But I will think that probably give every of those to other family members. - P11**

**The screens of my old phones are all shattered in pieces. I fell on the ground. At that time I just used it still for a couple of months. But when they got worse, I had to give them away. - P13**

**customers are aware that throwing away randomly is not good for the environment**

**familiar with recycling**

**Apple trade in service**

**deep stereotypes, bad impressions on electronics pre-owned market formed by famous market players**

**don't sell because of money incentives are so low**

**don't sell because of bad status of the device**

**emotional attachment**

**consider money incentives**

**Let's say if you're selling a product to reduce the use of things made with toxic substances. These things can be toxic to you, to your children. They can be toxic to the environment. You can't just cash it out immediately, even though that will be much easier and really attractive. -P14**

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**customers are aware that throwing away randomly is not good for the environment**

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**Apple trade in service**

**deep stereotypes, bad impressions on electronics pre-owned market formed by famous market players**

**don't sell because of money incentives are so low**

**don't sell because of bad status of the device**

**emotional attachment**

**consider money incentives**

### Segment C

**reuse themselves of a device**

**I actually still use the old phone for a game play. So there's still a little bit of value in there. Like you can compete with other accounts, but you can only afford a game per phone. So now I have two records. -P12**

**If I want something new, I would buy it myself online. I don't think shopping is convenient. Online selling is not convenient. - P15**

**So for example, on my old laptop, there are some software programs. But also some pictures and stuff like that, that are still on there. And I think it's maybe just a bit of hassle, that I don't transfer them to my new computer. - P12**

**I actually never thought about selling it to any stores, to be honest, because I think it's too much effort. Like bring it and throw it away in the grocery store is very easy. - P12**

**The drop off point if it is close and on my route I'm okay but if it is far I won't do it. - P12**

**I also don't want to go through hassle when selling it on Marketplaces. So that's also maybe one of the reasons why I might just throw it away. - P12**

**My parents just throw old stuff away. I think it's too much effort for them to sell. They just want to have it gone so they just throw it away. - P12**

**It's hard for me to completely clean the data and transfer it into a hard disk. - P3**

**When I'm not in a good budget, I will perceive selling as a big annoying hassle. - P3**

**I have a Dutch friend who really sticks to iPhone. And he only gifts them to his brother mother or something like that but never sells. - P12**

**I prefer to sell it to my acquaintances (rather than strangers). If my friends want them, I would sell. If not, I don't really invest my time to sell. - P3**

**But I can make someone else happy by giving it free away instead of just trading in. I would say this emotional value would be more important than just the value in the money instead.**

**When I traded in my iPhone, just traded into the other phone. I don't really care about the price. I only care about the phone. Because there's a price of trading in, but the device is not really good when you're trading in. It's just a trade in. It's not like you're getting a new phone. - P14**

**at my university, I think we have a point where you can drop your used electronics... - P15**

**I know you shouldn't throw used electronics away randomly, but it is a practical one. Or you have to sell something somewhere else to recycle. Besides that, I don't really think of other ways of reusing it. - P15**

**I have never known something like that other than selling platforms existed. But Marketplaces is really big and famous. So like when you want to sell something, it's immediately come in your head. It's like a lot of brand value. P12**

**I value my old phone when I replace a new one. Only did it for my phone because I know that that's like a big business. It's like a big market. -P12**

**The phone in my drawer I don't sell it is because, the first important reason is that it has a crack in the screen, so I think nobody wants that. - P15**

**I also have heard of some scandals of pre-owned market, like buyers will wash it with a fake or damaged one when they receive the device and then ask you to withdraw the money. -P9**

**I think maybe the second reason is because there's a lot of other things and more value of them. It's hard for me to get rid of. When I open the drawer and see them, I still think it's safe and happy. If I see them, I won't feel comfortable. - P12**

**The money incentive is low and is a big hassle, and I also attach emotion to my devices. It's hard for me to get rid of. When I open the drawer and see them, I still think it's safe and happy. If I see them, I won't feel comfortable. - P12**

**I do throw away those dead devices to recycling bins - P12**

**I just have some attached value to it. Like, I don't want to lose something to me. - P12**

**I did my whole bachelor's degree on that laptop. And like, all for that degree I had to make like, 10 models, and like, all of those models have an still on there. And maybe like, when I sell, I would like to reuse them again. - P12**

**It only counts for less than 100 euros so I would rather keep it myself. - P16**

**For example, my old my PlayStation has a lot of old games on there, which I really liked. I just don't want to lose them. Because if I want them to play them again, I will have them. - P12**

## Segmentation results among the interviewees

### Unstructured interview

people who usually sell		people who seldom sell (but usually store)	
digital enthusiast	average people	digital enthusiast	average people
P01	P02	P03 <span style="background-color: #00AEEF; color: white; padding: 2px;">D</span>	P06 <span style="background-color: #00AEEF; color: white; padding: 2px;">C</span>
		P04 <span style="background-color: #00AEEF; color: white; padding: 2px;">C</span>	P07 <span style="background-color: #00AEEF; color: white; padding: 2px;">D</span>
		P05 <span style="background-color: #00AEEF; color: white; padding: 2px;">C</span>	P08 <span style="background-color: #00AEEF; color: white; padding: 2px;">C</span>

All of them belong to Segment B

### Semi-structured interview

Whether they will sell	people who usually sell		people who seldom sell (but usually store)	
Whether they prefer electronics	digital enthusiast	average people	digital enthusiast	average people
Quota	4	4	4	4
participants	P1	P5	P9 <span style="background-color: #00AEEF; color: white; padding: 2px;">D</span>	P13 <span style="background-color: #00AEEF; color: white; padding: 2px;">A</span>
	P2	P6	P10 <span style="background-color: #00AEEF; color: white; padding: 2px;">D</span>	P14 <span style="background-color: #00AEEF; color: white; padding: 2px;">A</span>
	P3	P7	P11 <span style="background-color: #00AEEF; color: white; padding: 2px;">A</span>	P15 <span style="background-color: #00AEEF; color: white; padding: 2px;">C</span>
	P4	P8	P12 <span style="background-color: #00AEEF; color: white; padding: 2px;">C</span>	P16 <span style="background-color: #00AEEF; color: white; padding: 2px;">D</span>

All of them belong to Segment B

### Other notable insights across segments

Below are some other insights identified but are not closely related to the main story of the report, but might be interesting for Valyuu to refer to.

#### (1) Supports happen commonly within one's social network in the electronics field

As stated before, most people's first consideration when dealing with EOU electronics is to give them away to family members or friends, because of convenience and reliability. Similarly, another very interesting phenomenon revealed from consumer research is that, within an individual's friend circle, people who have lower knowledge tend to ask people with higher knowledge levels for information support about electronics, such as recommendations for a new device or discussions about a certain failure. Also, when people face a certain failure of the device and would like to repair it, they usually won't go to the offline random store to seek repair service directly but would rather prefer to ask reliable and capable friends to check and repair the device first. All of these prove that people are craving for certainty when they face a lot of uncertainty in the electronic market.

#### (2) Creative usage of the spare part or function

Among the four segments, especially A, B, and D, some people could come up with the reuse method in a different way. For example, people who have more disassembling knowledge, tend to keep some functional components of the EOU devices for reuse, especially in the category of laptops or desktop computers. However, some other people who have a more creative mindset, tend to reuse the remaining function of the device for other purposes, such as keeping the obsoleted smartphone simply as an alarm clock, or turning the obsoleted iPad into a digital picture frame.

# Appendix G

## Result of the rating scores of each segment

### D

Segment D

	Weight	Rating (0-10)	Total
Market attractiveness			
Customer needs and behavior	0.3	5	1.5
Segment size and growth rate	0.5	3	1.5
Marco trends	0.2	3	0.6
Total: Market attractiveness	1.0	/	3.6
Competitive position factors			
Opportunity for competitive advantage	0.5	7	3.5
Capabilities and resources	0.2	5	1
Industry attractiveness	0.3	6	1.8
Total: Competitive position	1.0	/	6.3

### A

Segment A

	Weight	Rating (0-10)	Total
Market attractiveness			
Customer needs and behavior	0.3	7	2.1
Segment size and growth rate	0.5	5	2.5
Marco trends	0.2	4	0.8
Total: Market attractiveness	1.0	/	5.4
Competitive position factors			
Opportunity for competitive advantage	0.5	5	2.5
Capabilities and resources	0.2	7	1.4
Industry attractiveness	0.3	4	1.2
Total: Competitive position	1.0	/	5.1

### C

Segment C

	Weight	Rating (0-10)	Total
Market attractiveness			
Customer needs and behavior	0.3	4	1.2
Segment size and growth rate	0.5	8	4
Marco trends	0.2	6	1.2
Total: Market attractiveness	1.0	/	6.4
Competitive position factors			
Opportunity for competitive advantage	0.5	8	4
Capabilities and resources	0.2	6	1.2
Industry attractiveness	0.3	5	1.5
Total: Competitive position	1.0	/	6.7

The weight of each criterion was derived from the discussion with Valyuu's co-founders.



# Appendix H

## Schedule of the co-creation workshop

### Workshop schedule for the participants to read in the workshop

#### Encouraging and supporting end-of-use electronics "selling" behaviors

Workshop Schedule

Schedule for the co-creation session

Time spend	Activity	Detailed explanation
15 mins	01 Ice-breaking	To be familiar with each other
10 mins	02 Bias dump	To let go of any biases before brainstorming
10 mins	03 Task announcement	The facilitator will briefly introduce the brainstorming toolkits and the main insights from the research phase
5 mins	04 Digest	To be familiar with the insights and toolkits, as a preparation for the next session
25 mins writing 5 mins sharing	05 How-tos session	Diverge Formulate as many How-To questions as possible from different points of view; and communicate with each other afterwards
10 mins		Reverge Revisit and cluster all the How-to questions
5 mins voting 5 mins sharing		Converge Vote for the top 10 How-Tos that cover as many different points of view as possible
10 mins		break
20 mins writing 10 mins sharing	Diverge	Generate ideas for all the chosen How-tos and stop until covering every of them; and communicate with each other afterwards
5 mins cluster 5 mins vote	06 Idea sampling and appraisal	Cluster ideas and vote for the most impactful ones
5 mins	07 Ending	Reflect and give suggestions to the project and the workshop

### Workshop schedule for myself to instruct the workshop

Schedule for the co-creation session

Time slot	Activity	Detailed explanation	Materials in use	Intended result
15 mins	01 ice-breaking	1. Welcome 2. [1 min per person] Brief self-introduction + answers of the two questions	1. Name stickers	
10 mins	02 bias dump	Write down on post-its (2mins) and share it with each other (3mins) 1. What is your feeling when you think about selling your used electronic devices? 2. What is your feeling when you think about purchasing a newer device?	1. Enough post-its 2. Color pen	1. To let participants realize the existence of stereotypes 2. To let go of any biases before brainstorming
10 mins	03 Task announcement	1. I will present to them the segmentation (ask belonging) + the empathy map + the mental notes 2. Let participants assign themselves which segment do they (more closely) belong to 3. Let participants ask questions if there is anything unclear	1. FBM with segmentation 2. Empathy map 3. Mental notes card-deck	1. Let participants be familiar with the context, problems and findings
5 mins	04 Digest	1. Let participants be familiar with the mental notes + empathy map + segmentation 2. Could let them take some notes if necessary		
25 mins-writing 5 mins-sharing	05 How-tos session	Diverge 1. [25 mins] Invite participants to formulate as many How-To questions as possible from the different points of view of the stakeholders, the context, the problem and everything (remember the balance of the three elements) 2. [5 mins] Share it (the most interesting one they think) with each other afterwards	1. Mental notes card-deck 2. Enough post-its (color yellow) 3. Color pen	1. Generate as much How-Tos as possible
10 mins-cluster, review and name the cluster		Reverge 1. Revisit all the How-Tos (speak out and ask for clarification if there is anything unclear) 2. clustering 3. give names to their groups 4. reduce and combine some How-tos		1. Integration of How-To questions
5 mins vote 5 mins communication		Converge <i>Select a number of How-Tos that cover as many different points of view as possible, regarding different stakeholders and product life phases</i> 1. Let participant vote for the top 10 How-Tos that cover as many different points of view as possible (remember the balance of the three elements) 2. Finally, choose the top 10 with the highest votes to generate ideas further	1. Dot stickers	1. Have the top 10 How-Tos to generate ideas further
10 mins		break		
20 mins + 10 mins	Diverge	1. Start generating ideas with the whole group on the selected 10 How-To question 2. Skip to the next How-To question until no new ideas emerge, and stop until covering all the selected questions 3. communication (introduce 1-2 the most interesting ideas one by one)	1. Mental notes card-deck 2. Enough post-its (color A for ability, color B for motivation, color C for trigger) 3. Color pen	1. As many ideas as possible for each How-to
5 mins cluster 5 mins vote	06 Idea sampling and appraisal	1. Cluster all the ideas by using the C-Box matrix 2. Dot vote for the top 5-8? ideas with the most impact	1. Dot stickers 2. C-Box matrix	1. Cluster of ideas 2. Preferred directions 3. Top 5-8? ideas
5 mins	07 Ending	1. slow down the pace 2. Let participants to chat about their reflections and recommendations	/	1. Receive suggestions and recommendations for the project and the organization of the workshop
Interview co-founders about design requirements				

# Appendix I

## Inspirational design elements in the design guideline

### Hierarchy 1:

- Periodic events: If Valyuu could hold a series of recurring events with fixed dates and similar forms, it can have multiple opportunities to catch the target group's attention and sustain their interest in a good level. In this way, the target group could develop a sense of belonging and even loyalty to Valyuu's brand.
- Self-expression: If "selling" to Valyuu or using Valyuu's services is a way for the target group to express themselves, such as about their beliefs or attitude towards sustainability, caring, no compromise that aligns with its brand story and personality (see Confidential Appendix 1), they would probably feel proud and confident to recommend Valyuu to others. This could possibly form a virtuous circle of raising awareness and advocacy.
- Gifting: If Valyuu could let the target group feel they are treated with bonuses or profits so that they feel good like receiving a gift, customers' reciprocal behaviors might be triggered. Then they probably would be more aware and loyal to the brand, consider it seriously, and even recommend it to others.
- Story: By using the techniques of storytelling, such as conflict, Valyuu could compose a story to provide well-crafted visions that give importance to the simple act of "selling". The target group might feel a sense of achievement towards the vision they acknowledged after selling, which also aligns with its brand story.
- Loss aversion: Can Valyuu reverse the fact that the target group would feel loss aversion towards selling to another situation that they might feel loss aversion of not selling? This element could be combined well with the design opportunity 2. If the value of "selling" is really unexpected or limited, and even unique compared to competitors, they probably regret not acquiring it.
- Need for certainty: as stated before, the target group is under huge uncertainty when considering "selling". This element provides another angle to ease uncertainty, which is to provide sufficient information about selling to the customers. And this works better when combined with the design opportunity 1.

### Hierarchy 2: (briefly explain)

- Surprise & curiosity: provide surprise, and arouse the sense of curiosity so as to raise awareness
- Familiarity bias: when the selling process or value could be combined with something the target group is already very familiar with, like some activities or feasts, they can develop a

- preference naturally towards it.
- Limited duration: when purposefully setting up a scenario with limited duration to let the target group decide on whether or not to sell, it can truly accelerate their speed of making decisions and guide them to make the choice of "selling".
- Removing status quo bias: Can Valyuu inform the target group of the harm of inaction so as to remove the status quo bias?
- Variable rewards: Can the "selling" reward be made "random" and unexpected so as to make the experience unique?

# Appendix J

## The unchosen initial concepts

### Concept 2: Conventional referral programme: referral greeting card

#### Marketing channels:

Valyuu's official website and Whatsapp

#### Scenario:



During some festival periods when people might often greet each other and declutter things in their homes, the target audience receives some greeting information in virtual referral & greeting cards from friends or families. And the card is provided by Valyuu.

#### How it works:

During Dutch festivals like King's day or Christmas, family parties are held frequently. Usually, customers would also declutter stuff in their homes, throw away old stuff or sell them in the flea market. Also, some activities like a small trip that requires some expenses could happen. This is a nice opportunity to arouse their awareness of selling as an option. Valyuu could invite its current sellers to generate their own referral & greeting cards and send them to their friends or families via Whatsapp that includes the target group. It contains some greeting information about the festival and recommending information about selling.

When the receiver gets registered, the sender could get 1€\* cash reward per person; and if the

receiver sells his or her devices successfully, the sender could receive 3%\* of the selling price as commission fees. And the receiver can get 5% value-added by selling through this channel.

#### Criterion used:

opportunity 1: social proof: circle of friends and family

self-expression

gifting

curiosity

- 1-the referral within the friend or family circle
- 2-the expression of attitude, thoughts, and beliefs in the referral & greeting card
- 3-the action of sending the card is like gifting
- 4-the design of the card could aim to raise the receiver's curiosity

#### Brief evaluation:

##### **Advantages:**

Festival could be a nice opportunity to conduct referral activity as it combines people's already existed habits quite well and also contains some potential needs to be met;

##### **Limitations:**

During the festival, a lot of other brands are also doing marketing activities, how to stand out in the competition then?

##### **Uniquenesses:**

Usually the conventional referral programme only uses the referral code. But this concept makes the combination of the referral information into a greeting card, which is unique.

## Concept 3: Unconventional referral programme: selling together with a group

### Marketing channels:

Valyuu's official website, offline posters

### Scenario:



The posters are put on the walls of neighborhoods, office buildings, and schools that have higher traffic.

### How it works:

The attractive poster could raise awareness of selling on the target audiences' way to homes, offices, or schools. In those places, they often meet and communicate frequently with their families, colleagues, or schoolmates. The target audience might become curious and take a look at it. There is a QR code on the poster that leads them to Valyuu's official website, where they can generate an invitation to others to call for selling. The rule is that if 3\* people sell together, everyone in the group can receive gifts or 5%\* value added. And when handing over their devices, the group can order a door-to-door pick-up service at a fixed location of their office, living, or school buildings.

### Criterion used:

opportunity 1: social proof: wisdom of the crowd & family and friends

curiosity

1-sell together within a group

2-the design of the poster should raise their curiosity and trigger them to explore more

### Brief evaluation:

#### Advantages:

Group selling can largely increase the quantity of the selling devices.

#### Limitations:

Who could be the initiator to lead others for participation?

#### Uniquenesses:

It takes advantage of the already existing communication scenarios between people so as to recommend;

When it combines with the door-to-door pick-up service, it can ease the workload of both the customers and Valyuu's workers.

## Concept 6: Valyuu's peripheral products

### Marketing channels:

the product itself is a marketing channel

### Scenario:



When customers see someone is using cute Valyuu's peripheral products such as the phone case, the canvas bag, and stickers, they probably will become curious and start getting to know the brand.

### How it works:

This is inspired by Design Analogy 2. Some current Valyuu's users get Valyuu's peripheral products from some channels. They are well-designed and represent their own styles and beliefs so they use them very often. This might also attract the attention of other surrounding people to be familiar with Valyuu's brand.

### Criterion used:

opportunity 1: social proof: friends and family & wisdom of the crowd

self-expression

curiosity

- 1-when the products are used by many people, including friends and families;
- 2-it could be a way to express personal beliefs about sustainability;
- 3-it could raise the curiosity of the audience wanting to explore the brand;

### Brief evaluation:

#### Advantages:

it can fuel forming a trend and leave a good impression on the audiences

#### Limitations:

the conversion rate is hard to be estimated and might be low

#### Uniquenesses:

The form is original and haven't been seen easily in the Netherlands

## Concept 8: Surprise bag

### Marketing channels:

offline channels

### Scenario:



when the target audience is shopping or hanging out

### How it works:

Those surprise bags are placed on some offline channels, such as Valyuu's own offline stores or booths. They can either be sent as gifts or purchased. They are eye-catching and trigger the audience's curiosity to have a look. The bag contains several peripheral products of Valyuu. During the time customers are unpacking the bag, they are in the mood of exploring, so they are open to acquiring new information. Hence, some booklets that educate people about the importance and value of selling EOU devices by storytelling could be placed into the bag and read well by audiences. And information about the selling process can also be introduced.

### Criterion used:

opportunity 2: visualize value
opportunity 3: playful and enjoyable
gifting
curiosity
surprise
variable rewards

1-the booklet explain the value of selling

2, 4, and,5-the format of the surprise bag provides a sense of curiosity and surprise, and is playful and interesting.

3-this bag is sent as a gift, or if by purchasing, usually, the price is much lower than the market price, so customers might feel a sense of gain like receiving gifts

6-The products in each bag are different

### Brief evaluation:

#### Advantages:

It is an interesting way to introduce Valyuu's brand and selling as an option

#### Limitations:

It is kind of making the marketing campaign complex that requires many resources, and then the ROI might also be low.

#### Uniquenesses:

It could make Valyuu as a brand more memorable

## Concept 9: Real-time digits display

### Marketing channels:

offline video billboard, Valyuu's official website

### Scenario:



on the street or station

### How it works:

The video billboard simply visualizes the value of selling or the harm of not selling on different topics, such as the real-time display of the number of the e-waste generated in the Netherlands, or the selling price drop tendency. A QR code on the billboard that leads the audience to Valyuu's website is also provided.

### Criterion used:

**opportunity 2: visualize value**

curiosity

(remove) status quo bias

- 1-different values will be visualized via different kinds of data
- 2-customers curiosity will be sparked and their consideration will be triggered
- 3-the data demonstrated creates an urgency of selling

### Brief evaluation:

#### Advantages:

The traffic of viewing an offline billboard might be good

#### Limitations:

It is hard to find a place where a video billboard could be placed in the Netherlands

#### Uniquenesses:

The live data demonstrated is attractive and unique

# Appendix K

## The results of the Harris Profile

✓

1

*the design solution should:*

**[Required Attributes]**

1. conform to the **context and trend**;
2. be **simple and efficient**;
3. be **innovative and original**;
4. **be foresighted** to bridge the future vision;
5. be **viable, feasible, and aligned** with corresponding service and marketing periods;
6. be as **honest** as possible;
7. **fit for the brand story and personality**;

**[Required Impact]**

8. push their **intrinsic motivation** to choose "selling" to Valyuu;
9. Increase Valyuu's **reputation and popularity** in an impactful way;
10. **increase the potential of their conversion behaviors**;
11. increase the potential of their **retention and advocacy behaviors**.

2

3

✓

4

✓

5

6

*the design solution should:*

**[Required Attributes]**

1. conform to the **context and trend**;
2. be **simple and efficient**;
3. be **innovative and original**;
4. **be foresighted** to bridge the future vision;
5. be **viable, feasible, and aligned** with corresponding service and marketing periods;
6. be as **honest** as possible;
7. **fit for the brand story and personality**;

**[Required Impact]**

8. push their **intrinsic motivation** to choose "selling" to Valyuu;
9. Increase Valyuu's **reputation and popularity** in an impactful way;
10. **increase the potential of their conversion behaviors**;
11. increase the potential of their **retention and advocacy behaviors**.

✓

7

8

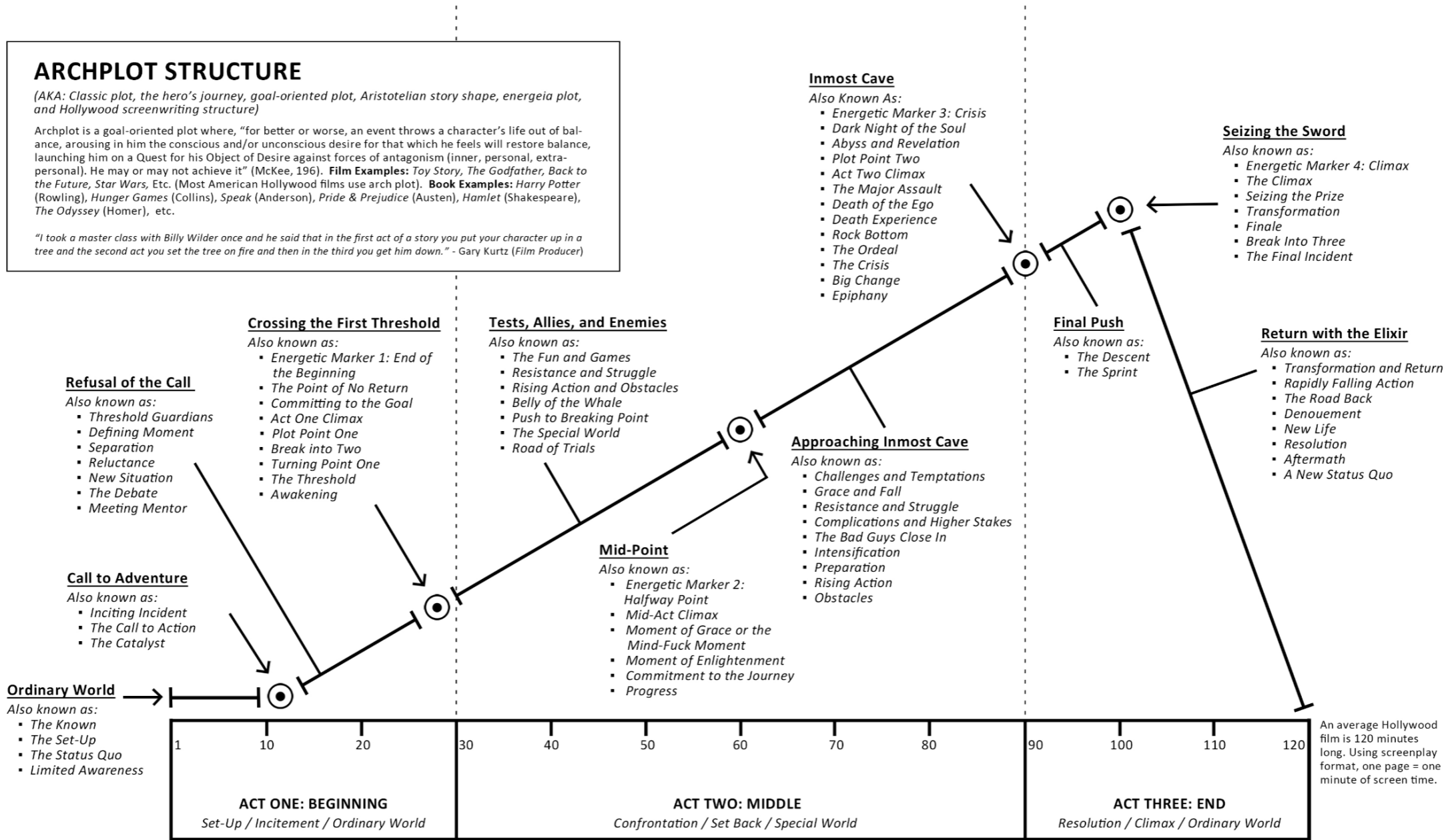
9

10



# Appendix L

## The theory behind the story arc (the Three-act Structure)



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Information on this handout comes from the following sources: *The Plot Whisperer* (Alderson), *The Hero with a Thousand Faces* (Campbell), *Novel Writing Help* (Chapman), *Screenplay* (Field), *The Sequence Approach* (Guilino), *Writing Screenplays that Sell* (Hauge), *Inside Story* (Marks), *Story* (McKee), *Tools for Analyzing Prose Fiction* (McManus), *Save the Cat* (Snyder), *Three Act Structure* (TV Tropes), *The Writer's Journey* (Vogler), and *The Moral Premise* (Williams).

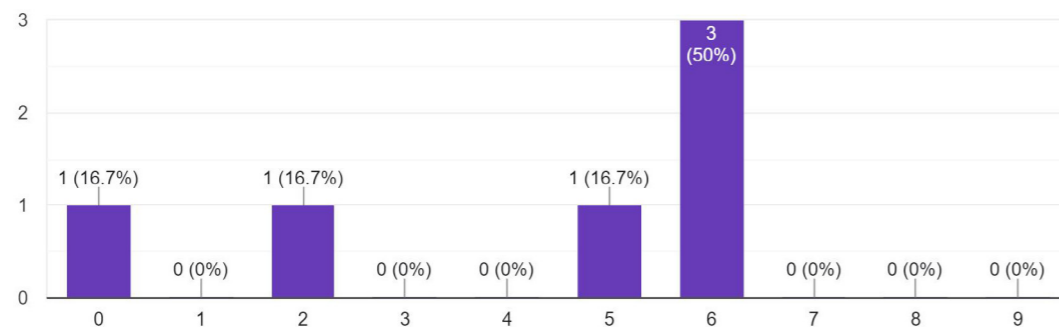
Source: What is Arch Plot and Classic Design? . (2013, June 5). Ingrid Sundberg. [http://ingrandsundberg.com/2013/06/05/what-is-arch-plot-and-classic-design/?utm\\_source=lit-litfan&utm\\_medium=social-fb&utm\\_term=100115&utm\\_content=link&utm\\_campaign&origin=lit\\_litfan\\_social\\_fb\\_link\\_\\_100115](http://ingrandsundberg.com/2013/06/05/what-is-arch-plot-and-classic-design/?utm_source=lit-litfan&utm_medium=social-fb&utm_term=100115&utm_content=link&utm_campaign&origin=lit_litfan_social_fb_link__100115)

# Appendix M

## The design and answers of the validation questionnaire

Could you please rate your (current or future) general willingness of selling your obsoleted electronic devices?

(6 条回复)



Could you please briefly explain the reason of your rating?

(6 条回复)

Depends on how much time I used it. If I used it for a long time and the hardware is not functioning well, I don't think others would buy it.

For me, electronics is not a fast-moving consumer goods, so I won't change it frequently. And most of the time I'd rather keep it as a hard drive because there might be some photos or other information in it. But if it's a relatively new product and I don't need it, I'll sell it.

I didn't sell the electronic device before. But I have some device that not used yet. The reason is : 1. don't have the suitable platform to sell the product. 2. have no hurry to sell the product. 3. Don't really have the passionate to sell the product.

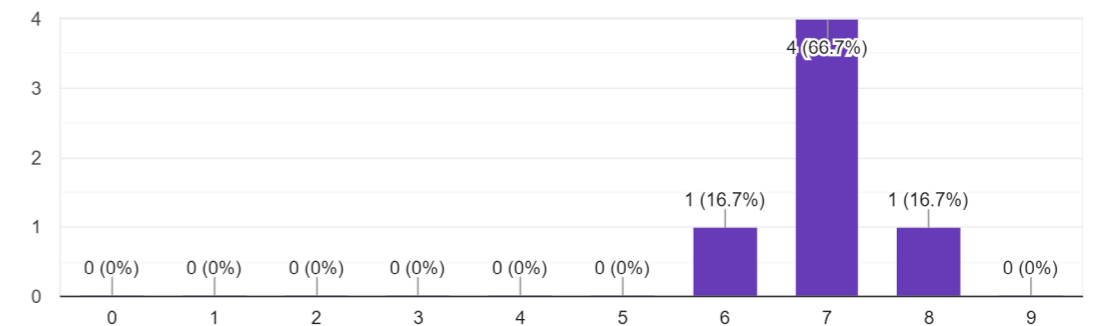
selling them could be very troublesome and I am not familiar with prices in second hand market.

I feel this process is quite time/energy wasting, which will make me frustrated.

After watching the "video"

Could you please rate your (current or future) general willingness of selling your obsoleted electronic devices after watching the "video" ?

(6 条回复)



Could you please briefly explain the reason of your rating?

(6 条回复)

The platform looks pretty convenient to me.

I will feel that I only need to provide goods and have no other worries, the platform will help me find buyers, and I will only be responsible for taking the money.

Still, electronic devices are not a FMCG for me. So I don't have much products to sell. But the website looks like it could help me sell my products at a high price, so if I want to sell my products, it would be a good channel.

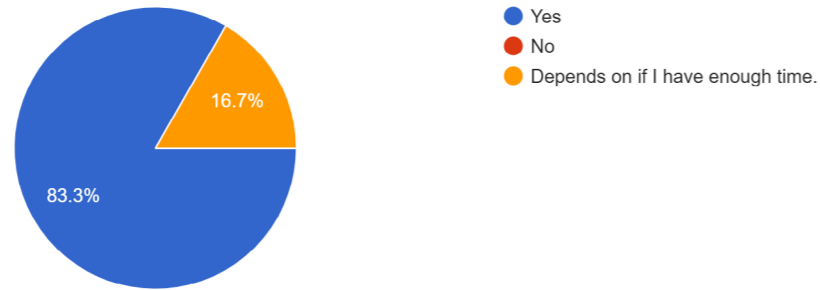
The whole website looks professional and evaluate the product in the diversity perspective. In the meantime the price looks nice. while I also want to know where my product will go after I sell to this website.

1.beneficial for environment; 2.price is reasonable 3.the process is clear and easy

The sentences from the youtuber let me realize the phone i put in the drawer never be used again, also its a eco-friendly way

Do you want to click on the link?

(6 条回复)



Could you please briefly explain the reason?

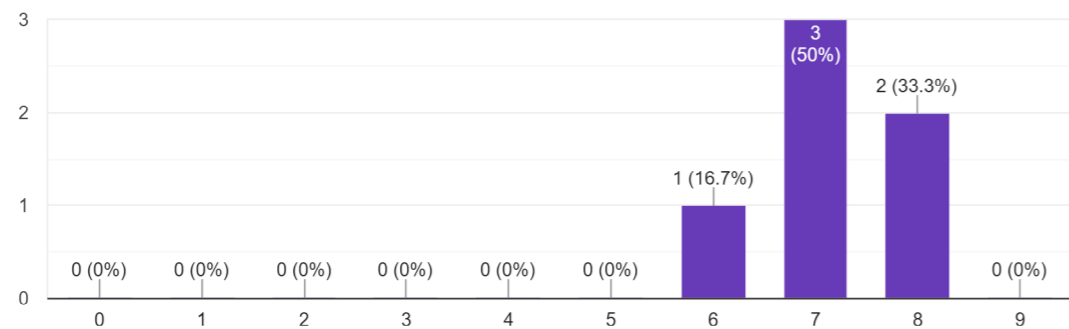
(6 条回复)

- I would very much love to if I have something to be sold at hand and there's enough time to do it. But if I'm just scanning through videos, probably not because that's maybe not my case.
- If I know about this platform I would love to use it, so I would love to give it a try if there is a publicity channel to let me know
- If I can sell at a higher price with no risk, why not?
- I want to have a try to use this website to sell . If it works well, I will sell the product in the long future.
- the website sounds good and i would like to sell my devices through it
- i want to try it to see its good or not. Also, how much is my phone worth

After browsing the web pages

Could you please rate your (current or future) general willingness of selling your obsoleted electronic devices after watching the "video" and browsing the web pages?

(6 条回复)



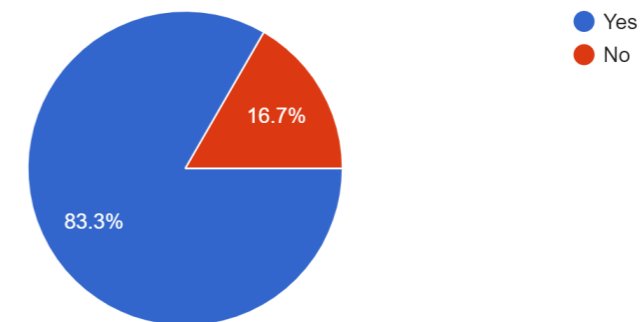
Could you please briefly explain the reason of your rating?

(6 条回复)

- A better price.
- I actually don't really like the feel of this coupon, this countdown coupon always makes me feel forced. And I will feel that the website is in a hurry and wants me to register an account
- The willingness of selling products remains up to myself. The coupon do not add much to promoting this willingness. So it's same as the moment when I know the platform
- I could clearly to know how much green contributions to the environment which is nice for me to have a overview.
- the website itself looks simple as the youtuber explained
- It a green action and looks fun

Do you want to collect the coupon and fill in you email? (the coupon has two-year validity to your first device sold to Valyuu)

(6 条回复)



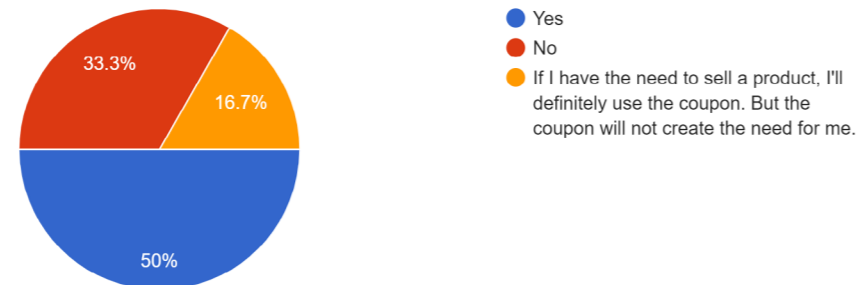
Could you please briefly explain the reason?

(6 条回复)

- Not tough task to do but earn extra money. Why not?
- For me, my usage habit is that I need to browse the content of the website before deciding if I want to register an account
- I would click and get the coupon whether I have a need to sell a product recently or not. Because I can use it in 2 years, and I think one day I'll use it.
- Two years validity is long enough for me to save in case that I have some product need to sell it.
- why not, it gives me more money
- yes, i can collect and use it whenever i want.

Do you want to use the coupon to have a try of selling to Valyuu soon?

(6 条回复)



Could you please briefly explain the reason?

(6 条回复)

Otherwise I would forget.

For example, in a shopping application, coupons usually appear on the prepayment interface and make the most sense. And I usually only sign up for an account after I've selected an item. With this app, I should see the offer, and a coupon will appear to tell me that new users can get a discount, so hurry up and register, and then I want to register

The coupon just something that add value/benefits to me when I want to sell a product, but it cannot push me to do it.

If I have a device don't used for a long time. I would like to have a try to use it to sell my device.

Right now I don't have any devices for sale. I may try it after I get a new phone next year

its quite interesting, i want to try it at least once.

## Appendix N

### Detailed explanations of the result of the final concept validation

#### Validation result with the target group

Below are the detailed explanations of the validation results with the target group, including the summary of pros, cons, and recommendations

#### The possibility of participants clicking on the link to Valyuu's promotion web pages

As for the conversion rate of clicking on the link recommended by the Youtuber after watching the video, most of the participants are curious and want to click on the link to have a look at the website. For example, one participant indicated that "If I can sell at a higher price with no risk, why not?" Another participant showed good retention potential: "I want to have a try to use this website to sell, and if it works well the first time, then I probably would like to sell my other devices to them as well in the future." However, only one participant didn't make sure whether he will click on the link but indicated that it depends on the timing when he watches it, for example, if he just browses Youtube late at night before sleep when he is very tired, he will definitely not clicking on the link or even leave half-way of the video. This will be further elaborated on in the "cons and recommendations" part of the video below.

#### The possibility of participants filling in the email

After clicking on the link, most participants were willing to collect the coupon and register their e-mail on Valyuu's website. Because "it just requires some simple clicks but enables you to earn extra money. Why not?" Besides, a lot of praise went to the "two-year validity" of the coupon because such a long validity truly triggered them to collect and register as they consider they might need it in the following two years due to their planning of replacing electronic devices. While only one participant was not willing to collect the coupon at the moment because she hates the form of the pop-up window and asks for filling in the e-mail before she has a glance at the whole website. Besides, together with the countdown design of the coupon, there was a nice discussion among the participants, which would be explained in the "cons and recommendations" part of the web pages below.

#### The possibility of participants having try of selling their devices to Valyuu soon

When comes to whether they would try selling to Valyuu soon, the conversion rate is a bit lower as expected. Because some of them don't really have available devices to be sold to Valyuu at the moment, either due to their hoarded devices being too old to be sold or due to their available devices are not covered by Valyuu's current services. However, among them, the good point is

that two participants expressed that they probably would like to sell to Valyuu the next year when they replace their smartphones. Although the conversion period is a bit longer, there were still around three participants who happened to have available devices at the moment and indicated that they want to try selling to Valyuu at least once soon.

## **Pros, cons, and recommendations for improvements**

### **1. The design of the video**

#### **(1) Pros:**

The explanation of the environmental value is really motivating:

During the discussion, most participants felt that when adding the explanation of the environmental value is much more motivating than merely explaining the monetary value. This also aligns with the insights from the research phase where the current sellers attach importance to the reuse value. In this case, after the lazy ignorers' awareness has been raised, the contribution to the environment is also an indispensable motivator for them to choose to sell as long as the action is easy enough to do.

- **The content about the meaningless to hoard devices arouses audiences' resonance well and increases persuasiveness:**

In the video, there is an important part explaining the influencer's own thoughts and stories about hoarding electronic devices, especially the self-reflection about the meaningless of hoarding devices. Because the influencer expressed that she had never used those hoarded devices again once till now, or never looked at them to recall any memories. This situation also widely exists among the audiences but they were not aware. After being pointed out by the influencer, audiences felt resonated and also started self-reflection about the meaningless to hoard devices, then, the persuasiveness got increased accordingly.

The demonstration of the whole process using Valyuu's services creates a good picture of it in audiences' minds:

The influencer leading the audience through the whole process successfully conveyed the easiness and convenience of Valyuu's services.

#### **(2) Cons and recommendations:**

- **The form of embedding Valyuu into influencers' videos was a bit obtrusive and lengthy:**

The video spends longer time than the audiences' expected to introduce Valyuu's services. Some of them implied that they would probably leave halfway through the video in the real scenario if the content cannot really attract them to continue watching it.

**Recommendations for improvements:** the topic is about how to attract them as much as possible to watch the video completely. So the hook at the beginning of the video should be really attractive to audiences and the embedding of the referral of Valyuu in the video should be more gentle. During the discussion, some examples were nominated by participants. For instance, the influencer could show his experience of selling devices on 5 different platforms and talk about the pros and cons of those platforms and finally recommend Valyuu; or, the referral could

be embedded into a traveling Vlog when the influencer talks about how to manage the budget of the trip at the end of the video and then expresses that selling to Valyuu covers his traveling expenses nicely.

- **Less consideration about the timing when publicizing the video:**

As stated above, except for the attractiveness of the video, one very important element to decide the conversion rate is whether they have the mood and time to click on the link, another is whether they have available devices to be sold at the moment. Due to some participants don't have available devices, the conversion rate decreased.

**Recommendations for improvements:** So the timing should be accurate and carefully chosen. Firstly, it is suggested to carefully select some periods of time to publicize the video during the year when there are peaks of customers replacing electronic devices, such as after Apple's new product launching events, or according to the prediction of customers' purchasing data of newer devices from other possible channels. Secondly, for a more precise time frame, the video is better to be launched on weekends or vacations during the daytime when people have more free time and energy. In this way, the conversion rate could be improved to a higher level.

### **2. The design of the promotion web pages**

#### **(1) Pros:**

- **The two-year validity of the coupon really triggers audiences to collect and register:**

The audiences might not have available devices at the moment, but they might have some after one or two years. With this in mind, I designed the validity of the coupon to be two-year. And it turned out that such a long validity triggered their collecting and registering behaviors very well because they always have in mind that it might be useful in the future.

- **The visualization of the green contribution per device on the homepage is inspiring:**

This visualization enabled them to have a clear understanding of how much green contribution they could do by selling what kinds of devices, which is eye-catching and rarely to be seen on any other platforms.

#### **(2) Cons and recommendations:**

- **The pop-up window of the coupon and the form asking to fill in the email frustrated some audiences:**

As observed in the answers from the questionnaire and the discussion, some participants don't really prefer the pop-up window of the coupon. One participant's willingness of selling even decreased a bit after clicking on the link and seeing the pop-up coupon asking for an email. They explained that they always like to wander around the website as a guest before they decide to register.

**Recommendations for improvements:** the coupon probably doesn't need to pop up so obtrusively or early as an opening page for audiences to enter Valyuu's website. It can, for example, pop up halfway when they browse the website or exactly after they try to assess the value of a certain device. Or it can be shown more mildly on the page without using a pop-up window.

- **The countdown of the coupon makes some audiences feel they are pushed and controlled:**

The main idea of the countdown is to urge them to make up their mind to collect and register more quickly in a limited timeframe. This kind of feeling among audiences is an expected risk when designing the concept, but I also expected the benefits of increasing their motivation to collect and register. But it turned out that it didn't function well in this case. It even didn't increase any of their motivation, however, it in turn let them feel they were under control and were pushed to collect and register.

**Recommendations for improvements:** It might be better to remove the countdown function in the coupon, but make it a gift for every newcomer to Valyuu honestly.

## Validation result with the co-founders

Below are detailed explanations of the recommendations from co-founders.

### **(1) To make the combination of inviting micro-and-macro-influencers:**

It is hard to estimate the effect of inviting several numbers of micro-influencers compared with one or two macro-influencers. After browsing several influencers' videos about the competitor, Swappie, and taking their data as references, a better method might be to have a combination of micro-and-macro-influencers so as to cover the public interest to the full potential within the budget.

### **(2) To cut down and select the most suitable elements for the specific field of one video:**

Nowadays, customers' attention span is reducing under the "short-video era". Launching a lengthy video might require more techniques of an influencer to continuously attract audiences' attention along the way, with still higher risks of them leaving halfway. Then it might be better if those good elements could be simplified and not necessarily need to be proposed one time in one video. For example, to distribute those good elements into several videos that suit the best in specific fields of influencers, so as to make the story in one video lighter, simpler and stronger.

### **(3) To make the launching time of the video more accurate:**

This is also related to the recommendation derived from the validation with the target group above. Based on that, the launch or recommended time for an individual can be identified by the algorithm of the video platform with big data analysis. There are some key indicators that could be captured, for example, a recent record of searching for shopping new electronic devices, or if the person has a recent record of purchasing electronic products. These may indicate that the person has a potential device that is about to be obsolete and can be sold soon. This could help Valyuu to launch its marketing materials more accurately and push the short-term ROI to the highest level.

***[The Ends.]***