# Appendix

Questionnaire

Dear Sir/Madam,

I am a researcher at Xi'an Jiaotong-Liverpool University. I am very interested in the topic of e-waste reverse logistics. The title of this paper is " Barriers for implementing large household appliance e-waste reverse logistics in China: a certified disassembler’s perspective". This paper will analyze the interaction between barriers through the grey-based DEMATEL method, get the key barriers that need to be focused on and solved in the short and long term, and finally provide feasible suggestions from disassembling enterprises and government perspective.

I hope you can judge the interaction between the following barriers (the questionnaire is expected to take 10 minutes). The information obtained from this questionnaire is for research purposes only. Please feel free to fill in the questionnaire. Thank you for your patience and support!

**Basic Information**

1 What’s your family name?

2. What’s your age?

* younger than 25 years old
* 26-35 years old
* 36-45 years old
* older than 45 years old

3. Where do you work for?

4. May I know your position in the company?

* Top manager
* Department manager
* Others

5. How many years have you worked in the dismantling industry?

* within 5 years
* 5-10 years
* 10-15 years
* more than 15 years

**Judge the interaction between barriers**

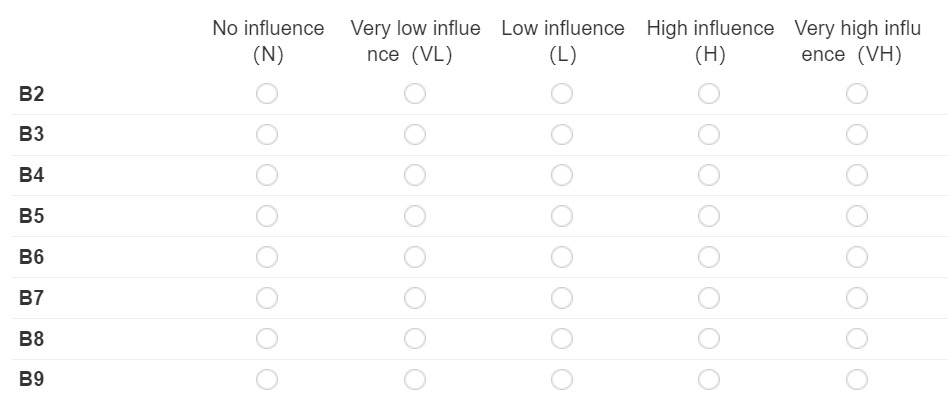
The following are 9 barriers summarized (Figure 1 and Table 1) based on literature review and field visits to disassembling enterprises and classification of stakeholders. Every choice you make will be an important reference for the research. Please make a careful judgment on the interaction between barriers based on your experience and professional knowledge.



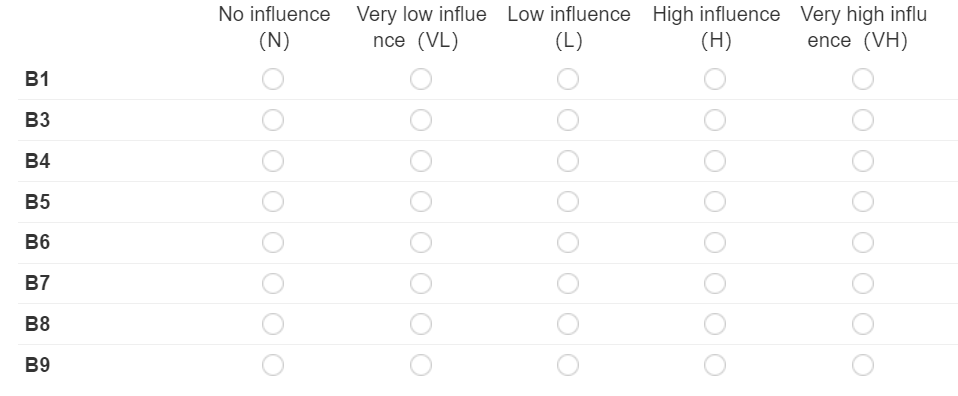
Figure 1. Barriers identified based on stakeholder analysis

|  |  |  |
| --- | --- | --- |
| Stakeholders | Barriers | Sources |
| Government | B1. Lack of popularisation of knowledge and practice for household e-waste recycling | Li (2011)  Qu et al. (2013)  Zeng et al. (2017)  Yu (2021) |
| B2. Delayed disbursement of subsidies and tightened audit standards for subsidies | Manomaivibool and Vassanadumrongdee (2012)  Chi et al. (2014)  Xing (2019)  Li et al. (2020) |
| B3. Poor enforcement of regulations to control illegal disassembling workshops | Wang et al. (2012)  Awasthi and Li (2017) |
| Households | B4. Households have low environmental awareness | Liu et al. (2006)  Chi et al. (2014)  Abdulrahman et al. (2014); Yu et al. (2014a)  Shaharudin et al. (2015)  Yuan et al. (2016) |
| Collectors | B5. E-waste purchasing prices from collectors are high and uncontrollable | Yu et al. (2014a)  Tong et al. (2015)  Cao et al. (2016)  Xing (2019) |
| Competitors | B6. A dramatic recent increase in the number of illegal disassembling workshops | Xing (2019)  CHEARI (2021) |
| B7. The emergence of producer-run interconnected factories for disassembling e-waste under the EPR and the Carbon Neutrality strategy | Yu (2021) |
| Disassemblers | B8. Certified disassemblers have higher running costs for rent, equipment, salaries, and environmental regulation compliance than illegal individual disassembling workshops | Yu et al. (2010)  Li et al. (2020) |
| B9. Certified disassemblers lack profitability because of limited storage capacity and inadequate technology | Li et al. (2020) |

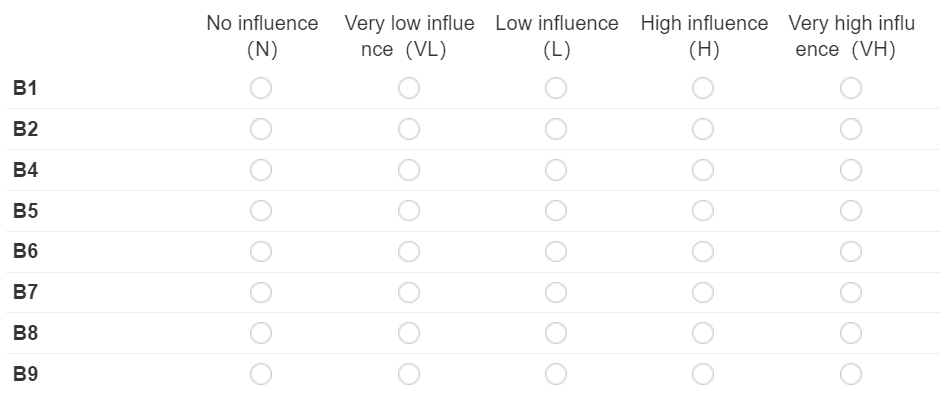
Table 1 A summary of stakeholder-based barriers to household appliance e-waste RL

6. B1. Lack of popularization of knowledge and practice for household e-waste recycling. Please judge the impact of B1 on the following 8 barriers.

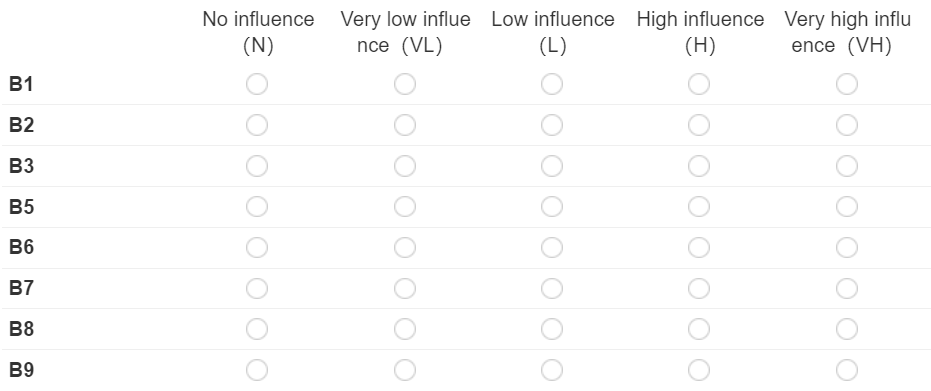
7. B2. Delayed disbursement of Subsidies and further tightened standard for subsidy audit. Please judge the impact of B2 on the following 8 barriers.



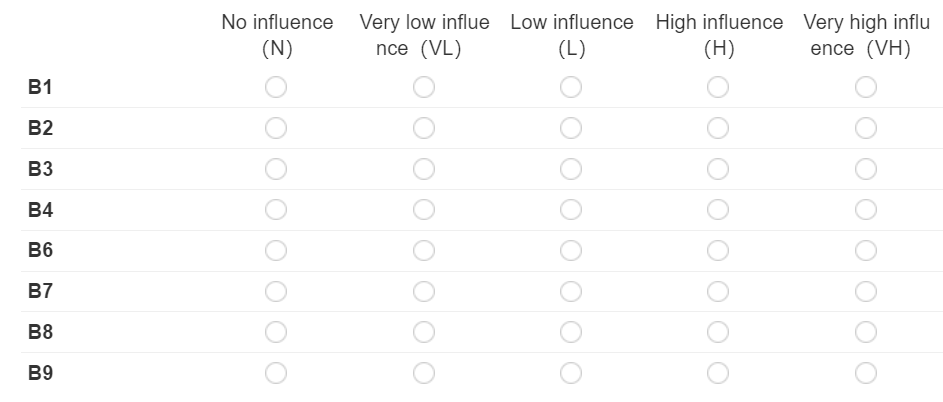
8. B3. Lack of effective regulations or specialized departments to control illegal disassembling workshops. Please judge the impact of B3 on the following 8 barriers.



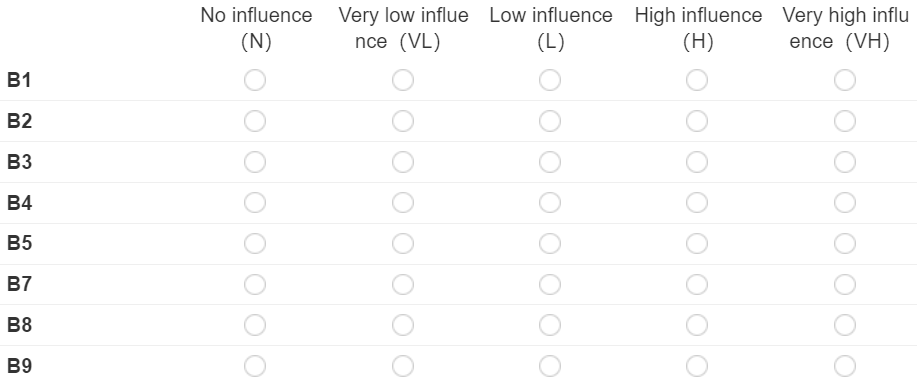
9. B4. Households have low environmental awareness. Please judge the impact of B4 on the following 8 barriers.



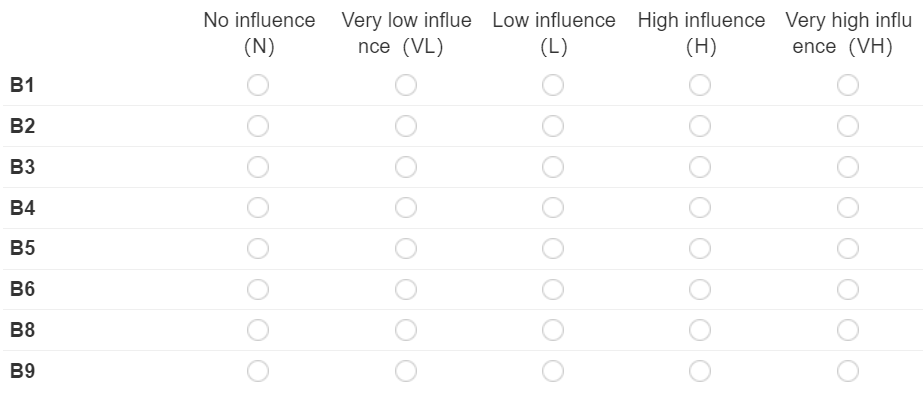
10. B5. Purchasing price from collectors is high and uncontrollable. Please judge the impact of B5 on the following 8 barriers.



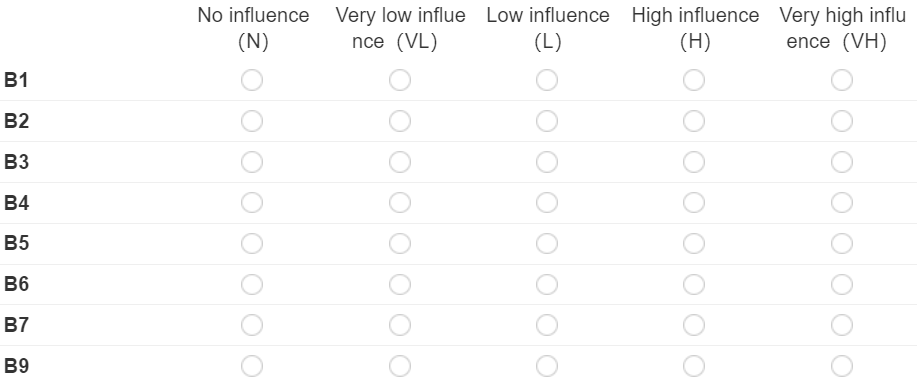
11. B6. Illegal disassembling workshops increase dramatically in recent years. Please judge the impact of B6 on the following 8 barriers.



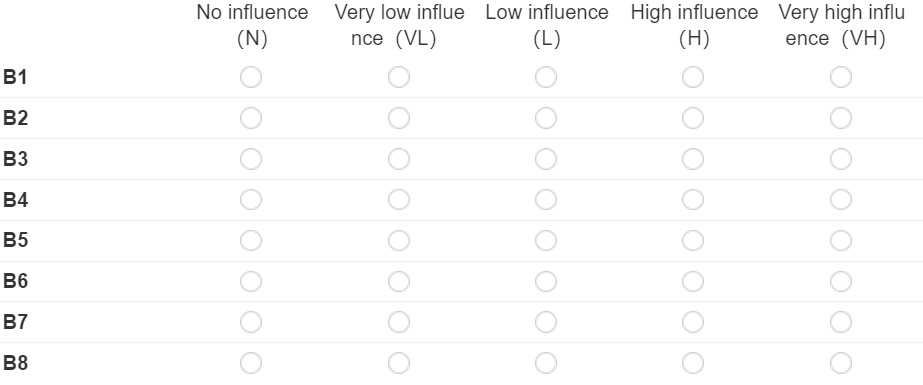
12. B7. Interconnected factories (for disassembling e-waste) established by producers begin to emerge and develop under the EPR and the “Carbon Neutrality” strategy in 2021. Please judge the impact of B7 on the following 8 barriers.



13. B8. Compared with illegal individual disassembling workshops, high running costs for rent, equipment, employees and environmental requirement. Please judge the impact of B8 on the following 8 barriers.



14. B9. Lack of profitability for limited technology and storage capacity. Please judge the impact of B9 on the following 8 barriers.



15. If other factors restrict the effectiveness and efficiency of disassembling waste household appliances of licensed disassembling enterprises (not mentioned in the questionnaire), please list them.

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Thank you again for your patience and support! Wish you a happy life.