Questionnaire and related information

In this study, we planned to investigate the lifetime distribution of mobile phones for every province (31 provinces in China). Considering the vast land area and limited finance, the online questionnaire survey is employed regardless of conducting direct interview. The questionnaire was put online through a professional questionnaire website named Tencent questionnaire (https://wj.qq.com/), which is one of the biggest questionnaire websites in China. This questionnaire website provides basic questionnaire templates and can help develop the final questionnaire. The website itself is a platform to publish the developed questionnaire. Besides, the developed questionnaire can be shared through the social software in China, such QQ, Wechat. It deserves to emphasize that both the two mentioned social softwares and the Tencent questionnaire are all belong to the Tencent company, which is one of the biggest Internet companies in China. Besides professionally developing and easily publishing the questionnaire, the Tencent questionnaire also provides analysis tool to help preliminarily analyse the collected data. Meanwhile, all the collected data can be directly exported to SPSS and other analysis software.

We drafted the questionnaire and then shared with several Wechat friends to pre-validate the feasibility of the questionnaire. The feedback includes the answer time and the easy-understanding extent of the questionnaire. The questionnaire is easy to understand and averagely less than three minutes were taken to fulfill the questionnaire. Then we optimized and published the questionnaire on May 10, 2018. After then, we checked the questionnaire results twice every month and conducted the final check on January 2, 2019. Based on the population in each of the 31 provinces, sample size for each province is

calculated as around 385, resulting in at least a sum of 11935 respondents (The sample size is calculated under given the confidence level as 95%, the margin of error as 5). The collected data is not applied in this study considering the much lower responses. The reasons of fail to collect many responses required to build the lifespan model are preliminarily analysed and summarized as follows:

Firstly, large size and dispersion of the sample as a consequence of too many specified locations in the survey. We planned to survey the lifetime distribution of mobile phones for every province. This requires huge respondents from all the 31 provinces and a certain amount of data from each province. However, the Internet population and the Internet-access frequency are different across provinces in China, which hinder the collection of enough data from each province.

Besides, may be the questionnaire method. Only the Online questionnaire is employed considering the finance problem. However, the low participation ratio of online questionnaire has been pointed out previously (Guo & Yan 2017). Even though Snowball sampling may benefit the online questionnaire (online from friends to friends), however, regardless of the biases (Baltar & Brunet 2012, Brace-Govan 2004), it is impossible for the authors to get access to enough people from every province of China;

In addition, lack of temptation. Only small gifts are designed and prepared for each respondent, which is insufficient to induce enough people to participate in the survey. A certain temptation has been pointed out as necessary for gathering enough respondents (Schewe & Cournoyer 1976, Yu et al. 2017).

In this study, we cited the lifetime distribution of mobile phones from the survey of Guo & Yan (2017). In their study, online and direct interviews questionnaire are jointly

conducted from December 2014 to April 2015. The online survey targets are the entire country, whereas the direct interview is conducted at the city of Guangzhou, Changsha, Ganzhou. They compared the average lifetime of mobile phones in their study (1.73) with the results of Li et al., (2015) (1.9) to confirm their results. The average lifetime in these two studies are rather close, which makes it reasonable and acceptable.

Survey of mobile phone consumption habits in China (excluding Hong Kong, Macao and Taiwan)	
Part one:	
01	Gender?	Male or Female
02	Age?	$20\leq$; $20< \leq25$; $25< \leq30$; $30< \leq40$; $40<$
03	Monthly salary (or living expense in case no salary)?	$1000\leq$; $1000< \leq2000$; $2000< \leq3000$; $3000< \leq5000$; $5000< \leq8000$; $8000< \leq10000$; $10000< \leq20000$; $20000<$; secret
Part two:	
04	Province of respondent?	List of the 31 provinces in the mainland of China.
Part three:	
05	Number of mobile phone (including useless one)?	0; 1; 2; 3; $4\leq$
06	Utilization lifetime of the previous mobile phone (year)?	≤0.5; $0.5< \leq1$; $1< \leq1.5$; $1.5< \leq2$; $2< \leq2.5$; $2.5< \leq3$; $3< \leq3.5$; $3.5< \leq4$; $4< \leq4.5$; $4.5< \leq5$; $5< \leq5.5$; $5.5< \leq6$; $6.5< \leq7$; $7< \leq7.5$; $7.5< \leq8$; $8<$
07	Utilization time of the latest mobile phone (year)?	≤0.5; $0.5< \leq1$; $1< \leq1.5$; $1.5< \leq2$; $2< \leq2.5$; $2.5< \leq3$; $3< \leq3.5$; $3.5< \leq4$; $4< \leq4.5$; $4.5< \leq5$; $5< \leq5.5$; $5.5< \leq6$; $6.5< \leq7$; $7< \leq7.5$; $7.5< \leq8$; $8<$
08	Expectation utilization lifetime of the latest mobile phone (year)?	≤0.5; $0.5< \leq1$; $1< \leq1.5$; $1.5< \leq2$; $2< \leq2.5$; $2.5< \leq3$; $3< \leq3.5$; $3.5< \leq4$; $4< \leq4.5$; $4.5< \leq5$; $5< \leq5.5$; $5.5< \leq6$; $6.5< \leq7$; $7< \leq7.5$; $7.5< \leq8$; $8<$
09	Is the latest mobile phone a new one or secondhand product?	New or secondhand
10	Purchase price of mobile phone?	≤1000; $1000< \leq2000$; $2000< \leq3000$; $3000< \leq4000$; $4000<$

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