

## Appendix 1 | Household Sector Innovation Questionnaire

Cross-national comparisons of household sector activity in product development, such as those shown in chapter 2, were possible because our group of colleagues intentionally used the same basic questionnaire, sometimes with additional questions added, to conduct their surveys. Here, on the chance that additional colleagues might wish to extend the collection of comparable data to additional countries or within another country longitudinally, I reproduce the latest version of our joint questionnaire (de Jong 2016). Jeroen P. J. de Jong is the main author of this questionnaire. An expert on matters of questionnaire design and analysis, he offers to advise any who might wish to use or modify this questionnaire.

Please note that so far my colleagues and I have used the questionnaire reproduced below only to collect information on household sector *product* innovations, as in the national surveys discussed in chapter 2. In view of the economic importance of services in national economies, it would clearly be useful to extend data collection to household sector development in services too. Unfortunately, however, my colleagues and I have not yet found a reliable way to do this. We have tried several approaches and several variants of the questionnaire without success. The basic problem appears to us to be that respondents are generally unable to isolate instances of service development from non-innovative general patterns of day-to-day living when confronted with a questionnaire.

For example, respondents, assisted by cues, find it relatively easy to recall physically modifying a grandpa's favorite chair to make it easier for him to safely stand up from a sitting position—this would be a product innovation. On the other hand, the respondents appeared unable to recall and report having devised a sequence of special lifting

movements to provide grandpa with the service of safely arising from his unmodified chair with caregiver assistance. This is the case even if follow-up, face-to-face interviewing finds that they had in fact devised such a sequence of lifting movements. The problem remained even when we start our questioning by asking respondents to recall a problem they had recently encountered, rather than a solution they had developed. They might then respond “I had a problem of getting grandpa safely up from his favorite chair.” But when we next asked, “What did you do about it?,” they appeared to us to be much more likely to recall making a physical modification to the chair than to recall making a service modification or a technique modification to solve the problem.

My colleagues and I do not think this reflects a general absence of service innovations by free innovators in the household sector. Recall that many of the respondents in the study of medical patient service innovations presented in chapter 8 were experiencing significant day-to-day difficulties and suffering from rare diseases. Contrary to our experience with general household innovators, who probably were generally experiencing and addressing less intense needs, these individuals often recalled service innovations. At least, they recalled those that provided them with significant help and improvements to their daily situation (Oliveira, Zejnilovic, Canhão, and von Hippel 2015). Researchers using the questionnaire reproduced below may wish to experiment with solving this problem—it will be important for all of us to have a good solution.

I next add a few additional comments to explain more about the choices we made in designing the questionnaire.

First, in order to aid respondents’ ability to recall an innovation they may have developed, de Jong devised a procedure involving offering respondents a series of subject-specific cues—for example, “Did you within the last three years develop or modify computer software? household fixtures or furnishing?” The cues used are shown in the questionnaire reproduced below.

Second, note that the questionnaire includes screening questions to ensure that what is being described by a respondent as an innovation meets the criteria of the study. Respondents were asked whether they

had created the innovation within the past three years, whether it was for their job or business (to screen out job-related innovations), and whether they could have bought a similar product on the market (to screen out homebuilt versions of existing products). Other screening questions could be added for other purposes.

Third, and again with respect to screening, we found it is useful to include an open-ended question asking respondents to briefly describe their claimed innovation. Such a question can help to exclude false positives. As experience shows, many householder respondents have only a vague idea of what the term innovation means. For example, one respondent said “Yes, I have innovated” and then proceeded to answer the screening questions listed above in a way that matched the study’s criteria for an innovation. However, when asked to briefly describe the claimed innovation, the respondent stated “I built a new barn for my horses.” This clearly false positive was caught only because of the inclusion of a request for a brief description of the innovation.

For more information on sample selection and more methodological information, see von Hippel, de Jong, and Flowers 2012, de Jong, von Hippel, Gault, Kuusisto, and Raasch 2016, and Kim 2015.

## Survey Script

The following survey script is taken from de Jong (2016). Preceding this script, an introductory statement is provided to respondents, offering information on the purpose of the study and providing information on sponsorship, on how the data will be used, and on the confidentiality of answers. Section A is meant to identify respondent consumers who have innovated. Section B includes the main follow-up questions that have been used in empirical studies to date.

### Section A

My next questions relate to any creative activities in your leisure time. You may have created novel products or product modifications for personal use, to help other people, to learn or just for fun. I will provide some examples.

**A02.** First, creating computer software by programming original code. Within the past three years, did you ever use your leisure time to create your own computer software?

1: yes 2: no

if A02>1 Go to A12

**A03.** Did you do this primarily for your employer or business?

1: yes 2: no

if A03 = 1 Go to A12

**A04.** At the time you developed it, could you have bought ready-made similar software on the market?

1: yes 2: no

if A04 = 1 Go to A12

**A05.** Did you primarily create it to sell, to use yourself, or for some other reason?

1: to sell 2: to use myself 3: other, please specify.....

If A05 = 1 Go to A12

**A06a.** What kind of software did you create? [open answer]

**A06b.** What was new about this software? [open answer]

(Repeat the sequence of questions shown above for each of the following cues)

**A12.** The second example is household fixtures and furnishing, such as kitchen- and cookware, cleaning devices, lighting, furniture, and more. In the past three years, did you ever use your leisure time to create your own household fixtures or furnishing?

1: yes 2: no

**A22.** Next, you may have developed transport or vehicle-related products, such as cars, bicycles, scooters or anything related. In the past three years, did you ever use your leisure time to create your own transport or vehicle-related products or parts?

1: yes 2: no

**A32.** Tools and equipment, such as utensils, molds, gardening tools, mechanical or electrical devices, and so on. In the past three years, did you ever use your leisure time to create your own tools or equipment?

1: yes 2: no

**A42.** Sports-, hobby- and entertainment products, such as sports devices or games. In the past three years, did you ever use your leisure time to create your own sports-, hobby- or entertainment products?

1: yes 2: no

**A52.** Children- and education-related products, such as toys and tutorials. In the past three years, did you ever use your leisure time to create your own children- or education-related products?

1: yes 2: no

**A62.** Help-, care- or medical-related products. In the past three years, did you ever use your leisure time to create your own help-, care- or medical-related products?

1: yes 2: no

**A72.** Finally, in the past three years, did you ever use your leisure time to create or modify any other types of products?

1: yes 2: no

(follow-up questions and routing A13-A16b, A23-A26b, etc., see A03-A06b)

If number of valid innovations (A05, A15, ... , A75 > 1) = 0 Go to End

If number of valid innovation = 1 Go to B01

**A99.** You just mentioned a number of creations. Which one do you consider most significant? 1: computer software 2: household or furnishing product 3: transport or vehicle-related product 4: tool or piece of equipment 5: sports-, hobby- or entertainment product 6: children- or education-related product 7: help-, care- or medical-related product 8: other product or application

## Section B

My next questions are concerned with this specific [insert name of innovation that respondent identified in A99 as “most significant”] that you created. I will refer to it as the ‘innovation’.

**B01.** Why did you develop this innovation? I will give you a list of reasons. Please indicate their importance by assigning zero to 100 points to each reason. The total number of points for all reasons together must add up to 100.

**B01a:** I personally needed it \_\_\_\_ points

**B01b:** I wanted to sell it/make money \_\_\_\_ points

**B01c:** I wanted to learn/develop my skills \_\_\_\_ points

**B01d:** I was helping other people \_\_\_\_ points

**B01e:** I did it for the fun of doing it \_\_\_\_ points

**B02a.** Did you work with other people to develop this innovation?

1: yes 2: no

If B02a = 2 Go to B03

**B02b.** How many others contributed to developing this innovation? ...persons

**B03.** Can you estimate how much time you invested developing this specific innovation? .... hours/days/weeks during ... days/weeks/months

**B04a.** Did you spend any money on this innovation?

1: yes 2: no

If B04a = 2 Go to B05

**B04b.** Can you estimate how much? ....Euros

**B05.** Did you use any methods to protect this innovation? (For example patents, trademarks, copyrights, confidentiality agreements)

1: yes 2: no

**B06.** Supposing that other people would be interested, would you be willing to FREELY share what you know about your innovation?

1: yes, with anyone 2: yes, but only selectively 3: no

**B07.** Supposing that other people would offer some kind of COMPENSATION, would you be willing to share your innovation?

1: yes, with anyone 2: yes, but only selectively 3: no

**B08.** Did you do anything to inform other people or businesses about your innovation? (For example: Showing it off, communicating about it, posting its design on the Web)

1: yes 2: no

**B09a.** To the best of your knowledge, have any other people adopted your innovation for personal use?

1: yes 2: no

If B09a = 1 Go to B10a

**B09b.** Do you intend to contact other people who may adopt your innovation for personal use?

1: yes 2: no

**B10a.** Do you, alone or with others, currently own a business you help manage, or are you self-employed?

1: yes 2: no

If B10a = 2 Go to B11a

**B10b.** Did you commercialize your innovation via your business? Or do you intend to do this?

1: yes, I commercialized it 2: yes, I intend to do so 3: no

Go to B12

**B11a.** Are you currently, alone or with others, trying to start a new business?

1: yes 2: no

If B11a = 2 Go to B12

**B11b.** Do you intend to commercialize your innovation with this start-up?

1: yes 2: no

**B12a.** Finally, commercial businesses like your employer or any other organization may be interested in your innovation. Did any commercial business adopt your innovation for general sale?

1: yes 2: no

If B12a = 1 Go to End

**B12b.** Do you intend to contact commercial businesses to adopt your innovation for general sale?

1: yes 2: no





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