

## **Attachment 2 – Innovation Activities Cognitive Testing Interview Protocol**

### **Introduction**

(To be given by NSF representative if present, or Westat interviewer if NSF is not available)  
Points to cover in the introduction; these will be fleshed out into a script

Hello, we are [introduce attendees from NSF, Westat].

The National Science Foundation (NSF) is in the process of developing a survey to collect information from small and medium sized U.S. businesses. The focus of this interview will be on innovation. There are no right or wrong answers.

We would like to record this interview so that we have all your comments. Would that be okay?  
[Have respondents read and sign consent forms.]

### **Background**

Please tell me, in 1-2 sentences, what your company does. [Use the response to this question to glean whether the respondent uses products vs. goods vs. services. Then go into the topic of innovation.]

### **Innovation Activities**

Now let's talk about the new or improved goods or services that your company has developed over the last three years. Please think of all the developmental, financial and commercial activities your company undertook to develop the actual products, goods, or services. We are also interested in understanding the costs associated with these activities.

Which of these activities has your company performed in the last three years? [Use ATTACHMENT 2A and have the respondent mark yes or no for each.]

- Research and development activities
- Engineering, design, and other creative work
- New approaches to marketing and brand equity activities
- Purchasing, selling, or protecting intellectual property
- Training employees to carry out or market the new or improved products, goods, or services
- Software development and database activities to develop new or improved products, goods, or services
- Investing in machinery, equipment, and other tangible assets to support your new or improved products, goods, or services
- Management activities to support new or improved products, goods, or services

What other activities, if any, has your company performed to support the new or improved products, goods, or services? [Record any new activities.]

Let's talk about those activities your firm has performed in the areas you marked. For now, let's focus on the [good/service – use the word(s) that respondent has used] that required the greatest effort or cost to investigate or make. It doesn't need to have been successful, or even to have been completed. What would that new or improved product, good, or service be? [Walk through the following for each of the areas marked "yes" above. For example, "First, let's talk about your research and development activities, and how you used them to support your new or improved product, good, or service."]

- Speaking very generally, describe what your company did with regard to ... [e.g., research and development] What activities did your company engage in at this stage?
- What kind of resources did that require? Personnel time? Equipment? Supplies? Outside contractors?
- Were these resources dedicated just for this new or improved product, or were the resources used for other purposes? If they were used for other purposes, what were they?
- Would your company be able to provide a reasonably accurate cost estimate of what was required with regard to developing or supporting your new or improved product?
  - [IF NOT] What would hinder your company from being able to provide an accurate estimate?
  - [IF SO] How would your company determine this cost?
- Has your company worked with any other company or organization on this activity? [IF YES]: Would you be able to separate the costs for this new or improved product from other work that organization has done for you? [IF NO]: Why not?

### **Activities and Costs**

[After the list is completed] Suppose that instead of asking you about cost for the individual activities (that we've discussed on the list), we asked you instead for the TOTAL cost of all such activities supporting the new or improved product, good or service. Would you be able to provide a reasonably accurate estimate at this higher level? How would you determine such an estimate? Is it easier or harder to estimate or provide the total cost rather than the cost of the individual activities?

We've talked about discrete activities such as research and development, or employee training. Let's talk more generally about your company's budget process and budget categories

[IF NEEDED]:

- At what level are expenses tracked - at the department level, at the project level? Some other level? Does tracking change if the expense is over a particular threshold?
- Are expenses associated with developing new or improved products, goods, and services intermingled with other expenses, or are they kept separate?

- Does one person have all of the data needed, or would multiple people need to be consulted?
- Who at your company is responsible for making decisions regarding your company's budget? How are the decisions made?

So far we have just been talking about your company's new or improved products, goods, or services. Your company may also have made important improvements to its business processes, such as how your company manufactures or produces goods or services, markets them, and provides services after sale, and whether your company has made improvements to your information and communication systems, and to your administrative or management procedures.

Has your company made or worked on any of these types of process improvements?

[IF YES]:

- Would you be able to provide the costs for such work, including all of the steps from developing the improvements to carrying them out? Roughly speaking, how do these costs compare to the costs of new or improved products or services?

### **Partnerships**

Let's talk briefly about the degree to which your company worked with other types of organizations, such as other businesses, universities, or the government, when making changes to goods, services, or business processes. For example, this might include contracting another organization to do some of the work for you, acquiring or selling a license to share proprietary information, or partnering together on a particular project. Have you engaged in any such cooperative relationships?

[IF SO]:

- What kind of organizations did your company work with?
- Did that organization contribute its own funds for the work, or did your company provide all of the funding?
- What information would your company be able to provide about the other organization's financial role? For example, if your company provided the funding, what information do you have about how the other organization spent those funds? What categories of expenses (if any) are shown in your own company's records? Are you able to discern how much money the other organization spent on activities associated with new or improved products, goods, or services, or improved processes, as compared with other activities? If the other organization provided some of its own funding, do your records show how much they provided? Do your records show any details about the funding they provided? What sort of details are available?

### **Reasons affecting innovation**

Now I would like to ask you about some factors that can affect a company's ability to innovate.

Please review the following question [USE ATTACHMENT 2B].

During the three years 2015 to 2017, how important were the following factors in interfering with this business from innovating?

- A. Lack of internal finance
- B. Lack of credit or private equity
- C. Innovation costs too high
- D. Lack of skilled employees within the business
- E. Lack of collaboration partners
- F. Difficulties in obtaining government grants or subsidies
- G. Uncertain market demand for your ideas
- H. Too much competition in your market

- In your own words, what do you think this question is asking you?
- What time period were you thinking of when you answered this question? How easy or difficult was it to think of factors in this time period only?
- How did you decide which boxes to check?
- I noticed you noticed you spent a lot of time thinking before you answered this question/line, can you tell me about that?
- To you, what does “interfering with this business from innovating” mean?
- Which parts of this question were the most difficult to answer? Why?
- Which parts of this question were easiest to answer? Why?
- Do these items get at the real reasons why companies are not able to innovate? What other reasons should be added to the list?

Thank you

Attachment 2A

Which of these activities has your company performed in the last three years?

- Research and development activities
- Engineering, design, and other creative work
- New approaches to marketing and brand equity activities
- Purchasing, selling, or protecting intellectual property
- Training employees to carry out or market the new or improved products, goods, or services
- Software development and database activities to develop new or improved products, goods, or services
- Investing in machinery, equipment, and other tangible assets to support your new or improved products, goods, or services
- Management activities to support new or improved products, goods, or services

ATTACHMENT 2B

During the three years 2015 to 2017, how important were the following factors in interfering with this business from innovating?

	Very Important	Somewhat Important	Not at all Important
A. Lack of internal finance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Lack of credit or private equity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Innovation costs too high	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Lack of skilled employees within the business	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Lack of collaboration partners	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. Difficulties in obtaining government grants or subsidies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. Uncertain market demand for your ideas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H. Too much competition in your market	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>