Questionnaire Development and Design: Questionnaire Communication
Traditional Business Questionnaires

• Self-administered paper questionnaires + instructions

• Tailored to statistical production lines
  – Names that refers to statistical results rather than information needs (Consumer Price Index, Structural statistics)
  – Mixture of questions that are best answered by respondents with different expertise (managers, accounts, HR-staff, technical staff)
  – Questions that can only be answered by combining and processing information from different sources

• Complicated, often poorly designed
  – Keyword requirements
  – Separate, long instructions
  – Implicit skips
  – Two-dimensional matrices

• Post-survey corrections
Two-dimensional matrices: Goods by Lorry, Norwegian Paper Version

<table>
<thead>
<tr>
<th>Date</th>
<th>Start</th>
<th>End</th>
<th>Distance</th>
<th>Kind of goods</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>02.04</td>
<td>Lillestrøm</td>
<td></td>
<td>9.0</td>
<td>Veg</td>
<td>500.0</td>
</tr>
<tr>
<td>03.09</td>
<td></td>
<td>1.0</td>
<td></td>
<td></td>
<td>9.0</td>
</tr>
<tr>
<td>04.09</td>
<td>1.0</td>
<td></td>
<td>3.0</td>
<td>Asfalt</td>
<td>5000.0</td>
</tr>
<tr>
<td>04.09</td>
<td>1.0</td>
<td></td>
<td>1.0</td>
<td></td>
<td>9.0</td>
</tr>
<tr>
<td>10.09</td>
<td></td>
<td></td>
<td>3.0</td>
<td>Tom</td>
<td>1500.0</td>
</tr>
<tr>
<td>10.09</td>
<td></td>
<td></td>
<td>6.0</td>
<td>Gjerstads</td>
<td>6500.0</td>
</tr>
<tr>
<td>15.09</td>
<td>5.0</td>
<td></td>
<td>4.0</td>
<td>Jord</td>
<td>12000.0</td>
</tr>
<tr>
<td>15.09</td>
<td>4.0</td>
<td></td>
<td>4.0</td>
<td>Tom</td>
<td>12000.0</td>
</tr>
<tr>
<td>15.09</td>
<td>4.0</td>
<td></td>
<td>3.0</td>
<td></td>
<td>5000.0</td>
</tr>
<tr>
<td>18.09</td>
<td>1.0</td>
<td></td>
<td>1.0</td>
<td></td>
<td>9.0</td>
</tr>
</tbody>
</table>

Note: The table contains data for goods transported by lorry, including dates, start and end locations, distances, kinds of goods, and weights.
Business Survey Response Challenges

- Respondents are compelled to...
- Relate to a complex information structure
Respondents are compelled to...
Relate to a complex information structure
Where what is asked for may not match with what is available
Questionnaire Design ➔ Questionnaire Communication

• Professional tone
• Conversational approach
• Conversational principles:
  – Manner (clearness)
  – Quantity (exclusiveness)
  – Quality (relevance)
  – Relations (Consistency)

Bad: 
**Merchandise.** By merchandise, we refer to goods that are bought and sold again without being processed, that is, pure merchandise goods. Income and cost for services and self-produced goods should not be included here.

Better: 
How much of the cost of goods sold was related to goods sold further without being processed (merchandise)? Income and cost for services and self-produced goods should not be included.
Conversational approach 2

Replace instructions with clarifying inquiries:

Did you invest in new machinery last year?
- VAT that was refunded should not be included
  □ Yes  How much did you invest?
  □ No

Was MVA refunded?
- Yes
- No
Tips about Texts

• Avoid keyword questions
• Replace words that need to be defined with questions based on the definition
• Consider replacing instructions with clarifying inquiries
• Words like «and» or «or» indicates more than one question in one.
• Words like «If» or «Provided that» indicate a need for filter questions
• Beware of implicit expectations
• Be careful to specify observational unit(s), time reference and measurement unit
Implicit expectations in Business Tendency Survey

Compared to previous month is your opinion about the general course of business in your industry...

- More optimistic
- Remain unchanged
- More pessimistic
Grice’s Conversational Principles Applied

• Manner: **Clear** about...
  • Observational units
  • Reference period and
  • Survey coordinator role
  • Competence requirements

• Quantity: **Exclusive** question order

• Quality: Question design based on **Relevance** considerations

• Relations: **Consistency** between...
  • management & measurement tools,
  • between survey title & survey questions and
  • between question elements (text, visualisations and flow)
### Manner: Clear about topics and competence

#### Table of Contents

**Survey Overview and Table of Contents**

The survey is divided into six sections. Each section asks questions about different aspects of R&D or innovation at your company. Due to the specialized nature of each section, it may be necessary to collaborate with colleagues in different departments to answer the questions. The sections are color-coded and cover the following topical areas:

1. **Section 1: Company Information**
   - **Topics:** company ownership, business(ies), revenues, and innovation.
   - **Requires:** knowledge of the company’s sales and revenues.
   - **Page:** p.4

2. **Section 2: Financial Schedule A.**
   - **Topics:** R&D expenses and capital expenditures for R&D.
   - **Requires:** knowledge of your company’s accounting concepts and access to financial records.
   - **Page:** p.9

3. **Section 3: Financial Schedule B.**
   - **Topics:** costs for work that was funded, paid for, or reimbursed by others.
   - **Requires:** knowledge of your company’s financial records related to R&D activities.
   - **Page:** p.18

4. **Section 4: Management and Strategy of R&D**
   - **Topics:** characteristics of R&D reported in Sections 2 and 3.
   - **Requires:** familiarity with the technical and strategic aspects of your company’s R&D.
   - **Page:** p.31

5. **Section 5: Human Resources**
   - **Topics:** your company’s employees, focusing on those who work on R&D activities.
   - **Requires:** familiarity with human resources (HR) concepts and access to HR records.
   - **Page:** p.39

6. **Section 6: Intellectual Property and Technology Transfer**
   - **Topics:** intellectual property and technology transfer.
   - **Requires:** knowledge of your company’s general business strategy, patenting, and licensing.
   - **Page:** p.43
**Manner: Identifying the Survey Coordinator**

<table>
<thead>
<tr>
<th>Who is the survey coordinator?</th>
</tr>
</thead>
<tbody>
<tr>
<td>The survey coordinator is the person at your company responsible for gathering all requested information, ensuring instructions are followed, and submitting the completed survey. The survey coordinator may not be able to personally complete the entire survey. The task of completing this survey will require collaboration with persons who have access to your company’s R&amp;D, accounting, human resources, and legal departments.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>
Quantity: Exclusive question order

Indicate which kind of business activities your enterprise conducted in 2015

- Services related to oil and gas industry
- Accommodation and / or catering
- Other services, including:
  - Maintenance and repair services
  - Services performed for Norwegian Tipping
  - Transport services
- Turnover, dissemination, rental and management of real estate
- Retail, that is sales of merchandise to individuals or households
- Wholesale, that is selling merchandise to companies or institutions that use the goods in their own business or resell them
- Agented trade, that is sale performed for other companies, in their name
- Planning building projects
- Building activities, including installation, completion and rentals of machinery with staff for building purposes
- Civil engineering, including the rental of machinery with staff for engineering Projects
- Industrial activities. Also including mining and quarrying
- Agriculture, forestry, fishing or other primary business activities
Total revenue shown below is item 3000, 3100, 3200, 3600, 3605, 3650, 3695, 3700 and 3900 from the Income Statement summarized.

**Please allocate the total revenue on the different sub-items listed in the table**
The amount should be given in 1000 NOK. Note that the last three zeros are prefilled

<table>
<thead>
<tr>
<th>Total revenue reported</th>
<th>3 500 000 kr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer services</td>
<td></td>
</tr>
<tr>
<td>Other services</td>
<td>000 kr</td>
</tr>
<tr>
<td>Retail sale</td>
<td>000 kr</td>
</tr>
</tbody>
</table>

**Revenue not yet allocated**
3 500 000 kr
### Quality: Relevance considerations 2: Response box options

Indicate which kind of business activities your enterprise conducted in 2015 → Please allocate the total revenue on the different sub-items listed

<table>
<thead>
<tr>
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<tbody>
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<td>Other services</td>
<td></td>
</tr>
<tr>
<td>Retail sale</td>
<td></td>
</tr>
<tr>
<td>Revenue not yet allocated</td>
<td>3 500 000 kr</td>
</tr>
</tbody>
</table>

1. Divide the total turnover reported in the Tax Office Trading Statement by percentage on the different commercial areas listed below.

   Primary industry products

<table>
<thead>
<tr>
<th>Percent with one decimal</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
Relations: Consistence between survey elements

- Consistent visual principles in management and measurement tools
- Consistency between survey title and the kind of information requested
- Consistency between question elements

Relations: Paper Elements in Concert

22 Har foretaket levert inn sluttrapport for prosjektet?
- Ja
- Nei → Gå til 24
- Husker ikke/vet ikke → Gå til 24

23 Omtrent hvor mange timeverk brukte foretaket totalt på sluttrapporten? Regn både med tiden det tok å innhente nødvendig informasjon og tiden det tok å fylle ut selve skjemaet.
- antall timer
- Husker ikke/vet ikke

Nedenfor følger noen spørsmål om selve prosjektet

24 Har foretaket samarbeidet med andre i gjennomføringen av prosjektet?
- Ja
- Nei → Gå til 27

25 Hvem var den viktigste samarbeidspartnernen?
- FoU-institusjon som er godkjent av SkatteFUNN
- FoU-institusjon som ikke er godkjent av SkatteFUNN
- Andre foretak
- Andre, vennligst spesifiser:
# Web Tools Addressing Business Survey Issues

<table>
<thead>
<tr>
<th>Issues</th>
<th>Tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heterogeneous population</td>
<td>Different modes for different purposes</td>
</tr>
<tr>
<td>Several surveys to complete</td>
<td>Web portal</td>
</tr>
<tr>
<td>Respondents act as informants</td>
<td>Access management</td>
</tr>
<tr>
<td>Retrieval from different sources</td>
<td>Online – offline instruments</td>
</tr>
<tr>
<td>Ongoing relationship</td>
<td>Preloading Feedback</td>
</tr>
<tr>
<td>Response burdens</td>
<td>Tailoring questionnaires, topics, question flow and questions</td>
</tr>
<tr>
<td></td>
<td>Error Detection → Error Prevention (Extended help functions)</td>
</tr>
</tbody>
</table>
Different Modes for Different Purposes

• Automatic Data Capture (+ Metadata Questionnaires)
  – For large and stable data deliveries

• Web Questionnaires administered in Web Portals
  – Administrative tool for the survey coordinator (including access management)
  – Questionnaires designed according to information sources and listed according to deadlines and completion status

• TDE/Smart phone/IPad options
  – For small businesses or small questionnaires
  – For zero reporting
  – Mixed Mode Designs

• “Interviewer” assisted Self Administration
  – “Interviewers” during development
  – “Interviewers” to motivate
  – Help desk staffed by “interviewers”
Computerized Distribution $\rightarrow$ Computerized Communication

Distributed paper questionnaires:
- Key-word questions
- Explained in long, separate instructions
- Post survey editing

Computerized distribution:
- Paper based PC-presentations
- Central $\rightarrow$ Local editing

Computerized Questionnaire Communication
- Words don’t speak for themselves
- Accurate comprehension requires dialogue

... addressing Business Survey Challenges

Bringing Features of Human Dialogue to Business Web Surveys

• Focus on...
  – Burdensome questions
  – Important answers
  – The question flow and presentation rather than single question wording

• Help the respondent to answer the questions right
  – Filter questions before and after main question
  – Help text before rather than after question
  – Visualizations

• Change question sequences to dialogues
  – Anchor questions to previous answers
  – Split complex tasks into series of simpler tasks
  – Let the computer help with computations

• Replace hard checks with soft checks + Open comment field
Flowchart for Price Index Survey

Product/Service?

Kind of service: Description: Price last month

Description?

Yes

Description

No

Reminder

Same quantity/quality?

Yes

Sold this month?

No

Temporary/permanent out of stock?

Temporary

Permanent

New description

Yes

Price this month

Discount?

Yes

More?

No

Summary

Reminder

No

Reminder

Yes

New description

Alternative?
Preloading Previously Reported Data

**Purposes**
- Administrative information (about units) which seldom change
- Information that should be updated (like prices)
- Help to recognize information request
- Help to avoid telescoping
- Summaries to check answers given
- Feedback based on previous answers

**Pros and Cons**
- Reduce response burden
- Reduce response quality?

**Solution**
Electronic Design: Use follow up questions to those who report no change
## Traditional Error Check

### Hotels, motels and guesthouses

- **On the previous page, you reported capacity to be 50 rooms.**
  
  **Count how many days each room was in use and summarize**

| Number of Room x days | 850 |

<table>
<thead>
<tr>
<th>Occupancy rate =</th>
<th>No of Room x days * 100 = 60.7%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No of available rooms x Days open</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>What was the total rent revenue in this period?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exclude revenue from meals.</td>
</tr>
<tr>
<td>Exclude VAT</td>
</tr>
</tbody>
</table>

| 3 400 000 kr eks mva |

<table>
<thead>
<tr>
<th>Average room rent day</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 000 kr eks mva</td>
</tr>
</tbody>
</table>
Alternative 1: Follow up questions

Hotels, motells and guesthouses

- On the previous page, you reported capacity to be 50 rooms. **Count how many days each room was in use and summarize**

  Number of Room x days

  - 850

- Occupancy rate = \( \frac{\text{No of Room x days}}{\text{No of available rooms x Days open}} \) \times 100 = 60.7\% 

- **What was the total rent revenue in this period?**

  - 3 400 000 kr eks mva

  Average room rent day

  - 4 000 kr eks mva

- **Are meal included in this total?**

  - Yes \( \rightarrow \) **How much was earned from meals?**
  - No

  - Kr eks mva
On the previous page, you reported capacity to be 50 rooms. **Count how many days each room was in use and summarize**

| Number of Room x days | 850 |

**Occupancy rate =**  \[
\frac{\text{No of Room x days}}{\text{No of available rooms x Days open}} \times 100 = 60.7\%
\]

**What was the total rent revenue in this period?**
Exclude revenue from meals.
Exclude VAT

| Average room rent day | 4,000 kr eks mva |

Please check that meals or VAT are not included and that the number of rooms x days is correct. **If correct, please explain which cost factors which add up to this price**
Questionnaire Design → Questionnaire Communication

• Characteristics and Principles:
  • A structured dialogue directed by those who have designed the instruments
  • Based on conversational principles

• Instruments and Instrument Elements:

<table>
<thead>
<tr>
<th></th>
<th>Texts</th>
<th>Visualizations</th>
<th>Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management instruments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measurement instruments</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

• Elements in Concert
• Utilizing the potentials of different Modes