

Snijkers, G., Haraldsen, G.,
Jones, J., and Willimack, D.K.
(2013)
*Designing and Conducting
Business Surveys*,
Wiley, Hoboken, NJ.

Implications of the Business Context for Survey Questionnaire Development and Design

Diane K. Willimack

*Economic Programs
U.S. Census Bureau*

*8th Annual Conference on Central Bank Business Surveys
and Liaison Programs, Miami, Nov. 27-29, 2017*

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*Any views expressed on statistical, methodological, or technical issues are
those of the author and not necessarily those of the U.S. Census Bureau.*

Outline

- Business context and survey response process
- Quality frameworks and implications for survey measurement
- Questions, questionnaires and data collection instruments

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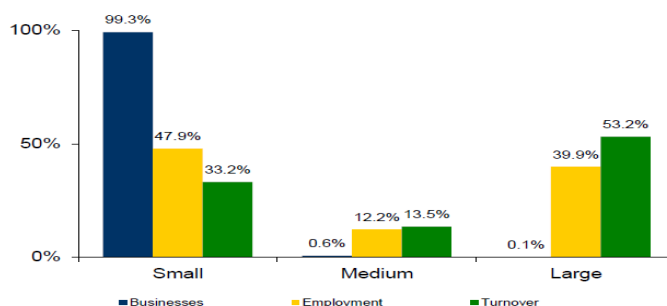
Main Features of Business Population and Implications For Surveys

- Skewed target population

- "Size" matters

Unequal selection probabilities

Figure 1: Share of businesses in the UK private sector and their associated employment and turnover, by size of business, start of 2014



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Main Features of Business Population and Implications For Surveys

- Skewed target population

- "Size" matters

Unequal selection probabilities

- Industry classification

- Heterogeneous vs. homogeneous

In multiple surveys

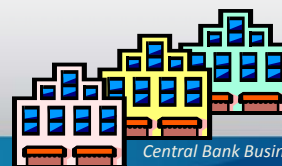
- Statistical outputs

- Total values of quantities

- Period-to-period change

- Time series

Panel / longitudinal designs



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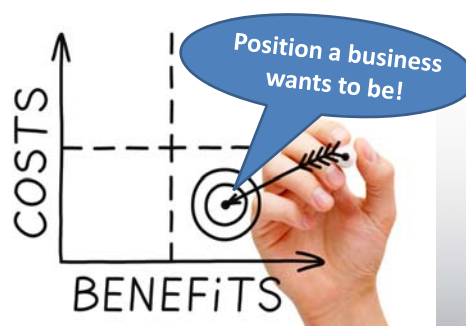
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Business Context

- Business Goals
 - To produce goods and services
 - To remain open and viable over time
- Decision-making
 - Costs vs benefits



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Business Context and Implications for Survey Response

Where are surveys
in this graph?

Surveys represent a
cost without
associated production
"Non-productive Cost"



Survey **benefits** are intangible and indirect.

- Used by others, e.g., policy makers, financial institutions
- Accrue to businesses through economic mechanisms

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Business Context: Business Survey Response Process

Sudman et al. (2000) / Willimack & Nichols (2010); Bavdaz (2007, 2010)

- 1) Record formation & encoding
- 2) Organizing response tasks
 - a) Respondent selection
 - b) Scheduling
 - c) Prioritizing & motivation
- 3) Comprehension
- 4) Retrieval
- 5) Judgment
- 6) Communication
- 7) Releasing the data

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Business Survey Response Process: Personal Cognitive Steps

(Tourangeau, 1984)

- 1) Record formation & encoding
- 2) Organizing response tasks
 - a) Respondent selection
 - b) Scheduling
 - c) Prioritizing & motivation
- 3) Comprehension**
- 4) Retrieval**
- 5) Judgment**
- 6) Communication**
- 7) Releasing the data

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Business Survey Response Process: Organizationally Determined Steps

- 1) Record formation & encoding
- 2) Organizing response tasks
 - a) Respondent selection
 - b) Scheduling
 - c) Prioritizing & motivation
- 3) Comprehension
- 4) Retrieval
- 5) Judgment
- 6) Communication
- 7) Releasing the data

Implications of Organizationally Determined Steps: Management's Role

1) Record formation & encoding

2) Organizing response tasks

- a) Respondent selection
- b) Scheduling
- c) Prioritizing & motivation

*Steps 3 – 6: Person-level cognitive
response process steps*

7) Releasing the data

1) Purposes for business records

- a) Manage operations
 - 1) Compartmentalized organizational structures
 - 2) Distributed data
- b) Legal and regulatory

Recorded Data ≠ Requested Data

2) Response may require gathering data from multiple data sources

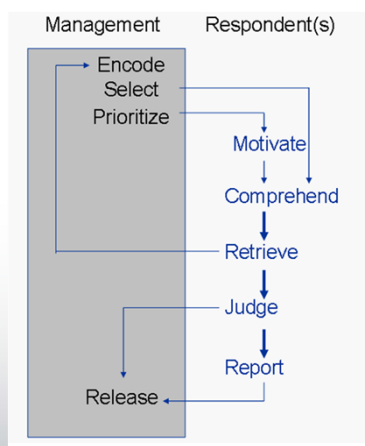
- a) Management delegates response tasks
- b) Response tasks have to be scheduled around other business activities
- c) Job performance & evaluation

Respondent = Survey Coordinator

7) Guided by business relationships with outside world

Data are “owned” by the business.

Business Survey Response Process Summary



Management Considerations

- Recorded data
- Respondent selection
 - Scheduling
 - Prioritizing & motivation
- Data release process

Respondent Requirements

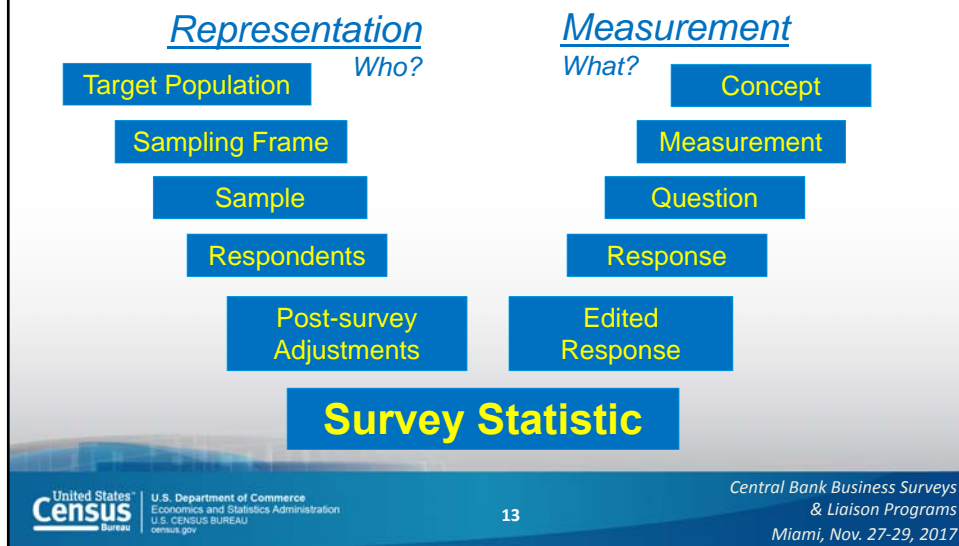
- Taking the role as survey coordinator
- Knowledge of available information
- Handling differences between recorded data and requested data

The Business Survey Response Process: Implications for Data Quality

- Total Survey Error Quality Framework
 - Review
 - Focus on Measurement
- Business context and data quality
 - Sources of Measurement Error

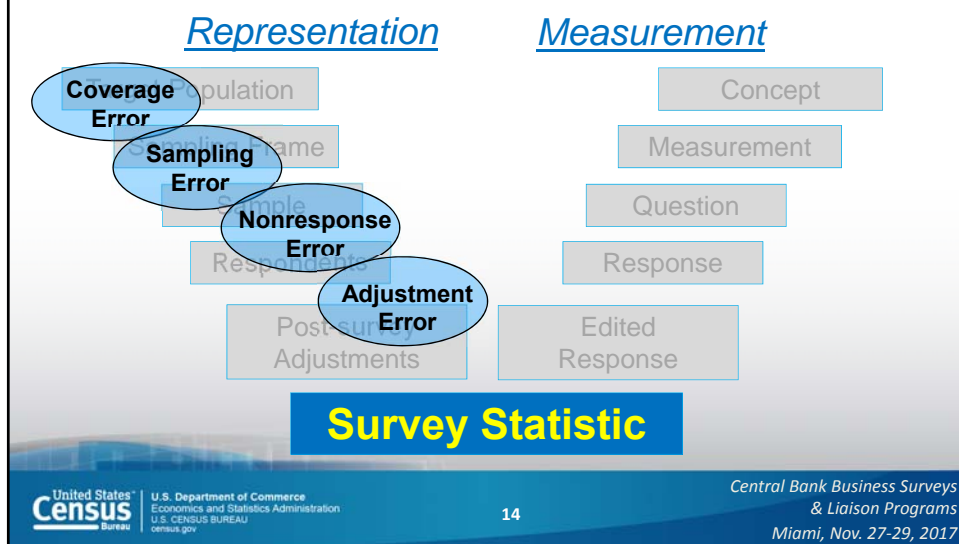
The Total Survey Error (TSE) Framework: Survey Lifecycle from a Quality Perspective

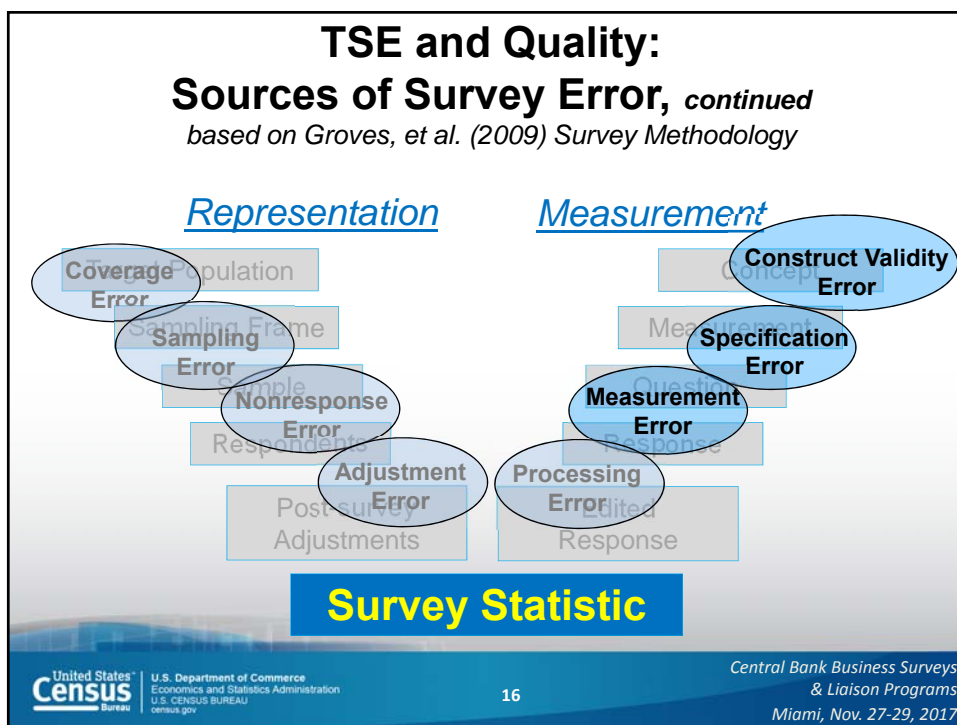
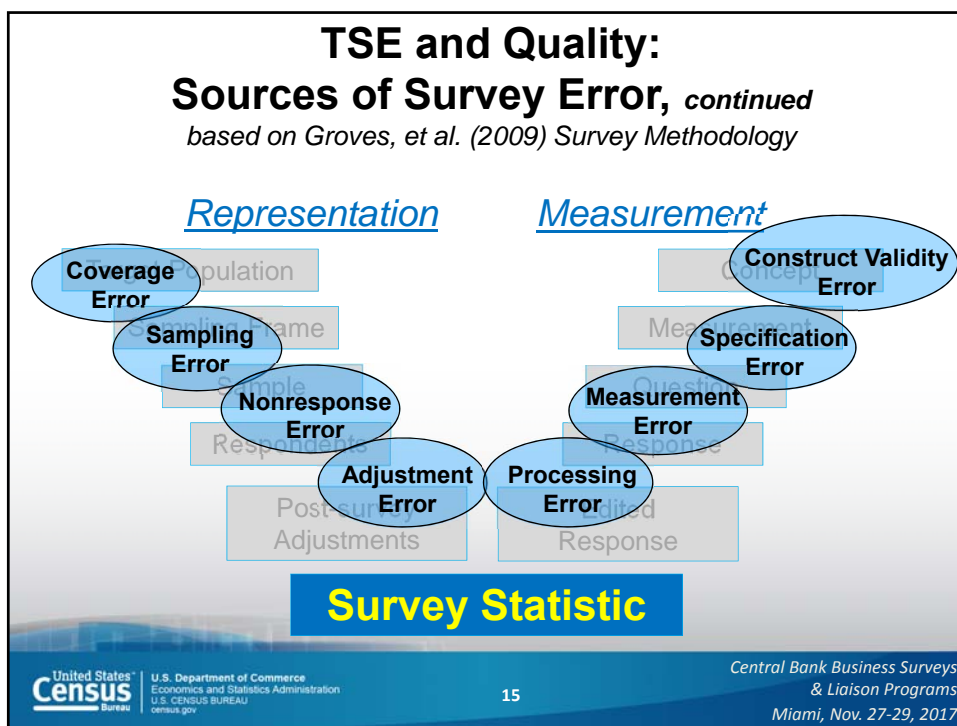
based on Groves, et al. (2009) Survey Methodology



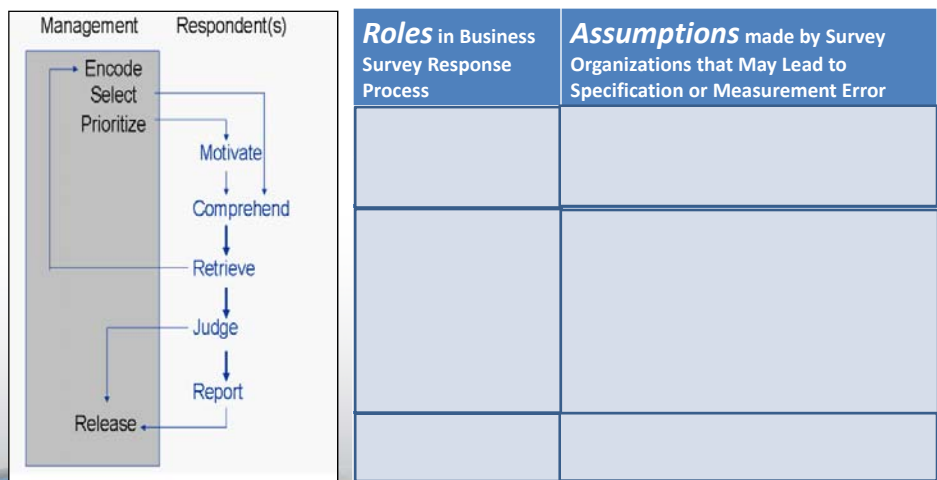
TSE and Quality: Sources of Survey Error

based on Groves, et al. (2009) Survey Methodology





The Business Survey Response Process: Specification and Measurement Error



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Measurement Error Requested Data ≠ Recorded Data

Bavdaz (2010)

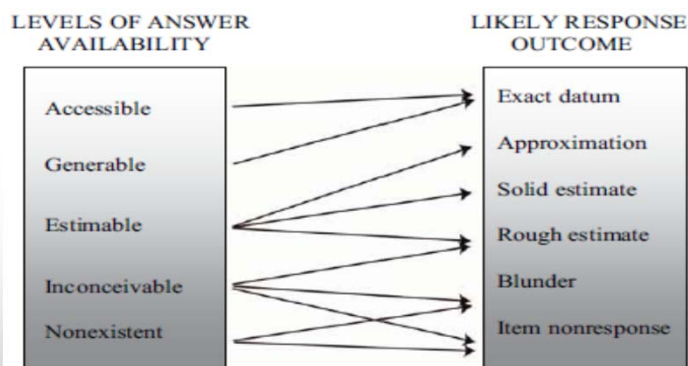
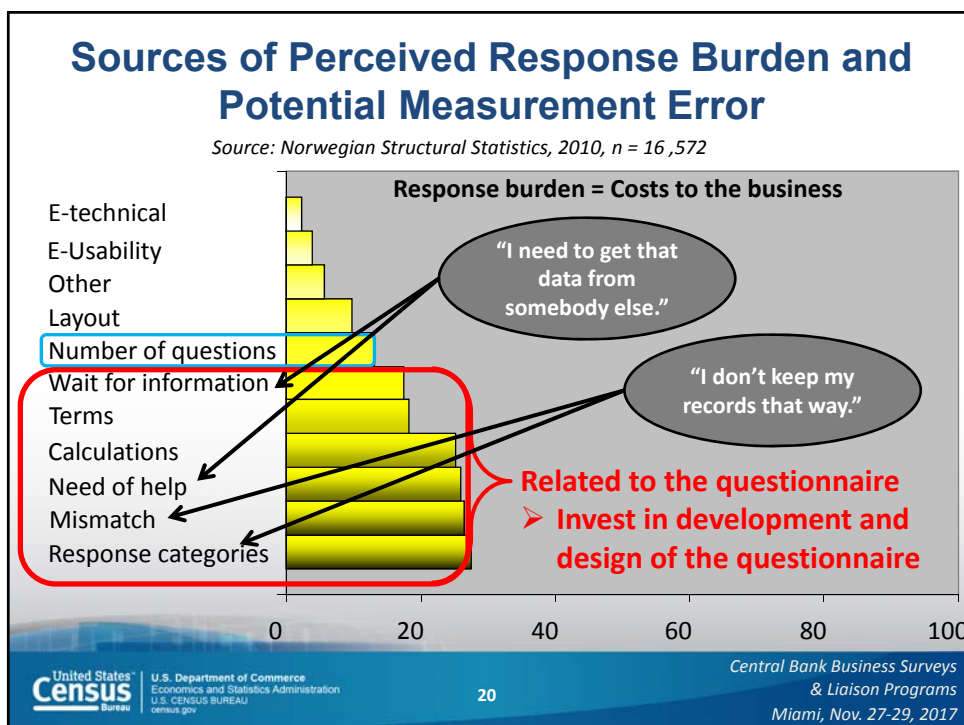
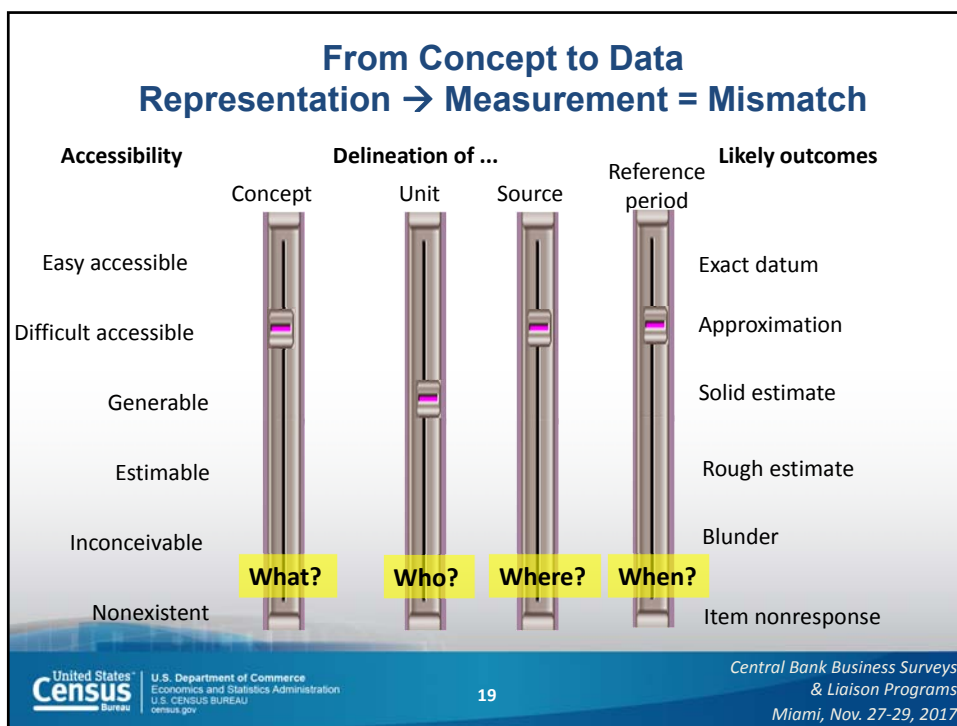


Figure 4 Levels of answer availability and likely response outcome

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The Business Context:

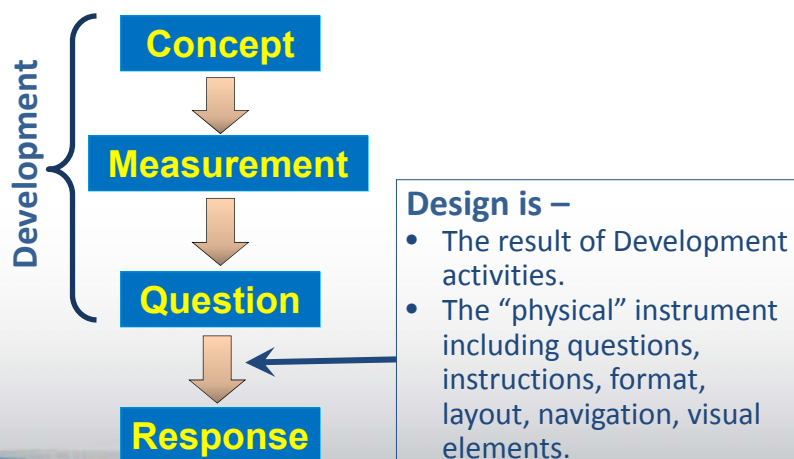
Key Takeaways

- Survey response has a tangible cost to the business
- Response process is not under our control
 - The business controls:
 - Types of data tracked
 - Availability / accessibility of data
 - Selection of the respondent
 - Release of data
- Recorded data \neq requested data

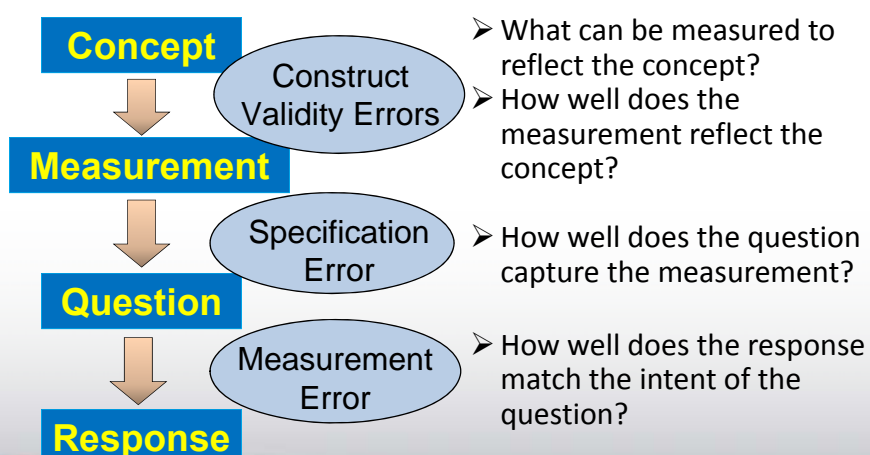
Designing Questionnaires for Quality in Business Surveys

- Questionnaire **development** vs. questionnaire/instrument **design**
- The “Missing Link”
- Design tips and examples
 - Considering the business context
 - Web survey design
 - Question text
 - Visual design

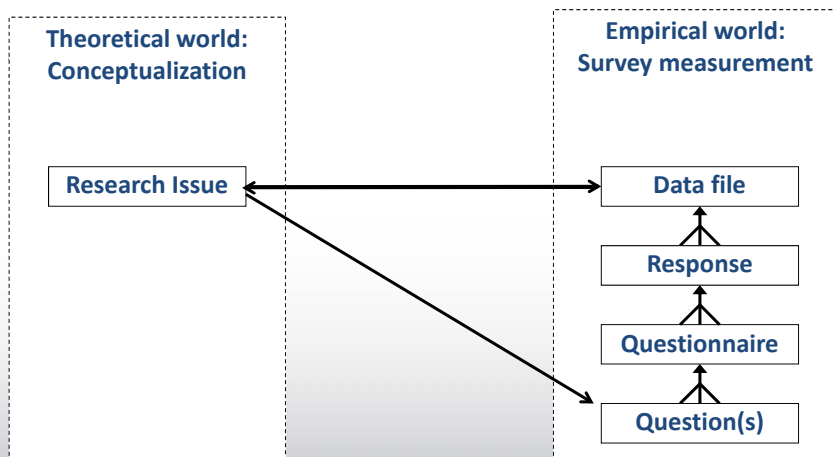
Data Collection Instrument Development vs. Design



Data Collection Instrument Quality Concerns



Developing Question(naire)s: A Total Survey Error Approach



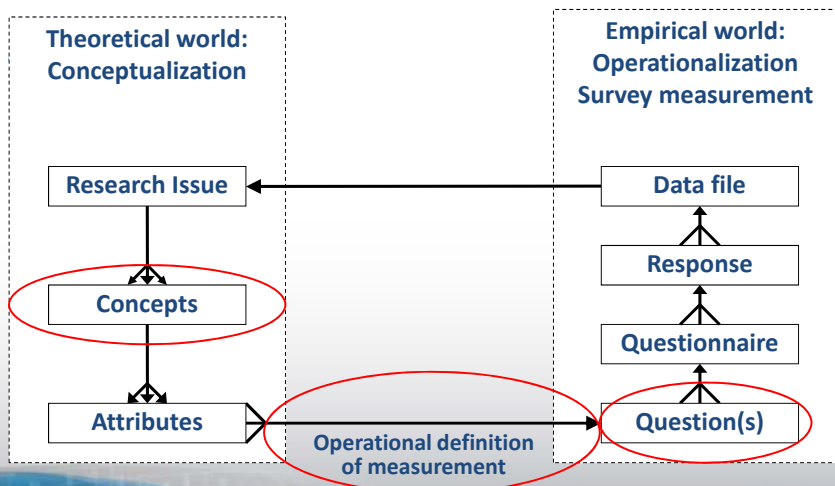
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Developing Question(naire)s: A Total Survey Error Approach

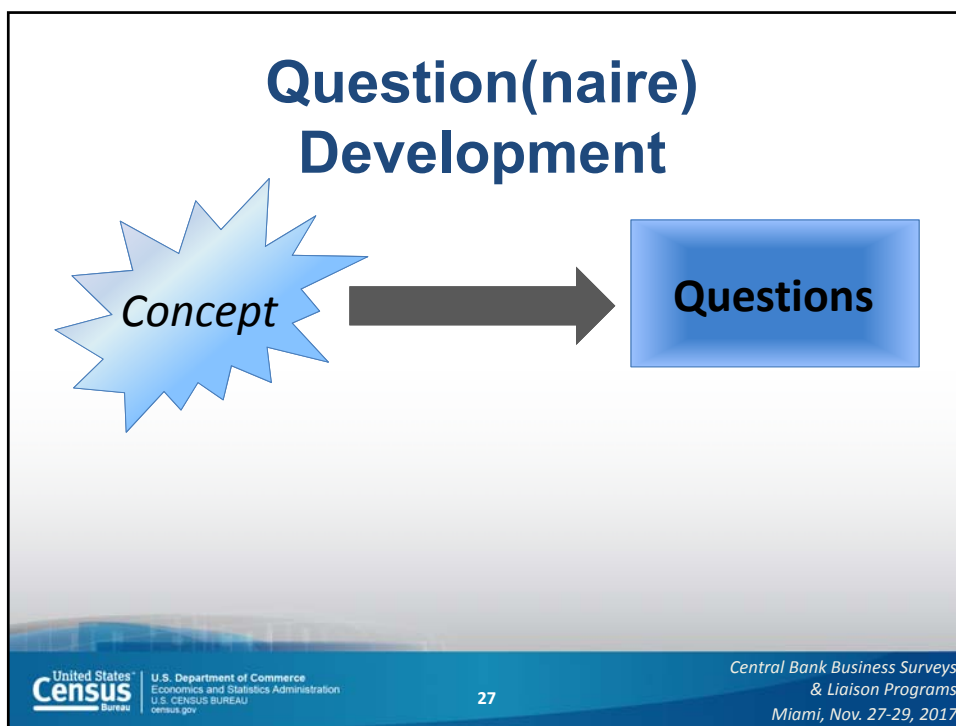


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How do you measure ...?

- Innovation
- E-commerce
- Factoryless goods production
- Global value chains
- Employment
- GDP

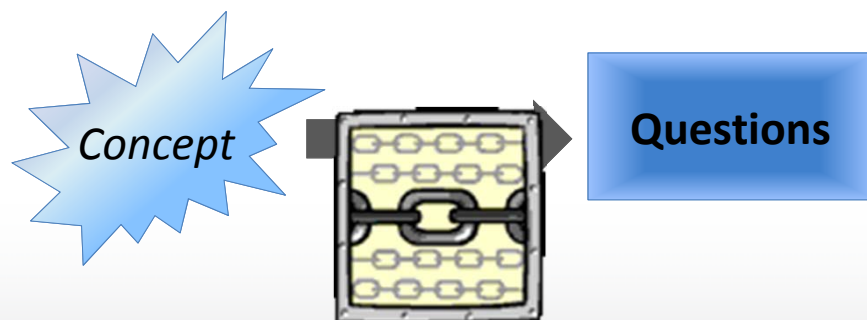
Concept

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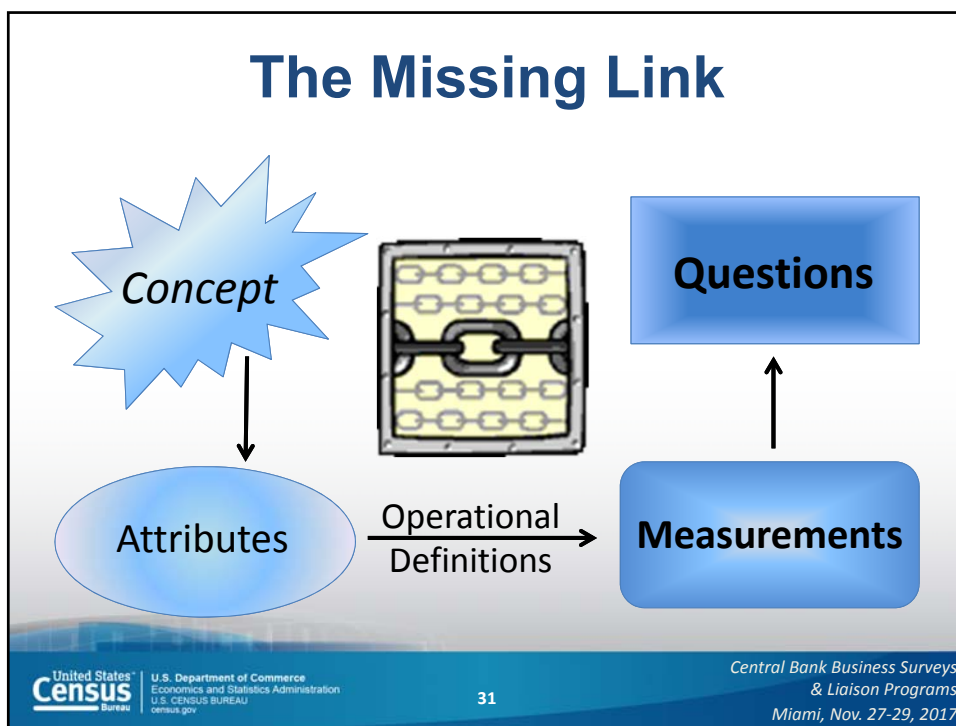
The Missing Link



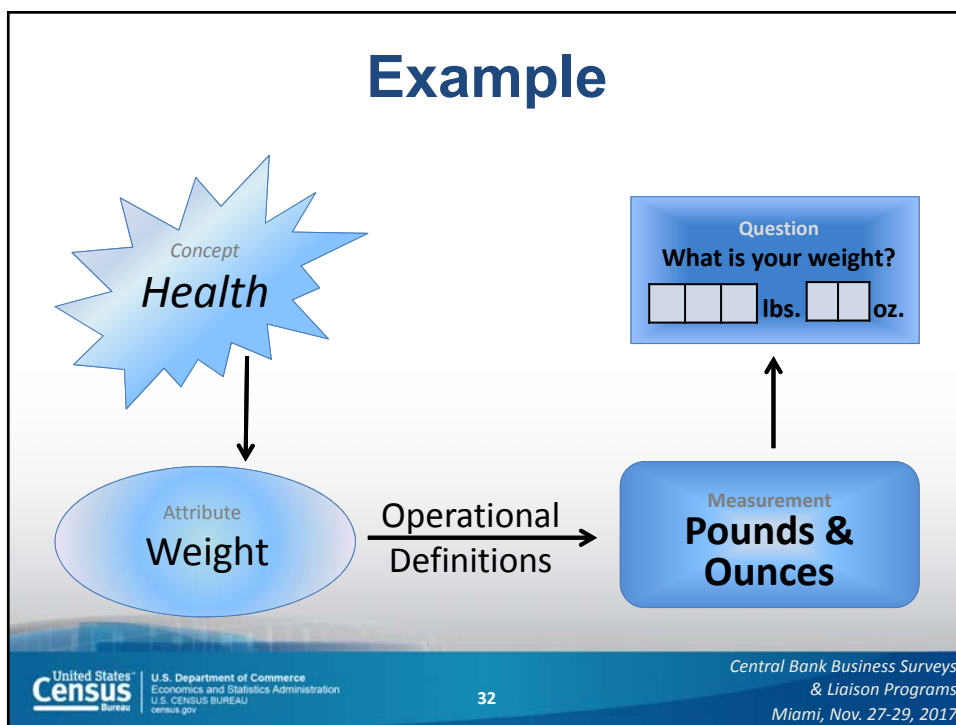
Consequences of the Missing Link

- For data users
 - Mis-specified variables
 - Measurement errors
 - Nonresponse errors
- For respondents
 - Response burden and trust
- For survey organization
 - Inefficient use of time and resources

The Missing Link



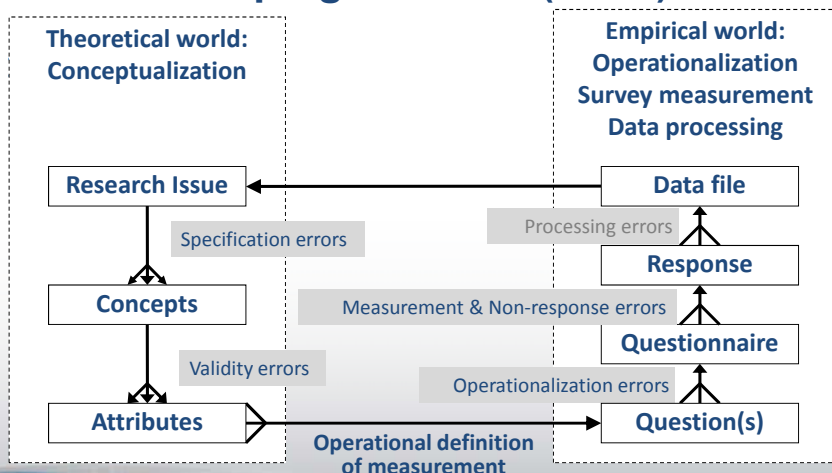
Example



Questionnaire Development: *Key Takeaways*

- Development = Concept \longrightarrow Question
 - Not necessarily straightforward
 - Concept \rightarrow Attributes \rightarrow Measurements \rightarrow Questions
- Design is the next step after Development
 - Questions
 - Visual elements
 - Navigation
 - Functionality

Review: A Total Survey Error Approach for Developing Question(naire)s



Quality Implications for Questionnaire Design

Traditional design

- Complicated, often poorly designed self-administered paper questionnaires
 - Keywords and phrases
 - Separate, long instructions
 - Advanced structure – e.g., accounting schedule or ledger
 - Two-dimensional matrices

Re-thinking design

- Design vs Communication
 - A structured dialogue directed by those who have designed the instruments
 - Based on conversational principles
- Elements in concert
 - Text
 - Visual design
 - Navigation
- Utilize features of different modes

Traditional Business Survey Questionnaires

- Self-administered paper questionnaires + instructions
- Tailored to statistical outputs produced by survey organizations
 - Names that refer to statistical results rather than information needs (Consumer Price Index, Structural/Production Statistics)
 - Questions phrased with jargon and technical terminology used by data users
 - 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-field corrections

Example: BEFORE

U.S. Bureau of
Economic Analysis'
form for

*Quarterly Survey
of Foreign Direct
Investment in the
United States*

- Legal size paper
- Navigation
 - Where to start?

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Example: AFTER

U.S. Bureau of
Economic Analysis'
form for

*Quarterly Survey
of Foreign Direct
Investment in the
United States*

- Letter size paper
- Navigation
 - Where to start?

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How to Design a Questionnaire: Business Survey Considerations

Business survey characteristics	Considerations
Heterogeneous population	
Several (recurring) surveys to complete	
Respondents act as informants	
Retrieval from different sources	
Response burden – response is a non-productive costs	

Mode Considerations

- Self-completion modes:

Mode consideration	Paper	Web
<ul style="list-style-type: none"> Data quality issues: <ul style="list-style-type: none"> Overview of information asked, response task Calculations Routing for multiple data providers/sources Edit checks Design issues <ul style="list-style-type: none"> Question wording Visual layout/design Instructions Matrix-style questions Navigation Cost issues <ul style="list-style-type: none"> Printing Mailing Data entry / keying Processing – edits and error correction 	<ul style="list-style-type: none"> ✓ ✗ ✗ ✗ <ul style="list-style-type: none"> Question wording Visual layout/design Instructions Matrix-style questions Navigation <ul style="list-style-type: none"> Printing Mailing Data entry / keying Processing – edits and error correction 	<ul style="list-style-type: none"> <ul style="list-style-type: none"> Depends on usability design; Offer print functionality ✓ <ul style="list-style-type: none"> Can be automated <ul style="list-style-type: none"> More complicated than paper: <ul style="list-style-type: none"> Paper design considerations User-interface Automated functions / features <ul style="list-style-type: none"> Less expensive than paper: <ul style="list-style-type: none"> No printing costs Less mail cost – no questionnaire No data entry / keying costs Less processing costs – edit checks

Mode Considerations


- Self-completion modes:
 - Paper
 - Web
- Other modes, e.g.,
 - Touchtone data entry (TDE)
 - Few data items that are readily accessible, easily retrieved from records
 - Screening
 - Telephone:
 - Updating / confirming contact information
 - Collecting data, e.g., minimal response requirements
 - Reminder calls
 - Other

Designing Questionnaires for the Web

The computer is different than paper

- The web questionnaire reacts to the respondent
 - Reading from the screen is different
 - Navigating and getting an overview works differently
 - Kick-and-rush behavior, even stronger than on paper
 - The use of computer-assisted functionalities
 - The respondent expects the computer to react
- **To get good data quality invest in the questionnaire design**
 - **Start with paper, then add functionalities**

Web Tools Addressing Business Survey Considerations



Business survey characteristics	Considerations	Web Tools
Heterogeneous population	<ul style="list-style-type: none"> Tailor modes to size of businesses Tailor modes to questionnaires 	Different modes for different purposes
Several (recurring) surveys to complete	<ul style="list-style-type: none"> Response aids and Web administration tools Preprint/pre-load previously reported data 	Web Portal
Respondents act as informants	<ul style="list-style-type: none"> Clearly identify reporting unit(s) and reference period Direct the questionnaire to the most knowledgeable respondent(s) 	<ul style="list-style-type: none"> Manage access to the instrument Provide printable reference version of the questionnaire <ul style="list-style-type: none"> Label: "Reference Copy;" "Do Not Return" Watermark: "Worksheet"
Retrieval from different sources	<ul style="list-style-type: none"> Design questionnaires and Web administrative tools for internal data collection 	
Response burden – response is a non-productive cost	<ul style="list-style-type: none"> Minimize task burden Tailor questionnaires, topics, question flow and questions Extended help functions 	Dynamic functionality: <ul style="list-style-type: none"> Fills Auto-sums Feedback

Web Portals

- One common login procedure to all questionnaires
- Lists only the questionnaires relevant for this business / respondent
- Supports authorized access, determined/controlled by the respondent
- Provides status information
- Enables two-way secure communication

Web Portal Example 1

The screenshot shows the U.S. Census Bureau's Respondent Portal. The header includes the U.S. Census Bureau logo and navigation links. The main content area displays a grid of survey cards under the heading "My Surveys". Each card represents a different survey, such as "Annual Survey of Manufactures 2016 (ASM)" and "Report of Organization 2016 (COS)". Each card includes the due date, company name, company ID, and a "REPORT NOW" button. A callout bubble points to a notification area, stating: "Respondent receives notice in the mail, with unique authentication code, for new survey". Another callout bubble points to the survey cards, stating: "Separate survey 'cards' for each survey". A sidebar on the right contains a "New Survey Request" section with a button to "ADD AUTHENTICATION CODE". The footer includes the U.S. Census Bureau logo, the U.S. Department of Commerce, and the text "Central Bank Business Surveys & Liaison Programs Miami, Nov. 27-29, 2017".

Respondent receives notice in the mail, with unique authentication code, for new survey

Separate survey "cards" for each survey

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Web Portal Example 2

The screenshot shows a detailed view of the U.S. Census Bureau's Respondent Portal. The main content area displays two survey cards: "Annual Survey of Manufactures 2016 (ASM)" and "Report of Organization 2016 (COS)". Each card includes the due date, company name, company ID, and a "REPORT NOW" button. A callout bubble points to the "OPTIONS" button on the first card, stating: "OPTIONS drop down list". Another callout bubble points to the "Share Survey Access" option in the sidebar, stating: "FACILITATES MULTIPLE RESPONDENTS 'Share Survey Access' offers the Respondent the ability to 'delegate' the survey to others". A third callout bubble points to the "Filing Status" option in the sidebar, stating: "FACILITATES MONITORING of Filing Status". A fourth callout bubble points to the "Send Message" option in the sidebar, stating: "FACILITATES COMMUNICATION two-way secure communication between Respondent and Survey Organization". The sidebar also includes options for "Request Extension", "Survey FAQs", and a "1-844-303-7713" contact number. The footer includes the U.S. Census Bureau logo, the U.S. Department of Commerce, and the text "Central Bank Business Surveys & Liaison Programs Miami, Nov. 27-29, 2017".

OPTIONS drop down list

FACILITATES MULTIPLE RESPONDENTS "Share Survey Access" offers the Respondent the ability to "delegate" the survey to others

FACILITATES MONITORING of Filing Status

FACILITATES COMMUNICATION two-way secure communication between Respondent and Survey Organization

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Web Portal Example 3a

My Surveys

Report Now History

VIEW: GRID LIST

Annual Survey of Manufactures 2016 (ASM)

Due: April 26, 2017

Company: ABC COMPANY
59.ELECTRONIC COMPANY 59
Company ID: 400000799

REPORT NOW OPTIONS

Request Extension

Share Survey Access

Filing Status

Survey FAQs

Send Message

1-844-303-7713

SHARE MY SURVEY

Those you share with can:

- View and overwrite survey data
- Submit the survey
- Request extensions
- Share with others
- Remove others (including you) from those that have been shared with

ENTER EMAIL ADDRESS OF DELEGATE (Step 1 of 2)

Enter Email Address

ENTER NOTES TO DELEGATE(S) (optional)

SUBMIT REQUEST Cancel Request

CURRENT DELEGATES **REMOVED DELEGATES**

Date	Email	Status	Options
03/19/2017	jimgamski@yahoo.com	Accepted	

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FACILITATING MULTIPLE RESPONDENTS

- Enter email address(es) of co-worker(s)
- Include notes, instructions
- Manage delegates

Web Portal Example 3b

My Surveys Message Status Manage Account Sign Out Jim Jamski

Submit a Request

Your Request

SURVEY

Annual Survey of Manufactures (ASM)

TOPIC please select one *

SUBJECT *

Subject

QUESTIONS/COMMENTS *

Please describe your request.

ADD ATTACHMENT

CANCEL SUBMIT

* Indicates required fields

Respondent able to send messages securely to the Census Bureau



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Web Survey Design: Dynamic Functionality to Reduce Respondent Burden

- Number and topics of questionnaires
- Topics within questionnaires
- Topic and question flow
- Questions and response alternatives
- Auto-sums and running tallies
- Feedback

Dynamic Functionality: Running Tallies

- Constant sum where the answers add up to some known amount (e.g., 100% or 24 hours)
- User-generated sum (where the answers add up to some previously reported numbers, e.g., how many employees, how many men, how many women) 
- Sum not known (total is for feedback rather than error-checking) 

Running Tallies: User-Generated Sum

CBS Enquête Productiestatistiek Algemene burgerlijke en utiliteitsbouw 2005 *Example from Norway*

Inleiding
 Invalinstructie
 Contactpersoon
 Boekjaar
 Werkzame personen
 Bedrijfsomzet
 Bedrijfskosten
 Inkoopwaarde
 Materialen t.b.v. bouwactiviteiten
 Handelsgoederen
 Overige inkoopwaarde
 Arbeidskosten
 Andere personeelskosten
 Kosten vervoermiddelen
 Energiekosten
 Huurvestingskosten
 Kosten machines, etc.
 Verkoopkosten
 Kosten communicatie
 Kosten dienstverlening door derden
 Overige bedrijfskosten
 Afschrijvingen

Versturen voor:
11 mei 2006

Correspondentijsnummer:
4508 0001

Centraal Bureau voor de Statistiek

Overige inkoopwaarde

Rond alle bedragen af op duizendtallen.
Noteer € 23.674,38 als 24.

Specificatie bedrag in rekening gebracht door onderaannemers:

Constructiewerkplaatsen	430
Loodgieterbedrijven	125
Elektrotechnische installatiebedrijven	3.400
Centrale verwarmingsbedrijven	
Timmer-, schilders-, glaszetters- en behangersbedrijven	
Steengas-, muurbewerkingsbedrijven en dergelijke	
Overige onderaannemers niet eerder genoemd	
Inkoopwaarde niet elders genoemd	
Totaal overige inkoopwaarde	3.955

Akkoord +

Verzenden Afdrukken Opslaan Afsluiten Calculator Rekenveld Informatie

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Running Tallies: Feedback for Sum Not Known

● Ifølge post 4005 i Næringsoppgaven var varekostnaden for foretaket 11 156 000 kroner i 2014.

● Hvor mye av varekostnaden var knyttet til varer som selges videre uten å bli bearbeidet (handelsvarer)? ☐ 0 kr ☒ 5 500 000 kr

= Varekostnad knyttet til tjenester og egenproduserte varer ☒ 5 656 000 kr

● På forrige side ble omsetningen fra detalj- og engros handel (handelsvarer) beregnet til 30 500 000 kroner. Når varekostnaden knyttet til handelsvarer trekkes fra blir dette en avanseprosent =

Omsetning av handelsvarer - Varekostnad handelsvarer ☒ * 100 = 81 %

Omsetning av handelsvarer

Vennligst kontroller at opplysningene om omsetning og kostnader knyttet til handelsvarer er korrekte slik at beregningen av foretakets avanseprosent i fjor blir riktig.

Example from Norway

Repeated Questions




- Asking the same question about many different things

- Often formatted like a table or matrix

Type of Employee	Male	Female	Total
Full-time			
Part-time			
Temporary			
Leased			

- Development and design
 - Flowchart
 - Alternative designs for matrix-style questions

Dynamic Functionality: Manageable Matrices

- **Funneling** 
- **Hybrid** when identical loops are repeated 
- **Enveloping** when loops and branches are combined 

Funneling

Add in the various countries for each service type, enter the total value per country for each service type, and amount of intragroup share.

2 Installation and assembly

Country	Amount (in thousand euro)	Of which intragroup services
Norway	15 320	150
UK	175 601	23 101
USA	24 589	0

☒ Add country

3 Reconstruction performed by/for others

Country	Amount (in thousand euro)	Of which intragroup services
Germany	2 568	23
USA	26 589	0

☒ Add country

4 Contract work and other industrial services

Country	Amount (in thousand euro)	Of which intragroup services
Choose country...		

☒ Add country

United States
Census
Bureau

U.S. Department of Commerce
Economics and Statistics Administration
U.S. CENSUS BUREAU
census.gov

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Miami, Nov. 27-29, 2017

Hybrid

1 How much, given in 1000 Euros did the enterprise invest in buildings and installations in 2011?

000 Euros

2 How much did the enterprise invest in buildings and installations in 2011?

000 Euros

3 How much did the enterprise earn from selling buildings and installations in 2011

000 Euros

4 Please fill in the same kind of information for the investment objects listed below

	Investments in 1000 Euros	Maintenance in 1000 Euros	Selling price in 1000 Euros
Building sites	<input type="text"/>		<input type="text"/>
Private houses	<input type="text"/>	<input type="text"/>	<input type="text"/>
Ships, rigs, airplanes etc	<input type="text"/>	<input type="text"/>	<input type="text"/>

United States
Census
Bureau

U.S. Department of Commerce
Economics and Statistics Administration
U.S. CENSUS BUREAU
census.gov

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Two-Dimensional Matrices: Goods by Lorry, Norwegian Paper Version

Date **Starting Point** **Destination** **Distance** **Kind of goods** **Weight**

KJØREBOK
En handling som brukes som hjelp til å fylle ut matrisen for varer som er registrert og anerkjent i systemet. Gjennom den handlingen blir transporten registrert og det blir registrert hvilke varer som er transportert og hvor langt det er kjørt med dem.

Linje nr.	Dato for kjøring	Startpunkt	Destinasjon	Avstand	Varer	Vekt	ADR-kode
1	02.09	1	1	2.0	Ved	5.00	
2	02.09	1	1	2.0	tom	2.0	
3	03.09	1	1	1.0	Hakling	2.0	
4	04.09	1	1	3.0	Asfalt	5.00	
5	04.09	1	1	1.0	Sjokolade	1.50	
6	10.09	1	1	3.0	tom		
7	11.09	1	1	6.0	Gruvmaske	6.50	
8	18.09	1	1	6.0		6.50	
9	15.09	1	1	6.0		6.50	
10	15.09	5	5	4.0	Jord	12.00	
11	15.09	1	1	4.0	tom	0	
12	16.09	7	7	4.0	Jord	15.00	
13	16.09	1	1	4.0	tom	0	
14	17.09	7	7	4.0	Jord	10.00	
15	17.09	1	1	3.0	tom	0	
16	18.09	7	7	1.0	Reiser	10.00	
17	18.09			4.0	tom	0	

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Enveloped

Vennligst spesifiser alle turer for DK 99999 kjørt i perioden 06.11 til 12.11.2014 Hjelp?

Trip #1 Tur nr. 1 Kongsvinger - Hamar Dato: 2014-11-06 Vis detaljer

Trip #2 Tur nr. 2 Hamar - Lillehammer Dato: 2014-11-06 Vis detaljer

Trip #3 Tur nr. 3

1. Når startet neste kjøretur? Ta også med kjøring uten last.
dd.mm.åååå

2. Oppgi startstedet for turen:
2619 Lillehammer
postnummer by/sted land

3. Startet kjøreturen ved en terminal?
☐ Ja
☒ Nei

4. Hva slags kjøring var dette?
☐ Kjøring uten last (tomtur)
☐ Oppsamlingsrute med 5 eller flere stopp
☐ Distribusjonsrute med 5 eller flere stopp
☒ Kjøring med last

5. Beskriv godset som ble lastet opp her.
Du legger til vareslag ved å trykke 'Legg til flere vareslag'.

	Velg eller skriv inn vareslag	lastetype	Varens vekt i kilo	ADR-kode
1	Daglegvarer		50 000 kg	
2	Bananer		2 000 kg	

Example from Norway

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Dynamic Functionality: Edit / Error Checks

People expect that the software is intelligent:

- Let the computer help with computations
- Add consistency checks, but be aware of “hard” error checks:
 - “Hard” error checks must be corrected in order to permit respondents to submit their completed surveys.
 - “Soft” error checks do not need to be corrected in order for respondents to submit their surveys.
- Replace hard checks with soft checks + Open comment field
- Try to **prevent** errors instead of asking respondents to correct errors

Error Prevention ⇒ Error Detection ⇒ Error Correction

- Try to **prevent** errors from happening
- Restrict hard checks to...
 - Filter questions
 - Essential questions
- Alert respondents to errors as soon as they occur
- Error messages should not just tell Rs that something is incorrect, they should be designed in such a way that **Respondents**:
 - **SEE** them,
 - **KNOW** what to do, and
 - **CAN ACT** upon them

Edits in Web Surveys: *What to Say*

- Information to include:
 - Location of problem
 - Description of problem
 - Action needed
- Avoid:
 - Jargon
 - Passive voice
 - Poor grammar
 - Terminology not in the question
 - Offering only one of many possible solutions

Edits in Web Surveys: *When to Say It*

- Immediately after the problem, when feasible:
 - Respondents prefer this
 - Respondents don't like receiving a batch of edits at the end of the questionnaire
- Inter-item edits:
 - Wait until all relevant items have been manipulated

Please verify the responses marked below.
To ignore these problems, press the Next button again.

U.S. Census Bureau online

Building Permits Survey

New Housing Units by Type of Structure

b. Single Family Houses, detached and attached:

Housing Units Total Valuation \$

c. Two-unit buildings:

e. Five-or-more unit buildings:

Units are zero (or blank); enter number of units.

Each building should have 5 or more units. Enter correct number of buildings and units or enter in 3b-d depending on the number of units per building.

Valuation large; verify valuation of construction.

Buildings Housing Units Total Valuation \$

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Example Soft Edit: "Warning"

from U.S. Census Bureau's 2017 Economic Census, Single Unit version

DS-81110 - Motor Vehicle Repair and Maintenance

Warning: The value reported for Annual Payroll in Item 7B1 (\$50,000.00) should be greater than or equal to the value reported for First Quarter Payroll in Item 7B2 (\$200,000.00).

Item 7: Employment and Payroll Additional Information

TEST MU AUTO MAINTENANCE SERVICES
 ER MU AUTO MAINTENANCE SERVICES
 903 TEST STREET
 BALTIMORE, MD 21209
 EIN: 12-3456789
 Store / Plant: MD671
 CFN: 7513010023

ITEM 7: EMPLOYMENT AND PAYROLL

Include:

- Full- and part-time employees working at this establishment whose payroll was reported on Internal Revenue Service Form 941, Employers Quarterly Federal Tax Return, and filed under the Employer Identification Number (EIN) 12-3456789

Exclude:

- Temporary staffing obtained from a staffing service
- Contractors, subcontractors, or independent contractors

Description of problem

Location of problem

Example Error Review Screen

from U.S. Census Bureau's 2017 Economic Census

Step 2 - Review

Please review your responses and make any necessary corrections by selecting the 'Fix' button, which will return you to the screen where you can make the appropriate update. Errors **must** be corrected before the location can be submitted.

Download Errors/Warnings: This report contains the data you have reported totaled by Employer Identification Number (EIN). You can compare these totals to your records to ensure the data you have reported are correct.

Fix	Errors / Warnings	Item #	Explanation	Survey	Title	CFN
Fix	Error	1	Error: Location is not completed.	OS-81110	Motor Vehicle Repair and Maintenance	7513010023
Fix	Warning	4	Warning: Please provide a response for Employer Identification Number in Item 1.	OS-81110	Motor Vehicle Repair and Maintenance	7513010023
Fix	Warning	7	Warning: Please provide a response for Months in Operation in Item 4.	OS-81110	Motor Vehicle Repair and Maintenance	7513010023
Fix	Warning	7	Warning: The value reported for Annual Payroll in Item 7B1 (\$50,000.00) should be greater than or equal to the value reported for First Quarter Payroll in Item 7B2 (\$200,000.00).	OS-81110	Motor Vehicle Repair and Maintenance	7513010023

Total Items: 20 (Showing Items: 4)

Buttons: Step 1 - Report, Step 3 - Submit

Tips About Writing Questions

- Specify observational unit, time reference and measurement unit
- Avoid use of keywords in addition to or instead of proper question structure
- Be aware of common words used in specific definitions
- Split complex tasks into a series of simpler tasks
- Double barreled questions: words like 'and' or 'or' indicates more than one question in one → split into two
- Words like 'If' or 'Provided that' indicate a need for filter questions
- Replace words that need to be defined with questions based on the definition
- Consider replacing instructions with clarifying inquiries

Example:

Replace words that need to be defined with questions based on the definition.

- Replace this:

“How much money did the enterprise invest in renewable power sources?” With “renewable power sources,” we think about sources such as hydroelectric power, wind power, power from sea waves, solar energy, or bioenergy.”

- With this:

“How much money did the enterprise invest in hydroelectric power, wind power, power from sea waves, solar energy, bioenergy or other renewable power sources?”

Example:

Replace Instructions with Clarifying Inquiries

- Question with instructions:

1 How much did you invest in new machinery last year?

Exclude refunded Value Added Tax (VAT).

,00 NOK

Series of Questions that Replaces Instructions

1 Did you invest in new machinery last year?

- ☐ Yes
☐ No --- Skip to 5.

2 How much did you invest?

,00 NOK

3 Does the figure reported in item 2 include refunded Value Added Tax (VAT)?

- ☐ Yes
☐ No --- Skip to 5.

4 How much was refunded?

,00 NOK

Common Text Recommendations

- Use a title that is related to the content of the questionnaire, not the kind of statistics that will be produced
- A minimum of Sample Management questions
- Section heading indicating who should provide what kind of information. Hyperlinks in web questionnaires
- Fully phrased open-ended questions that only permit specific kinds of answers – e.g., dates, phone numbers, etc.
- Beware of...
 - role ambiguity
 - vague time references
 - abstract units
 - mapping problems
- Take a Conversational approach
 - Question order can both cause and hinder misinterpretations
 - If matrices are used, consider sequence + matrix design
 - Pre-printing, computer assisted dialogues, open help lines
- Highlight question(naire) changes from previous reporting

Common Visual Design Principles

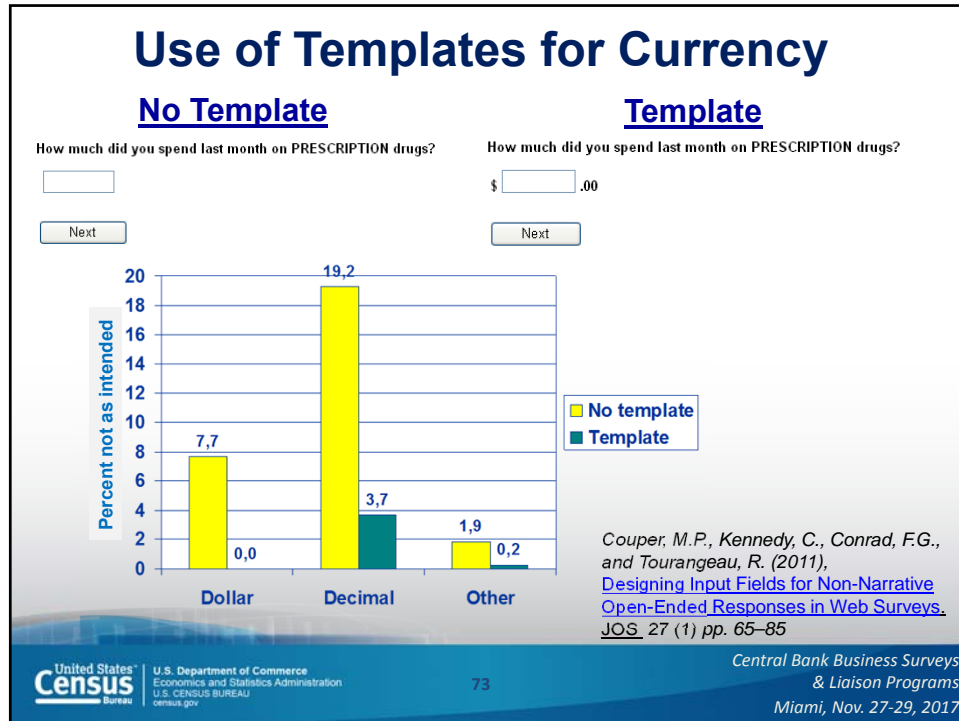
- Size and contrast arranges elements
- White space aids readability, eases eye strain
- Boldface/lightface prioritize
- Visual distance signals what belongs together and what doesn't
- Similar elements are interpreted similarly
- Simple, regular and symmetric are easiest to remember
- Some images have commonly understood symbolic meanings

Visual Design:
Numeric Response Boxes for Paper Forms
Statistics New Zealand

35 Question text

dollars and cents	\$	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	.	<input type="text"/>	<input type="text"/>
whole dollar	\$	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>		<input type="text"/>	.00
rounded to thousands	\$	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>		<input type="text"/>	000
percentage		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>		<input type="text"/>	%
time in hours		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>		<input type="text"/>	hrs
time in hours and minutes		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>		<input type="text"/> hrs	<input type="text"/> mins

http://www.stats.govt.nz/surveys_and_methods/methods/survey-design-data-collection/layout/response.aspx#number



Visual Design and the User-interface:

- Professional **look-and-feel**: this gives a signal to the respondent!
- **Don't be original**: use user-interface elements that people know!
- **Self-explaining**: if you need instructions, think again!
- **Consistent**: be consistent from start to end!

Questionnaire Design: Key Takeaways

- **Be a communication designer!**
- **Visual design**
 - Clear and logical: "Don't make me think!"
 - Simple, transparent, consistent
 - No hidden and unexpected functionalities
- **Support the completion process, start to end**
 - Other mode, other features, other visual design
 - Use computer functionalities: automatic calculations
 - Use layout and usability principles that are known to typical Respondents
- **Tailor to kick-and-rush behavior**
 - Split questionnaire into small sections, small tasks
 - Short and clear explanations, included in the question

Summary

- Survey response has a tangible cost for businesses
 - **Response process is not under our control**
- Requested data ≠ Recorded data
 - Question development requires attention:
Concept → Attributes → Measurements → Questions
- **Questionnaire design and communication**
 - **Consider the business context**
 - Elements in concert: Text, Visual Design, Navigation, Functionality
 - **Facilitate response process**

THANK YOU!

Questions?

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