Human Coding & Interrater Reliability In Content Analysis

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2013 AOM Content Analysis PDW
Understanding Content Analysis

A research technique that relies on the scientific method for the objective, systematic, and quantitative description of the manifest content of communication.

(Berleson, 1952; Krippendorff, 1980; Neuendorf, 2002)

Number of decisions…
Human vs. Machine

We have complex and sophisticated content analysis software… why on Earth use human coding?
Why Human Coding?

1. When the meaning of the variable is latent vs. objective (discrete judgment/interpretation)
   Attributions & sociocognitive variables (Lee et al., 2004)

2. When context matters
   Identity of Arizona charter schools (King et al., 2011)

3. When concepts are not easily identified by particular words or phrases
   Strategic actions (Zavyalova et al., 2012; Lamin & Zaheer, 2012)

4. To identify grounded or emergent variables or processes
   Identity resurrection (Howard-Grenville et al., 2013)
Example:
Reputations in Conflict

• RQ: How do firms repair their multiple reputations in response to a negative event

  • Using human coding content analysis to identify response strategy
  • Unit of analysis: firm generated press release
Reputation Repair

Response strategy

• Coordinated communication and actions used to manage and repair reputation following a violation
  
  (Barton, 2001; Benoit, 1995; Coombs, 2007; Elsbach, 2003; Pfarrer et al., 2008)

Defense  

Attempt to avoid damages by reducing a firm’s perceived responsibility
  
  (Coombs & Holladay, 2004; Elsbach, 2003; Tedeschi & Melburg, 1984)

Accommodative

Attempt to manage damages by proactively accepting responsibility
  
  (Coombs & Holladay, 2004; Elsbach, 2003; Tedeschi & Melburg, 1984)
Sample Response Strategy: Accommodative

SAUSALITO, Calif.-(BUSINESS WIRE)-July 14, 2003-Willis Lease Finance Corporation (Nasdaq:WLFC), a leading lessor of commercial jet engines, today announced it will restate its financial statements for year 2000 due to an error in accounting for the cost of an item of engine-related equipment sold during that year from its wholly-owned spare parts subsidiary, Willis Aeronautical Services, Inc. ("WASI"). WASI was sold in November 2000 and was accounted for as a discontinued operation in the financial statements for the year ended December 31, 2000.

As a result of the accounting error, $1.0 million of cost was not properly assigned to an asset sold in September 2000. Earlier in 2000, the asset was physically transferred from WLFC to WASI; however, due to the accounting error, the corresponding cost of the asset was not transferred to WASI's balance sheet. Subsequently, when the asset was sold by WASI out of its inventory, the cost of goods sold was understated by $1.0 million. The Company is finalizing its tax calculations, but it is expected that the error will reduce net income for 2000 by approximately $650,000. WLFC had previously reported net income of $7.8 million for the year.

"The error was discovered during the course of a review of uninstalled engine-related equipment during the second quarter of 2003," said Charles F. Willis, President and CEO. "We have instituted new procedures to increase the visibility of our uninstalled engine-related equipment to our operational and management team. While the restatement is unfortunate, we believe it is appropriate to act decisively to address this matter."

On February 7, 2005, the SEC issued a general letter on lease accounting. As a result, nearly 250 public companies have announced lease related restatements, adjustments or reviews of lease accounting. The Company is in process of completing a review of its lease accounting practices, and in consultation with its audit committee, plans to restate its financial statements for 2002, 2003 and 2004 to reflect what are expected to be certain immaterial adjustments. This conclusion has been discussed with the Company’s independent registered public accountants.

The Company is revising its accounting for branch leases to recognize step rent increases on a straight line basis over the lease term. For over twenty-five years, the Company had consistently recognized rent expense as paid.
How to Start?

• Start with theory!

• Deductive definitions of construct
  • Be as broad as you can – multiple definitions
  • Supplement with inductive revisions

• Decide how you want to operationalize
  • Binary, scale, etc.
  • Consider redundancies

• Create a codebook…
<table>
<thead>
<tr>
<th>Type</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forgiveness</td>
<td>Categorical explicit statement apologizing for similar statement asking for forgiveness for restatement of the crisis management team taking responsibility for crises, asking for forgiveness, and taking action to prevent a repeat of the crisis (Coombs, 2001)</td>
</tr>
<tr>
<td>Regret</td>
<td>Categorical explicit statement of regret or sorrow regarding the event</td>
</tr>
<tr>
<td>Apology</td>
<td>Categorical a statement that acknowledges responsibility and regret for trust violations (Kim, et al., 2004)</td>
</tr>
<tr>
<td>Excuse</td>
<td>Categorical self-serving, explanations, or accounts, that aim to reduce personal responsibility for questionable events, thereby dispelling core components of the self from the incident (Schlenker, et al., 2001)</td>
</tr>
<tr>
<td>Justification</td>
<td>Categorical an account designed to minimize perceptions of responsibility for a negative event (Bluch, 2002)</td>
</tr>
<tr>
<td>Action Type</td>
<td>Categorical redefining the means and ends retroactively, in order to make the disruptive events appear more consonant with prevailing norms (Suchman, 1995)</td>
</tr>
<tr>
<td>Scapegoat</td>
<td>Categorical redefining the situation in a different light (Sutton &amp; Callahan, 1987)</td>
</tr>
<tr>
<td>Action Type</td>
<td>Categorical does the firm identify a scapegoat by stating that someone else is responsible for the crisis (Coombs, 2007)? Generally either a manager, auditing firm, or SEC</td>
</tr>
<tr>
<td>Action Type</td>
<td>Categorical whether the firm or the organization in response to violation</td>
</tr>
<tr>
<td>Rainforest - Belothing</td>
<td>Categorical does the announcement highlight past good deeds (Coombs, 2007)? This includes financial statements of health and other statements related to well-being of org</td>
</tr>
<tr>
<td>Rainforest - Belothing</td>
<td>Categorical does the organization state that they are a victim or someone else's action (Coombs, 2007)? This will be close to scapegoating, but not necessarily. The account to suggest victimization without explicitly naming the culprit</td>
</tr>
<tr>
<td>Distancing</td>
<td>Categorical reducing the conflict and challenging the renderer, forceful questions (Lamin &amp; Zeahe, 2012)</td>
</tr>
<tr>
<td>Defiance</td>
<td>Categorical resolve the offense of issue (may be related to justification; Benoit, 1995)</td>
</tr>
<tr>
<td>Accommodative</td>
<td>Categorical making corrective distancing itself from the source of the problem (Lamin &amp; Zeahe, 2012)</td>
</tr>
<tr>
<td>Retractions</td>
<td>Categorical whether the firm is responsible for a negative event, but claim regret (Bluch, 2003)</td>
</tr>
</tbody>
</table>

**For 16-19, can only be 1**
Measurement Issues

\[ M = t + e \]
(measure = true score + error)

Source of (systematic) error = Humans
Coder misinterpretation, poor scheme, inadequate training, inattention/fatigue, recording error, rogue coder!

Thus, we need **reliability** – the extent to which a measuring procedure yields the same results on repeated trials

More specifically, **interrater reliability** – the amount of agreement or correspondence among two or more coders
Why Reliability?

- Validity of coding scheme
- Results are not idiosyncratic to rater subjectivity
- Allows for the use of multiple coders
- Replication over time

*Reviewers are going to ask for it!*
Reliability Flowchart
(Neuendorf, 2002; Weber, 1990)

1. Write Codebook (Variable Definitions)
2. Coder Training
3. Practice Coding (Together)
4. Pilot Coding (Independent)
5. Revisions
6. Final Coding
7. Final Reliability (Cross Fingers!)
8. Revisions (Until Sufficient Reliability)
9. Reliability Check
Avoid the Temptation!

Write Codebook (Variable Definitions) → Coder Training → Practice Coding (Together)

Reliability Check

Pilot Coding (Independent) → Revisions

Revisions (Until Sufficient Reliability) → Final Coding

Final Reliability (Cross Fingers!)
Avoid the Temptation!

Write Codebook (Variable Definitions)

Final Coding

Final Reliability (Cross Fingers!)
# Reliability Measures

[http://dfreelon.org/utils/recalfront/](http://dfreelon.org/utils/recalfront/)

<table>
<thead>
<tr>
<th>Measure</th>
<th>Type</th>
<th>Best for</th>
<th>More than 2 coders?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Agreement</td>
<td>Agreement</td>
<td>Nominal</td>
<td>No</td>
</tr>
<tr>
<td>Holsti’s Method</td>
<td>Agreement</td>
<td>Nominal</td>
<td>No</td>
</tr>
<tr>
<td>Scott’s Pi</td>
<td>Agreement (w/ chance)</td>
<td>Nominal</td>
<td>No</td>
</tr>
<tr>
<td>Cohen’s Kappa</td>
<td>Agreement (w/ chance)</td>
<td>Nominal</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Krippendorff’s Alpha</strong></td>
<td><strong>Agreement (w/ chance)</strong></td>
<td><strong>Any</strong></td>
<td><strong>Yes</strong></td>
</tr>
<tr>
<td>Spearman Rho</td>
<td>Covariation</td>
<td>Ordinal</td>
<td>No</td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>Covariation</td>
<td>Interval/ratio</td>
<td>No</td>
</tr>
<tr>
<td>Lin’s Concordance</td>
<td>Covariation</td>
<td>Interval/ratio</td>
<td>No</td>
</tr>
</tbody>
</table>
Other Thoughts

• Codebook and form - make the set so complete and unambiguous as to eliminate individual coder differences

• At least 2 coders, 10% overlap ranging between 50-300 observations depending on sample size

• Reliability can be low when coding subjective into objective, thus cut-offs can be lower (.67-.80)….if reviewers allow it…..

• Blind coding is preferable

• What to do with variables that are not reliable?
  • Redefine variable, split variable, re-train coders, drop variable, drop coder, integrate non-content analytic data

• Need separate reliability for each measure
Tips

• Develop habits & routines
• Code daily, but avoid fatigue
  • 2 hours max for me
• Spend time up front
• Familiarize self with content texts and theory
• Invest in training!

Revise early and revise often!
References


• From MGMT – Duriau, V. J., Reger, R. K., & Pfarrer, M. D. 2007. A content analysis of the content analysis literature in organization studies: Research themes, data sources, and methodological refinements. Organizational Research Methods, 10: 5-34.

• http://www.terry.uga.edu/management/contentanalysis/