Using ATLAS.ti to Conduct a Systematic Review

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Evidence Based Management

- EBM - decision making can be improved by applying logic, facts, & available information to the problem.
- “The systematic, evidence-informed practice of management, incorporating scientific knowledge in the content and process of making decisions” (Rousseau, 2012, p. 3).
Evidence Based Management

- EBM involves a four step process:
  - Use of the best available scientific findings
  - Gathering & attending to organizational facts, indicators & metrics in a systematic fashion to increase their reliability & usefulness
  - On-going use of critical, reflective judgment & decision aids in order to reduce bias & improve decision quality
  - Consideration of ethical issues including the short & long term impact of decisions on stakeholders (Rousseau, 2012).
Systematic Review

- Creation of the Cochrane Collaboration (1993) to gather data on health care research greatly assisted with acceptance of systematic review (Littell & Corcoran, 2010).

- “Carefully organized, comprehensive and transparent studies of previous research on a particular topic that follow written protocols that specify their central objectives, concepts, and methods in advance” (p. 313).

- All systematic reviews “include procedures for identifying, critically appraising, synthesizing, and presenting results of previous studies” (Littell & Corcoran, 2010, p. 313).
Systematic Review - Key features

- Explicit research question to be addressed
- Transparency of methods used for searching for studies
- Exhaustive searches which look for unpublished as well as published studies
- Clear criteria for assessing the quality of studies
- Clear criteria for including/excluding studies based on scope of review/quality assessment
- Clear statement of the findings of the review (Evans & Benefield, 2001, p. 529).
Research Process

Steps used to conduct a systematic review outlined in the Cochrane Collaboration’s Reviewer’s Handbook & expanded upon by Booker (2010).

These steps are:
1. Identify the topic of interest
2. Select studies relevant to the topic
3. Read the studies
4. Determine how the studies are related
5. Translate the studies into one another
6. Synthesize translations
7. Express the synthesis.
Data Location

- Thirty-three databases were searched
- Inclusion criteria for the systematic review
  - Must evaluate either a library environment or an environment undergoing a rapid change process.
  - Must measure leadership competencies as an independent variable.
- Exclusion criteria
  - Studies that pre-dated 1993
  - Studies written in a language other than English.
Data Analysis

- Included studies were ranked as high, medium, or low on relevance based on their relation to the research question.
- Relevant articles were uploaded to the Qiqqa PDF management software tool.
- Reasons for exclusion were noted.
- Articles eliminated at this stage failed to meet one or more aspects of the dissertation's inclusion/exclusion criteria.
- Qiqqa was used to de-duplicate articles.
- Studies were imported from Qiqqa to the ATLAS.ti qualitative data analysis software for first, second & third stage analysis which led to the creation of final themes & concepts.
Data Analysis

- Using ATLAS-ti for coding encouraged a cyclical & iterative approach to data analysis that would have been difficult to accomplish through note cards, word processing, or spreadsheet applications.

- The ATLAS-ti coding process is not hierarchical but rather inductive.

- ATLAS-ti provides the “ability to express relationships between codes, concepts, and themes in a range of different ways, and often these cannot be represented in a hierarchical list” (Silver & Lewins, 2014, p. 210).
Data Synthesis Approach - Interpretive.

- Integrative approach impossible due to heterogeneity.
- Interpretive approach first suggested by Noblit & Hare (1988).
- Articles are read and re-read to find similar terms & concepts.
- “The defining characteristic of an interpretive synthesis is its concern with the development of concepts, and with the development and specification of theories that integrate those concepts” (Dixon-Woods, et al., 2005, p. 46).
- The added value of such a framework “lies in its ability to examine systematically a much wider literature than is usually included in systematic reviews to draw conclusions and suggest recommendations for policy and practice” (Oliver, et al., 2005, p. 440).
Meta-ethnography

- First proposed by Noblit and Hare (1988) as a means of synthesizing qualitative research.
- Involves three major strategies:
  - Reciprocal translation analysis (RTA)
  - Refutational synthesis
  - Lines of argument synthesis (LOA).
- In RTA “the key metaphors, themes, or concepts are identified, and an attempt is made to translate these into each other” (Dixon-Woods, et al., 2005, p. 48).
- In refutational synthesis, the “contradictions between the reports are characterized, and possible refutations are examined and an attempt made to explain them” (p. 48).
- LOA “involves building a general interpretation grounded in the findings of the separate studies” (p. 48).
First Stage Coding - Meta-ethnography

- Many advantages - primary one: it preserves the interpretive properties of primary qualitative data.
- Created for synthesizing qualitative research, meta-ethnography has also been used to synthesize quantitative data as well.
- Booker (2010) used meta-ethnography to synthesize both qualitative & quantitative data on racial or ethnic matching of clients with clinicians.
First Stage Coding - utilized ATLAS-ti

- Provides a text search tool for counting the number of instances a term appears in an article, but not used.
- Using such a tool merely results in quantitative counting of qualitative research.
- “The work of much qualitative research is about unpacking the meaning of texts in terms of respondents’ experiences, attitudes, and beliefs rather than concentrating explicitly on the language used; the overuse of text search tools in an interpretive approach may be a red herring, perhaps oversimplifying or skirting over complex undercurrents and nuance” (Silver & Lewins, 2014, p. 150).
- Simple text search tool will also miss alternate uses of a term. Instead, all 54 articles were coded on a line by line basis.
First Stage Coding - Open or *in vivo* coding

- Used in first stage of analysis as it allowed small segments of data to be considered in detail & compared with one another (Silver & Lewins, 2014).

- First stage codes could represent theoretical concepts, or be completely practical & descriptive, or merely represent ideas that were interesting or needed to be considered at a later stage.

- Any line of data which could be important or relevant was coded.

- First stage coding results in mere indexing – a “first attempt at systematically gathering together segments that are instances of the aspects of interest to the research” (Silver & Lewins, 2014, p. 189).

- Result -- over two hundred *in vivo* codes
Second Stage Coding - Axial coding

- Similar codes were grouped together, merged into higher order categories, & continually compared and revisited (Silver & Lewins, 2014).
- Britten et al. (2002) suggest that Schutz’s theory of first & second order constructs be utilized in this stage.
- “Schutz used the term first order construct to refer to the everyday understandings of ordinary people and the term second order construct to refer to the constructs of the social sciences” (p. 211).
- Printing out first stage codes assisted with second stage coding process.
- Terms of ordinary usage were converted to more usable terms that were prevalent in the evidence base.
- Codes which were similar or related were merged.
- Little used codes which were dead ends or irrelevant were also eliminated during second stage coding.
Third Stage Coding - Selective coding

- Data & codes were revisited, searching for themes, concepts, & relationships (Silver & Lewins, 2014).
- ATLAS-ti provided the ability to make chains of multiple codes & linking of quotations to create networks which was vital to third stage coding.
- Network diagrams were qualitative visual representations of the data & greatly assisted with third stage coding.
- Concepts, themes, & patterns emerged from the network diagrams.
Figure 1: ATLAS-ti Network View of Leadership Competencies Associated with Transformational Leadership (Lewis, 2014)
Figure 2: ATLAS-ti Network View of Leadership Competencies Associated with Emotional Intelligence (Lewis, 2014)
Third Stage Coding

- Mapping of co-occurring codes also useful for identifying patterns in the data.
- ATLAS-ti allows co-occurring codes to be retrieved & visualized through network & mapping tools.
<table>
<thead>
<tr>
<th>Leadership Competency</th>
<th>Leadership</th>
<th>Leadership Competencies</th>
<th>TOTALS:</th>
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<tr>
<td>Budgeting</td>
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<td>0.07</td>
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<td>Building relationships</td>
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<tr>
<td>Interpersonal competence/social skill</td>
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<td>0.03</td>
<td>0.08</td>
</tr>
<tr>
<td>Manage/lead change</td>
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<td>0.03</td>
<td>0.09</td>
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<td>0.09</td>
</tr>
<tr>
<td>Visionary/Shared vision</td>
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<td>0.04</td>
<td>0.12</td>
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Table 3 Leadership & Leadership Competency Co-occurrence Coefficients, (Lewis, 2014)
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*Communication Competency Co-occurrence Coefficients, (Lewis, 2014)*
Third Stage Coding

- ATLAS-ti was used to create hyperlinked maps of quotations which assisted with the analysis of proposition three of the dissertation.

- Once third stage coding was complete line of arguments could be expressed for these overarching themes & patterns.

- The results of third stage coding were the basis for the findings & analysis presented in Chapter 4 & for the conclusions & implications presented in Chapter 6 of the dissertation.
Figure 3: ATLAS-ti Hypertext View of Competencies Associated with Change Leadership (Lewis, 2014)
References
