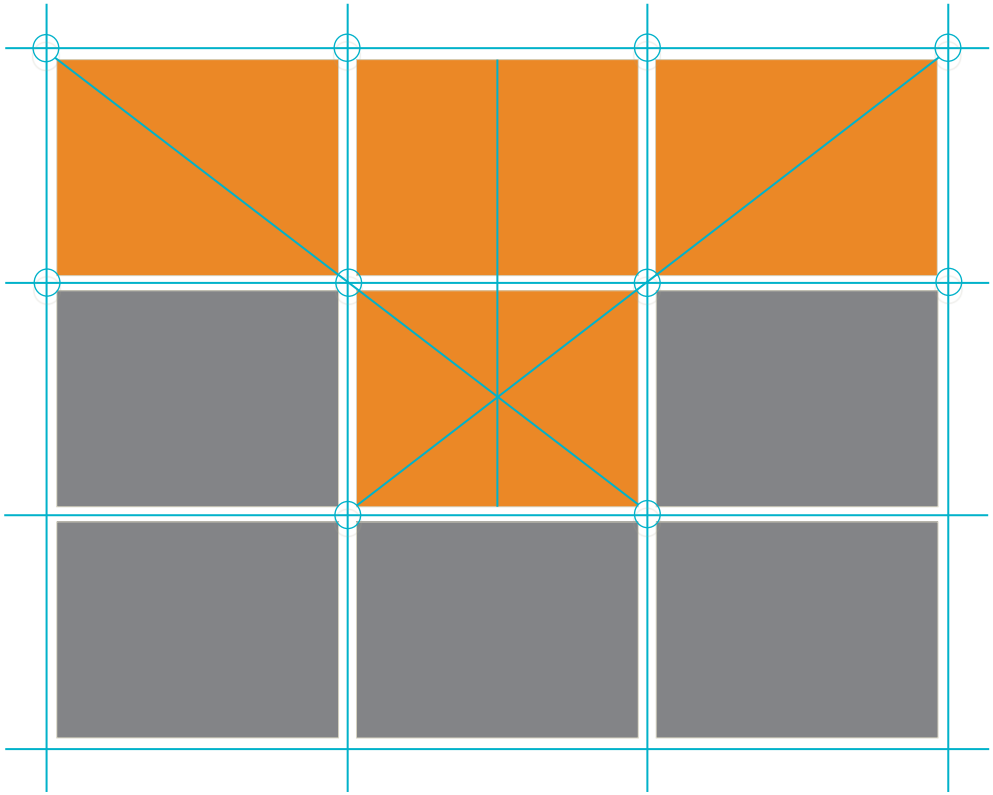
THE RESEARCH CANVAS



A Framework for Designing and Aligning the "DNA" of Your Study

JOHN LATHAM
LEADERSHIP + DESIGN

Version 1.0

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Publisher: Leadership Plus Design Ltd. a research, education, and applications company organized in the state of Colorado in the United States.

About the Author

John R. Latham, PhD

Social scientist + creator of frameworks, models, and methods to help leaders and researchers design, build, and lead organizations that create sustainable value for multiple stakeholders.

Itinerant scholar-practitioner, enjoys a variety of professional activities including research, writing, teaching, and occasionally consulting.

Designed, conducted, and published peer reviewed research using a variety of methods including quantitative, qualitative, and mixed.

Two-time recipient of The Gryna Award from the American Society for Quality (ASQ) for authoring the paper published in the preceding year that made “the single largest contribution to the extension of understanding and knowledge of the philosophy, principles, or methods of quality management” (2013 and 2014).

Served on over 50 doctoral dissertation committees including visiting professor on dissertations at Tulane University, School of Public Health and Tropical Medicine and Pepperdine University, Graduate School of Education and Psychology.

Taught research methods courses to over 1,000 PhD students helping them develop custom research designs and research plans specific to their topic.

Taught faculty development courses on supervising PhD dissertation research.

Developed research methods courses for PhD students.

Served as a scientific merit reviewer of PhD research proposals.

Served seven years on the Institutional Review Board (IRB) at the University of Northern Colorado (2007-2014).

Read more: http://johnlatham.me/bio

Acknowledgements

Examples

I would like to thank Drs. Chad McAllister and Tatiana Zimmerer for generously allowing their work to be included in this book. The examples help the nine key design canvas components “come alive.” These examples are invaluable additions to this work. For the complete descriptions of these two outstanding research examples see their PhD dissertations.

Chad McAllister, PhD

McAllister, C. A. (2006). *Requirements determination of information systems: User and developer perceptions of factors contributing to misunderstandings. .* (PhD Doctoral Dissertation), Capella University, Minneapolis, MN. (UMI No. 3226800)

LinkedIn: https://www.linkedin.com/in/chadmcallister

Tatiana Zimmerer, PhD

Zimmerer, T. E. (2013). *Generational perceptions of servant leadership: A mixed methods study.* (PhD Doctoral Dissertation), Capella University, Minneapolis, MN. (UMI No. 3554993)

LinkedIn: https://www.linkedin.com/pub/dr-tatiana-zimmerer/38/ba/826

Check for Updates

Version 1.0

You are reading version 1.0 which is the first version of this book. If you are signed up and receiving our Updates, then you will notified via email of any new releases. If you are not signed up for Updates, you can check for new versions by going to the main webpage for this book at:

http://johnlatham.me/researchcanvasbook

Recommended Citation

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Table of Contents

The book includes ten chapters focused on the components of the design canvas. They are sequenced in the order that they are typically addressed. However, you will find that the research “journey” will take many twists and turns. Consequently, each chapter is designed to be used as a stand alone guide for that particular component.

Preface

A visual guide to help you design your research to get the "DNA" of your study right at the start!

This book is about the "art" and "science" of research design. It is a "how to" guide for getting the "DNA" of your study designed and aligned prior to writing more detailed descriptions of the methodology.

This book has emerged from my experience over the past several years doing my own research and helping other researchers learn the "craft" of research. The content is organized around a nine cell framework that I have found useful for helping researchers (including myself), design an aligned and coherent research study.

Many of these tools and techniques have appeared in other media including presentations, my website and blog posts, and my one-v-one research coaching. They are now organized and refined to create a single volume of the most useful tools and techniques that you will need to create your own research design canvas.

This is not a research methods textbook but rather a textbook supplement. You will need to refer to your research methods texts and peer reviewed papers on research methods to complete the details of your design.

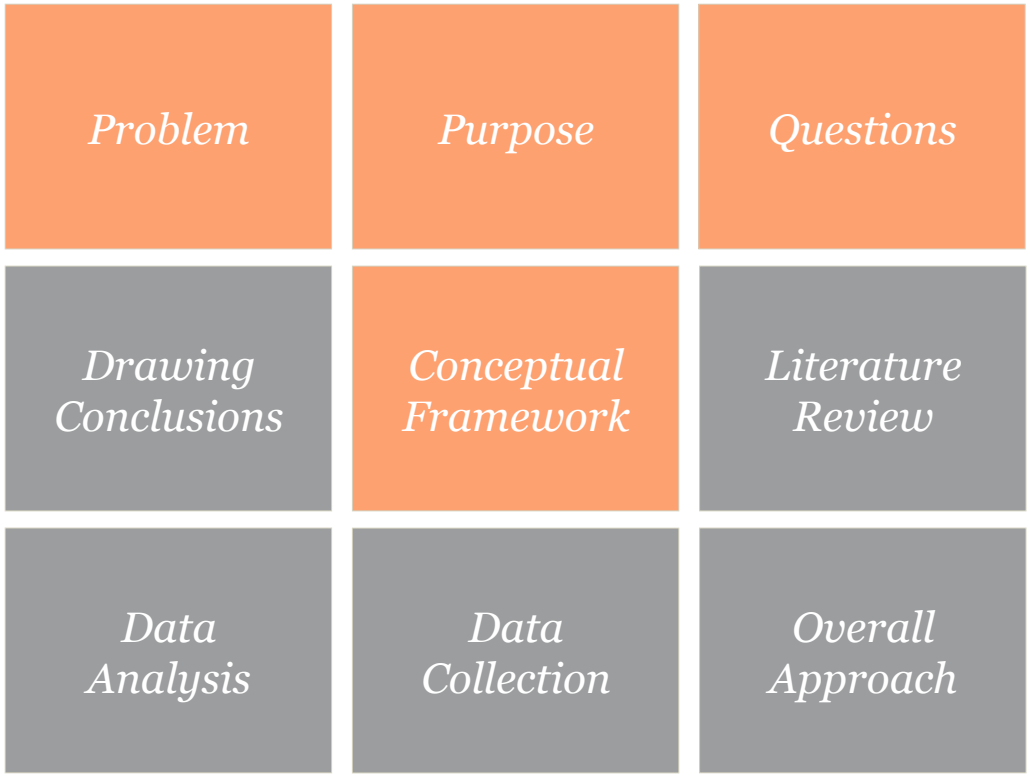
The "journey" can be frustrating and challenging under the best of circumstances. My hope is that this book will help anyone who is interested get the "DNA" of their study right early in the process, and hopefully, avoid some of the frustration associated with all research projects.

For more research methods tools and techniques follow my research methods blog at: http://johnlatham.me/researchmethodsblog

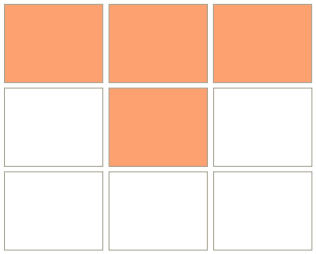
Research Canvas

The Research Canvas

While the research canvas components are presented in a sequence, the process of developing a custom research design is an iterative and often "messy" process. The components are organized into two groups. The "T" or **foundation** includes the problem, purpose, research questions and conceptual framework (orange cells). The "U" or **methodology** includes the literature review, overall approach, data collection, data analysis, and drawing conclusions (grey cells).



Getting the "T" or Foundation Right



All too often, new researchers will begin their design process by asking questions like, "could I use an existing survey to measure x, y, z… with a particular population or case?"

This is the wrong place to start!

You first need a solid foundation…

Step 1 - The Problem

Often the first step in the research design process is to identify a real world problem or management dilemma and provide a brief description of the issue, the undesirable symptoms, and our inability or lack of knowledge to solve the problem. All the other canvas components are designed to produce a contribution to knowledge that will help solve this problem.

Step 2 – The Purpose

The purpose statement builds on the knowledge gap in the problem statement and describes what new knowledge the study will produce. This is not the specific content or answer but rather the type of knowledge that will be produced. The new contribution should directly address the knowledge gap in the problem statement.

PhD dissertations produce a contribution to theory.

Step 3 – Questions

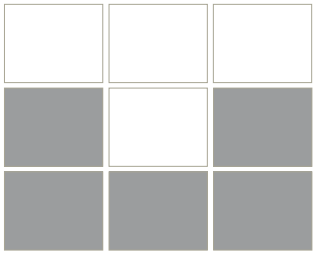
There is nothing in the research process that is more important than getting the question(s) right.

If the questions are good, there is a chance that the study will be good. If the questions are not good, then there is no hope that the study will be good. Good research questions ask about HOW the "world" works.

Step 4 – Conceptual Framework

A diagram of the topic is literally worth more than 10,000 words. A conceptual framework is a diagram that depicts the key constructs or variables (independent, dependent, etc.) along with the relationships between those constructs along with the key context factors that influence the constructs and relationships. The development of the conceptual framework begins early and it evolves as the design process unfolds.

Getting the "U" or Methodology Right



Once the foundation is fairly well developed, you are ready to start working on how you will answer the research questions in a way that will fulfill the purpose and add new insights to help solve the problem.

Form follows function!

Step 5 - The Literature

How much do we know about the constructs, variables, and relationships identified in the conceptual framework and the research questions?

We begin with theory and we contribute back to theory.

The amount and specificity of the current empirical knowledge will influence the choice of an overall research approach.

Step 6 - Overall Approach

Identify the overall research approach and the rationale for selecting that particular approach. Choose both the overall approach (quantitative, qualitative, mixed) and the specific design (e.g., case study). Ultimately, the approach is determined based on whether it is the best approach to contribute the new knowledge specified in the purpose and problem.

Step 7 – Data Collection

The data collection plan consists of methods, instruments, and sources. How will you measure the constructs and variables? What is the sampling strategy? The choices in this step determine the "menu" of data analysis options.

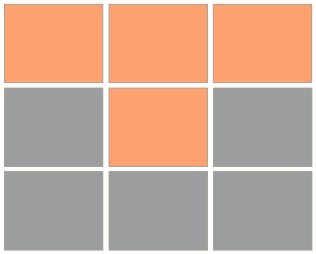
Step 8 – Data Analysis

While measurement and data collection are typically focused on the constructs, variables, and context factors - the analysis is focused on the relationships between the constructs, variables, and context factors. There is a wide variety of options based on the type of data and the purpose.

Step 9 – Drawing Conclusions

The last components puts all the pieces together in a cogent conclusion and discussion on the implications for theory and practice.

Alignment



One way to help deal with the complexity of a research design is to focus on the conceptual framework as the "touchstone" for alignment.

The nine research canvas components form a complete "big picture" research design and methodology from problem to solution.

In order to accomplish the purpose of the research, the research design components must be internally consistent and congruent.

This alignment is determined during the design process and often requires many iterations as the design unfolds.

The design decisions that are made for each canvas component impact design decisions in other components.

Once a few design decisions have been made, the "menu" of options available in subsequent components is reduced.

For example, once the "T" is developed, the methodology or "U" options are now reduced – form follows function!

As the design process unfolds, each time that a component is changed, go back to the conceptual framework.

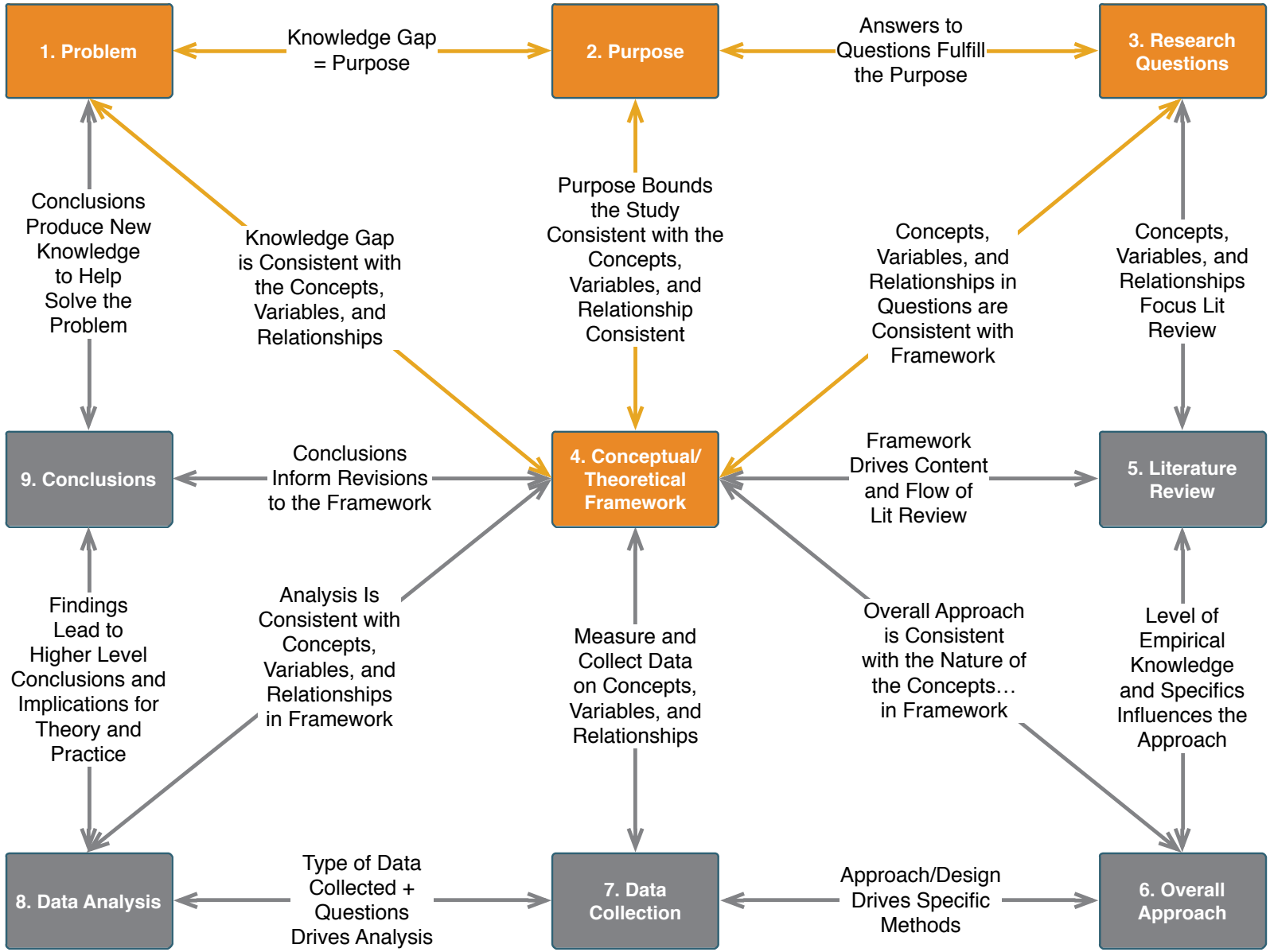
If there is an inconsistency between the component and the conceptual framework you have two options: (1) revise the conceptual framework or (2) revise the component.

If you choose to adjust or revise the conceptual framework, you will then need to review the other components for alignment and consistency.

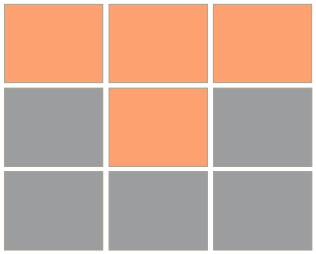
Each time that you change a component go back and check for alignment and consistency with all the other components.

This is why working with a brief document such as a "canvas" is much easier than trying to achieve basic alignment with a more comprehensive plan.

The "basic" linkages between the nine canvas components are depicted on the next page.


1. Problem
Knowledge Gap = Purpose
2. Purpose
Answers to Questions Fulfill the Purpose
3. Research Questions
Conclusions Produce New Knowledge to Help Solve the Problem
Knowledge Gap is Consistent with the Concepts, Variables, and Relationships
Purpose Bounds the Study Consistent with the Concepts, Variables, and Relationship Consistent
Concepts, Variables, and Relationships in Questions are Consistent with Framework
Concepts, Variables, and Relationships Focus Lit Review
9. Conclusions
Conclusions Inform Revisions to the Framework
4. Conceptual/ Theoretical Framework
Framework Drives Content and Flow of Lit Review
5. Literature Review
Findings Lead to Higher Level Conclusions and Implications for Theory and Practice
Analysis Is Consistent with Concepts, Variables, and Relationships in Framework
Measure and Collect Data on Concepts, Variables, and Relationships
Overall Approach is Consistent with the Nature of the Concepts… in Framework
Level of Empirical Knowledge and Specifics Influences the Approach
8. Data Analysis
Type of Data Collected + Questions Drives Analysis
7. Data Collection
Approach/Design Drives Specific Methods
6. Overall Approach

Design Principles



According to several executives, successful research is not academic arcane language in some obscure journal

Latham (2008)

Significance - New or profound information (content) and best practices versus incremental knowledge in a narrow topic.

Readability - New knowledge presented in a language that employees at all levels of the organization can understand and deploy.

Utility - Actionable information that will help practitioners improve organization performance (solve the problem).

Transferability - New knowledge that can be easily transferred across the organization and ideally across industry sectors (corollary to generalizability).

Credibility - The depth of scholarship, including analysis and supporting data, is sufficient to inspire confidence and implementation of the new knowledge.

Timely - New knowledge and information needs to be accessible in time to address real-world problems and challenges.

Access - Easy access to new knowledge and information available in multiple media and formats.

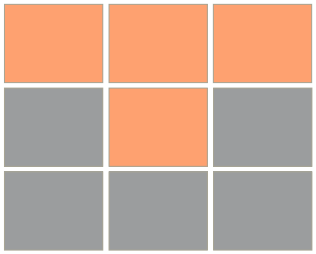
Benefits - There should be a clear connection between the new knowledge and information and organization results and overall success.

Involvement - When appropriate, involve practitioners throughout a collaborative research process.

Dissemination - Present new knowledge and information at public forums and make the new knowledge available to the public (publish in a variety of forms and media).

Source: Latham, J. R. (2008). Building bridges between researchers and practitioners: A collaborative approach to research in performance excellence. *Quality Management Journal, 15*(1), 20.

Ethical Considerations



Design ethical principles into your research plan from the very beginning!

There are three basic ethical principles to keep in mind when designing research: respect for persons, beneficence, and justice.

Respect for Persons

Humans are autonomous beings capable of self-determination. Consequently, research requires “informed” consent from the participants. Informed means that they understand the research methods (procedure), benefits, and risks. There are some individuals who may have a diminished autonomy such as prisoners, children, those who have diminished mental capacity, so on and so forth. Special protections are required in the design and execution of research for certain categories of participants and these should be detailed in the IRB requirements for your particular institution.

Beneficence

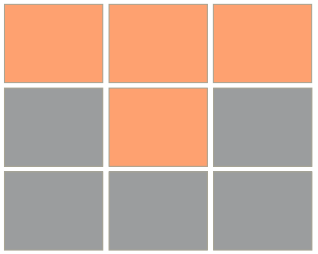
Beneficence has two components: (a) do no harm and (b) maximize the possible benefits and minimize the risks. The design considerations for this principle include weighing of the benefits of the research with the risks involved and designing the study so that the benefits are as great as possible and the risks are minimized. Poorly designed or “sloppy” research is of little benefit to anyone and thus based on this principle is unethical.

Justice

The third basic principle addresses the issue of who benefits vs. who bears the burden. The history of this principle includes many abuses in the medical research field where some populations bore the burden, while other populations were the primary beneficiaries of the research. The challenge here is to design research so that there is a fair distribution of benefit and burden.

For more on research ethics see *The Belmont Report: Ethical Principles and Guidelines for the Protection of Human Subjects of Research*. http://www.hhs.gov/ohrp/humansubjects/guidance/belmont.html

Example A



Latham (2013)

Three examples are used throughout this book to illustrate the individual components. Below is the abbreviated, one-page, version of Example A. Click on the link for a full sized downloadable version.

http://johnlatham.me/canvasexampleA

Research Canvas - Latham's CEO Study Example

Latham, J. R. (2013) A framework for leading the transformation to performance excellence part 1... and part 2..., *Quality Management Journal, 20*(2 & 3)

JOHN LATHAM
LEADERSHIP + DESIGN

Problem + Knowledge Gap - 70 to 80% of attempts at organization transformation fail - Less than 10% of Baldrige applicants receive award - World is rapidly changing - workforce, competition, technology, etc. - Little agreement on what constitutes leadership - Numerous theories more added all the time - Little understanding of how to lead transformation based on Baldrige model as main framework	***Purpose*** - Explore the experiences of strategic (upper-echelon) leaders who successfully transformed their organizations. - Develop a richer understanding of the processes, practices, and behaviors required to lead large-scale transformations. - Multiple case study based on in-depth interviews with CEOs (most senior leader) of 14 Baldrige recipient organizations.	***Research Questions / Hypotheses*** - ***What*** are the key upper-echelon leadership approaches, behaviors, and individual leader characteristics, and ***how*** do they influence the transformation to performance excellence? - ***What*** are the key internal, external, and cultural factors and ***how*** do they influence the transformation to performance excellence?
Drawing Conclusions - Theoretical Memos along with Node structure used to develop framework - Framework reviewed by BAR consortium members - Final papers reviewed by some participating CEOs - Identified implications for theory (transformational, transactional, servant, and spiritual leadership) - Identified implications for practice - Identified limitations and recommendations for future research	***Conceptual / Theoretical Framework*** The study began with three key leadership constructs and one large process outcome: - leader activities (what leaders do) - leader behaviors (how they do it, style) - individual leader characteristics - organizational transformation process As research unfolded other constructs were added: - internal and external forces and facilitators of change - organizational culture factors	***Literature / Level of Empirical Knowledge*** - Leadership is a "messy landscape" with more theories today than 50 years ago - Little consensus on what effective leadership is among practitioners and researchers - Many tested theories but many questions remain - Limited understanding of how the nuances of context influences leadership effectiveness - Majority 88% of leadership studies are quantitative - Several practitioner case studies on this context
Data Analysis - Transcripts analyzed for each individual case (within case analysis) - NVivo8 used to code data (level 1 analysis) - Visual data displays (Miles and Huberman, 1994) - Over 200 nodes explored, 35 top levels codes selected for final framework - Constant comparison + open and axial coding - Cross-case analysis with node frequency/case - Enfolded research literature as part of analysis	***Data Collection*** - Cases drawn from 49 organizations that received the Baldrige award in the 10 years preceding the data collection. - Purposive sampling approach to select 14 cases which exceeds Eisenhardt's recommendation of 4 to 10 (made for a lengthy analysis process). - Deep dive interviews conducted with CEOs - Flexible semi-structured interview guide - Verbatim transcripts typed from digital recordings	***Overall Approach*** - Theory building qualitative study - Multiple Case Study Design (Eisenhardt, 1989) - Inductive analysis based on in-depth interviews with CEOs who led successful organizational transformations - Incorporates grounded theory methods (Corbin & Strauss, 1990) - Individual case analysis - Cross-case analysis

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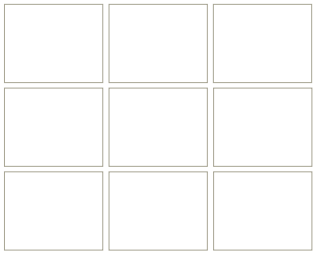
DIY



Begin with a single page. Then, as the individual components are developed, expand to a page for each component for a total of nine "slides." Use the nine slides as your research summary document and keep it updated as the research study evolves.

Do It Yourself...begin with a blank canvas

It might seem a bit intimidating to begin with a blank sheet but this book takes you step-by-step through the development of your own custom canvas. Download a printable PDF blank canvas and get started today!

http://johnlatham.me/researchcanvasblank

Research Canvas

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Problem + Knowledge Gap	***Purpose***	***Research Questions / Hypotheses***
Drawing Conclusions	***Conceptual / Theoretical Framework***	***Literature / Level of Empirical Knowledge***
Data Analysis	***Data Collection***	***Overall Approach***

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Resources

Research Methods Framework – This page is the “landing” page for the framework that is the basis for the research canvas. It includes links to the nine canvas components.

http://johnlatham.me/rmframework

Design Research Like Leonardo da Vinci – This blog post is an introduction to the research canvas and includes a downloadable example and blank template.

http://johnlatham.me/leonardo

Good Research – Blog post on the definition of good research from the Building Bridges paper (Latham, 2008).

http://johnlatham.me/goodresearch

Blank Canvas Template – Download the blank canvas template here:

http://johnlatham.me/researchcanvasblank

Example Research Canvas – Download an example using the research design and methods from my CEO Leading Transformation study (Latham, 2013).

http://johnlatham.me/canvasexampleA

The Belmont Report

http://www.hhs.gov/ohrp/humansubjects/guidance/belmont.html

Problem

Research Problem

Knowledge Gap

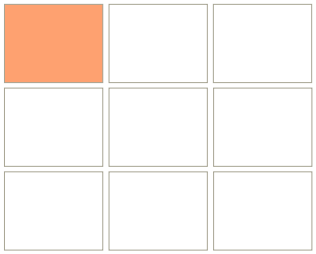
Examples

Alignment

D I Y
Do It Yourself

Resources

Problem



A problem isn't always a "problem," it might also be an opportunity for improvement.

In other words, organization performance is seldom all that we would like it to be.

What Can't We Solve?

A research problem is one we can't solve with our existing empirical knowledge and theories.

Often, the first step in the research design process is to identify a real world problem or management dilemma and provide a brief description of the nature of the issue, the undesirable symptoms, and our inability or lack of knowledge needed to solve the problem.

All the other components in the research framework are designed to produce a contribution to knowledge that will help solve this problem.

While there are some fields that do "pure" research, there are plenty of real world management problems and opportunities for improvement to keep management researchers busy without "dreaming up" new things to research.

So What?

What is the significance of the problem?

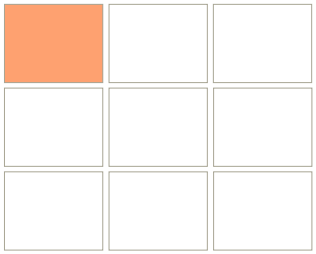
The problem statement is the foundation and rationale for the significance of the study.

The problem needs to answer the "so what" question. Why would anyone be interested in supporting, participating in, or using the results of, this study?

Regardless whether you plan on having a sponsor, a practical reason to conduct the study will help increase your motivation (and tenacity), your participant's motivation thus increasing participation and response rate, and the impact on the real world.

Note: If you have not yet identified a research topic then work on identifying an appropriate research topic then return to this section.

Knowledge Gap



If the knowledge needed to address the problem is already in existing peer reviewed publications, we don't need more research

We can simply apply our existing knowledge and theories to solve the problem.

Why Can't We Solve It?

The second required component of the problem statement is a gap in our existing knowledge and theories that prevents us from solving the problem.

There MUST be a gap in our existing theories and empirical knowledge to justify a research project.

If we already have the knowledge to solve the problem, then we can simply apply that knowledge or theory to our particular situation and solve the problem.

It is not uncommon for organizations to experience many problems that we already know how to solve.

The organization may not know how to solve the problem, or may not be familiar with the current literature, so the first step is to find out what we know about this problem by conducting a literature review.

Where to Look for Gaps?

If there is a knowledge gap, then the problem is a candidate for a research project. So, where is the best place to look for a knowledge gap?

The knowledge gap in the problem statement should be supported by the literature review.

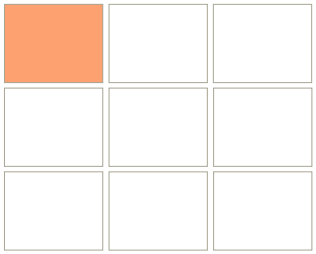
1. Look at the limitations sections of the most recent peer reviewed papers related to your topic. Many research studies are designed to reduce the limitations of previous studies.

2. Look at the conclusions and recommendations for future research. Author(s) often identify where they think researchers should go next.

3. Take the time to delve deeply into the research "streams" on your topic.

There is no easy path. You have to do the hard work of reviewing the literature.

Example A



Latham (2013)

“Since the quality crisis of the 1980s, organizations have faced unprecedented change in the areas of global competition, competition for talent, economic turbulence, and uncertainty, along with social and environmental challenges, forcing them to continuously rethink their strategies and redesign their methods for achieving sustainable success” (Latham, 2013, p. 12).

Growing pressure from a variety of stakeholders including investors, customers, employees, supplier partners, the community, and the natural environment. The environment and community find their “voice” through the regulation, public policy, social media, customer purchase decisions, etc.

The methods we have used to create our current standard of living are human created and thus can be redesigned and recreated to meet these challenges.

Unfortunately approximately 70 to 80% of attempts at organization transformation fail and less than 10% of Malcolm Baldrige Award applicants receive the award.

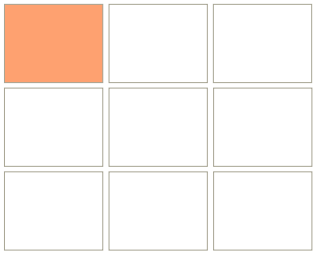
There is little agreement on what constitutes leadership. It is a messy “landscape” and the number of theories has actually increased over the past 50+ years.

We now have numerous theories and more are being added all the time. Unfortunately, seldom are any discarded. The mess continues to get worse!

There is little research on and understanding of how to lead organization transformation based on Baldrige model as the main framework.

Source: Latham, J. R. (2013). A framework for leading the transformation to performance excellence part I: CEO perspectives on forces, facilitators, and strategic leadership systems. *Quality Management Journal, 20*(2), 22.

Example B



McAllister (2006)

A primary reason software products fail to meet users' needs, are delivered late, or exceed budgets is because the requirements were not well understood.

Two important parties that must agree on and understand the requirements are users and developers.

Misunderstandings between these two groups lead to requirement errors, which increases the cost and time of the software project, jeopardize quality, and create work-life imbalances.

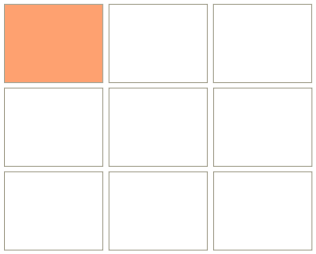
While many techniques have promise, the rate of software product failures has not substantially been reduced, hovering around 66%

What is lacking in techniques such as Voice of the Customer (VOC) is a fundamental knowledge of the factors involved in misunderstanding requirements between users and developers.

Without this theoretical foundation the efficiency and effectiveness of the techniques aimed at improving the understanding of requirements is difficult to determine.

Source: McAllister, C. A. (2006). *Requirements determination of information systems: User and developer perceptions of factors contributing to misunderstandings*. . (PhD Doctoral Dissertation), Capella University, Minneapolis, MN.

Example C



Zimmerer (2013)

Hypercompetitive environment corporations seek to maximize output and performance and a key factor influencing performance is leadership. Leaders more than ever are struggling to motivate, inspire, and exhort followers to produce more and more with less and less.

Unfortunately, followers are cynical, disillusioned, and no longer trust corporate leaders in the US. And, charismatic transformational leaders seem to be less and less effective. If there was any doubt, followers now know that these leaders put the corporation first and followers often last when making decisions.

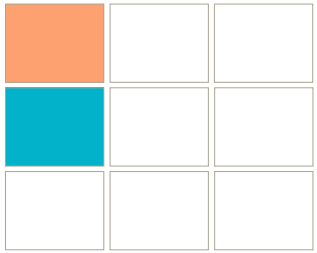
Servant leadership has emerged as one alternative to the more popular transformational and transactional style. Servant leadership appears to be well suited to address the key issues with the workforce including the lack of trust in leadership.

Increase in workforce diversity including multiple generations working together. Some research suggests that different generational cohorts need different leadership styles. While we know quite a bit about servant leadership in general, the applicability to the three main generations working today (baby boomers, gen y, gen x) has not been studied.

We also do not know how servant leadership is related to other follower and organizational outcomes including job satisfaction, organizational commitment, and turn-over intent.

Source: Zimmerer, T. E. (2013). *Generational perceptions of servant leadership: A mixed methods study.* (PhD Doctoral Dissertation), Capella University, Minneapolis, MN. pp. 1-16

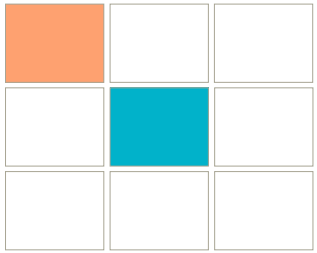
Alignment



Drawing Conclusions

The conclusions and implications discussion should focus on how the research findings will help fill the specific knowledge gap and help resolve the problem.

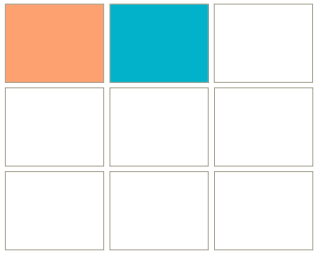
If it is designed and executed properly, the research process comes "full circle" and produces the new insights and knowledge that was identified in the knowledge gap.



Conceptual Framework

As with all the components of the research methodology, the problem should be consistent with the constructs, variables, relationships, and context factors identified in the conceptual framework.

Ultimately, the conceptual framework serves as a "touchstone" for the other eight components and provides a common basis for alignment and congruence throughout the research design.

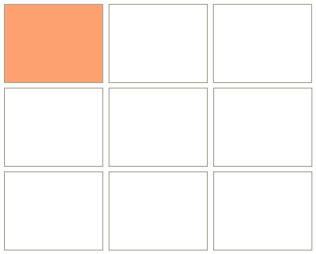


Purpose

The knowledge (theory) gap in the problem statement links directly to the purpose of the study.

The purpose statement should be focused on producing new knowledge and insights that will help fill the knowledge gap described in the problem and, in turn, help solve the problem.

DIY



Do It Yourself

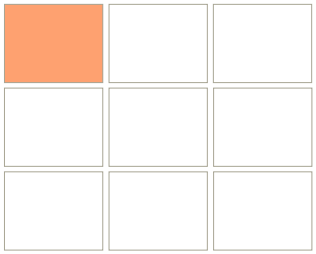
1. Identify a “real world” problem related to your field (e.g., management). While researchers in some fields study basic research without predetermined applications, management researchers (in particular scholar-practitioners) develop and test theories that can help inform or improve practice.

2. Describe the undesirable symptoms and dilemmas related to your research problem. Include numbers and specific facts to help clarify the extent and magnitude of the symptoms. Undesirable symptoms might simply be that current management methods are not producing the level of performance (results) that we desire.

3. Identify the knowledge gaps that need to be filled in order to help solve the problem. If we already have the empirical knowledge and theories necessary to solve the problem, there is no reason to conduct research. Instead we can simply apply what we already know to the new situation to solve the problem. A much cheaper solution.

The literature review actually begins here, in this first phase of the design process, and continues throughout the development of the study.

Resources



Problem Statement - Website contains additional information and links to external sources.

http://johnlatham.me/problem

Identifying a Research Topic - Many new researchers struggle trying to find just the right research topic. Sometimes they identify something that is interesting and important but not related to the theories in their field.

http://johnlatham.me/topic

My Research Agenda – If you are interested in research topics in the areas of leadership, leading transformation, organization and systems design, sustainability, performance excellence, or quality management, the leadership research framework and the associated papers might provide a few ideas.

http://johnlatham.me/researchagenda

Recommended Reading

The Research Problem pp. 114-120 in Creswell (2014).

Purpose

Purpose

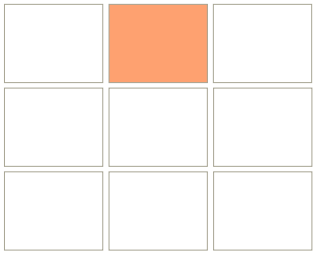
Examples

Alignment

D I Y
Do It Yourself

Resources

Purpose



The purpose should directly address the knowledge gap in the problem statement.

The purpose or desired deliverable will drive the research questions and subsequent design decisions.

Why?

Describe the new knowledge the study is expected to produce.

This is not the specific content or specific answer but rather the type of knowledge that will be produced.

Then describe what researchers and practitioners will be able to do better once they have the findings from this study.

The generic purpose of a research study is to produce new credible empirical knowledge and insights.

The question here is what is the specific deliverable, or contribution to the body of knowledge, that this study is expected to produce?

If you are working on a PhD dissertation, the the contribution to knowledge must include a contribution to theory in your particular field.

Key Components

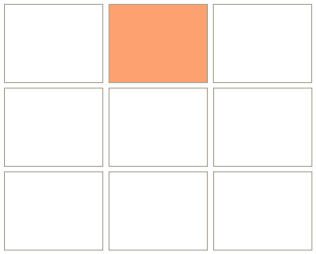
Dissatisfaction - There has to be some dissatisfaction with the current level of knowledge of the topic. Why are we motivated to conduct the study? This is a short summary that links to the problem.

Vision - Define a reason for, or goal of, the study. The vision should be focused on what can be done with the research output. How will it help?

Who and What – What are the key constructs and variables (independent, dependent, and moderating), the relationships, and the context and population that is being studied.

Design and Deliverable – What is the overall research design or approach? The design determines the type of new knowledge that will be produced. Describe the expected output of the study and identify of the overall approach (e.g., multiple case study).

Example A



Latham (2013)

Multiple case study using grounded theory methods based on in-depth interviews with CEOs (most senior leader) of 14 Baldrige recipient organizations.

Explore the experiences of strategic (upper-echelon) leaders who successfully transformed their organizations using the Baldrige Criteria for Performance Excellence (CPE) as a tool to guide the assessment and improvement cycles.

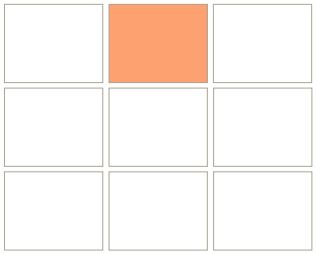
Develop a richer understanding of the processes, practices, and behaviors required to lead large-scale transformations.

Ultimately, the purpose was to “take an initial step in developing a more comprehensive understanding, description, and explanation of the key concepts associated with leading the transformation to performance excellence from the top” (Latham, 2013, p. 14).

The deliverable was a framework of inter-related concepts including forces and facilitators of change, leadership approaches (activities), leadership behaviors, individual leader characteristics, and organizational culture.

Source: Latham, J. R. (2013). A framework for leading the transformation to performance excellence part I: CEO perspectives on forces, facilitators, and strategic leadership systems. *Quality Management Journal, 20*(2), 22.

Example B



McAllister (2006)

The purpose of the study is to examine factors that contribute to users and developers misunderstanding requirements of software products.

To limit the scope of the study, software products are confined to information systems created in-house by an organization to be used within the organization.

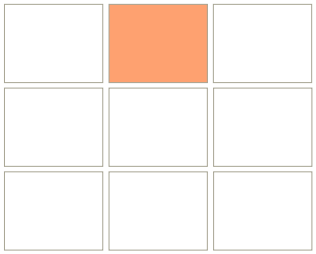
The findings of the study will lay a theoretical foundation for future research, allowing for the creation of more effective and efficient techniques for understanding requirements.

By studying what influences developers and users misunderstanding requirements, software project managers can begin seeking ways to minimize these influences, therefore minimizing misunderstandings.

The result is expected to ultimately enable the creation of software that better solves the intended problem, meets the expectations of its users, decreases development costs, and provides better schedule control.

Source: McAllister, C. A. (2006). *Requirements determination of information systems: User and developer perceptions of factors contributing to misunderstandings*. . (PhD), Capella University, Minneapolis, MN.

Example C



Zimmerer (2013)

Identify if exposure to servant leadership is RELATED to follower job satisfaction, organizational commitment, and turn-over intent.

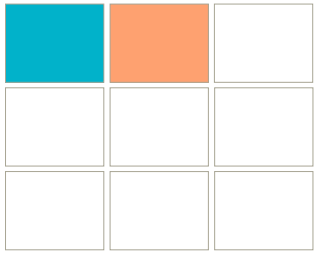
Understand HOW servant leadership resonates with followers from three main generational cohorts currently working in the US (baby boomers, gen y, gen x).

VALIDATE the servant leadership dimensions proposed by van Dierendonck (2011) and the associated survey instrument in the US.

Understand the nuances of HOW servant leadership is perceived by members of the three generational cohorts given their differing values, attitudes, goals, ambitions, and needs.

Source: Zimmerer, T. E. (2013). *Generational perceptions of servant leadership: A mixed methods study.* (PhD Doctoral Dissertation), Capella University, Minneapolis, MN. pp. 16-19

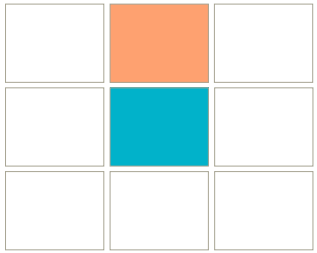
Alignment



Problem

The purpose statement should identify the new knowledge that will be produced that will help resolve the problem.

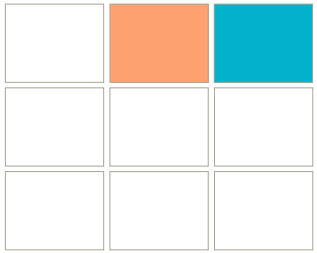
The alignment between the knowledge gap in the problem statement, and the knowledge the purpose will produce, needs to be an exact match and obvious to the reader of any documents produced.



Conceptual Framework

As with all the components of the research methodology, the purpose should be consistent with the constructs, variables, relationships, and context factors identified in the conceptual framework.

In other words the new **knowledge produced should be directly related to theories** about the constructs, relationships, and context factors described in the conceptual framework.

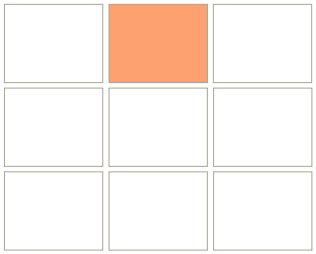


Research Questions

The purpose statement links directly to the research questions.

The research questions should be crafted so that the answers to the questions will produce the new knowledge and insights that will fulfill the purpose and, in turn, help solve the problem.

DIY



Do It Yourself

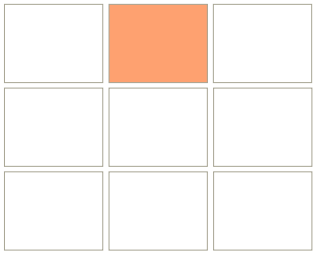
1. Link to, and expand on, the knowledge gap in the problem statement. The purpose of research is to produce new insights, knowledge, discoveries, so on and so forth to help “fill” the knowledge gap identified in the problem.

2. Identify the “tentative” overall research design (overall approach) and briefly clarify who and what will be included in the study. This will evolve as the other components are developed, so come back to the purpose often to keep it aligned with the other components. The type of research leads to the type of new knowledge that will be produced.

3. Identify the intended output of the study or the final “deliverable.” Describe the new knowledge and insights the study will produce that will help fill the knowledge gap identified in the problem statement. This is not the actual solution or result but rather the “type” of knowledge that will be produced.

The purpose of a PhD dissertation is to make a contribution to theory. Hopefully, that contribution will also be useful for improving practice.

Resources



Purpose Statement – This page is the landing page for the research purpose and includes additional information, examples, and external links.

http://johnlatham.me/purpose

Recommended Reading

Chapter 6 The Purpose Statement pp. 123-138 in Creswell (2014).

Questions

Research Questions and Hypotheses

Quantitative vs. Qualitative

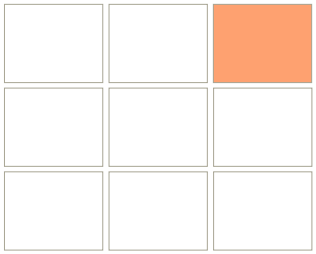
Examples

Alignment

D I Y
Do It Yourself

Resources

Questions



The research questions should be designed so that the answers to the questions will produce the knowledge identified in the purpose statement.

Research Questions

There is nothing in the research process more important than a good question.

If the questions are good, there is a chance that the study will be good. If the questions are not good, then there is no hope that the study will be good.

The “nature” of the questions range from very deductive focused questions about specific variables and relationships, to broad descriptive inductive questions about constructs and systems.

Questions alone are usually associated with theory building and exploratory studies which are often flexible and often qualitative or mixed.

Qualitative methods are usually too limited to be credible for theory testing. However, there may be a rare exception.

Hypotheses

Questions are just that - questions - and by themselves they do not include or predict an answer.

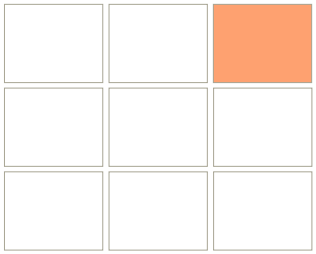
Hypotheses, on the other hand, are the predicted answers to the questions.

Questions + Hypotheses (or sometimes hypotheses alone) are usually associated with theory testing studies which are often fixed and quantitative.

A hypothesis is not simply a “guess.” Rather, it is a logical conclusion based on the results of previous research.

There are rare studies that are mixed in that they "finish" the theory building with a qualitative portion and then test a hypothesis based on that preliminary work.

Quantitative vs. Qualitative



Correlation maybe the most popular type of quantitative questions used by leadership, management, and organization researchers, primarily because they are possible to answer using survey instruments.

Quantitative Questions

Quantitative research questions ask about measurable variables and their relationships. While they do not establish causation, the reason we analyze correlations is we suspect that the relationship will provide insights we can act upon. (Yes, I know, some of the statistician purists are doing the "funky chicken" about now).

There are two popular types of quantitative questions in management and organization research.

What is the relationship between _____ (independent variable) and _____ (dependent variable)?

What is the difference between group A and group B (independent variable) with respect to _____ (dependent variable)?

Minimum of two variables and a relationship are required!

Qualitative Questions

Exploratory or discovery questions seek to get at the nature of some phenomenon and not only describe it, but also "explain HOW" it works.

For example, "HOW do leadership behaviors influence how followers feel about the meaning they find in their work?"

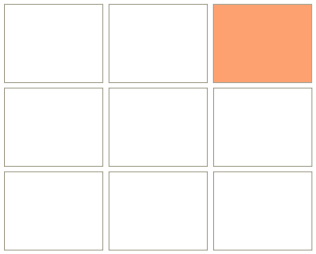
Occasionally, these questions do not identify specific factors or constructs and instead, ask to identify the factors or constructs.

For example, "WHAT key factors influence how employees feel about the meaning they find in their work?"

These WHAT questions often make for a highly inductive study calling for highly inductive methods such as grounded theory.

These are just a few examples, research questions come in a wide variety of "shapes and sizes."

Example A



Latham (2013)

Five qualitative research questions focused first on the identification of the factors and then how they influenced the transformation process.

1. **WHAT** are the key internal and external forces and facilitators for change and **HOW** do they influence the transformation to performance excellence?

2. **WHAT** are the key upper-echelon leadership approaches (processes and activities) and **HOW** do they influence the transformation to performance excellence?

3. **WHAT** are the key upper-echelon leadership behaviors and **HOW** do they influence the trans- formation to performance excellence?

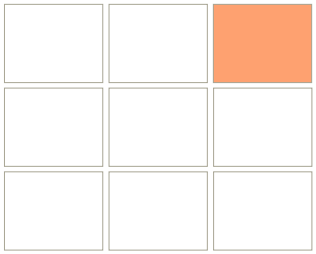
4. **WHAT** are the key upper-echelon individual leader characteristics **HOW** do they influence the trans- formation to performance excellence?

5. **WHAT** are the key organizational culture characteristics and **HOW** do they influence the transformation to performance excellence?

These questions led to a multiple case study using grounded theory methods.

Source: Latham, J. R. (2013). A framework for leading the transformation to performance excellence part I: CEO perspectives on forces, facilitators, and strategic leadership systems. *Quality Management Journal, 20*(2), 22. p. 15

Example B



McAllister (2006)

The first question is **qualitative** and focuses on identifying the factors that participants believe cause misunderstandings.

1. **Which** factors do users and developers believe **cause** misunderstandings about the requirements for information systems?

The second and third questions are **quantitative** and ask for measurement and analysis to determine the factors with the most impact and how that differs between the two groups.

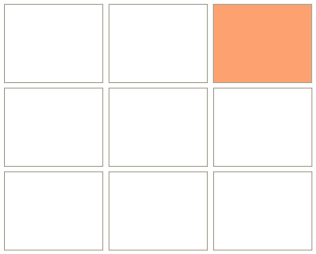
2. **Which** factors do users and developers believe have the **most impact** on misunderstandings?

3. What is the **difference** between users' and developers' perceptions of these factors?

This is an example of a sequenced mixed method study - QUALITATIVE then QUANTITATIVE.

Source: McAllister, C. A. (2006). *Requirements determination of information systems: User and developer perceptions of factors contributing to misunderstandings*. . (PhD), Capella University, Minneapolis, MN. pp. 5-6

Example C



Zimmerer (2013)

1. What is the **relationship** between levels of exposure of Baby Boomer, GenX, and GenY followers to servant leadership attributes as outlined by van Dierendonck (2011) and levels of follower job satisfaction, organizational commitment, and turnover intent?

   a. Is there a **difference** in the levels of job satisfaction when exposed to servant leadership among Baby Boomer, GenX, and GenY employees?

   b. Is there a **difference** in organizational commitment when exposed to servant leadership among Baby Boomer, GenX, and GenY employees?

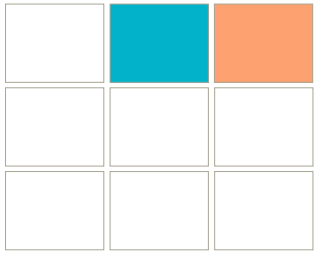
   c. Is there a **difference** in turnover intent when exposed to servant leadership among Baby Boomer, GenX, and GenY employees?

2. How can follow-up interviews further help **explain** the relationship between exposure to servant leadership attributes and job satisfaction, organizational commitment, and turnover intent as well as further elucidate if and how generations view servant leadership constructs through generationally influenced viewpoints?

Example of a sequenced mixed methods study QUANTITATIVE then QUALITATIVE.

Source: Zimmerer, T. E. (2013). *Generational perceptions of servant leadership: A mixed methods study.* (PhD Doctoral Dissertation), Capella University, Minneapolis, MN. pp. 22-25

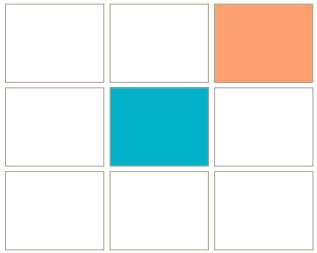
Alignment



Purpose

The research questions should be crafted so that the answers they produce will be the new knowledge and insights that will fulfill the purpose and, in turn, help resolve the problem.

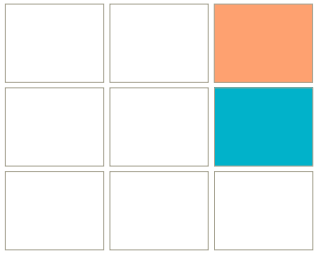
This link should be explicit and obvious.



Conceptual Framework

As with all the components of the research methodology, the research questions (constructs, variables, relationships, etc.) should be consistent with the constructs, variables, relationships, identified in the conceptual framework.

It helps tremendously if the words chosen for the constructs, variables, and context factors are consistent throughout the document(s).

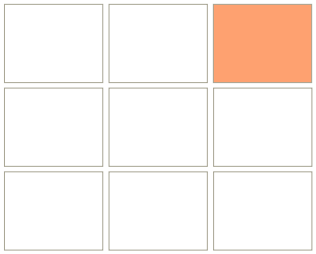


Literature Review

The constructs, relationships, and context factors in the research questions link directly to the theories discussed in the literature review.

The literature review should identify what we already know about the constructs, variables, relationships, and context factors identified in the research questions.

DIY



Do It Yourself

1. Identify the “type(s)” of questions that need to be answered to fulfill the purpose (qualitative, quantitative, or mixed).

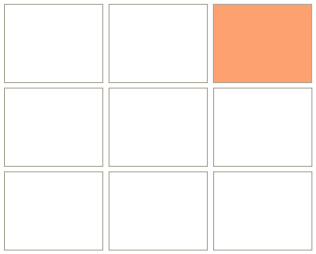
2. Develop the main research questions. Focus on questions that ask HOW the world works. How does one construct influence another construct? How is one variable related to another variable? WHAT are the factors that influence x, y, z…?

My perspective for this book is that we are designing the research to contribute to theory. For me, theory is explanation about HOW something works. Consequently, a simple description of a phenomenon is not, by itself, a contribution to theory. It can be a good first step and "thick rich description" is often a first step toward building a theory. But, without the next step of analysis that produces an explanation, we are left with an anecdote vs. a theory.

3. Develop hypotheses as appropriate. If the questions are quantitative and the level of empirical knowledge is sufficient, develop hypotheses to test. Hypotheses come in pairs. Ha is the “Alternative” hypothesis which is sometimes called the research hypothesis. Ho is the “Null” hypothesis and is the hypotheses where there is NO relationship or difference. “Null” means “None” or “Zero.” Note: We always test the Null hypothesis and either reject or fail to reject the Null.

The quality, credibility, and utility of the study depends on the research questions. Get this wrong and the rest is a waste of time!

Resources



Research Questions – This page includes additional information on research questions and hypotheses including external links.

http://johnlatham.me/questions

Recommended Reading

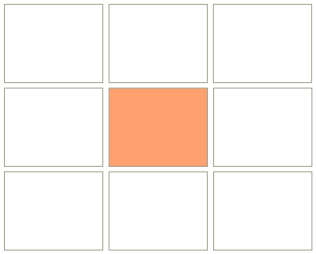
Chapter 7 Research Questions and Hypotheses pp. 139-153 in Creswell (2014).

Read Chapter 2 “Thinking like a Researcher” pp. 13-19 in Bhattacherjee (2012).

http://scholarcommons.usf.edu/oa_textbooks/3/

Conceptual Framework

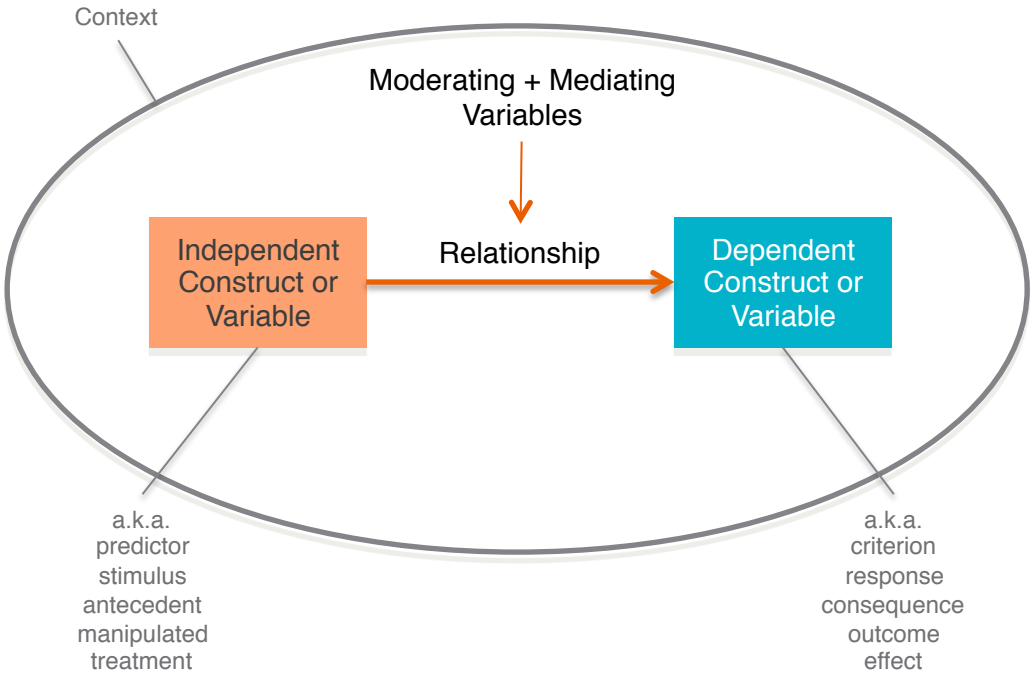
Conceptual Framework



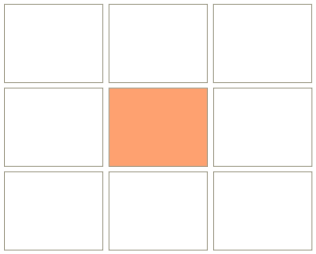
"There is nothing more practical than a good theory."
W. Edwards Deming

A diagram of the topic is literally worth more than 10,000 words.

Experience suggests that when developing the research questions, it is very beneficial to also diagram the problem or topic. This is often called a conceptual or theoretical framework. According to Miles and Huberman (1994), "A conceptual framework explains, either graphically or in narrative form [both are much preferred], the main things to be studied - the key factors, constructs or variables - and the presumed relationships among them" (p. 18). The task here is to create a diagram of the topic that includes clearly defined constructs or variables (independent, dependent, etc.) along with the relationships of those constructs and key factors that influence the constructs and the relationships. This task is often done in conjunction with the development of the research questions and it is an iterative process.



Conceptual vs. Theoretical



Conceptual Framework

The process of developing a framework for a topic usually begins with a conceptual framework.

A conceptual framework is typically comprised of constructs (e.g., trust, satisfaction, commitment).

While the constructs might be measurable, at this point in the process they are not defined in measurable terms.

Presumed relationships between the constructs are identified but are often multi-directional, dynamic, and complex.

The context and other factors that influence the situation are also identified and depicted on the framework.

A conceptual framework is often vague due to a lack of existing empirical knowledge about the phenomenon.

Theoretical Framework

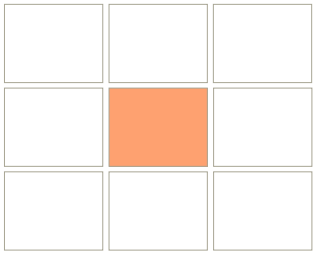
If you discover during the literature review that the constructs and relationships in your conceptual framework are measurable using quantitative methods, you may be able to transition your conceptual framework into a theoretical framework.

A theoretical framework has the same basic components and structure as a conceptual framework. However, a theoretical framework is more precise and specific with measurable variables in place of constructs.

If there is enough known about the variables and relationships to support the development of hypotheses, a theoretical framework is appropriate.

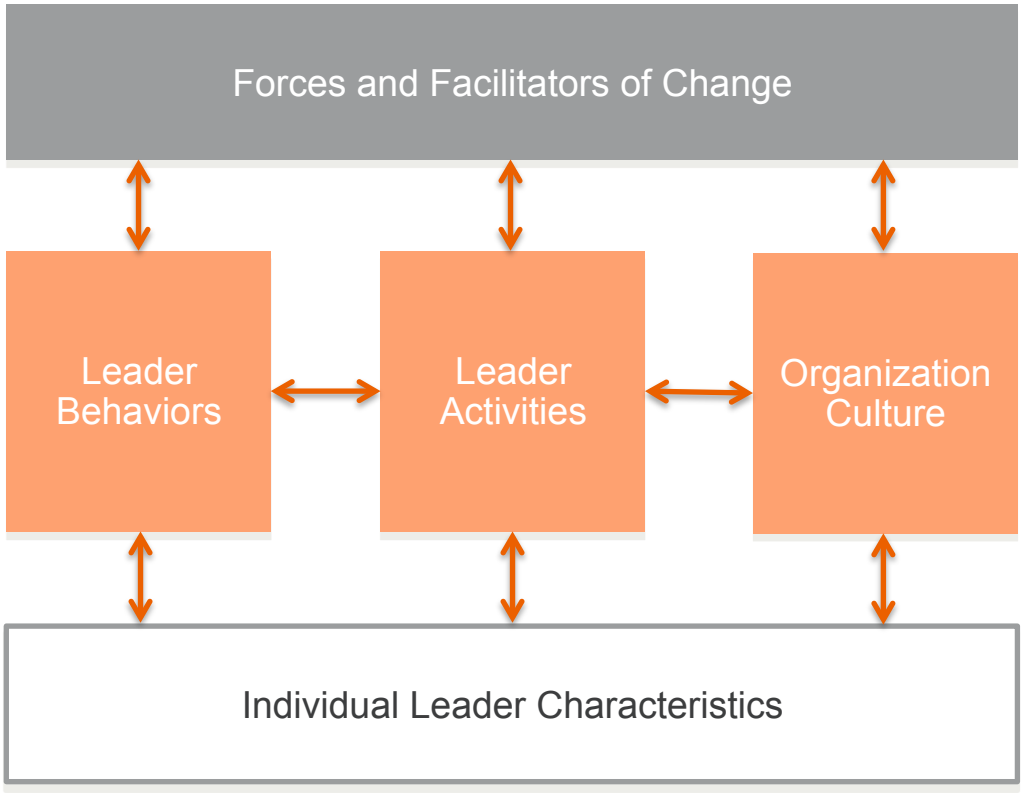
The other “T” components (problem, purpose, and research questions) must align with the framework and the nature of the constructs, variables, and relationships.

Example A



This qualitative study utilized a conceptual framework focused on five "buckets" or categories of factors that influence the process of organizational transformation.

Latham (2013)

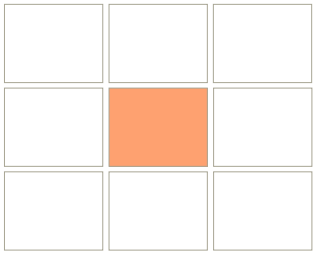


The study began with three key leadership constructs and one large process outcome: (a) leader activities (what leaders do); (b) leader behaviors (how they do it, style); (c) individual leader characteristics and (d) organizational transformation process.

As the research unfolded other constructs were added: (a) internal and external forces and facilitators of change and (b) organizational culture factors.

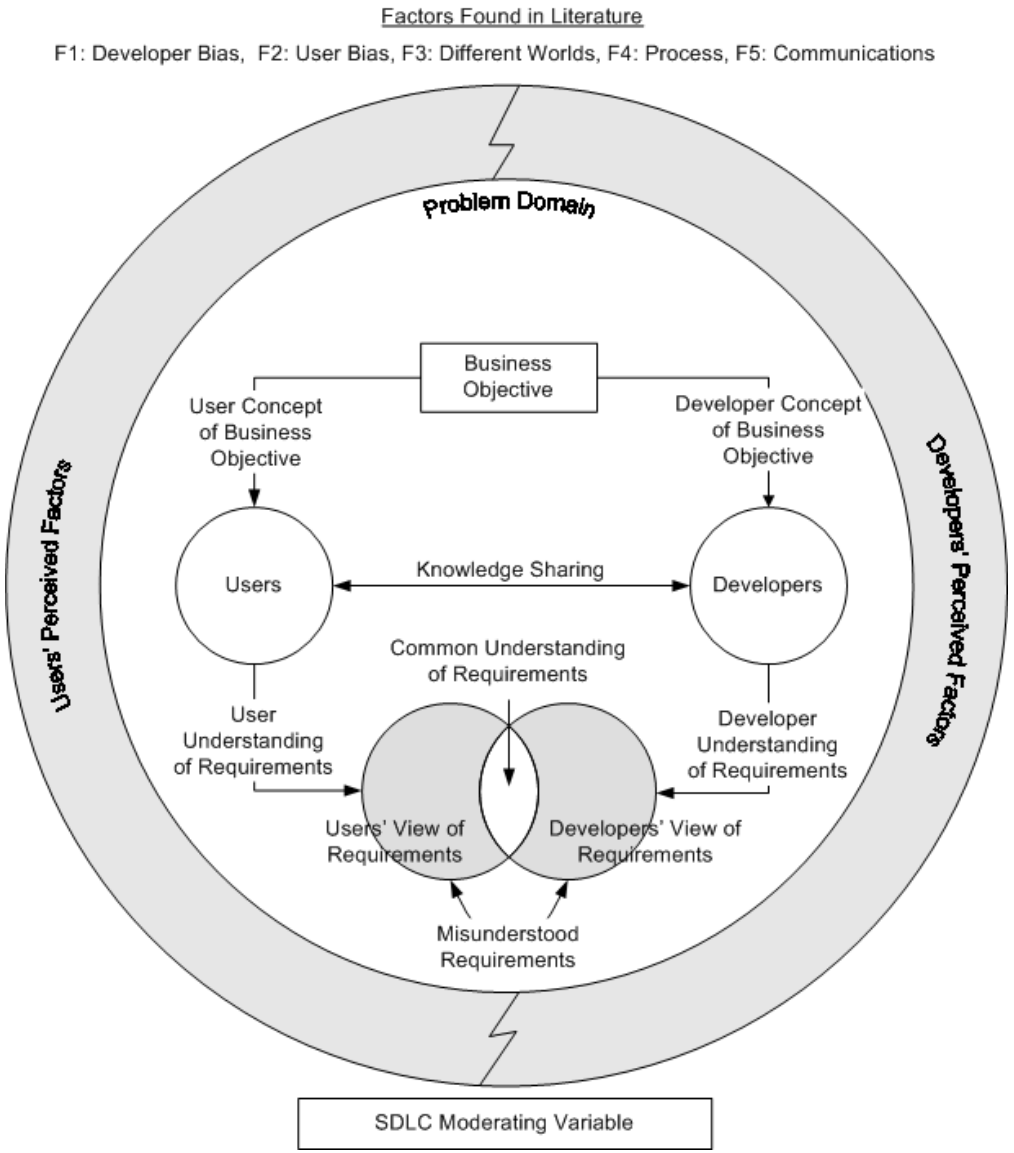
Source: Latham, J. R. (2013). A framework for leading the transformation to performance excellence part I: CEO perspectives on forces, facilitators, and strategic leadership systems. *Quality Management Journal, 20*(2), 22. p. 17

Example B



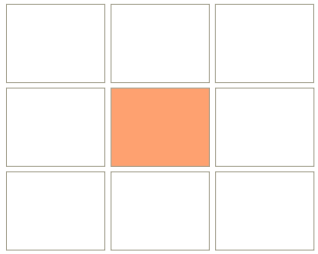
This mixed methods study used a conceptual framework to guide the identification and subsequent weighting of the factors related to misunderstanding of requirements.

McAllister (2006)



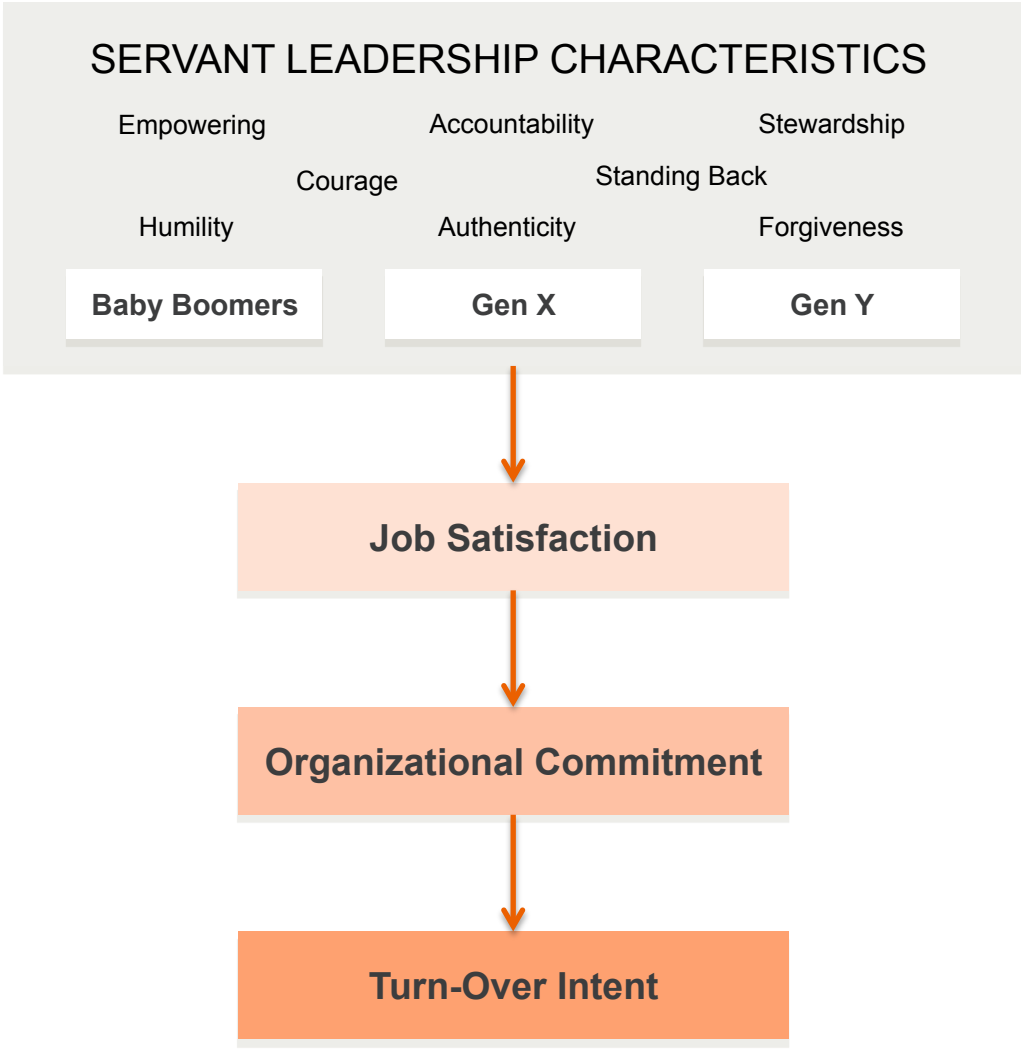
Source: McAllister, C. A. (2006). *Requirements determination of information systems: User and developer perceptions of factors contributing to misunderstandings.* (PhD), Capella University, Minneapolis, MN. p. 7

Example C



This mixed methods study used a theoretical framework to guide the quantitative analysis of the variables and relationships and subsequent qualitative exploration of the results.

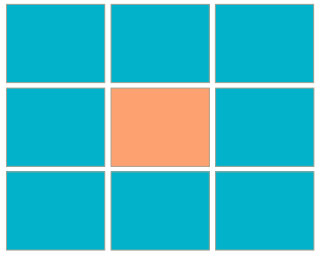
Zimmerer, 2013



Servant Leadership Dimensions and Organizational Outcomes

Source: Zimmerer, T. E. (2013). *Generational perceptions of servant leadership: A mixed methods study.* (PhD Doctoral Dissertation), Capella University, Minneapolis, MN. p. 34

Alignment



The conceptual framework is the "touchstone" for the alignment of all research canvas components and sub-components.

Problem - The problem should be related to the constructs, variables, relationships, and context, identified in the conceptual framework.

Purpose - The purpose should to produce new knowledge and insights related to the constructs, variables, relationships, and context factors identified in the conceptual framework.

Questions - The research questions should include the same constructs, variables, relationships, and context identified in the conceptual framework.

Literature Review - The literature review should address the theories that are related to the construct, variables, relationships, and context identified in the conceptual framework.

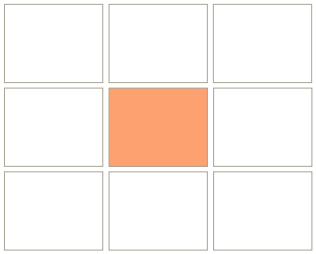
Overall Approach - The overall research approach should be appropriate for the constructs, variables, relationships, and context identified in the conceptual framework.

Data Collection - The data collection methods should be appropriate for the constructs, variables, relationships, and context identified in the conceptual framework.

Data Analysis - The data analysis methods should be appropriate for the relationships identified in the conceptual framework.

Drawing Conclusions - The conclusions should be appropriate for the constructs, variables, relationships, and context identified in the conceptual framework.

DIY



Do It Yourself

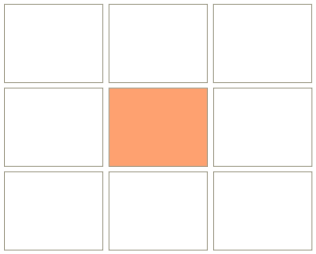
1. Identify and graphically depict the key constructs (or variables) in the research questions. There are two basic options for this step – analog (sticky notes) or digital (diagramming software). Start with a blank page and simply place the sticky notes or rectangle shapes on a blank page. Or if you have a white board, even better. Any placement or organization will do for now. You can arrange them later.

2. Identify and graphically depict the key relationships between the variables. Once the relationships are identified, organize the constructs so that the relationships can be depicted without too many lines crossing. This might take several iterations.

3. Identify and graphically depict the key context factors. Finally, overlay the other factors including context onto the diagram to show how these influence the constructs and relationships.

Don't get too "attached" to the first version of your diagram. The framework usually evolves throughout the journey as your thinking evolves. Keep all versions in case you need to backtrack!

Resources



Conceptual Framework – This page contains additional information, examples, and external links.

http://johnlatham.me/conceptualframework

Recommended Reading

Read “Building a Conceptual Framework” pp. 18-22 in Miles, M. B. & Huberman, A. M. (1994).

Read Chapter 2 “Thinking like a Researcher” pp. 13-19 and Ch 4 “Theories in Scientific Research pp. 28-37 in Bhattacherjee (2012).

http://scholarcommons.usf.edu/oa_textbooks/3/

Literature Review

Research "Stream"

Literature Review

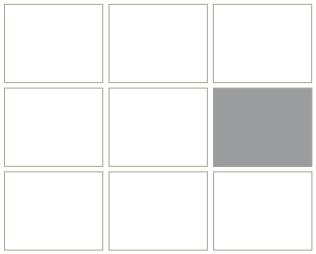
Examples

Alignment

D I Y
Do It Yourself

Resources

Research "Stream"



Determine how much we already know about the constructs, variables, concepts, and relationships identified in the conceptual or theoretical framework and research questions.

Do Your "Homework"

Have you ever been on a project or problem solving team that was performing well, when all of a sudden, a new member was added to the team?

What happened to the performance of the team?

My experiences are pretty consistent, the team went back to the "storming" phase of team development.

Why is this so common?

One explanation is that the new member doesn't have the same knowledge and understanding of the problem, project, and where the team has been.

Research begins with our existing knowledge as described in the peer reviewed scientific literature and ends with a contribution back to that body of knowledge.

Join the Dialogue

When we decide to conduct research and contribute to the body of knowledge, we are joining a dialogue that is already in progress.

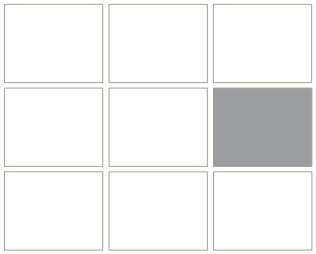
This ongoing dialogue is documented in the research-based (peer reviewed) scholarly journals, dissertations, and other research reports.

To avoid causing "storming" in the ongoing discussion, a potential contributor to the discussion first needs to come "up to speed" on the current state of the discussion.

This is accomplished by developing a comprehensive literature review based on a comprehensive annotated bibliography.

There is no easy path. You have to read and analyze the peer reviewed literature on your topic. "Elbow grease" and tenacity are keys to a successful literature review.

Literature Review



Don't be timid – point out the limitations of all sources including those that are famous!

This is critical to a credible study.

The Basics

Ideally, the literature review includes both recent contributions and classic or foundational contributions.

The majority of the literature review should be recent contributions (last five years or so) to ensure that you are up to date on the discussion and can determine the next "sentence" that needs to be added for the dialogue to move forward.

Include key classic contributions to make sure that you are building on the main findings of theoretical basis of the topic.

One technique that many researchers use is to find some key current articles and then follow the "trail" backward by going to the articles in the reference list.

You can also go the other direction and follow the trail forward by finding the papers that cited the few articles you used to begin the search.

Critical Review

A solid lit review presents the multiple viewpoints and findings objectively.

The task is an objective and critical review of all the **key findings** and contributions related to your topic found in the research.

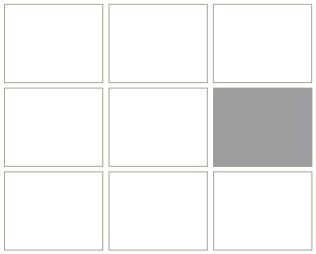
This critical review includes not only the findings from the literature, but also a description of the strengths and limitations of the findings.

The literature review should take the discussion to the next level and "set the stage" for your research.

A literature review does this by drawing conclusions from the discussions that clearly establish the basis for the research questions and, when appropriate, the hypotheses.

For the purposes of the research canvas, the literature review is only a brief summary of the key theories and findings in the scientific record.

Example A



The large number of competing theories, along with no clear candidate theory to test in the research context, drove an inductive grounded theory approach.

Latham (2013)

Leadership is a “messy landscape” with more theories today than 50 years ago. We keep adding theories but seldom actually eliminate any. Consequently, we have made little progress toward narrowing the number of theories down to a reasonable number that explain the majority of leadership phenomena.

There is a wide variety of leadership theories from Fiedler’s Leadership Contingency Model and Path-Goal Theory to the popular Transformational and Transactional leadership theories to Strategic Leadership and Upper Echelon theories.

There is little consensus on what effective leadership is among both practitioners and researchers.

Many tested theories but many questions remain. Many inconclusive results and many inconsistent results in different contexts. We have a limited understanding of how the nuances of context influences leadership effectiveness.

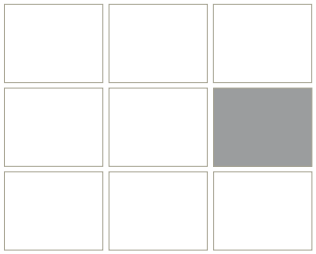
The majority (88%) of leadership studies are quantitative and most are theory testing. Unfortunately, few qualitative studies have been published in credible journals and many of those are deductive explorations of existing theories.

Several practitioner case studies describing their organization transformation experiences related to Baldrige but few empirical studies on the subject.

Not clear where one should start – with what theory or theories???

Source: Latham, J. R. (2013). A framework for leading the transformation to performance excellence part I: CEO perspectives on forces, facilitators, and strategic leadership systems. *Quality Management Journal, 20*(2), 22.

Example B



The lack of an established list of factors led to a sequential mixed methods study with the first phase focused on developing the list of factors that could then be weighted and compared.

McAllister (2006)

Why Understanding Requirements is Important

The 2002 Standish Chaos report found that 66 percent of IS projects fail, a number that has varied little since their original report in 1994.

Lack of user input, misunderstood requirements, and changing requirements were cited as the key factors for project failures.

A European study to improve the development of quality software found the two main factors were “requirements specifications” and “managing customer requirements.”

Misunderstandings Between Users and Developers

A correct, complete understanding of software requirements is the foundation for quality software and reduces the cost of a software development project. However, communication problems between stakeholders, particularly between users and developers, make requirements engineering (RE) difficult.

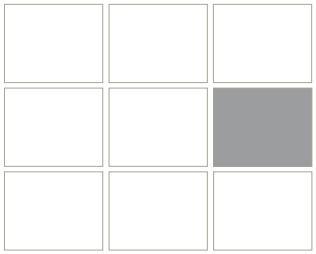
A qualitative study of communication in RE found communication issues were a key contributor to many requirements misunderstandings and project failures.

Requirements determination is a communication intensive process.

The differences between users and developers creates additional communication issues.

Source: McAllister, C. A. (2006). *Requirements determination of information systems: User and developer perceptions of factors contributing to misunderstandings*. . (PhD), Capella University, Minneapolis, MN. pp. 13-58

Example C



The current state of the key theories and instruments leads to a mixed methods study to validate the instrument in the US context to see if there is the expected difference among the three generational cohorts.

Zimmerer (2013)

There are many leadership theories, including the popular and extensively researched, Transformational and Transactional Leadership. Unfortunately, these theories don't always work well with the current workforce.

Servant leadership was first introduced in 1970 by Robert Greenleaf. Since that time several research studies have been conducted. However, until Dirk van Dierendonck, no one had synthesized these diverse efforts and models. Dirk van Dierendonck developed and validated a new survey in the UK and Netherlands.

Generational cohort theories date back to the mid 19th century and Auguste Comte. These theories propose that the socio-cultural environment of humans can and does shape the members' world views.

Karl Mannheim put forth a framework in 1928 that is the basis for much of our research today. It suggests that generational cohort groups have values, attitudes, and approaches to life and work specific to their particular group.

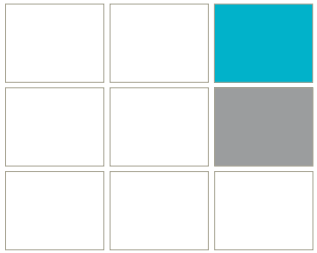
The current US workforce is primarily comprised of three generational cohorts, each with different values, attitudes, and approaches to life and work.

Given the characteristics of servant leadership in the van Dierendonck synthesis model it appears that servant leadership may be a viable alternative to the current situation.

We would expect servant leadership to be more effective than other leadership approaches but there will still be differences among the generational cohorts.

Source: Zimmerer, T. E. (2013). *Generational perceptions of servant leadership: A mixed methods study.* (PhD Doctoral Dissertation), Capella University, Minneapolis, MN. pp. 37-82

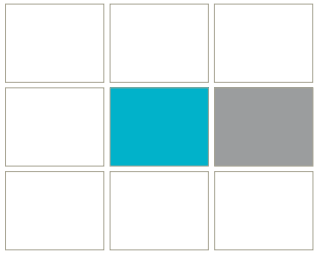
Alignment



Questions

The literature review describes what we already know about the theories related to the constructs, variables, relationships, and context factors identified in the research questions.

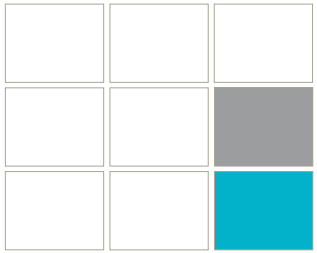
A hypothesis is not a “wild guess” - it is a logical conclusion based on the previous research findings identified here in the literature review.



Conceptual Framework

As with all the components of the research methodology, the literature review should address the constructs, variables, relationships, and context factors identified in the conceptual framework.

The literature review typically informs the development of a new or revised conceptual framework.

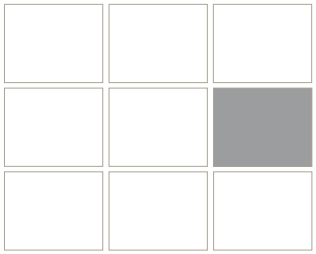


Overall Approach

The literature review establishes the current level of empirical knowledge on the topic.

The level of existing knowledge, and the decision to include or not include hypotheses, will drive the appropriate overall research approach.

DIY



Do It Yourself

One BIG mistake that many new researchers make is to start writing the literature review before they are ready. Before you start to write “pretty” paragraphs, there are at least four preliminary steps to complete.

1. Create a preliminary outline of the literature review and use it as a guide as you collect and analyze the literature. I often use a mind map to help explore the key concepts, variables, and relationships.

2. Dig deep into the “peer-reviewed” literature for each construct, variable, and relationship and create an annotated bibliography.

3. Then you can use tables (I use spreadsheet software for this) to create matrices in order to analyze the various findings. Note: The most recent version of NVivo also allows you to code PDF versions of papers.

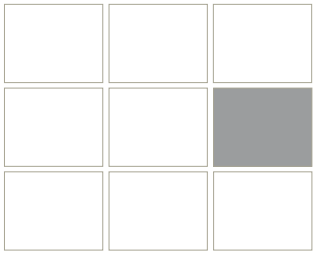
4. Then you can develop a more detailed outline based on the analysis of the matrices or NVivo analysis.

5. Then and only then will you be ready to write "pretty" paragraphs.

Once the literature review is complete, the conceptual framework should be revised (as necessary) based on new insights gained from the analysis of the literature and previous research findings.

Seldom is a comprehensive literature review accomplished as part of the initial development of a research canvas. Consequently, revisit and revise the research canvas as you develop a comprehensive literature review.

Resources



Literature Review – More information, examples, and external links related to the literature review.

http://johnlatham.me/literaturereview

What is "Peer Reviewed?" This short video from the Newman Library provides a good overview of the meaning of peer reviewed.

http://johnlatham.me/peerreviewed

How to Read Academic Research - Once you understand what peer reviewed articles are and how they differ, watch this great YouTube video.

http://johnlatham.me/readresearch

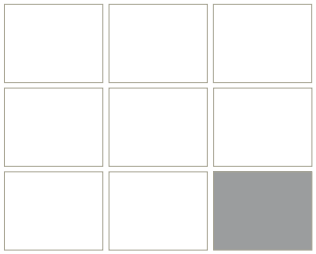
Recommended Reading

Read Ch 4 "Theories in Scientific Research pp. 28-37 in Bhattacherjee (2012).

http://scholarcommons.usf.edu/oa_textbooks/3/

Overall Approach

Overall Approach



Hint: if you are using a hypothesis then the overall approach should be a deductive, fixed, quantitative design.

Research traditions vary depending on the particular field, discipline, and school.

Choosing an Approach

At this point in the design process, it should be clear which "category" of approaches is most appropriate for your particular study.

The most appropriate approach is based on the problem, purpose, and research questions. In addition, the "nature" (epistemology and ontology) of the constructs and relationships identified in the research questions and conceptual framework will influence the most appropriate research approach.

For example, If you have constructs that are not measureable, and sometimes not even known at this point, then you are limited to qualitative inductive approaches.

If, on the other hand, you have measureable variables that are predictable and less dependent on context then quantitative deductive approaches are likely to be appropriate.

How Much We Know?

How much we know about the research questions, constructs, and relationships, and the decision whether to use a hypothesis, influences the "menu" of research approaches appropriate for you study - qualitative, quantitative, mixed.

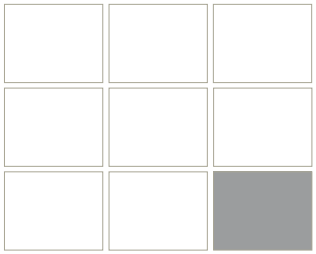
How much do we know about your topic – the constructs, variables, and relationships?

If little is known about the topic then it might be a theory building situation.

However, if much is known about the topic in general, it might be more appropriate to test the theory in a new context or with a new population.

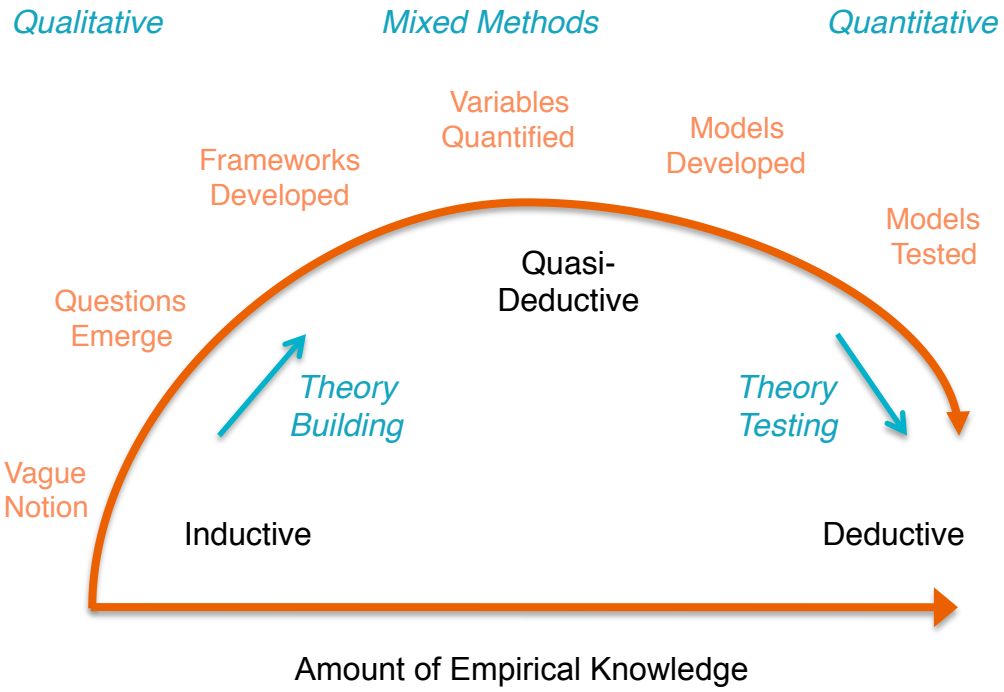
The Research Arc is a visual depiction of how the level of empirical knowledge can influence the overall approach.

Research Arc

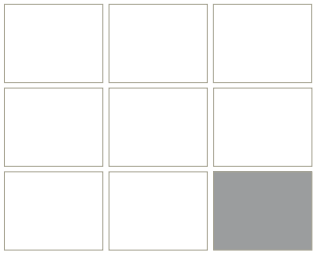


While it is presented in a linear fashion, the development of knowledge is a messy, iterative, often unpredictable journey with many twists and turns.

The research arc visually depicts the relationship between the amount of empirical knowledge that we have a phenomenon and the applicable research approach. When we know very little about a phenomenon we inductively build a theory from a vague notion to the identification of the key constructs to developing frameworks. Due to the "nature" (epistemology and ontology) of some phenomena, in some situations we never get to theory testing. However, if the constructs and relationships are measureable, we can test the frameworks and models using quantitative methods. Sometimes we go back to qualitative methods to explore quantitative results that we don't fully understand. It is often an iterative process with many "twists and turns."



Quantitative Approaches



There are two common quantitative situations. Either...
You are measuring the variables at one point in time.
-- OR --
You are measuring the variables, then performing an intervention, and then measuring the variables again.

Single Point in Time Options

Survey research that measures the variables at a particular point in time, appears to be the most common management research approach published in top-tier journals.

These studies either ask about how the participant or phenomenon is today, or how it was at some point in the past (*ex post facto*).

These studies are often characterized as correlation studies and tend to focus on analyzing the relationships between two or more measureable variables.

There are other options that utilize existing measures from operations, sales, finance, etc. These approaches often make use of advanced statistical methods to explore and test theories related to large data sets. Longitudinal studies are similar to experiments in that they include multiple measurements with events in between.

Experimental Options

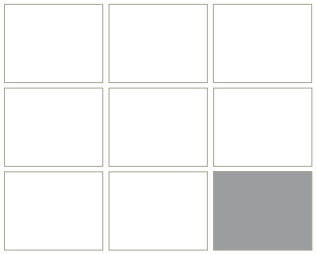
A second common option is to conduct an experiment or quasi-experiment.

While we seldom conduct “true” experiments in management and organization research, it is the “gold standard” of research. However, a true experiments typically require randomized selection and assignment of participants and treatments.

More common in management studies are quasi-experiments where we do not use randomized selection or assignment.

When it comes to experiments, the main issue we face in management and organizational research is our “lab” is typically the actual organization which includes many uncontrollable variables and many idiosyncratic contextual factors that influence the measurement of the variables and analysis of the results.

Qualitative Approaches 1



Case Study

The case study is by far the most common qualitative approach used and published in business, organization, and management research.

There are two basic types of case studies but both include an in-depth treatment of a particular case.

First, it can be the overall structure or design of a study that incorporates other methods including quantitative, qualitative, and mixed. Second, it can be a specific methodology as described by Yin (2014).

This flexibility makes the case study a useful approach for management researchers who are often studying topics that include the intersections between process, people and culture.

For more on the case study approach I recomend Eisenhardt (1989) and Eisenhardt and Graebner (2007).

Grounded Theory

While qualitative research in general tends to be inductive, or at the most quasi-deductive, grounded theory is possibly the most inductive of the four approaches presented here.

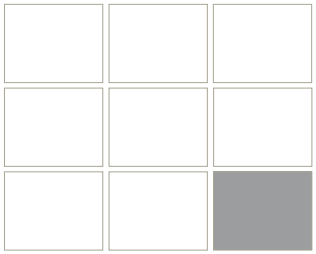
Frameworks, models, and theories are developed by analyzing the data "from the ground up."

This may be one of the most difficult approaches for a new researcher use, especially when working at a distance (virtually) from their research supervisor and coach.

Grounded theory can be the best option when faced with situations where you don't know all the factors that influence the phenomenon being studied.

Case studies sometimes incorporate aspects of grounded theory when appropriate (e.g., Latham, 2013). For more on grounded theory read Corbin and Strauss (1990).

Qualitative Approaches 2



Phenomenology

Phenomenology is focused on the participants lived experiences from their point of view.

This type of research is interested in specific concrete experiences and how the participants perceive and feel about those experiences.

While this approach is not the most common approach used for business, organization, and management research, it is an appropriate option when the focus of the study is on how organization practices, processes or policies impact the people inside and outside the organization and how they feel about their experiences.

For example, how does downsizing impact the employee and their family?

For more on phenomenology read Giorgi (1997).

Ethnography

Ethnography is typically focused on exploring and understanding groups and culture. Or, how people do certain tasks and activities.

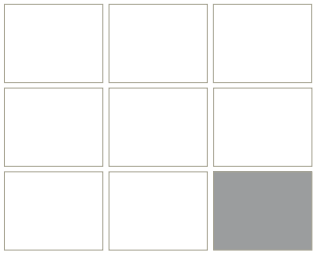
It often used in product design but is not very common in management research in general.

This type of research is often used by cultural anthropologists such as Margaret Meade.

It typically requires extended field research with multiple visits to the particular site/group. For this reason, pure ethnographic approaches are not common for doctoral students in business, organization, and management who typically want to complete their study in a reasonable amount of time.

Like grounded theory, it is highly inductive, often starting with less structure than a typical grounded theory study.

Example A



Latham (2013)

This study used a theory building, qualitative multiple case study design.

Inductive analysis was based on in-depth interviews with CEOs who led successful organizational transformations. Individual cases were analyzed prior to cross-case analysis.

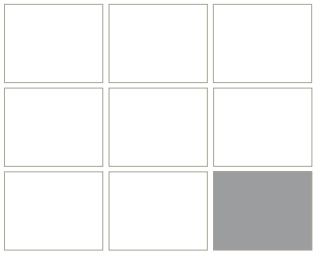
The study began with few preconceived constructs. Consequently the approach incorporated grounded theory methods (Corbin & Strauss, 1990) into a case study “super structure” (Eisenhardt, 1989).

Overall Case Study Design = Eisenhardt’s nine-step Approach

1. Getting Started
2. Selecting Cases
3. Crafting Instrument and Protocols
4. Entering the Field
5. Analyzing Within-Case Data
6. Searching for Cross-Case Patterns
7. Shaping Hypotheses
8. Enfolding Literature
9. Reaching Closure

Source: Latham, J. R. (2013). A framework for leading the transformation to performance excellence part I: CEO perspectives on forces, facilitators, and strategic leadership systems. *Quality Management Journal, 20*(2), 22.

Example B



McAllister (2006)

The nature of the research was theory-building and was conducted as an exploratory mixed-methodology that began with a qualitative investigation followed by a quantitative investigation. A conceptually similar mixed-methodology was used by Havelka, Sutton, and Arnold (1998), who identified factors related to information system quality. The purpose of the qualitative investigation was to identify factors that influence users and developers misunderstanding requirements.

The nominal group technique (NGT) was used with six small groups of six to 12 participants each. Pairs of small groups were formed from users involved in requirement specification and developers of the same information system, resulting in three pairs. The small groups were from companies engaged in the development of IS for internal use and willing to participate in the research. A total of three companies were used. NGT identified the factors involved in misunderstanding requirements from the perspective of users and developers.

A quantitative analysis was performed to understand the importance users and developers place on each of the factors. Two survey instruments were created to weight and rank the factors. The results from each participant were aggregated to create the absolute weightings of factors for users and developers. Analytical Hierarchy Process (AHP) was used to weight the factors.

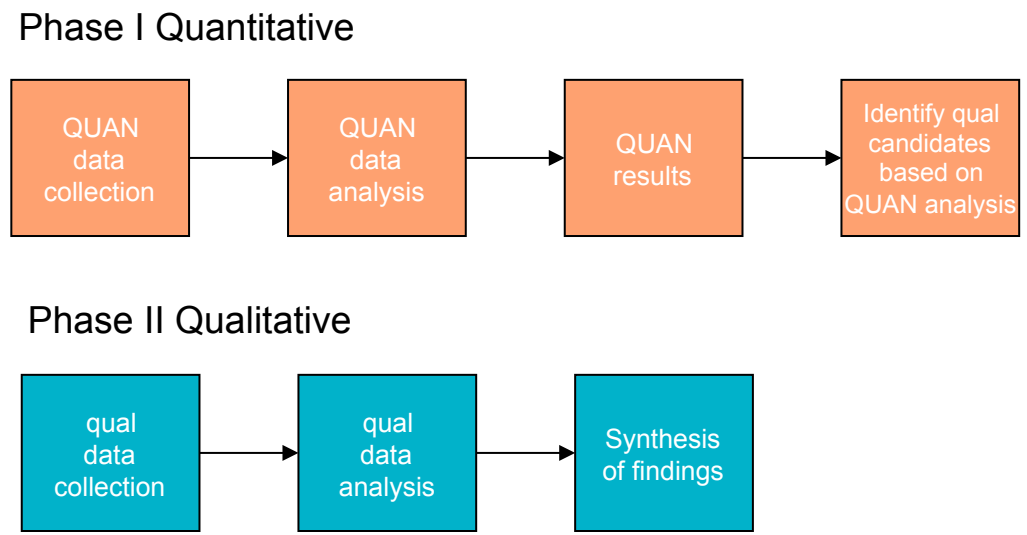
Source: McAllister, C. A. (2006). *Requirements determination of information systems: User and developer perceptions of factors contributing to misunderstandings*. . (PhD), Capella University, Minneapolis, MN.

Example C

Zimmerer (2013)

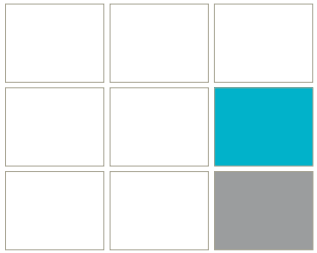
Sequential non-experimental explanatory mixed methods approach combining quantitative and qualitative research methods.

The dominant phase was the quantitative phase with the qualitative phase following up on the results from the quantitative study: QUANT → qual.



Source: Zimmerer, T. E. (2013). *Generational perceptions of servant leadership: A mixed methods study.* (PhD Doctoral Dissertation), Capella University, Minneapolis, MN. p. 100

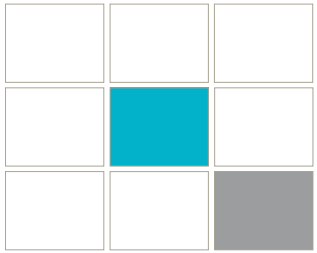
Alignment



Literature Review

The selection of the overall approach should be, in part, based on the level of existing knowledge identified in the literature review.

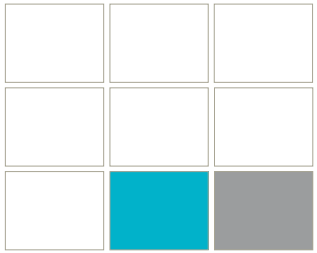
The literature review is the primary input to the Research Arc which helps to determine the appropriate overall approach options.



Conceptual Framework

As with all the components of the research methodology, the overall approach should be appropriate for the constructs, variables, relationships, and context factors identified in the conceptual framework.

The nature (ontology and epistemology) of the constructs and relationship drives the overall approach options.

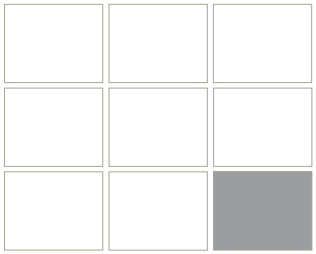


Data Collection

The overall approach should provide clear guidance for the rest of the research design and methodology: data collection, data analysis, and drawing conclusions.

The overall approach will dictate the "menu" of data collection options that are available including the methods, instruments, and sampling strategy.

DIY



Do It Yourself

1. Identify the level of “empirical” knowledge that exists on the constructs and relationships from the literature review.

    a. What do we know about the key constructs and factors?

    b. Do we know how to measure them?

    c. Have the relationships been analyzed in previous research studies?

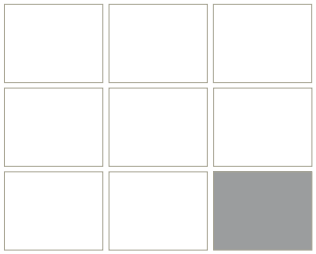
2. Identify the “type” of knowledge needed to fulfill the purpose and help solve the problem. What kind of knowledge is required?

3. Using the information from steps 1 and 2 above, identify the options and select an approach based on input from the “Research Arc.”

4. Describe the key aspects of the approach.

Decisions made here will drive the remainder of the methodology!

Resources



Overall Approach – Website page with additional information, examples, and external links related to choosing an overall approach.

http://johnlatham.me/approach

Cargo Cult Science – Thoughts from one of my favorite researchers Richard P. Feynman on science and the “pleasure of finding things out.”

http://johnlatham.me/cargocultscience

Bias and Validity Threats to Qualitative Research – If you are planning to conduct qualitative research check out this blog post.

http://johnlatham.me/biasandvalidity

Recommended Reading

Read “Types of Scientific Research” pp. 7-10 and Ch 5 Research Design pp. 38-44 in Bhattacherjee (2012).

http://scholarcommons.usf.edu/oa_textbooks/3/

Data Collection

Triangulation

Measurement

Levels of Data

Sampling

Examples

Alignment

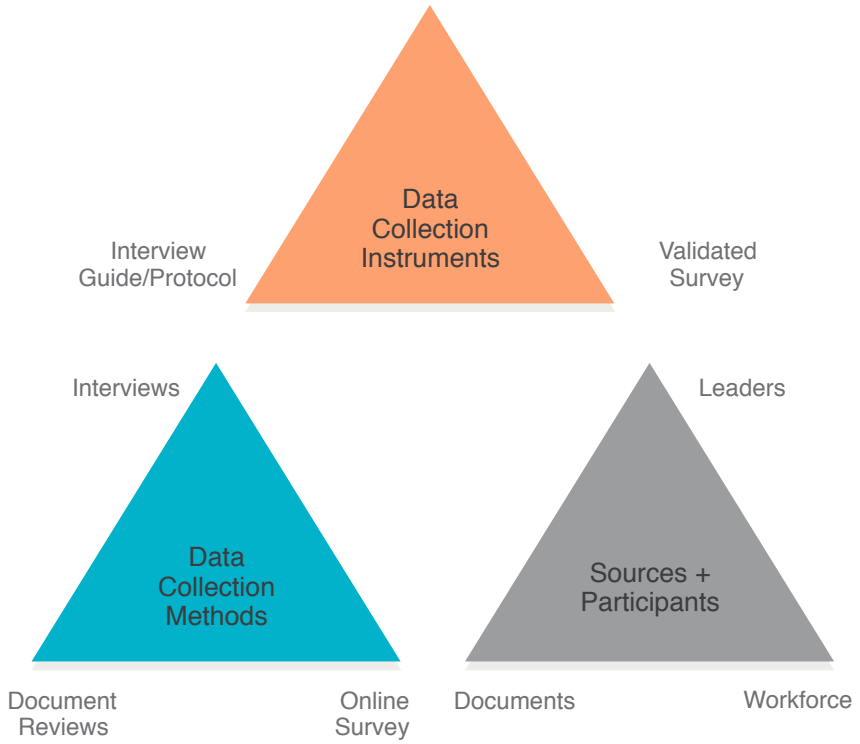
D I Y
Do It Yourself

Resources

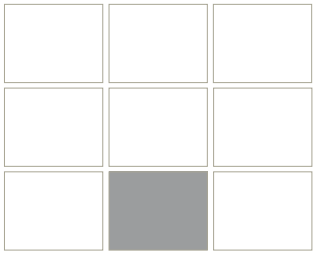
Triangulation

Triangulation is a technique used to mitigate the bias and validity threats associated with research. The concept of triangulation originated with surveyors and the process of using known geographic points to determine a location. One survey point provides a line and we know we are somewhere on (or near) that line. Two points provides an “X” intersection point but given the measurement error we could be in any one of four quadrants around the X. The intersection of three points creates a triangle in one of four quadrants that is smaller than the area around the X. Each data point adds additional accuracy to the measurement of our location. This same concept applies to research. The more data sources, data points, data collection instruments and data types, the greater the potential accuracy of our analysis and conclusions.

There are no free lunches in research! Each additional data source, instrument, and participant requires additional time. Not only additional time for the data collection but also for the analysis, which can be quite expensive especially for qualitative research.



Measurement



If the constructs can't be measured, then you are left with qualitative options.

If the constructs can be measured, you have both qual and quant options but there would need to be a good reason to conduct even more qualitative research.

Quantitative

There are two main options for quantitative measurement in management studies: (a) the Likert scale survey and (b) direct measurement using other methods.

How will you measure the independent and dependent variables?

For quantitative deductive studies measurement resulting in nominal or ordinal data limits you to non-parametric statistical analyses.

While parametric statistics are acceptable, they are not as powerful as parametric statistical analyses.

The best options are when you have interval or ratio level data which allows for the "menu" of parametric statistical options.

Note – We measure variables and analyze relationships.

Qualitative

The word "measure" in the context of qualitative methods seems odd.

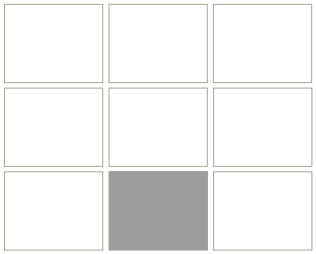
For qualitative studies the measurement is often "thick rich qualitative descriptions" based on the responses to the questions in an interview guide.

However, the words chosen mean different things, as do the tones used, the non-verbal indicators, etc.

For mixed method quasi-deductive studies the measurement plan might include both qualitative descriptions and quantitative measures (e.g., survey questions with scales, performance measures such as financial performance).

The measurement plan should be consistent with the overall approach identified in the previous step and the conceptual framework and research questions.

Levels of Data



The levels of data produced from the data collection instruments and processes will determine the statistical analysis options in the data analysis phase.

Nominal

The lowest level of quantitative data is nominal or categorical data. Examples, include things like color, race, geographic region, yes vs. no, etc. The math that can be performed using this level of data is very limited. Even if you assign numbers to the categories, you cannot add, subtract, multiply or divide the numbers. For example, adding the number of green and yellow crayons and dividing to get the average does not get you blue. We often use categorical data as an independent variable to test differences in a dependent variable. For example, the difference in group A and B.

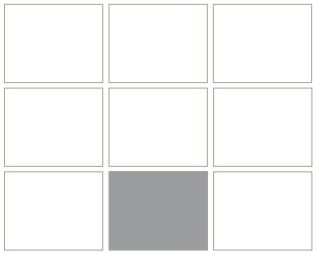
Ordinal

Ordinal data is ordered and ranked, but the intervals between each number are not necessarily the same. So a scale of “I love it, I like it, I don’t like it, and I hate it” can be assigned numbers where one options is greater than the next in sequence. However, “I like it” might be only three times greater than “I don’t like it” but ten times greater than “I hate it.” Thus the distance is not the same between the options. This limits you to non-parametric statistical tests.

Interval + Ratio

The highest levels of data are interval and ratio. Both have ordered magnitude and the interval between the choices is the same. The difference between the two is ratio data has an absolute zero point and interval data does not. While Likert scale surveys often produce ordinal data, some can produce interval level data which enables the use of parametric statistics.

Sampling



The main sampling strategy differences for each methodology (qualitative and quantitative) are based primarily on the purpose of the research and overall approach.

Probability Sample

If the purpose is to deductively "test" a specific quantitative hypothesis, then a **random** sample that is **sufficiently large** to represent the population is the desired sampling approach. That way, the findings can be generalized to that larger population.

In reality, we seldom have access to the target "population" and thus settle for an accessible sub-set or sampling frame. Unfortunately, the sampling frame is often, in reality, a quantitative case study of a particular organization or a convenience sample.

When combined with the ethical requirement of informed consent, we seldom actually obtain a true probability sample.

Consequently statistical power is an important input to an *a priori* sample size determination (e.g., G*Power).

Purposive Sample

On the other end of the research spectrum are exploratory qualitative studies with the purpose of "building" a theory.

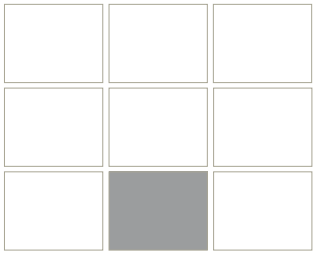
Researchers conducting qualitative theory building studies worry less about representative samples and more about getting the right people to provide a rich data set. Consequently, participants are chosen using explicit purposive criteria.

For practical reasons qualitative samples are limited in size and often include as few as 15 interviews.

Of course there are many variations to these approaches including those used in mixed methods studies.

When practical, you want to work toward a representative sample. However, unless you are testing the theory to increase generalizability to other populations, a purposive sample might be more appropriate.

Example A



Latham (2013)

Cases were drawn from the 49 organizations that received the Baldrige award in the 10 years preceding the data collection.

A purposive sampling approach was used to select 14 cases.

Participant were active members of the Baldrige Award Recipient's (BAR) Consortium.

Organizations chosen represented the five categories of organizations that had received the Baldrige Award including large manufacturing, large serve, small business, education (both K-12 and Higher Ed) and healthcare.

The sample size of 14 exceeded the recommended 4 to 10 cases in Eisenhardt (1989) which made for a lengthy analysis process. While 14 individual interviews is often doable, when those interviews are lengthy and the analysis includes additional organization data (context), the process can become very time consuming.

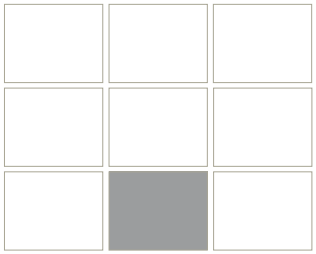
Deep dive interviews were conducted with CEOs using a flexible semi-structured interview guide.

Verbatim transcripts typed from digital recordings.

Organization documents that described the key context factors were used to analyze the impact of context on the transformation process and the leader behaviors and activities, culture, and individual leader concepts identified in the analysis.

Source: Latham, J. R. (2013). A framework for leading the transformation to performance excellence part I: CEO perspectives on forces, facilitators, and strategic leadership systems. *Quality Management Journal, 20*(2), 22.

Example B



McAllister (2006)

The population explored included users who were involved in specifying requirements for IS and developers who create information systems.

Purposive sample was used consisting of three companies that meet the following criteria:

a. Sufficient size to create NGT groups of users and developers;

b. Publicly traded company performing in the top 49% of their industry group (a measure of success determined by the stock market); and

c. Each company will be from a different industry to obtain a broader perspective.

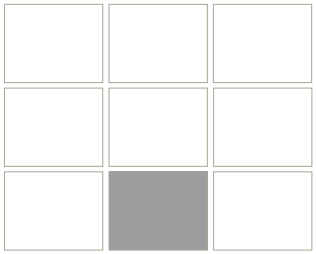
After collecting the factors from users and developers via NGT, two aggregated lists will be created—one for users and the other for developers.

Two web-based survey instruments will be used to weight the importance of the factors. One will contain the user factors and users will be asked to complete the survey. The other will contain developer factors and developers will be asked to complete the survey.

The survey participants will be the same individuals who participated in the NGT small groups.

Source: McAllister, C. A. (2006). *Requirements determination of information systems: User and developer perceptions of factors contributing to misunderstandings*. . (PhD), Capella University, Minneapolis, MN.

Example C



Zimmerer (2013)

Quantitative Phase I

452 total participants from the United States

- 150 Baby Boomers
- 151 GenX
- 151 GenY

Survey instrument was emailed by research firm Luth Research, LLC to members of the SurveySavvy Panel who qualified based on employment status, age, and follower status

Completed survey data was exported into SPSS data sheet.

Qualitative Phase II

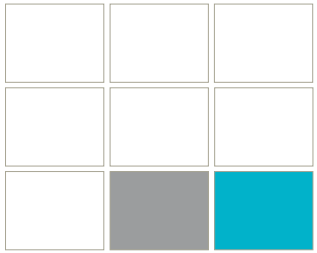
Data analysis of surveys from participants indicating willingness to participate in a phone interview:

8 Baby Boomers, 8 GenX, and 9 GenY participants, who had high servant leadership survey scores, were interviewed by phone.

30 min interviews were recorded and then transcribed.

Source: Zimmerer, T. E. (2013). *Generational perceptions of servant leadership: A mixed methods study.* (PhD Doctoral Dissertation), Capella University, Minneapolis, MN.

Alignment

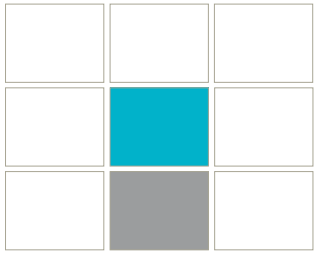


Overall Approach

Data collection methods should be derived from, and consistent with, the overall approach.

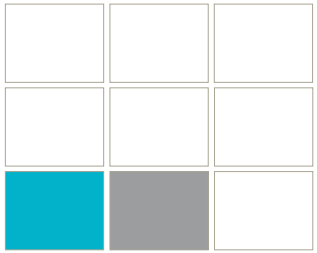
While it might seem obvious that a grounded theory approach requires qualitative data, I have reviewed preliminary research plans that proposed a Likert scale survey.

It is easier to spot these issues when using a research canvas.



Conceptual Framework

As with all the components of the research methodology, the data collection methods should be focused on collecting data about the constructs, variables, and context factors identified in the conceptual framework.

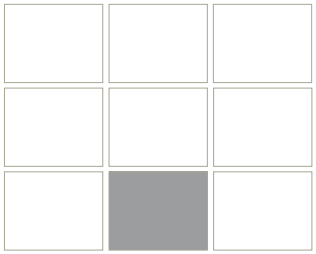


Data Analysis

Data analysis options will be determined by the type of data collected.

Working backwards, determine the type of analysis required to answer the research questions. Then, identify the type of data needed to perform the necessary analysis.

DIY



Do It Yourself

1. Develop a measurement plan for the constructs and variables included in the research questions and hypotheses. Include the triangulation strategy and identify the multiple data collection methods, instruments, and participants.

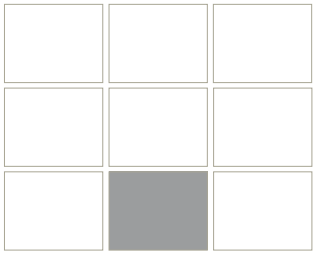
2. Identify or develop the data collection instrument(s). If using a quantitative survey, identify a validated survey that measures the constructs. Developing and validating your own survey is a research study in, and of, itself.

Look for validated surveys that are published in peer reviewed journals. In addition, look for instruments that have been validated using advanced methods such as confirmatory factor analysis (CFA) and structural equation modeling (SEM). Use surveys from doctoral dissertations as a last resort, and if they did not do CFA/SEM put that on your "to do" list and do it yourself.

If doing a qualitative interview study, develop and test an interview guide. I highly recommend using an "expert" panel of researchers in the field to review the instrument and provide feedback. Once refined, conduct "mock" interviews to check for participant understanding and test the type of data they produce.

3. Develop a sampling strategy. Identify the sources of data including organizations, databases, etc. Identify the sampling approach (probability vs. purposive). If purposive identify the criteria used for selection. Finally, determine the appropriate samples size. See resources on next page for more on sample size determination.

Resources



Data Collection - Website page with additional information, examples, and external links related to data collection.

http://johnlatham.me/datacollection

Choosing a qualitative sample – Thoughts on purposive samples.

http://johnlatham.me/qualsampleselection

How Many Participants is Enough? – Determining qualitative sample size.

http://johnlatham.me/qualsamplesize

The Importance of Statistical Power – Thoughts on G*Power and determining a quantitative sample size.

http://johnlatham.me/statisticalpower

Do You Need a Pilot Study? – If you are planning to develop and use a new survey or use an existing survey with a new type of participant you might need to conduct a pilot study.

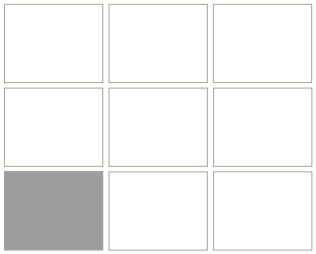
http://johnlatham.me/pilotstudy

Bias and Validity Threats to Qualitative Research – If you are planning to conduct qualitative research check out this blog post.

http://johnlatham.me/biasandvalidity

Data Analysis

Data Analysis



Developing an analysis strategy, is an iterative process.

The type and level of data that is collected will determine the data analysis options that are available.

Fundamentals

While measurement and data collection are typically focused on describing or measuring the constructs, variables, and context factors, the **analysis is focused on analyzing the relationships** between the constructs, variables, and context factors.

The type and level of data that is collected, along with the questions and purpose, will determine the data analysis options that are available. Remember, the level of measurement (nominal, ordinal, interval, and ratio) will determine the specific statistical tests that are available.

Analysis is not limited to statistical tests and thematic analysis. In fact, preliminary exploration of the data using visual displays is a useful way to “get to know” your data. There is no substitute for an in-depth understanding of the data set prior to subjecting it to analysis.

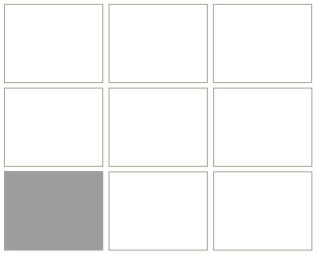
Develop Strategy

How will you display the data and analyze the results of the tests and qualitative techniques? If you are doing a fixed design then a detailed analysis strategy, including specific statistical tests, can be developed prior to conducting the research.

If, on the other hand, you are using a flexible qualitative design, it might not be possible to know in advance all the analysis techniques that might provide useful insights into your questions.

In the case of flexible studies, the challenge is to pre-think the analysis options as much as you can, then describe that in the proposal. If you are using qualitative analysis software to assist in the process then that will impact the types of analysis methods that you choose. However, the actual analysis methods used might be quite different than those that you predict at the time of the research plan development.

Quant, Qual, and Mixed



We measure variables and we analyze relationships.

Given the limitations of each method, quantitative and qualitative, the use of mixed methods has grown in popularity.

Quantitative

If we have quantitative data from the data collection phase, we can use statistical analysis methods to analyze relationships between the variables.

The main advantage of using mathematics is the formulas, when executed the same way each time, produce the same result (assuming there is no math error).

This is not necessarily the case for qualitative analysis where the researchers brain is ultimately the analysis instrument and doesn't follow the exact path each time it analyzes the data.

Qualitative

While quantitative analysis is more objective, it does not always provide a rich understanding of the details behind the numbers.

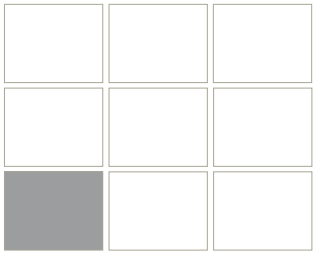
For example, the correlation between employee turnover and employee satisfaction as measured by a survey might be significant at the .05 level. What does that mean? **How** and **why** did the satisfaction factors influence whether an employee would leave or not?

These are the types of questions qualitative methods are best suited to answer. Then quantitative methods can often be used to test the new insights.

Mixed Methods

Given the limitations of each method, quantitative and qualitative, the use of mixed methods has grown in popularity. Most problems or topics in organization research involve both easily measurable variables (e.g., time, money, quality) and constructs that are not so easily measurable such as complex interactions. Mixed methods can also help deal with the many context issues we typically face in management research.

Example A



Latham (2013)

Verbatim transcripts were analyzed for each individual case (within case analysis).

NVivo8 was used to code the transcripts (level 1 analysis).

Constant comparison + open and axial coding were used to explore the data.

Cross-case analysis with node frequencies by case were analyzed.

Over 200 nodes were explored resulting in 35 top levels codes selected for final the framework.

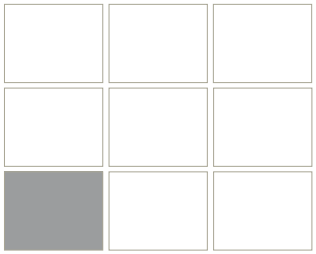
The 35 top level nodes were organized in the five “buckets” at the beginning of the study including forces and facilitators of change (5), leadership behaviors (9), leadership activities (9), individual leader characteristics (5), and organizational culture (7).

NVivo analysis was supplemented with visual data displays (Miles and Huberman, 1994)

Once the data analysis was finished, the resulting 35 concepts in the framework were compared to the extant literature, using a process described by Eisenhardt (1989) as “enfolding the literature.”

Source: Latham, J. R. (2013). A framework for leading the transformation to performance excellence part I: CEO perspectives on forces, facilitators, and strategic leadership systems. *Quality Management Journal, 20*(2), 22.

Example B



McAllister (2006)

Phase 1 will create two lists of factors that influence misunderstanding requirements. The lists will be an aggregate of the work produced by three pairs of small groups using NGT. To produce the aggregated lists, the definitions of each factor will be compared and similarly defined factors will be consolidated.

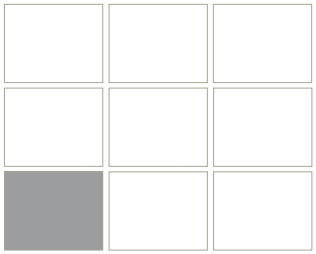
Phase 2 will result in weighted lists of factors, indicating the importance of each factor as perceived by users versus developers. Each participant will individually weight the factors. Analytical Hierarchy Process (AHP) or another appropriate technique will be used to create a combined weight across all participants.

Differences between users' and developers' perceptions of factors influencing the misunderstanding of requirements will be analyzed in five ways:

1. Identifying factors identified by users but omitted by developers.
2. Identifying factors identified by developers but omitted by users.
3. Consistency of weightings assigned by users and those by developers using Kendall's Coefficient of Concordance.
4. Consistency in weighting critical factors between users and developers using the Wilks' lambda test.
5. For the critically ranked factors, a thematic analysis will be performed of the definitions to identify similarities and differences between users and developers.

Source: McAllister, C. A. (2006). *Requirements determination of information systems: User and developer perceptions of factors contributing to misunderstandings*. . (PhD), Capella University, Minneapolis, MN.

Example C



Zimmerer (2013)

Quantitative Phase I

Descriptive statistics:

- Distribution of age groups
- Work experience
- Industry
- Job tenure of the participants

Normalcy Analysis

Correlation Analysis

Multivariate analysis of variance (MANOVA)

Scheffe's and Tukey's LSD test were used as post-hoc tests

Qualitative Phase II

Themes were developed and clustered.

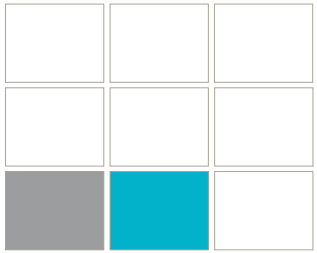
Abbreviated theme codes were assigned to each theme.

Reread the interview transcripts using the theme codes.

Theme codes were added to the appropriate sections in the text and then counted.

Source: Zimmerer, T. E. (2013). *Generational perceptions of servant leadership: A mixed methods study.* (PhD Doctoral Dissertation), Capella University, Minneapolis, MN.

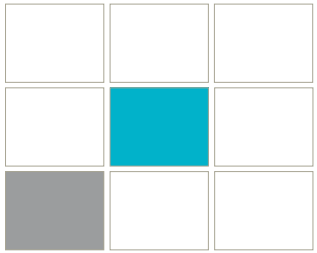
Alignment



Data Collection

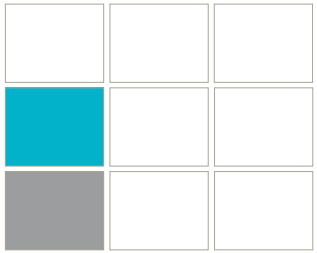
The data analysis methods MUST be consistent with the type and level of data that is collected in the previous step.

In the design process this can be an iterative process of “give and take” as the data collection and analysis plan emerges.



Conceptual Framework

As with all the components of the research methodology, the data analysis methods should be appropriate for the constructs, variables, relationships, and context factors identified in the conceptual framework.

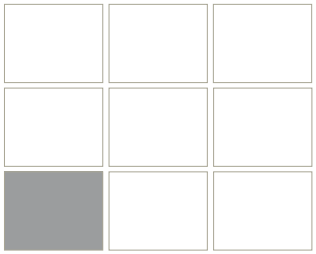


Drawing Conclusions

The data analysis methods should provide the findings in a format that helps to answer the research questions, or test the hypotheses, and draw conclusions.

The analysis methods chosen need to provide the kind of insights and new knowledge that enable the type of conclusions required to fulfill the purpose and help solve the problem.

DIY



Do It Yourself

1. Based on the research questions, the overall approach, and the data collected, choose the appropriate analysis methods (be specific). For quantitative studies identify the specific statistical tests that will be used. For qualitative studies identify the data analysis tools and techniques that will be used.

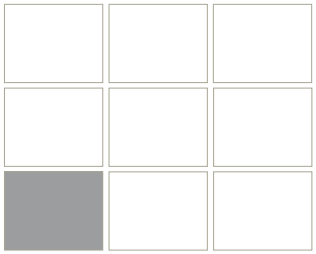
Software such as NVivo or SPSS are NOT analysis methods. They are applications that perform, or help you to perform, the analysis methods you identify.

2. Align the analysis methods with the individual research questions.

Tip: One way to show this alignment is with a table that includes the research question, the constructs, the level of data (if appropriate), and the analysis methods or tests. I find that one row for each research question work well.

3. Identify the validity and reliability issues and methods to address those issues. If conducting a quantitative study, identify the validation and reliability methods and tests that you will use. If conducting a qualitative study, identify the techniques and methods you will use to mitigate the bias and validity threats.

Resources



Data Analysis - Website page with additional information, examples, and external links related to data analysis.

http://johnlatham.me/dataanalysis

Bias and Validity Threats to Qualitative Research – If you are planning to conduct qualitative research check out this blog post.

http://johnlatham.me/biasandvalidity

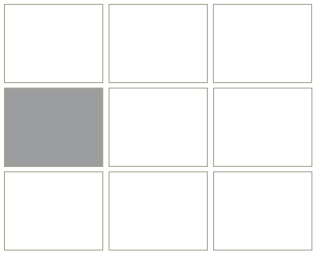
Recommended Reading

Read Ch 13 Qualitative Analysis pp. 114-118 and Ch 14 Quantitative Analysis pp. 119-126 in Bhattacherjee (2012).

http://scholarcommons.usf.edu/oa_textbooks/3/

Drawing Conclusions

Drawing Conclusions



What does it all mean?

What are the implications for theory?

What are the implications for practice?

What are the limitations?

Conclusions

The final step in the research process is to put all the "pieces" together in a cogent conclusion of key findings and their implications for theory and practice.

The conclusions should directly link to the problem statement.

How will you draw and test your conclusions?

What do you expect researchers will be able to do with the findings?

What do you expect practitioners will be able to do with this new knowledge?

What is the expected significance of the conclusions?

Acid Test – Will the study, as designed, produce the new insights necessary to fulfill the purpose and help solve the problem?

Limitations

Any discussion of implications for theory and practice should also include the limitations associated with those conclusions.

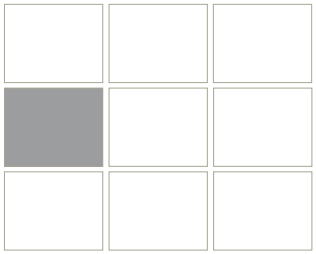
ALL research studies have limitations!

What are the limitations that you have designed into your study?

The researcher makes many decisions during the research design process that determine the limitations.

Are the limitations that you have designed into your study acceptable?

Example A



Latham (2013)

Theoretical Memos along with the Node structure were used to develop the framework with 35 concepts organized into five categories.

Preliminary conclusions and the framework were reviewed by Baldrige Award Recipient (BAR) consortium members at two meetings, one in Cambridge, MA and the other in New Orleans, LA. Members provided feedback which was incorporated into subsequent rounds of analysis, conclusions, and implications for practice.

Drafts of the final papers were reviewed by some of the participating CEOs. Feedback was analyzed and incorporated into conclusions and implications for practice.

Identified implications for four leadership theories including transformational, transactional, servant, and spiritual leadership.

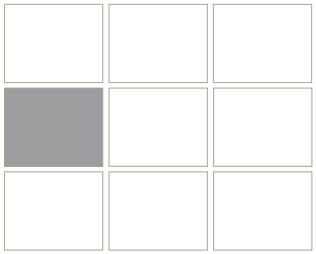
Identified implications for practice including leadership development and guidance on leading organization transformation.

Identified six limitations including: (a) limited to CEO perspective; (b) no female CEOs; (c) no non-profit or government organizations; (d) small sample of 14; (e) U.S. centric; and (f) conclusions not tested using more objective quantitative methods.

The last limitation led to a “spin-off” study on CEO attitudes and motivations which was a mixed methods study that was actually published in 2012 prior to the overall study results (Larson, et al., 2012).

Source: Latham, J. R. (2013). A framework for leading the transformation to performance excellence part I: CEO perspectives on forces, facilitators, and strategic leadership systems. *Quality Management Journal, 20*(2), 22.

Example B



McAllister (2006)

Conclusions were drawn from three areas:

The weighted factors that influence misunderstandings of requirements.

The differences in factors and their weightings between users and developers.

The similarities and differences in definitions of critical factors between users and developers.

As exploratory research, the study lays a foundation for further work that could show a correlation with minimizing misunderstandings of requirements and quality of software.

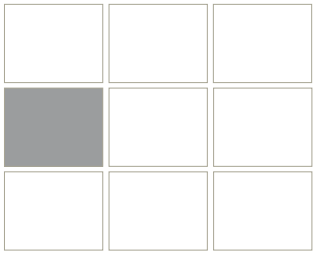
By knowing the factors that influence misunderstandings of requirements and the different perspectives between users and developers, methods could be proposed and tested for improving the understanding of requirements. Such improvements are expected to increase the quality of information systems.

By knowing why requirements are misunderstood we will be are better prepared to devise ways to improve users' and developers' understanding of requirements.

Although many methods have been proposed for this, such as VOC, a theoretical knowledge of the factors responsible for misunderstanding is lacking.

Source: McAllister, C. A. (2006). *Requirements determination of information systems: User and developer perceptions of factors contributing to misunderstandings*. . (PhD), Capella University, Minneapolis, MN.

Example C



Zimmerer (2013)

Conclusions were developed by first analyzing the quantitative data and then adding the qualitative insights to explain and enhance the quant results.

Add to the slowly growing body of knowledge on servant leadership by further validating the instrument developed by van Dierendonck (2011) and adding more descriptive data to enhance the granularity with which generational cohorts as a social group can be circumscribed with.

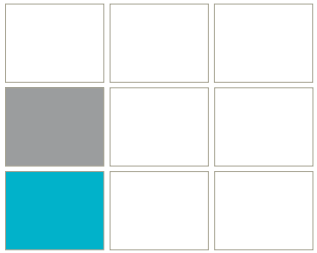
By investigating the potential consequences of servant leadership as defined by job satisfaction, organizational commitment, and turnover intent, the study adds to the practitioner dimension of the scholar-practitioner dyad.

Recommendations for betterment of the leadership process in corporations would be of interest so that all corporate stakeholders, from top management teams, over human resource professionals to front line managers could work together towards a common goal of improving organizational citizenship behavior and organizational outcomes.

This study is focused on leadership attributes. Organizational climate, culture, and economic circumstances can have an influence on job satisfaction, organizational commitment, and turnover intent but will not be included in this study.

Source: Zimmerer, T. E. (2013). *Generational perceptions of servant leadership: A mixed methods study.* (PhD Doctoral Dissertation), Capella University, Minneapolis, MN.

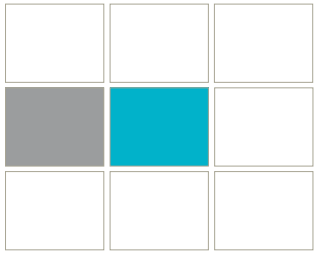
Alignment



Data Analysis

The conclusions should be derived from, and consistent with, the data analysis methods.

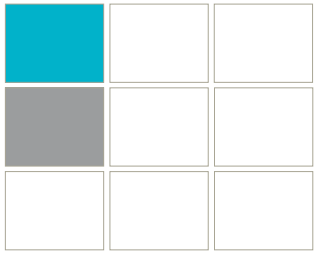
Will the current data analysis plans produce the findings needed to draw the conclusions that will help solve the original problem?



Conceptual Framework

As with all the components of the research methodology, the conclusions should be appropriate for the constructs, variables, relationships, and context factors, identified in the conceptual framework.

Ultimately, the research should contribute back to the refinement and validation of the conceptual framework.

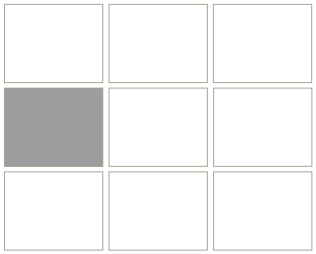


Problem

We have now come “full circle!”

The approaches to drawing conclusions should provide the new knowledge and insights needed to help fill the knowledge (theory) gap that is preventing us from solving the problem.

DIY



Do It Yourself

1. Based on the planned data collection and analysis, identify what new knowledge and insights you expect to be able to produce?

2. How will the new knowledge and insights contribute to the knowledge gap identified in the problem and purpose?

3. Identify the limitations of this study.
   a. Are these acceptable?
   b. How will these limitations impact the credibility of the study?
   c. How will the limitations impact the motivation to use the findings for future research and practice?

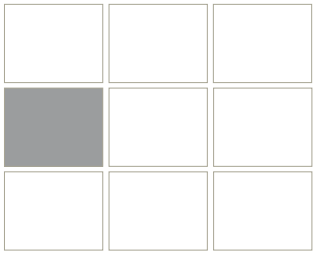
Will the conclusions and associated limitations provide the credible contributions to theory and practice identified in the problem and purpose?

If yes, then you are ready to develop the details of your research design and methodology.

If no, then go back and make the changes necessary so that is will make the necessary contribution.

It is an iterative process!

Resources



Drawing Conclusions - Website page with additional info, examples, and external links related to drawing conclusions.

http://johnlatham.me/drawingconclusions

Epilogue

Epilogue

For me, research is recreation. I simply enjoy the process. And, I enjoy watching others enjoy the process. Research is often a challenging and frustrating experience. For many new researchers, their first solo research project is the first time that they have been asked to come up with everything from the problem to the questions to the methods to answer those questions. This can be both liberating and scary at the same time.

I use terms like “canvas” and “design” because research requires both analytical and creative knowledge, skills, and abilities. There is no one best way to conduct research and the answer to ALL research methods questions is, “it depends.” Of course your next question is, “on what might it depend?” This book is intended to help frame that very question. The canvas is a framework that helps visualize and understand the key linkages between key research design components.

All too often a PhD student will receive feedback on their research proposal asking them to fix x, y, and z. They then proceed to make those changes and resubmit to their dissertation chair. The chair then sends back feedback asking them to fix a, b, and c. The reaction from the student is, “hey, why didn’t you tell me I needed to fix a, b, and c the last time you gave me feedback?” The answer, of course, is the changes the student made to remedy x, y, and z created the new problems with a, b, and c.

It is my hope that this work will help researchers identify, for themselves and in advance, the implications that changes to one part of the research design have on other parts of the design, and thus, preempt situations like the one above. The canvas is a flexible framework and intended to be used like a “well tailored suit” vs. a “straight jacket.” Work hard, be tenacious, stay curious, and enjoy the journey!

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