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1.1 Goals and Learning Objectives

Goals and Learning Objectives

• Goals of this chapter:
  – Learn what research is.
  – Learn why businesses want to do research to inform decisions.
  – Learn about types of research.
  – Learn the steps of the research process.

• Learning objective: LO1: Develop the ability to define a research problem. Formulate research questions and hypotheses that are measurable, well-defined, address the overall problem, are directly related, and reflect the scope of the problem.

2 Formulating a Research Question

2.1 Business Decision Making

Business Decision Making

• Business decision making: process of developing and deciding among alternative ways of,
  – resolving a business problem, or
  – taking advantage of a business opportunity.

• Business problem: a situation in which negative consequences are possible.
  – It may not be apparent what the problem is, or even that a problem exists.
  – symptom: the effects caused by a problem, serve as observable clues that a problem may exist.
• Business opportunity: a situation in which there is a potential for competitive advantage.

Why Research?

Ambiguous situations:

• Existence of an opportunity or problem may not be obvious.
• Precise nature of the problem or opportunity is not known.
• Alternatives for resolving a problem, or taking advantage of the opportunity are not fully clear.
• Set of symptoms to a problem are unclear or not all known.

What a good research question / project does is identify an opportunity or problem, as evidenced by one or more symptoms, and investigate alternatives for solutions.

2.2 Research Objective

Defining the Research Objectives

• Research objectives: what are the goals of your research project?

• Problem / research question: a single statement/question describing the objective of the research project.
  – Term “problem” is used more generally, what don’t we know, what question are we going to answer?
  – Not about confirmation or justification.

• Research problem must be clear and focused. More Albert Einstein:
  – “A problem well defined is a problem half solved.”
  – “The formulation of a problem is often more essential than its own solution.”

Methods for Finding Problem

• Exploratory research.

• Literature review. Often previous (published) research will motivate new questions.

• Pilot study (practice run): small-scale research project that collects data from individuals similar to those which will be used in a full study.

• Focus group: small group discussion in a loosely structured format, where participants are likely similar to those which would be used in a full study.
3 Types of Research

3.1 Exploratory Research

Types of Business Research

1. Exploratory research: identify problems or opportunities, discover alternatives.
   - Purpose is to clarify ambiguous situations.
   - Not intended to provide answers to problems or opportunities.
   - This is only the first step in a business decision process.

2. Descriptive research: describes people, organizations, customers, groups, etc. that are relevant to the business decision (more ahead).

3. Causal research: answers how will a change in one event in a manager’s control change another event of interest (much more ahead).

3.2 Descriptive Research

Descriptive Research

- Descriptive research: describes people, organizations, customers, groups, etc. that are relevant to the business decision.
- Usually done after a problem or opportunity is well understood (after exploratory research).
- Diagnostic analysis: type of descriptive research that seeks to discover reasons for business outcomes.
  - Typically discovered with well written survey questions.
  - Might get at customers’ feeling, beliefs, values, habits, spending habits, etc.

3.3 Causal Research

Causal Research

- Causal research: answers how will a change in one event in a manager’s control change another event of interest.
- Examples:
  - How will an online training program affect workers’ job performance?
  - How will an improvement in quality of a product change customer demand?
- In practice, establishing evidence for causation is extremely tough.
3.4 Overview

Text-Questions: Types of Research

- What is the relationship between alcohol consumption and students’ academic performance?

- What is the ethnic, racial, and age profiles for viewers of *The Daily Show* on Comedy Central?

- Is there a difference between the amount of cheating between freshman students and senior students?

- What are the UW-L College of Business enrollment forecasts for the next year?

- A restaurant distributes a customer satisfaction survey.

Types of Business Research

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3.5 Establishing Causation

Evidence for Causation

- Temporal sequence: cause happens first, then effect.

- Concomitant variation: simply means two variables are related.
  - *Might* be measured with a correlation coefficient.

- Non-spurious relationship: concomitant variation is evidence that one variable causes another. This one is extremely tough to establish.

Variable Co-movement

- Spurious relationship: data on two variables are correlated but variables are not directly related to one another.

- Example: ice cream consumption and murder rate are positive related to one another.
• Example: class size and academic performance is related to another. Do you think they are positively related or negatively related?
• Example: alcohol consumption and academic performance??
• Example: being overweight and psychologically depressed??

 Degrees of Causality

• **Absolute causality:** cause is necessary and sufficient to bring about the effect.

• **Conditional causality:** cause is necessary, but not sufficient, to bring about an effect.
  – Close example: smoking *and* lung cancer.
  – Possible business (close) example: develop a new product *and* increasing market share??

• **Contributory causality:** cause does contribute to effect, but the cause is not necessary or sufficient to bring about the effect.
  – Weakest, and most common form of causality.
  – Multiple causes may have the same effect.
  – Causes don’t always result in an effect.

4  Stages of the Research Process

4.1  Overview

Overview of the Research Process

• Stages of the Research Process:
  1. Defining the research objectives.
  2. Planning a research design.
     – Planning a sample.
     – Collecting the data.
  3. Analyzing the data.
  4. Formulating conclusions.

• Albert Einstein once said, “If we knew what is was we were doing, it wouldn’t be called research, would it?”

• Forward Linkage: earlier stages in the research process influence how the later stages are conducted.

• Backward Linkage: later stages in the research process influence what is done in the earlier stages!
4.2 Research Design

Research Design

- **Research Design**: detailed, carefully constructed plan of the methods and procedures for collecting and analyzing data.

- Types of research designs:
  - Collect primary data: answer who is your population? who are you going to sample? how? how many? What are your survey questions?
  - Experiments (like McDonald’s). Carefully describe and assure the design will expose cause and effect.
  - Secondary data: use data from a previous study, use economic or financial data.
  - Literature review: piecing together the results from other studies may provide an answer to yours.

Sampling

- Purpose of collecting a sample:
  - Make inferences about the population, based on results from the sample.
  - Objective is *not* just to describe the sample.

- First ask: who is population?
  - Might be obvious: A population may be UW-L students.
  - Might not be obvious: Potential customers of a new product.

- Avoid sample selection bias: the act of being part of your sample itself is related to the result.
  - Cancer treatment.
  - Viterbo awareness.

Gathering Data

- Obtrusive methods: when gathering data requires filling out a questionnaire or interacting with an interviewer.

- Unobtrusive methods: subjects are not at all disturbed by collection of the data, or possibly even unaware.
  - Counting vehicles passing a billboard.
  - Collecting data on customer purchases.
• Treating research subjects ethically. Even simple questionnaires may pose risks:
  – Will the information be treated confidentially?
  – Is the researcher in a position of authority over a subject?

4.3 Analyzing Data and Drawing Conclusions

Analyzing Data

• Choosing appropriate statistical analysis.

• Are the assumptions behind the statistical procedures met?

• Will the results of the statistical procedure answer your research question?

Drawing Conclusions

• Conclusion section should be more than a short summary of what you did.

• Bring the results of the statistical analysis back to the research question. Answer the question.

• Did your analysis fail to fully answer the question, what questions remain.

• Does the discussion of the results motivate a new research question?

5

5.1 Coming up next...

Coming up next...

• Chapter 6: problem definition.

• Group exercises do refine research project ideas, focus on problem definition.

• Homework due Wednesday, February 1: End of Chapter 4 (pages 72-73) problems 2,3,4,5,6,7.
  – Type up answers, upload to D2L dropbox or bring to class.