

**TECH 646 Analysis of Research in Industry &
Technology
IT 507 Measurement & Evaluation in Industry &
Technology**

A Core Course

for

**Purdue University M.S. Technology Industrial
Technology/Manufacturing**

and

**IT and Advanced Computer Applications Tracks
Indiana University-Purdue University Fort Wayne**

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Technology**

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Lecture note based on the text books:

**Book1: Cooper, D.R., & Schindler, P.S., *Business Research Methods* (11th edition),
2011, McGraw-Hill/Irwin, ISBN 978-0-07-337370-6**

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IT 507

**IT 50700 Measurement and Evaluation in Industry and
Technology, 3 cr. hr, class 3 (Course Catalog Description)**

- **An introduction to measurement strategies in industrial, technical, and human resource development. The evaluation of measurement outcomes will be the primary focus of the course.**

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IT 507

Required Text Books:

- Douglas C. Montgomery and George C. Runger, ***Applied Statistics and Probability for Engineers***, 6th Ed, by publisher: John Wiley & Sons, ISBN 978-1-11853971-2, www.wiley.com/college/montgomery.
- Cooper, D.R., & Schindler, P.S., ***Business Research Methods*** (11th edition), 2011, McGraw-Hill/Irwin

IT 507 Course Objectives

- This course is structured to fulfill the following objectives:
- Learn the application of scientific thinking to study the real world industry problems.
- Describe the various data types and scales for determining and measuring them.
- Develop skills in applying statistical techniques such as: Hypothesis Testing, Interval estimation methods.
- Determine proper sampling techniques for a given research scenario.
- Utilize and interpret various charts, graphs, and tables displaying statistical information.

IT 507 Course Objectives (cont.)

- Apply basic descriptive statistics to give a research design scenario.
- Use software to compute the basic statistical analyses.
- Understand how various statistical methods help when applied in practice through articles reviews.
- Understand the flaws and fallacies in statistical thinking.
- Learn hands-on how to apply some of the techniques and their implementation issues through homework and article review.

TECH 646

- **TECH 646 Analysis of Research in Industry & Technology**, 3 cr. hr, class 3 (Course Catalog Description)
- Analysis of research and evaluation of research reports. Emphasis on understanding the application of fundamental statistical methods in design and interpretation of research findings in industrial, technical, and human resource development environments.

TECH 646 Course Objectives

- Apply the scientific research approach to practitioner problems in business, industry and government.
- Select the appropriate data type and the scales for measuring the industry data.
- Enhance skills in performing analysis and interpreting the results of statistical methods such as: Hypothesis Testing, Regression and Correlation Analyses.
- Understand the application of multivariate analysis techniques such as cluster analysis and multiple regression models.

TECH 646 Course Objectives (cont.)

- Demonstrate systematic thought processes used in scientific thinking and knowledge development.
- Identify, describe and implement the key steps in the research process, including proposal generation, research design, methodology, data collection, analysis of findings, and written and oral presentation of results.
- Generate a draft proposal for an applied research project.
- Employ rigorous standards and conventions in formatting research documentation.

Week 1

- **Research in Industry/Business Request for Proposals –(from Business Research Methods text book)**
- **The Role of Statistics in Engineering (from Applied Statistics and Probability for Engineers)**
- **Minitab 16 – Demo and Examples**

Ch. 1 Intro to Research in Business

- **Why Study Business Research?**
- **Information & Competitive Advantages**
- **Hierarchy of Information-Based Decision Makers**
- **The Research Process: A Preview**

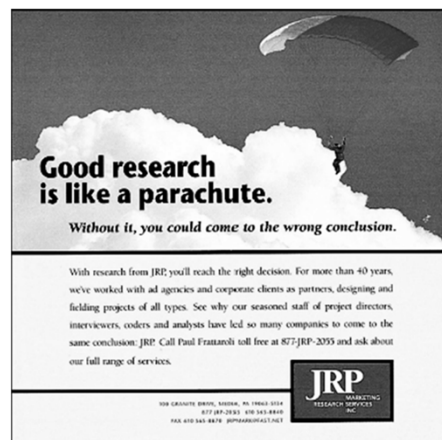
Data Collectors Face Responsibilities

“This is a fantastic time to be entering the business world, because business is going to change more in the next 10 years than it has in the last 50.”

Bill Gates, *entrepreneur and founder*
Microsoft

Why Study Business Research?

Business research provides information to guide business decisions



Good research is like a parachute.
Without it, you could come to the wrong conclusion.

With research from JRP, you'll reach the right decision. For more than 40 years, we've worked with ad agencies and corporate clients as partners, designing and fielding projects of all types. See why our seasoned staff of project directors, interviewers, coders and analysts have led so many companies to come to the same conclusion: JRP. Call Paul Frattaroli toll free at 877-JRP-2055 and ask about our full range of services.

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Research Should Help Respond to Change

“Enterprises have long recognized the need to better sense and respond to business change. What’s different today is that ubiquitous access to information and real-time communications have fostered an ‘always on’ business culture where decision making has become a ‘just-in-time process.’”

Business Performance Management Forum

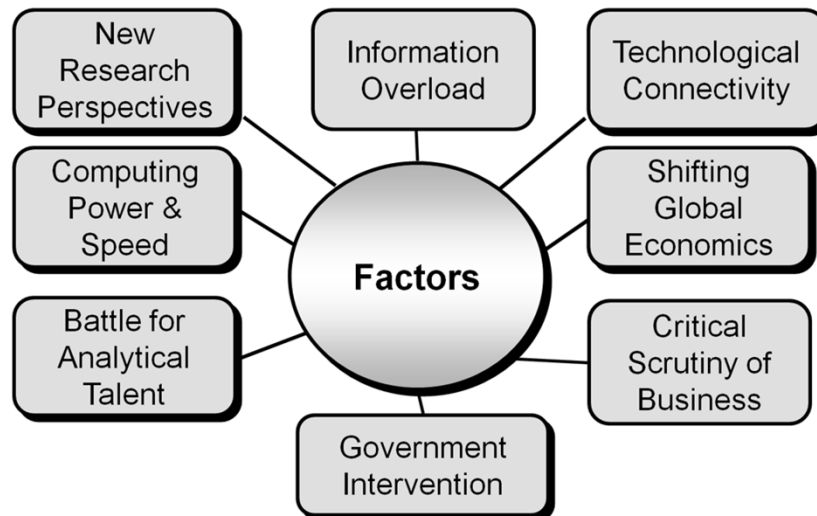
Business Research Defined

- A process of **determining, acquiring, analyzing, synthesizing, and disseminating** relevant business **data, information, and insights** to decision makers in ways that mobilize the organization to take appropriate business **actions** that, in turn, **maximize business performance.**

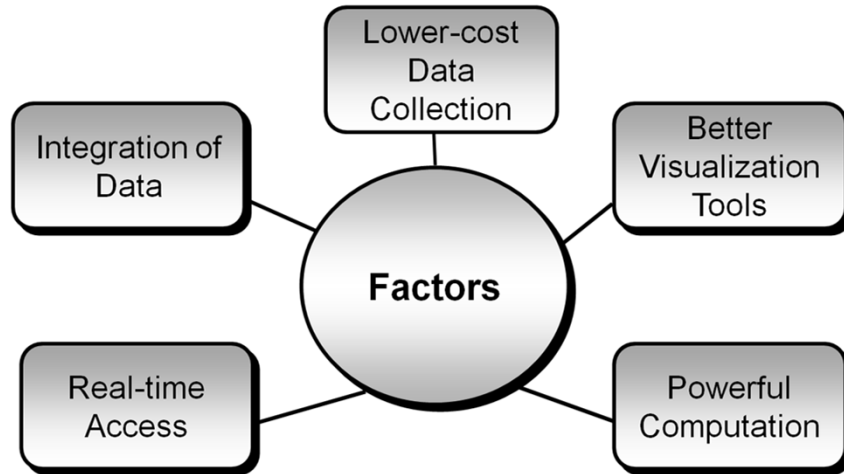
Research Should Reduce Risk

- The primary purpose of research is to reduce the level of risks of a business decision
- Financial/economic risk
- Social risks
- Physical risks
- Technological risks
- Product recalls (industrial, medical, consumer, pharmaceutical, etc.,)
- Environmental risks

What's Changing in Business that Influences Research



Computing Power and Speed



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Business Planning Drives Business/Industry Research



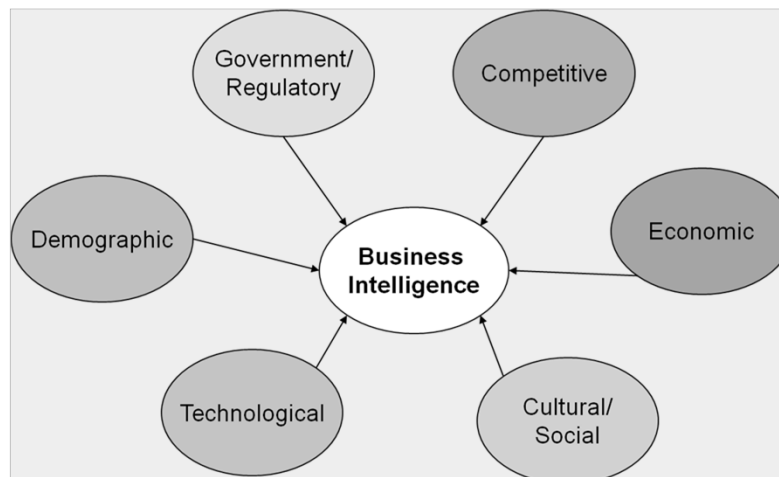
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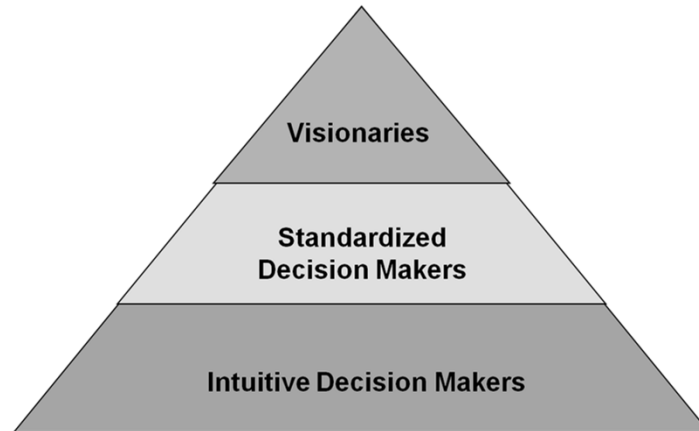
Information Sources/Business Intelligence

- Decision Support Systems (DDS)
 - Numerous elements of data organized for retrieval and use in business decision making
 - Stored and retrieved via
 - Intranets
 - Extranets
- Business Intelligence Systems
 - Ongoing information collection
 - Focused on events, trends in micro and macro-environments

Sources of Business Intelligence



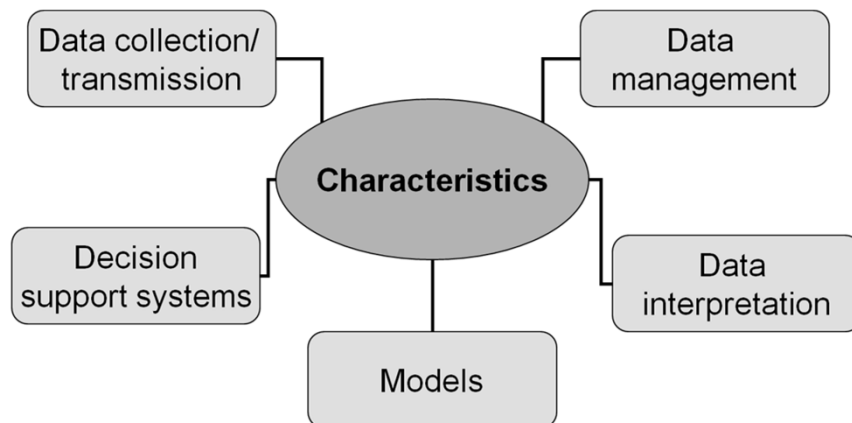
Hierarchy of Business/Industry Decision Makers



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Information Value Chain



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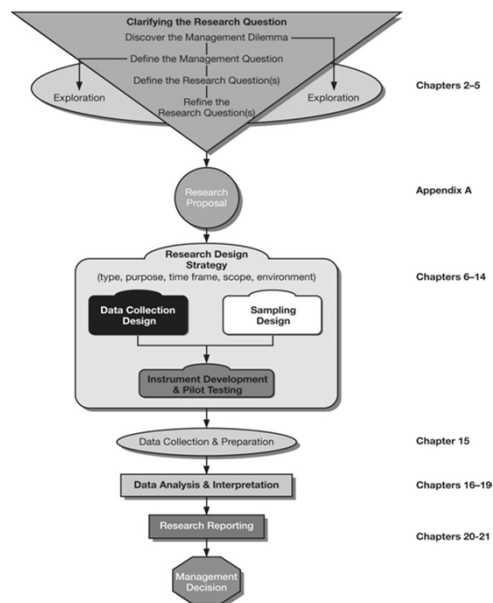
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Research May Not Be Necessary

Can it Pass These Tests?

- Can information be applied to a critical decision?
- Will the information improve managerial decision making?
- Are sufficient resources available?

The Business Research/Industry Process



Characteristics of Good Research

Clearly defined purpose

Detailed research process

Thoroughly planned design

High ethical standards

Limitations addressed

Adequate analysis

Unambiguous presentation

Conclusions justified

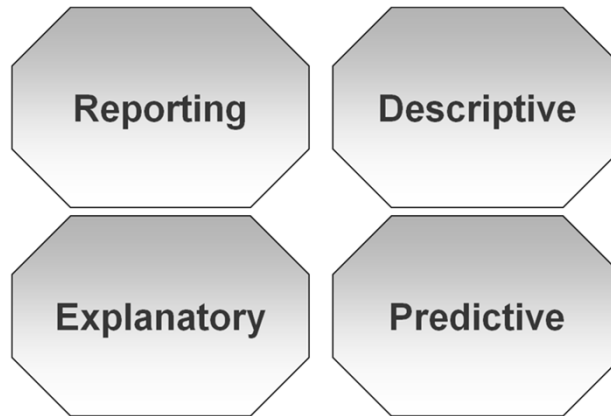
Credentials

Two Categories of Research

Applied

Basic (Pure)

Four Types of Studies



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Summary/Key Terms

- Applied research
- Business Intelligence System (BSS)
- Business research
- Control
- Decision Support System (DSS)
- Descriptive studies
- Explanatory study
- Management dilemma
- Predictive studies
- Pure research
- Reporting studies
- Return on Investment (ROI)
- Scientific method
- Strategy
- Tactics

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