



LOGISTICS AND BORDER TRADE STUDY CENTER
LOEI RAJABHAT UNIVERSITY

Operation Research **logistics**

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Learning Objectives

- To understand the fundamental concepts of business research methods
- To appreciate the several terminologies in business research
- To be able to identify one's own philosophical position in business research
- To be able to identify one's own practical position in business research.



Agenda

- What is Business Research?
- What is Theory?
- Deduction & Induction
- Research Paradigms
- Ontology
- Epistemology
- Quantitative Research
- Qualitative Research
- Mixed Methods
- Q&A



Business Research

- What is Business Research?

*“The application of the **scientific method** in searching for the **truth** about **business phenomena**. These activities include defining business opportunities and **problems**, generating and evaluating **ideas**, monitoring **performance**, and understanding the **business process**.”*

(Zikmund, 2010, p5)





Theory

- What is Theory?

*“A **formal, logical** explanation of some events that includes **predictions** of how things **relate** to one another.”*

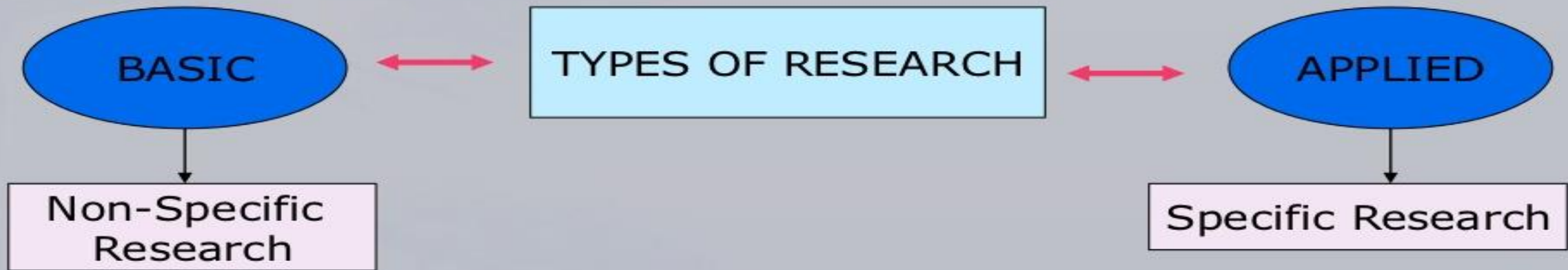
(Zikmund, 2010, p39)





Business Research

- Scope of Research



- Type of Research

- Natural Sciences
- Social Sciences
- Management Sciences (Business Research)



Hypothesis & Theory

- A prediction about the relationship between two or more variables.
- Prediction is about what researcher expects to find in his/her research.
- Hypotheses are more specific than theories.
- A theory could have many different hypotheses.
- If the hypotheses offered by the theory are confirmed, the theory is supported.
- If the hypotheses offered by the theory are rejected, the theory is not supported and should be re-evaluated through further research.



Hypothesis

Null Hypothesis (H_0)

- *There is no relationship between two measured phenomena. Eg. H_0 : There is no link between smoking and cancer.*
- Null Hypothesis can never be proven. It can either be rejected or fail to reject.

Alternative Hypothesis (H_1)

- *A hypothesis to be adopted if the Null hypothesis implied to be highly implausible. ie. The hypothesis to be accepted if the Null hypothesis is rejected. eg. H_1 : There is significant link between smoking and cancer.*

“Most confusing phrase in research: Fail to reject Null Hypothesis”



Hypothesis

		Reject H_0	Don't Reject H_1
Truth	H_0	Type I Error (False Positive)	Right Decision
	H_1	Right Decision	Type II Error (False Negative)

Type I Error Example - H_0 : The patient is not sick.
Reject H_0 Implies patient is sick.
Actual fact is the patient is healthy.

Type II Error Example - H_0 : The patient is not sick.
Don't Reject H_0 Implies patient is healthy.
Actual fact is the patient is sick.

Variables

- **Independent Variable:** The presumed “cause” in the theoretical model.
- **Dependent Variable:** The presumed “effect” in the theoretical model.
- **Moderating Variable:** Suspected or known to impact or influence the Dependent Variable.

Variables

Example of Theoretical Model

Independent Variables

Perceived
Usefulness

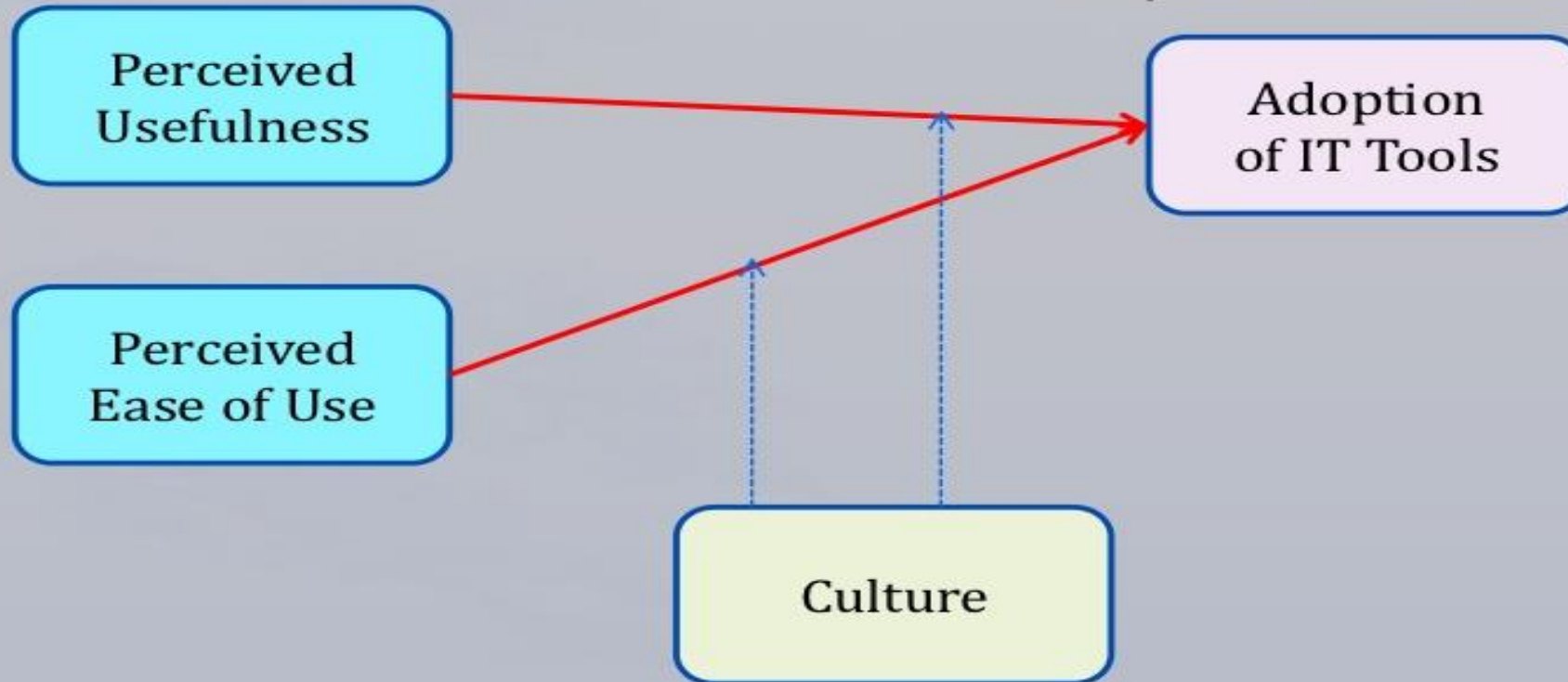
Perceived
Ease of Use

Dependent Variables

Adoption
of IT Tools

Culture

Moderating Variables



Deduction & Induction

- The Process of Deduction

Theory

Hypothesis

Data Collection

Findings

Hypotheses confirmed or rejected

Revision of theory

Waterfall

(Bryman, 2006, p11)

Deduction & Induction

- The Process of Induction



Deduction & Induction



(Source: Adapted from Walter Wallace, *The Logic of Science in Sociology*, 1971)



Deduction & Induction

Deduction emphasises

- scientific principles
- moving from theory to data
- the need to explain causal relationships between variables
- the collection of quantitative data
- the application of controls to ensure validity of data
- the operationalisation of concepts to ensure clarity of definition
- a highly structured approach
- researcher independence of what is being researched
- the necessity to select samples of sufficient size in order to generalise conclusions

Induction emphasises

- gaining an understanding of the meanings humans attach to events
- a close understanding of the research context
- the collection of qualitative data
- a more flexible structure to permit changes of research emphasis as the research progresses
- a realisation that the researcher is part of the research process
- less concern with the need to generalise

Source: Saunders et al. (2009)



Research Paradigms

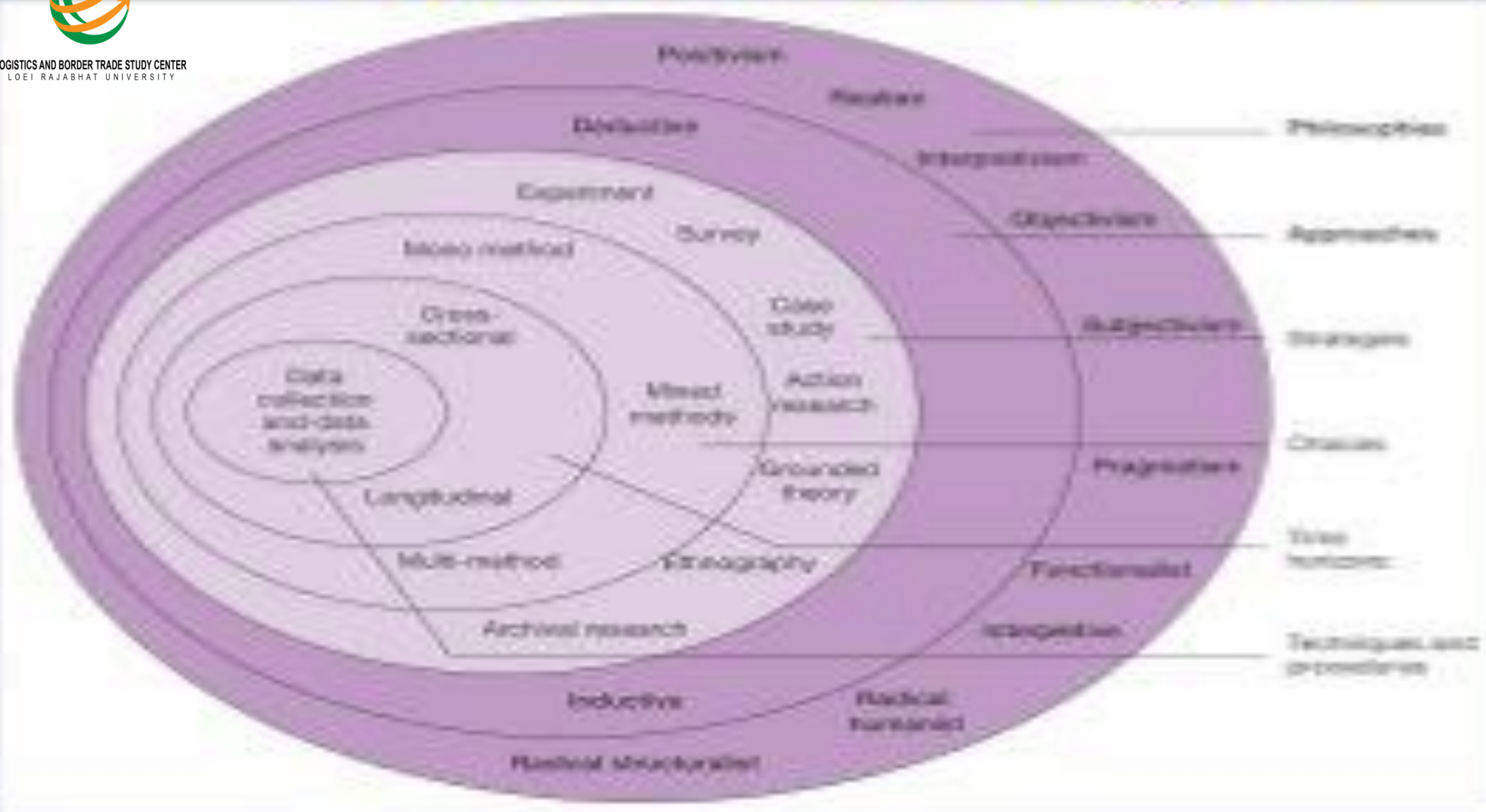
Three fundamental questions:

- *The **ontological** question i.e. what is the form and nature of reality*
- *The **epistemological** question i.e. what is the basic belief about knowledge (i.e. what can be known)*
- *The **methodological** question i.e. how can the researcher go about finding out whatever s/he believes can be known.*

Research Paradigms



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Source: Saunders et al. (2009)

Research Paradigms

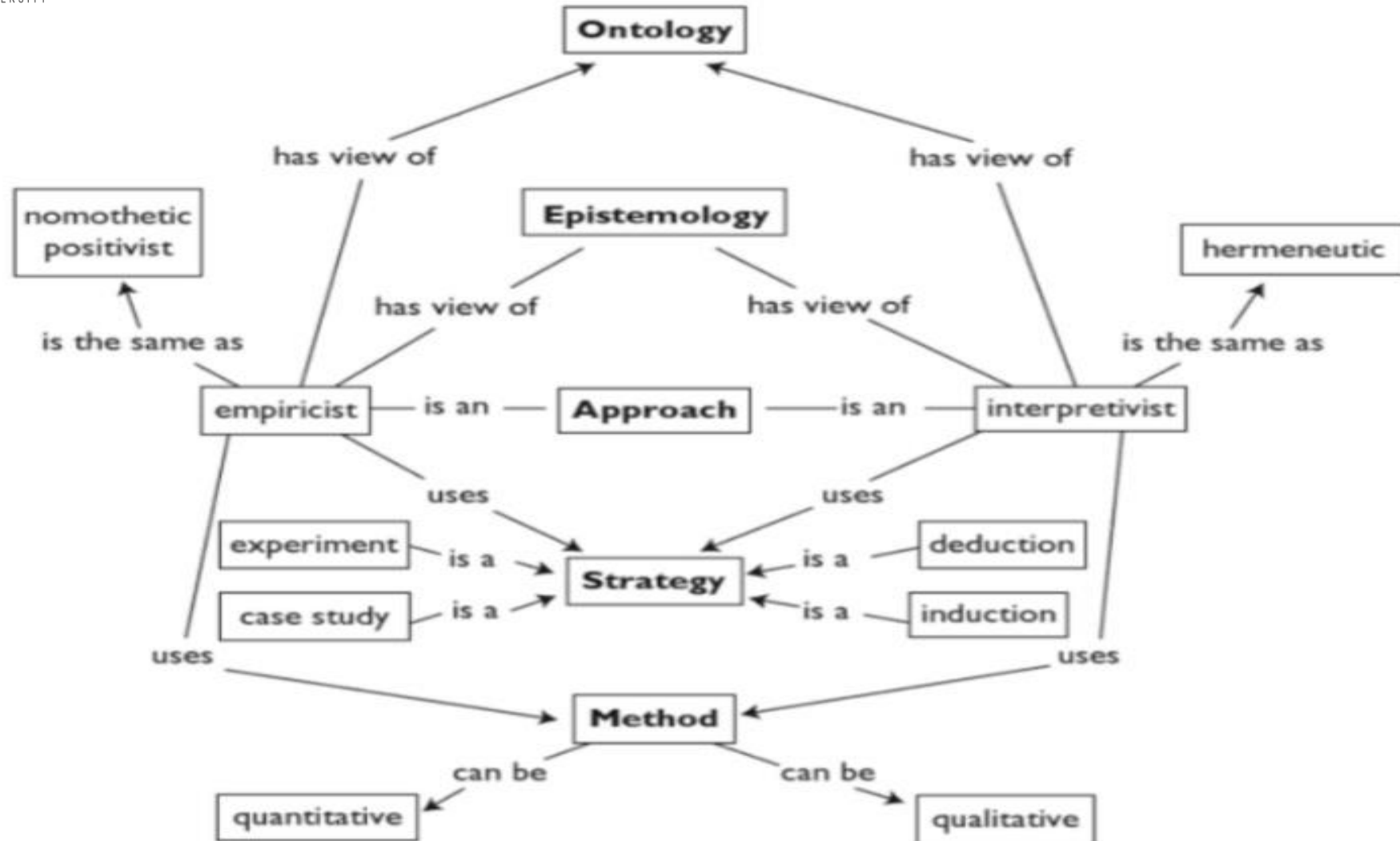
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(Guba and Lincoln, 1994)



Relationship in Research





Researcher as Scientist

- Example Theory: Computer Games leads Juvenile Violent
- Example Hypothesis: Violent in Computer Games increases Juvenile Violent
- Ontology: Objectivism - Facts exist independent of researcher
- Epistemology: Positivism - Using Scientific principle to study the phenomena
- Methodology – Deductive approach (Theory – Hypothesis - Confirmation)
- Methods – Quantitative research (surveys, questionnaires, samplings)





Quantitative & Qualitative Research

Differences between Quantitative and Qualitative research strategies

	Quantitative	Qualitative
Principal orientation to the role of theory in relation to research	Deductive Testing of theory	Inductive Generation of theory
Epistemological orientation	Natural science model, in particular positivism	Interpretivism
Ontological orientation	Objectivism	Constructionism

(Bryman, 2006)



Quantitative & Qualitative Research

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Strengths of Quantitative Research

- Easy to implement the research (surveys, questionnaire)
- Relatively quick to gather research data
- Provides precise and numerical research data
- Useful for large sampling size
- Relatively faster to analyse research data (SPSS)
- Easier to interpret research data

Weaknesses of Quantitative Research

- Researcher's theory and hypotheses might not reflect real phenomena
- Research data gathered could be too general
- Research results might not be in-depth
- Research results could be bias as researcher is verifying his/her pre-determined theory and hypotheses instead of building them from the research findings



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