

Some Problems of the Current Empirical Research Practice

Dr. Alex Liu

The RM Institute

831-E South Stoneman Avenue

Alhambra, CA 91801, USA

626-552-2351

Alex@ResearchMethods.org

Summary

- Replacement of research methods with statistics AND replacement of dynamic research process with static research
- are the two main problems of current empirical research practice.
- Due to this, empirical research is considered as an art by many and is named as “Garbage in, Garbage out” by some. And these problems have made empirical research a confusing field as commented by many scholars.

Problem 1: Using Statistics to Replace Research Methods

- Research methods = statistical techniques + statistical strategies + subject knowledge.
- Many institutes only teach statistical techniques to their analysts and students.
- Many researchers use statistics as a substitute for causal analysis.

Problem 2: Equivalent Models Ignored

- There are many, sometimes hundreds or even thousands, models that fit a dataset equally well.
- Many researchers ignore this issue in practice, and only report the model they like the most.

Problem 3: Over-emphasis of Fit Indices

- Good fit indices of a model do not necessarily prove this model is logically consistent with a dataset OR this model provides the best answers to a research question.
- But, many researchers use fit indices as the sole guide in their model search process.

Problem 4: Over-emphasis of GOOD Estimation Methods

- MLE is considered as a good estimation method.
- But, MLE is not stable and may have more than one local maximal.
- Many researchers rely too much on good estimation methods.

Problem 5: Confirmative methods used for exploratory analysis

- Many methods are created for confirmative only, but used for exploratory purposes.
- Good exploratory methods are to be developed.

Problem 6: Implicit Assumptions Used

- The decision of moving from one research stage to another is often led by researchers' experience or biases, not by explicit scientific assumptions.

Problem 7: Dynamic Research Process Managed as Static Process

- Research is a dynamic search process.
- But it is often managed, and reported as a static process.

And

- 8. Mis-match between research questions and research methods.
- 9. Mis-match between models and estimation methods.
- 10. Misunderstanding of the difference between qualitative and quantitative
- 11. Self enforced obstacles for interdisciplinary research
- 12. Ignorance of reflexivity
- ...

One of the Main Causes of these Problems

- Statistical packages are used as RM systems.
- These packages allow expert users to hide implicit assumptions, and get novice users confused.

A Partial List of the Scholars Who Studied these Problems

- Professor Stanley Lieberman, Harvard
- Professor Judea Pearl, UCLA
- Professor Rebecca Morton, NYU
- Professor Forrest W. Young, University of North Carolina
- Professor David J. Hand, Imperial College, UK
- Professor Clark Glymour, Carnegie Mellon University
- **But, no practical solutions offered yet that all the problems still stay with the current practice.**

Effects of These Problems

- Low Productivity
- Low Quality
- of Empirical Research

GIGO
Garbage in
Garbage out

The RM Solutions

- The RM Principles
- The RM4Es
- The ResearchMap
- and
- RM techniques and RM systems to improve quality and productivity of empirical research.

Future Work

- A book in progress -
<http://www.researchmethods.org/problems-research.htm>
- An article –
 - <http://www.researchmethods.org/alex-method-journey.htm>