# Research Methodologies

* Most important tools to identify problems and reach one main’s objective and product
* Need to be compatible with research problems to get accurate and realistic result
* 2 categories
  + Qualitative
  + Quantitative
* Identifying and clarifying main key of research aims.
* Babbie (2012) [[6](http://www.scirp.org/journal/PaperInformation.aspx?PaperID=71775#ref6)] , identified research approach as: “systematic and orderly approach taken towards the collection and analysis of data so that information can be obtained from those data”.
* Qualitative
  + Interpretive or critical paradigm within social sciences to study social phenomena
  + Get rich, important, meaningful data
* Quantitative
  + Interpretation of numeric data
  + Using tools of analysis
  + In the analysis of data depends on statistical principles
* Research Strategy
  + “the general plan of how research will go about answering the research questions.” Sunder et al. [16]
  + according to Weduawatta et al. [[1](http://www.scirp.org/journal/PaperInformation.aspx?PaperID=71775#ref1)] , “provides the overall direction of the research including the process by which the research is conducted”.
  + Case Study
    - Yin [[18](http://www.scirp.org/journal/PaperInformation.aspx?PaperID=71775#ref18)] , defined case study as?”A case study is an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident”.
    - Depends on qualitative approach
    - Enables researcher to study information system in its natural settings and generate theories from practice
    - Enables researcher to gain more explicit information
    - Enables researcher to the nature and complexity of the process taking place.
  + Single-Multiple Case Studies
* Data Collection Method
  + Interviews
  + Documentation
  + Questionnaire
* Validity and Reliability
  + The validity and reliability can be achieved when there is a clear explanation of the techniques used to collect needed data and enabling the interviewee to assemble documentation that can support interview. He also added that the validity and reliability can be increased depending on: careful design of individual questions; clear and pleasing layout of the questionnaire; lucid explanation of the purpose of the questionnaire; pilot testing; carefully planned and executed administration [[20](http://www.scirp.org/journal/PaperInformation.aspx?PaperID=71775#ref20)] [[28](http://www.scirp.org/journal/PaperInformation.aspx?PaperID=71775#ref28)] .
* Research Design
  + Aims to give a picture of structure of research and used data collection
  + Method of inquiry
  + Action plan to move from methodology to next stage
* AGILE VS SCRUM VS WATERFALL VS KANBAN
  + Agile
    - Incremental, iterative approach
    - Open to changing requirements
    - Ecourages constant feedback
    - Goal of each iteration is a working product
    - Face to face communication as well as accountability
    - 12 principles of agile methodology
    - Advantages
      * Change is embraced
      * Unknown end goal
      * Faster, high quality delivery
      * Strong team interaction
      * Customers are heard
      * Continuous improvement
    - Disadvantages
      * Planning less concrete
      * Team must be knowledgeable
      * Time commitment from developers
      * Documentation neglected
      * Different final product
    - Agile Development
      * 1) Requirements
      * 2) Plan
      * 3) Design
      * 4) Develop
      * 5) Release
      * 6) Track and Monitor
    - Methodologies used to Implement Agile
      * Extreme Programming
      * Feature-driven development
      * Adaptive System development
      * Dynamic Systems Development Method
      * Lean Software Development
      * Kanban
      * Crystal Clear
      * Scrum
  + Scrum