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| **Presentation: Research Methodologies** |
| **Quantitative Research**  Because it deals with specific empirical data that is gathered, measured, and analyzed, quantitative research methodology is a powerful form of research. In this methodology, relationships between variables are measured or quantified. This includes both dependant variables that are observed and independent variables or outcomes. Quantitative research can be applied to both observational and experimental research. The focus on hypothesis testing is really what distinguishes quantitative from qualitative research.  An example of a quantitative research project is the development of an electronic component based on two different kinds of software. If the research question is *Which software enables the electronic component to perform faster and more efficiently?*, the hypothesis is that Software A will outperform Software B using a specific set of criteria. The research design is to conduct an experiment to determine the best performing and most efficient software for the electronic component. Performance is measured based on a specific set of criteria.  **Qualitative Research**  Dealing with observation and analyzing trends as well as patterns and behaviors, qualitative research methodology is often referred to as a softer form of research approach. Qualitative research can be considered more exploratory in nature. Information is collected using focus groups, seminars, surveys, interviews, and forums.  An example of a qualitative research project is the study of how work is accomplished in an organization. A case study approach may be used as the research strategy. Information is gathered from organizational charts, documents, and observation of daily operational behavior. Results and conclusions from the study may generate recommendations or even more questions for further research.  **Mixed Methods Research**  Because it combines the power of quantitative and qualitative approaches, mixed methods research methodology is often considered the most powerful. An example of this type of research strategy is the use of both case study and an experimental design to explore an organization’s processes. Processes are observed, changed, measured, and the results quantitatively analyzed. Again, this research methodology combines the qualitative (case study approach) with the quantitative (experimental design) approach.  **Action Research**  Action research methodology provides a way to approach solving a problem or improving a process. The methodology's iterative nature is very similar to performing a quality process improvement effort within an organization. Although there are a number of models, the basic approach is a spiral process that includes identifying the problem, fact finding, planning, taking action, and evaluating and correcting as necessary.  One example of an action research project is that of an organization that operates a sales call center. The call center is dropping a high number of calls, thus losing potential revenue, so a team is pulled together and data are collected, reviewed, and an action plan developed. Corrections are continuously implemented until the call center metrics improve.  **Ethics in Research**  Whether in daily life, a job, or especially in research, ethical behavior is critical to protect personal and organizational integrity. When conducting research, the entire research process must be monitored and carefully administered to ensure each step of the process is following the highest standards of conduct possible. Regardless of the research methodology used, during the entire process, careful consideration must be given to honesty, intellectual property, use of human subjects, confidentiality, and social responsibility.  Examples of unethical behavior are not very hard to find. In research, ethics are crucial to maintain credibility of the researcher, the team, and even the organization conducting the research project. Once the information, analysis, results, and conclusions have been compromised, the value of the research is substantially, if not irreparably, compromised. |

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| **Article** |
| **FAQ: Research Methodology** |
| **Question:** What is research methodology?  **Response:** Research methodology is a collection of techniques used to explore the validity of various theories and ideas that are applicable to a particular field of inquiry. In general, the three broad approaches to research in business and other disciplines include qualitative, quantitative, or mixed methodology. These approaches to research provide the framework for scientific inquiry. Such methodologies provide a systematic and replicable pathway to answering questions of concern within the field of inquiry. As such, research methodologies are a means to an end; they are processes that allow the formulation of a particular viewpoint concerning a theory of interest.  **Question:** Why is research methodology important to completing research?  **Response:** Any attempt to answer a research question is doomed to failure without a logical framework within which to examine that question. Research without methodology is like a corporation without a strategy. It starts nowhere and leads to nowhere. The methodology employed often defines the direction of the research. It is fair to say that more than a few unexpected discoveries have resulted from the research methodologies employed in the inquiry.  **Question:** When is it best to use qualitative research techniques?  **Response:** In studying any phenomenon in business research, one of the questions that we desire an answer to is the following: What are the behavioral reactions of the employees or customers to a particular management decision? These behavioral reactions are qualitative variables that reveal the thoughts and feelings of those affected by the decision. Qualitative research techniques should be employed when a decision is thought to be potentially controversial or the business is charting new territory and is not sure what to expect. Marketing research relies heavily on qualitative research techniques to gauge the customer’s reaction to a change, elimination of a product, or the introduction of a new product.  **Question:** What do qualitative research methods really measure?  Qualitative research methods measure emotions and the reactions of the human element of the business equation. In this type of research, the personal interview is often the most effective technique. Questions such as the following are frequently asked:   * How do you feel about the product? * Do you enjoy using it? * Would you recommend the product to others?   Likewise, asking employees about how they feel about a new company policy can help management to gauge the degree of support or resistance to that policy. The emotions of the human element can be major determinants of how successful a firm’s strategy will be.  **Question:** When is it best to use quantitative research techniques?  **Response:** Quantitative research is aimed at finding out what the degree of reaction is to some phenomenon. This research measures numerical data such as revenue or expense numbers from an income statement as a gauge of the success or failure of a business strategy. A researcher may use this type of approach to answering a business question when the qualitative response to a product or decision is already known or is considered less important, such as in an inelastic demand response due to a price increase in a product that the consumer must buy. A good example of this situation is the price increases in gasoline. Nobody wants to pay $3.00 a gallon, but most consumers have no choice but to pay the higher price because they need gas to drive their cars to work and school. This could be verified using a demand analysis showing the inelastic nature of demand when the price of gasoline is changed.  **Question:** What do quantitative research methods really measure?  **Response:** Quantitative research measures numbers such as from a profit and loss statement. The increase or decrease in profit is the gauge of the degree of success or failure of the firm’s strategy. Thus, this measurement reveals the degree of reaction to the phenomenon being studied. Based on the theory of demand, an argument could be made that all quantitative studies are an indirect way of evaluating the customer’s emotional reaction to changes in the marketplace. If the customer has a positive emotional reaction to a price change, he or she is likely to increase his or her purchases, which are reflected in the profit and loss statement. Regardless of what is measured, quantitative research is the easiest to conduct.  **Question:** When should mixed research methodology be used?  **Response:** Mixed research, as the name implies, is a combination of both qualitative and quantitative research techniques. When entering a new regional or international market, it is desirable to measure both the behavioral reaction and also the degree of that reaction in quantitative terms. Another opportunity to conduct mixed research occurs when a new product is introduced either in an existing marketplace or a new geographic location. Doing mixed research can often lead to a broader understanding of the phenomenon being studied. Mixed research is more costly than quantitative research and is more time consuming than either qualitative or quantitative research because both qualitative and quantitative research techniques are employed.  **Question:** How does a mixed research methodology approach facilitate business decision making?  **Response:** To optimize business decision making, it is desirable to reach the most thorough level of understanding of the phenomenon upon which is being decided. While both qualitative and quantitative research methods offer a lot of insight into the subject being studied, only mixed research optimizes that insight. By measuring both the behavioral reaction and the quantitative degree of that reaction, the most comprehensive business decision can be formulated. In this sense, mixed research should facilitate sound business decision making to an even greater extent than qualitative or quantitative research alone.  **Question:** How do I select the data I will use for my research?  **Response:** Selecting data upon which to base research on is the most crucial step after the determination of the methodology that is to be employed. The methodology dictates the type of data to be used. If the data are not available to the researcher, then a change in methodology might be needed. In qualitative research, the key source of data is from customers or employees, so access to these two groups and the opportunity to interview them or to administer surveys is essential. A case study technique might be used, but access to people and numbers would be required. In a quantitative study, raw numerical data are needed. If the data are available to the public through the corporation’s Web site or the company’s Security and Exchange Commission filings, then the research can go forward. If the researcher has access to additional information directly from the company, then the research process is aided even further.  **Question:** Does my research need to include statistical analysis?  **Response:** Almost every research project can be aided by the inclusion of statistical analysis at some level; however, the inclusion of a significant amount of statistical analysis in any research project is dependent upon the nature of that research. There is no benefit in including unnecessary statistical analysis simply because you can do so. In many respects, the amount of statistical analysis used in the research will be determined by what is needed to prove or disprove the hypothesis in the study. |