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NATURE, PRINCIPLES AND METHODS OF BUSINESS AND MANAGEMENT RESEARCH

The article discusses the importance of understanding the nature and principles of business and management research for a successful implementation of the study. With the view of achieving this objective the differences between quantitative and qualitative methods are reviled, the strengths and limitations of both approaches are discussed. On the example of the evolution of bankruptcy prediction models, it was concluded that it is impossible to focus only on one research method and triangulation between qualitative and quantitative methods allows to achieve significant results.

Keywords: *research, paradigm, methods and techniques, quantitative and qualitative research methods*

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ПРИРОДА, ПРИНЦИПЫ И МЕТОДЫ НАУЧНЫХ ИССЛЕДОВАНИЙ В БИЗНЕСЕ И МЕНЕДЖМЕНТЕ

В статье рассматривается важность понимания природы и принципов исследований в бизнесе и менеджменте для обеспечения значимых научных результатов. Для успешного достижения поставленной цели анализируются отличия количественных и качественных методов исследования, их преимущества и ограничения. На примере эволюции количественных методов оценки вероятности банкротства сделан вывод о невозможности ориентации лишь на какой-либо один метод и о необходимости комбинирования различных количественных и качественных методов в бизнес-исследованиях.

Ключевые слова: *исследования, парадигма, методы и приемы, количественные и качественные методы исследования*

The Nature of Business and Management Research

Understanding the nature of business research is vital to make sure that research comes from a valid source and was collected and analysed appropriately. In business the issues are not so narrowly focussed as in exact sciences. For conducting business and management research we will need to understand things about the way the global economy is managed and governed, about governments and how their policy affects business operations, about national economies and how they affect business processes, about business entities such as companies, partnerships and co-operatives, how they sell products and services, about people as managers, staff, customers and owners, etc. As can be seen, business is an umbrella term for many different substances, and involves a number of different academic disciplines, such as mathematics, statistics, history, economics, sociology, politics, etc. So when we research into business or management, we will be

drawing on a number of different disciplines and domains of life because business research is multi-disciplinary.

Extremely vital for business and management research to understand what kind of problems might need a research study. From this point of view it is possible to determine “Mode 1 knowledge” by Gibbons [1], created by academics for an academic intellectual purpose and “Mode 2 knowledge”, which is practical applied knowledge. If “Mode 1 knowledge” has to do with basic research, tends to be built on the foundations of what was known before and consider how that knowledge might be further discussed or developed, “Mode 2 knowledge” is essentially real-life knowledge or slice of life information comes from collaborating with practitioners (managers, supervisors, etc.). So, among a wide range of ways to approach business research the choice should, therefore, be based on the mode analysis.

Except some above-outlined specifics, business research can also be conducted at different levels and from different points, they can have different time frames, costs, etc. that also should be considered by specialists, conducting business and management studies. For example, the study of a phenomenon at a particular time from the perspectives of more than one person (evaluating by legal professionals, economists, etc.) – cross-sectional research – very common for business research. A longitudinal study (tracking a new product from launch to maturity, observing industry trends over time, etc.) – look at a phenomenon over a time period – is also important feature of business research. So, most business and management studies tend to be cross-sectional and longitudinal research.

Fundamental Principles of Research Design

Understanding the fundamental principles of business and management research design is a starting point for future investigation. A *paradigm* serves as the main point of departure for this understanding. It is a mind foundation or a set of hypotheses and statements to determine the thinking mode. Paradigm is an ideology which identifies the essence of the universe, the status of any individuals and amplitude of their probable relationships with the universe and its parts [2, p. 25].

On the paradigm basement according to Easterby-Smith, Thorpe and Jackson [3], there are four main elements of research design, which outlined the basic principles of research. They show the influence and view of the world that affects the choice of methods and techniques.

The first core element – *ontology* – a scope of concepts that directly relate to being, in particular, becoming, existence, reality, as well as the basic categories of being and their relations [4]. It determines how the researcher view the world and its assumptions about the nature of the world and of reality.

Then goes *epistemology* – a study of the nature and grounds of knowledge, justification, and the rationality of belief [5]. It determines researchers’ assumptions about the best way of investigating the world and about reality.

The third element is *methodology*. This is a particular procedure or set of procedures [6] that researcher us for grouping together research techniques to make a coherent picture.

The fourth outer layer is *methods and techniques* – what researcher actually does in order to collect data and carry out investigations.

Research paradigms provide research frameworks for the researchers and helps each paradigm follower answer for three substantial questions:

- What is the substance and nature of reality?
- What is the nature of the relationship with reality?
- How can a researcher understand reality?

The answer to the first question is the nature of ontology, the second question is the nature of epistemology and the third one can be answer by the nature of methodology based on methods and techniques as it is shown in Fig. 1.

All four layers showed in the Fig. 1 are required to be coherent and consistent to create a viable research design and before starting research it is necessary to understand how four above

mentioned elements of research design fit with the ‘bigger picture’ of the world. For example, among the four main schools of ontology there are four main cluster of beliefs: realism, internal realism, relativism and nominalism. The first one summaries that the world is ‘real’, and science proceeds by examining and observing it, whereas a relativism postulates that scientific laws are basically created by people to fit their view of reality. The two therefore require quite different approaches, focus on different areas of study and foster different research methods although none of these positions are absolutes.

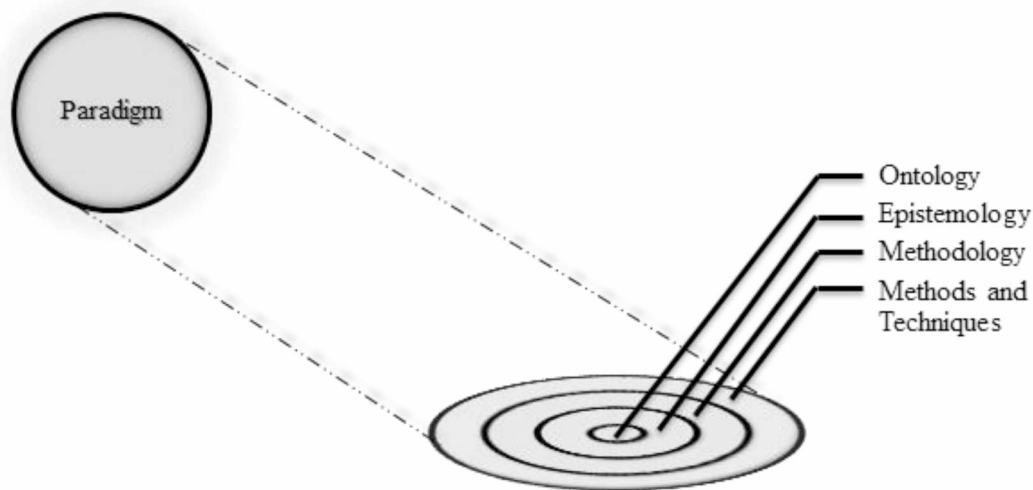


Fig. 1. Relationship between a paradigm and decomposition of a research process

Note: own study.

Within social sciences, there are also different epistemological approaches, or the way in which researchers choose to investigate the world. The two main schools are positivism and social constructionism.

A positivist approach is usually associated with natural science research. Positivists believe that the best way to investigate the world is through objective methods, such as observations or empirical testing. Positivism states that only phenomena which we can know through our senses (sight, hearing, smell, etc.) can really produce “knowledge”. It promotes the idea of experimentation and testing to prove or disprove hypotheses (deductive) and then generates new theory (“laws” or principles) through the investigation of what is said or written (inductive). Finally, positivist research is about objective rather than subjective (normative) statements and only the objective statements are seen to be the proper domain of scientists.

By contrast, social constructionists believe that reality does not exist by itself. Instead, it is constructed and given meaning by people. Therefore their focus is on feelings, beliefs and thoughts, and how people communicate these.

As a result, positivism fits within a realist ontology, while social constructionism fits better with a relativist ontology.

So, realists tend to use a positivist epistemology. They start with hypotheses, then gather facts through experiments, with a view to proving or disproving their hypotheses, and therefore confirming, or not, their theory. Relativists, on the other hand, tend to take a social constructionist view. They start with questions and use basically case studies and surveys to gather both words (views) and numbers, which they use to compare and generate theories.

Thus, it is the ontological and epistemological position which affect the methodology and the methods and techniques researchers choose. This choice of any particular research design involves trade-offs but all of the main research traditions have strengths and weaknesses.

Business and Management Research Methods and Techniques for Different Research Studies

All methods and approaches of business and management researches were used, together with their core ontological and epistemological philosophy, must answer chosen research questions. From this point of view, all of them, as shown in the fourth layer in Fig. 1, can be either quantitative or qualitative. Each approach has its strengths and limitations and both approaches share core scientific principles, but they also differ in significant ways (see Fig. 2):

Quantitative Approach	Qualitative Approach
• Measure objective facts • Focus on variables • Reliability the key factor • Researcher distant (detached) • Value free • Separate theory and data • Independent of context • Many cases, subjects • Statistical analysis	• Construct social reality, cultural meaning • Focus on interactive processes, events • Authenticity the key factor • Researcher close (involved) • Values present and explicit • Theory and data fused • Situationally constrained • Few cases, subjects • Thematic analysis

Fig. 2. Quantitative and Qualitative Approaches Comparison

Note: based on [7, p. 17; 8, p. 302].

As reflected in the Fig. 2, quantitative research is explaining phenomena by collecting numerical data that are analysed using mathematically based methods (in particular algebraic, statistical and financial analysis methods) [9]. It is virtually impossible to avoid data analysis if we wish to evaluate, monitor, predict or improve the company activity. This means that economists and managers have to deal daily with data collection, management, processing and analysis.

“Qualitative methods” is an umbrella term to cover the methods and techniques which haven’t been able to be “quantitative” [9, p. 107]. Qualitative researches seek to answer questions of human experience and about why and how people behave in the way that they do. They provide valuable insight into human behaviour and help researchers to understand human beings and their social and cultural phenomena in the social world [10, p. 81].

Some main differences between qualitative and quantitative research methods are outlined below in Table 1.

Table 1

The Differences between Qualitative and Quantitative Researches

Indicator	Qualitative researches	Quantitative researches
Verbal style (literature)	Personal ideas are stated in present tense (point of view of researcher)	Speeches from others are stated in the past tense (points of view of participants)
Analysis process	Mostly deductive (specific to general)	Mostly comparative (general to specific)
Concluding basics	The evidences resulted from events are real and experiences are tangible	The relationships are taken from repeated and countable data

Table 1 ending

Indicator	Qualitative researches	Quantitative researches
Describing cause-effect link	Bound to an individual (individualism), an objectivity from integrated events	Universal (rule-based), relationship among statistical variables
Research proposal	Including new concepts, innovative, and open ended (without boundaries)	Statistical design (a set), concepts are closed (limited) before the research
Research questions	A marginalized set and group, and a study problem, ambiguous issues, open ended questions	Specifiable and measurable variables and relationships
Sampling purpose	Determining ability, variety, and enrichment	Generalize ability and indicative factors

Note: based on [8, p. 302; 9, p. 113].

Among principal qualitative methods the most popular are:

- Action research;
- Case study;
- Storytelling;
- Ethnographic research;
- Participant observation;
- Focus groups;
- Interviews;
- Life history research;
- Participant diaries;
- Structured observation, etc.

Quantitative methods are generally closely affiliated with scientific research, which can include:

- Collection of empirical data;
- Measurement and data analysis;
- The estimation of dependencies and creation of models, etc.

A comprehensive analysis of 1274 articles published in the top two American sociology journals between 1935 and 2005 found that roughly two-thirds of these articles used quantitative methods [11]. Especially, they are widely used by economists. Such a widespread or dissemination could be explained by the possibility of use both the big range of the simplest methods for conducting quantitative research such as one-step linear equations in one variable (e. g. $x + 1 = 1$) or more complex advanced methods of higher mathematics or financial algebra as, for example,

for finding the unpaid of a loan ($A_{n-k} = R \left[\frac{1 - (1+i)^{-(n-k)}}{i} \right]$), where R – size of each periodic

payment, i – interest rate per period, n – total number of equal periodic payments, k – number of equal payments paid, $n-k$ – number of remaining payments).

But most of the quantitative research is based on statistical methods (especially in business and management) and statistics is the most widely used branch of mathematics in quantitative research. So, understanding and possession of such skills as proceeding data with descriptive and inferential statistics are extremely important for economists for business and management research.

Development of Research Methods (Based on the Example of Bankruptcy Prediction Models)

Different methods become popular at different stages of development. This idea is vivid on the example of evolution of quantitative methods of bankruptcy prediction.

On the beginning of 20th century the first methods for bankruptcy prediction were created and nowadays there are four stages in the development of financial distress measures can be detected:

- Univariate analysis,
- Multivariate analysis,
- Logit- and Probit-analysis,
- Advanced analytical tools [12, p. 115].

Univariate analysis assumes that a single variable can be used for predictive purposes. The univariate model as proposed by William Beaver provided a moderate level of predictive accuracy. Univariate analysis identified factors related to financial distress; however, it did not provide a measure of the relevant risk.

A review of the literature indicates that among the first researchers applying financial ratios for bankruptcy prediction were Ramser (1931), Fitzpatrick (1932) and Winakor and Smith (1935). Fitzpatrick, for example, used a univariate analysis of 13 ratios to indicate a failure. The Fitzpatrick model did not, however, show a significant relationship with failure. Later on, many studies have evaluated financial ratios as the most effective factors on bankruptcy.

In the next stage of financial distress measurement, multivariate analysis (also known as multiple discriminant analysis or MDA) attempted to overcome the potentially conflicting indications that may result from using single variables.

Although not as popular as regression analysis, MDA has been utilized in a variety of disciplines since its first application in the 1930's. During those earlier years, MDA was used mainly in the biological and behavioral sciences.

MDA assumes that, for two populations, the independent variables are distributed with each group according to a multivariate normal distribution with different means but equal dispersion matrices. For his model, the two groups were bankrupt and non-bankrupt companies, and the independent variables were five common financial ratios that could be obtained by publicly available financial statements. MDA obtains a linear combination of the independent variables that maximizes the variance between the populations relative to within group variance.

A survey of the literature shows that the majority of international failure prediction studies employ the MDA, which has many disadvantages, so its popularity declined considerably after the 1980s. At the same time, new methods have emerged based on the logit and probit methods, which partially help to avoid some disadvantages.

The logistic regression (or logit regression) analysis was put forth in the 1940s as an alternative to Fisher's classification method, linear discriminant analysis. Initially it was used extensively in numerous disciplines, including the medical and social science fields. Unlike the MDA, the logistic regression does not assume multivariate normality and provides several statistics that indicate the significance of each variable. It also handles relatively smaller sample sizes better than the discriminant analysis.

Another commonly used approach is the probit analysis which is very similar to the logistic regression. The main difference between them is that the probit function assumes a cumulative standard normal distribution, whereas the logistic function assumes a binomial distribution. Both methods employ the maximum likelihood estimation and should produce very similar results, especially with large sample sizes.

As such, the probit analysis is a type of the regression used to analyze binomial response variables. The idea of the probit analysis was originally published in Science by Chester Ittner Bliss in 1934. In 1947, a professor of statistics at the University of Edinburgh by the name of David Finney took Bliss' idea and wrote a book called *Probit Analysis*. Today, the probit analysis is still the preferred statistical method in understanding dose-response relationships.

All above mentioned statistical methods have high accuracy of prediction and could easily interpret the results of the analysis. The statistical MDA, LR and PR parametric models for

corporate default prediction are of practical importance but all of them have certain limitations. Therefore, there are other complex techniques for bankruptcy prediction based on non-parametric algorithms. Among other statistical methods applied to bankruptcy analysis are:

- The gambler's ruin model option pricing theory;
- Recursive partitioning;
- Neural networks;
- Rough sets, to name a few.

Mostly, the creation and development of these models was possible due to modern electronic technologies that have facilitated the use of Big Data and mathematical algorithms to predict future financial problems.

Triangulation between Qualitative and Quantitative Methods

The above mentioned example shows that orientation only on the one research method is not possible. The development even the same type or group of methods shows that despite some real differences between quantitative and qualitative research, they overlap a great deal and there is a usual practice for business research to mix methods of data collection and analysis associated with each of them. This can be done by using different data collection methods (a multi-method approach) which are all either qualitative (e. g. by interviewing, using questionnaires, etc.) or quantitative (e. g. paper or web surveys and observations, financial reports, etc.), or it is possible to use both qualitative (e. g. narrative analysis, content analysis, etc.) and quantitative (e. g. correlation analysis, regression analysis, etc.) data analysis methods (a mixed method approach). One of the reasons for this is interpenetration where different methods of data collection and analysis will both enrich and confirm the picture. Often survey results are used to map out a broad view of the research question, and to provide themes or areas for investigation in more depth through interview. Combining both qualitative and quantitative research, which is called triangulation, is a good way of approaching research as it enables to counteract the weaknesses in both qualitative and quantitative research. Such triangulation can also provide a check on findings from a particular method.

Conclusion

Understanding and correct deal with key issues in quantitative and qualitative data analysis are of essential importance in business and management research. Grounded on a properly chosen ontological, epistemological and methodological bases it is possible to conduct scientifically based research using qualitative and quantitative methods. Different methods become popular at different social, political, historical and cultural times in our development, and all of them have their specific strengths and weaknesses. Modern business and management research could benefit from using triangulation between qualitative and quantitative methods because their successful implementation requires an integrated approach.

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