The Evidence of case study Research in Business Management: Definitions and Guidelines for Empirical Analyses

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Abstract: The case study is one of the preferred research methods in Business Management field due two main reasons, i) it is recommended for exploring new themes, subjects, relations, or contexts, and ii) it helps the researcher to build theory from analyzed case(s). Despite the extensive contributions from different authors in management research for addressing the case study method, the definition, constitution, and operationalization of evidence analyses are still not fully clear. This research has as goal to fulfil this gap in the research methods literature by defining, constituting, and guiding researchers in operationalizing the evidence analyses for case study research. In this research, the evidence concept was triangulated from Forensic Sciences in order to achieve a more specific and detailed definition. The notions of quality and types of evidence are revisited. Thus, evidence from empirical case studies is analyzed aiming to provide its constitution. The manuscript offers a guideline for researchers in the case study method for better identifying, gathering, analyzing, and presenting evidence found from empirical research.

Keywords: Case study research, Empirical evidence, Research methods, Business Management.

1. Introduction

The case study is one of the preferred research methods in Business Management field (O'Gorman & MacIntosh, 2015). The reason is that case study allows scholars exploring new themes, subjects, relations, or contexts, or helps the researcher to build theory from analyzed case(s) (Eisenhardt, 1989). The most common approaches are the quantitative (Yin, 2014; Eisenhardt, 1989) and qualitative (Stake, 1995). This research focused on the quantitative approach in the Business Management field of study.

Although evidence is associated with data collection, there is no consensus on what evidence is. In Yin (2014) it is noticeable the six 'sources of evidence' for gathering data. The first is the 'multiple sources of evidence', not clear but giving the general idea that evidence is 'facts or findings'. Yin (2014) underlines the third source as 'chain of evidence' representing the relations among the asked questions, collected data, and conclusions (Tellis, 1997). In Gerring (2004), the empirical evidence is considered as covariational, a causal relationship.

Most scholars are considering evidence as related to data. Yin (1981, p.58) stated that "… the case study does not imply the use of a particular type of evidence. Case studies can be done by using either qualitative or quantitative evidence. The evidence may come from fieldwork, archival records, verbal reports, observations, or any combination of these". Eisenhardt (1989) stated that "The evidence may be qualitative (e.g., words), quantitative (e.g., numbers), or both." Despite these precise contributions, it is clear that evidence is considered as a synonymous of qualitative or quantitative data. Even though both qualitative and quantitative data are needed in case study research, we argue that evidence is not related solely to the data. We believe that a clearer and operational definition of evidence in case studies is still missing.

The relevance of addressing a more precise definition of evidence is due to the possibility that researchers deal with any kind of data that is gathered from field research that could be considered sufficient evidence of what was being collected. Moreover, the lack of clarity and rigor of collecting and analyzing evidence prejudices researchers in many ways. First, the idea of collecting one type of data is enough for responding the research questions. Second, considering the quality of data, a researcher can consider as sufficient enough to use multiple sources of evidence. Third, researchers may not consider relevant data to properly prove evidence. Fourth, the quality of case study in general may be jeopardized. Five, the lack of definition may lead the researcher to collect redundant data causing an overload of data to be analyzed.

This research has as goal to fulfil this gap in the research methods literature by defining, constituting, and guiding researchers in operationalizing the evidence analyses for case study research. Main contributions of this research to the existing literature are presented as follows. It states a clear definition, constitution, and operationalization of evidence analyses, extending the definitions of Yin (2014) and Eisenhardt (1989). This research presents types and quality of evidence for case study. In doing so, the evidence concept was triangulated from Forensic Sciences (Houck & Siegel, 2015) in order to achieve a more specific and detailed definition. The adopted procedures allowed proposing a guideline for researchers when defining, dealing, and analyzing empirical evidence for case studies.

2. Towards a definition of evidence

Evidence and data are not synonymous, and evidence goes beyond the data definition. We argue that evidence cannot be considered only data due a given evidence needs to be compared between/among other evidence *to confirm or disconfirm a statement*. After identification, comparison is fundamental process of evidence analysis (Houck & Siegel, 2015). Usually, the existing case studies do not compare one evidence with another but compare the results with literature (the discussion). In this way, evidence is needed to establish the idea/information validity concerning an object or phenomenon under study.

Thus, evidence is the result of identifying different data that could be confirmatory or contradictory, and then, after analyzing data, evidence can dis/confirm a statement. Evidence is not considered as a meta-inference or a set of data, but the *meaning* that is apprehended after analyzing sets of data aiming to respond a research question.

In Forensic Science (FS) (Houck & Siegel, 2015, p.44), evidence is considered:

> *"… as information – whether in the form of personal testimony, the language of documents, or the production of material objects – that is given in legal investigation to make a fact or proposition more or less likely. … Having the association of the bullets to the gun makes the proposition that the accused is the perpetrator more probable than it would be if the evidence didn't exist."*

Evidence depends on the association among other evidence and *how they prove or not a given statement*. The way of proving this statement is through analyzing different kinds of evidence and two or more evidence are needed to confirm a statement. This is a relevant finding from FS due there are case studies being conducted without this notion of *evidence comparisons to prove or not a statement.* This limitation is addressed when Yin (2014) stated the need for triangulating the 'sources of evidence'. However, most researchers are using triangulation more as a requirement for conducting case studies than benefiting from such kind of procedure.

After defining evidence, the next step is to define the types of evidence. Houck and Siegel (2015, p.45) provided fourteen types of evidence commonly considered in FS. From these types of evidence, four are adherent to the case study research as stated below and were previously tested by the case studies conducted by Ferasso (2018).

1. Circumstantial evidence (CIR): evidence that is based on inference, not representing the individual knowledge or perceptions (individual bias). This type of evidence includes a process of inference or reasoning where the conclusion is understood as justified considering the available information (principles of logic - Mortari, 2001).
2. Conclusive evidence (CON): evidence that is strong enough to overbear any other contrary evidence.
3. Corroborating evidence (COR): evidence that differs from the main evidence under study, but that reinforces or confirms main evidence.
4. Presumptive evidence (PRE): evidence considered to be true and sufficient unless it is discredited by other contradictory evidence.

These types of evidence also provide the fundamentals for understanding the quality of evidence, or the *probative value of data* (Houck & Siegel, 2015; Robertson, Vignaux & Berger, 2016). The quality of an evidence depends on how it is sufficient enough to prove or refute a statement. This quality is based on evidence's own content. By content of the evidence, it is understood the data that provide clear conclusions after inference processes. The different types of evidence are compared in order to provide greater assertiveness of the results of inference process.

3. Proposal of guidelines

Aiming to offer guidelines for better identifying, gathering, analyzing, and presenting evidence found from empirical research, a hypothetical case study is analyzed. As example, the theme of absenteeism in a company is framed as research topic of case study. Table 1 operationalizes the way of identifying, analyzing, and presenting the evidence in a case study.

Table 1: Guideline for evidence analyses

Theme of a case study	Identifying	Gathering	Analyzing	Probative value
Absenteeism in company 'A'.	Interviews with employees and employer. Employee's attendance sheets. Satisfaction and motivation reports. Site visits (observation).	Company has one CEO, one Human Resources Department (HRD), five employees (observation). "Employee 1 is always absent on Fridays" (Employee 4). Employees 1 and 4 did not participate in the Satisfaction and Motivation in the last three surveys (HRD reports). Employee attendance sheets showed 3 absences per month of employees 1 and 3 on Fridays, and all employees start late and leave earlier (HRD reports). The company has a noisy production room. During the visit, the CEO said: "We are solving this problem in next week" (observation). "The CEO was alerted about the noise in the factory in the last six months and nothing changed" (Employee 2).	Employees are showing two different degrees of absenteeism: the lower level is the late entrance/earlier leaving, the highest is the absence of two employees (COR). Empirical evidence of absenteeism could be associated with the bad working conditions caused by the noise in the factory (PRE).	CIR: The noise (CON) proved to be the cause of absenteeism in two different degrees among employees (COR).
	Second round: Interviews with employees.	Second round of interviews with employees regarding the noise in the factory room: "I hate noisy environments and I am already looking for another position" (Employee 1). "I am sensitive to noise, and I am avoiding staying too much in that room" (Employee 3). "I try to balance my permanence in the production room by circulating in the other places of the company. But I am unsatisfied with these working conditions" (Employee 2). "Too noisy!" (Employee 5).	Second round of interviews with employees revealed the association between the absenteeism and the noise in the factory (CON).	

4. Concluding remarks

This research aimed to provide a definition, constitution, and operationalization of evidence analyses in case study research in Business Management field of study. The definition and constitution of evidence were provided. The quality of evidence, types and probative value of data were discussed.

Aiming to help researchers in conducting future case studies using the discussed precepts of evidence, this research proposes guidelines for identifying, gathering, analyzing, and presenting evidence from empirical research. As limitations, this research was based on the ideas of the authors.

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