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**SINGLE CASE RESEARCH METHODOLOGY: A TOOL FOR
MORAL IMAGINATION IN BUSINESS ETHICS**

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SINGLE CASE RESEARCH METHODOLOGY: A TOOL FOR MORAL IMAGINATION IN BUSINESS ETHICS

Abstract

Purpose – Although there are often utilized the case research method for teaching purposes, it is not a method employed to move forward in scientific research into business ethics, perhaps due to criticism levelled against it. The precise aim of this work is to expound and argue for its use within the framework of scientific hypothetical-deductive methodology.

Design/methodology/approach – The opportunities offered by this methodological approach, both from an inductive (Eisenhardt, 1989; Dyer and Wilkins, 1991) and a deductive perspective (Yin, 1993; Carson et al., 2000) have been wasted, creating a need for scientific contributions within this area; hence this study. It was carried on a theoretical approach of the use of single case applied to corporate management based on religion and spirituality inclusion.

Findings – The results obtained indicate that the single case research method makes it possible to put forward alternative hypotheses to the dominant hypothesis, making contributions to the theory. Concretely, the scientific legitimacy of its use is justified by what it has been called “possibilistic hypothesis” for what it is not necessary to collect a large data or make an empiric research.

Practical implications – In the field of business ethics these hypotheses (possibilistics) make alternatives stand out that widen the moral responsibility of decision-makers. It implies an open mind for decision-makers and rigorous arguments using just a single case. Reinforce and make them easier based on moral imagination improvement.

Originality/value – It is complex the decision process, but this rich method, the single-case study could permit establishing rigorous and robust decisions easily. It is not use the case study widely for management, but this perspective could enrich and increase its use.

Key Words: Case Study, Business Ethics, Religion, Falsationism, decision-makers, hypothesis.

EconLit: M140, P130, Q130.

Introduction

The experiment that the CERN (European Laboratory for Particle Physics) carried out in September 2011 concerning the speed at which neutrinos travel has challenged Einstein's Special Theory of Relativity. In this respect and regardless of the fact that the Opera Project (Oscillation Project with Emulsion-tRacking Apparatus) has had cabling and measurement problems that invalidate the conclusions, the truth is that a single case study can question a theory that has been in force for more than a century. But this is nothing new, for Einstein's Theory was itself verified in 1919 by Eddington by means of a famous single analysis involving the observation of the curvature of light as it passed near the sun during an eclipse. In this classic example, a single case serves to refute or validate a complex theory.

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3 But what is the situation in the economic sphere and, more specifically, in business
4 ethics? Is it useful for moral imagination? The complexity of socio-economic reality
5 makes it very hard to control intervening variables and generalise the results obtained.
6 This is even more evident in the micro-economic area, where specific single companies
7 are to be dealt with, and the aggregation of data distorts the real distinguishing
8 characteristics of each company. This problem produces two antagonistic and
9 incomplete results. In the first case this is due to working with general aggregated data
10 within the framework of quantitative methodologies where specific differentiated
11 information for each company ends up losing its significance. Quantitative
12 methodologies certainly enable the identification and quantification of a good number
13 of companies but the statistical treatment employed means that divergent data are
14 dispensed with, either licitly due to error, or illicitly through the elimination of
15 discordant data. The second case lies at the other extreme, and occurs because
16 qualitative case analysis is used to understand complex company reality, forgetting the
17 scientific rigor that must accompany any attempt at attaining the general option
18 (Christians et al., 2015; Thiel et al., 2013; Hoffman et al., 2014).
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24 In this regard, the “possibilistic” hypothesis concerning the methodology we develop
25 and defend in this paper does not require lots of data, since a single fact, which does not
26 necessarily have to be searched but achieved, allows ethical reflection. Moreover, the
27 problem that this work addresses and will in consequence provide an answer to,
28 revolves around the possibility and advisability of using single cases within the
29 framework of scientific hypothetical-deductive methodology. Concretely, the utility of
30 case analysis in scientific methodology will be determined and argued from the
31 perspective of business ethics so as to increase the scientific rigor of its use in research
32 (Christians et al., 2015; Hoffman et al., 2014); giving scientific character to ethical
33 reflection based on a single data.
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37 Case analysis as such is not a new methodology, as is shown by the fact that it has been
38 widely employed for teaching purposes, in relation to both management and ethics
39 (Eisenhardt, 1989; McDonald, 2004; Bird & Hughes, 1997; Otley & Berry, 1994; Patton
40 & Appelbaum, 2003; among many others). Nevertheless, the opportunities offered by
41 this methodological approach, both from an inductive (Eisenhardt, 1989; Dyer and
42 Wilkins, 1991) and a deductive perspective (Yin, 1993; Carson et al., 2000) have been
43 wasted, creating a need for scientific contributions within this area; hence this study. So,
44 in the present work, through analytical-synthetic methodology we set out to demonstrate
45 the utility of single cases in their relation to scientific methodology and, more
46 specifically, the hypothetical-deductive method, applied to the field of business ethics
47 and the utility for moral imagination. This demonstration will be posed in two
48 complementary ways, on the one hand, as a process of logical justification, and on the
49 other, showing the importance that the single case, or the analysis of a limited number
50 of cases, has had in devising theories within the sphere of economics.
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56 The results that have been reached demonstrate that single case study, without any other
57 extra data, makes it possible to put forward hypotheses alternative to the dominant
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3 hypothesis, and these we have termed possibilistic hypotheses. This generation of
4 possible alternatives is crucial for moral decisions to be made, as only where there is an
5 alternative can there be morality (Aristotle, 1941). Thereby, this research method can be
6 used with little comment, critique or epistemological context.
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9 Likewise, the possibilistic hypotheses open an important area of interaction between
10 religion and/or spirituality and the company itself. Neoclassical economic has created a
11 scenario that gives manager little freedom of decision; because the main activity of
12 manager is based on obtaining efficient results of the entity (see for example Walger et
13 al., 2016), according to the laws that govern the operation of the companies. In this line;
14 it is important to take into consideration that the capacity of managers refers only to
15 decisions on uncertain data, and there are not decisions based on normative ethics
16 derived from different anthropological or social models. This paradigm, supported by a
17 clearly tautological mathematical formalization, tends to avoid ethical behaviour, as
18 long as it does not refer to professional ethics. And to a greater extent, to eradicate any
19 proposal that tries to seek the centrality of the economy in something alien to itself. This
20 is the case of religions, where economics is instrumental to a higher order purpose. In
21 this sense is the criticism of Pope Francis to the dictatorship of techno-economics
22 (*Laudato Si*), and his call to overcome the dichotomy between economy and common
23 good, proposing the need for it to respond to a truly human objective (*Evangelii*
24 *Gaudium*). Nevertheless, this religious reflection, which in the case of the Catholic
25 Church is classified in the denominated *Social Doctrine of the Church*, does not have
26 easy accommodation in the field of business management, since a significant number of
27 its precepts collides frontally with some of the main laws admitted in the economy.
28 From this perspective, the critical single case presented in this paper is shown as an
29 instrument to identify divergent empirical experiences that open the window to
30 alternative normative approaches, creating a space of possibility through which
31 ideological or spiritual elements of religions, whose can be transposed to the scientific
32 research and management of organizations.
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35 This paper is structured over four sections. After the introduction and the exposition of
36 an analytical approach to the scientific method, highlighting the relevance of the
37 hypothetical-deductive method and the conditions of refutation, section three sets out
38 the characteristics of methodologies based on single cases; specifically, case analysis
39 and quasi-experimental methodology. Then the possibilities offered by single case
40 methodology in relation to the refutation of dominant hypotheses are explained, in
41 addition to highlighting and expounding the argumentation that supports what we have
42 termed the alternative possibilistic hypothesis. Lastly, and before the conclusions, we
43 analyse the opportunities that this approach produces within the sphere of business
44 ethics and it is shown with some case examples.
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55 56 **Business Ethics and the Hypothetical-Deductive Method** 57 58 59 60

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3 ***Correlation, induction and the hypothetical-deductive method as Scientific***
4 ***Methodologies in the Social Sciences: particular conceptions***
5

6 In the social sciences the methodology or structured process aimed at obtaining true
7 explanations of social circumstances can be rooted in different methodological
8 approaches. The inductive and the hypothetical-deductive methods are the most
9 developed in formal terms (George & Bennett, 2005); the correlation method has also
10 been included, however, due to being considered as part of the *Symmetry Thesis*
11 introduced by Blaug (1980). The implications of these three methodologies are very
12 different in their relation with the problem we are tackling in this work. Immediately
13 below there is followed some observations regarding each method:
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18 1. Correlation¹: where ethical decisions are concerned, suppositions grounded in
19 correlation methodologies are always questionable in their applicability to a
20 single practical case and, consequently, do not constitute a fixed framework of
21 reference for possibilities of choice (see Simon [1954] or Brett [2004] for a
22 proper analysis in this regards). The problem is aggravated when the correlation
23 methodology is spuriously associated with the hypothetical-deductive method
24 and, skipping the differentiation between the exploratory and the confirmatory
25 stage, transforms into a hypothesis a correlation previously obtained that is
26 validated afterwards in line with the same data. In such a case, however, we are
27 not confronting a problem of scientific methodology, but one of inexperience or
28 a lack of ethics in the research; and rejection of the assumption is clear provided
29 that the research process is known.
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33 2. Induction²: it is always at least hypothetically possible for information to appear
34 that contradicts the causal relation established, so that, although the observations
35 lead us to think B will occur because A has occurred, we cannot be sure that the
36 next observation will confirm this. Precisely for this reason, inductive
37 methodology is not suitable for establishing causal relations (Popper, 1982), and
38 assumptions based on this methodology are particularly prone to refutation by
39 single case study, as we go on to analyse in a later section.
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48 ¹ Correlation indicates the degree of association between two variables; this is open to interpretation in
49 descriptive terms Two quantitative variables are correlated when the values for one of them, A, let us say,
50 systematically vary with regard to the homonymous values of the other, B, both in the same and in
51 opposite directions. Superficially, correlation gives a false impression of causality, giving rise to fallacies
52 known as “post hoc” and as “cum hoc ergo propter hoc” (Damer, 1995); correlation *per se*, however, does
53 not imply any causal relation between variables. In the words of Box, Hunter and Hunter (2008: 9):
54 “Correlation between two variables X and Y is often produced because both variables are associated with
55 a third factor W”.

56 ² Induction as a methodology for establishing causal relations has always been used as a method
57 throughout the history of humanity; but the criticism of its pretensions to truth made by logical
58 rationalism is convincing, in that something universal cannot be asserted from the particular data offered
59 by experience (Popper, 1967; 1982).
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3 3. Lastly, the hypothetical-deductive method³: it proves to be more complete than
4 the inductive method in that, in the observation stage of the phenomenon to be
5 studied, normally known as the exploratory stage, it incorporates the data known
6 with regard to a particular phenomenon in their entirety. Nevertheless, following
7 Popper's postulates (1967, 1982), a hypothesis is considered to be impossible to
8 demonstrate through an accumulation of data, which repeats the problem
9 experienced with induction; and the only verification possible lies in the
10 impossibility of falsifying the hypothesis or the theory in question. So, from this
11 perspective, the scientist should falsify the hypotheses by means of some type of
12 contrast, and falsification of the former would be derived from their results, as
13 would, in consequence, the need to propose alternative hypotheses more
14 consistent with reality; or, otherwise, provisional acceptance of the hypotheses.
15 As a result, the fact that an observation is in agreement with a proposition or a
16 prediction does not confirm the theory, which does not mean that it does not to
17 some degree corroborate it, depending on the rigour of the comparison; in the
18 opposite case, the comparison would have led to rejection of the proposition.
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24 Although in the later sections we might refer to correlation methodology and the
25 inductive method, we are definitely of the opinion that the former, in not acquiring
26 scientific status, can only be considered to fall within techniques linked with
27 hypothetical-deductive methodology, while the second falls within the exploratory stage
28 of the hypothetical-deductive method. The investigation, then, fundamentally
29 concentrates on analysing the potentiality of the single case within the area of
30 hypothetical-deductive research in the field of company and business ethics.
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34 *A methodological perspective through business ethics*

35

36 Ethical decisions in companies are powerfully conditioned by underlying economic
37 reasoning (Melé, 2010; Hoffman et al., 2014); furthermore, a great number of ethical
38 problems in companies stem from a conflict between personal good and common good
39 (Argandoña, 1998; Sison & Fontrodona, 2012; Dembinski, 2008), or from the
40 distribution of a positive / negative impact between a set of participants (Gupta et al.,
41 1998). While this problem is of great interest, what this work will specifically tackle are
42 the underlying economic assumptions that allow us to attribute a specific value to a
43 concrete decision.
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47 So, following an assumption to describe the phenomenon we are referring to, it would,
48 for instance, prove of great interest to analyse an ethical problem concerning "the
49 characteristics of the people I shall sack in order to reduce the costs of a company and
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52 ³ Hypothetical-deductive method is the procedure currently followed by scientific research, and has
53 exercised the most influence on scientific development. For Popper (1982), it is a logical thought process
54 for producing new knowledge and approaching the truth. This method can be broken down into various
55 sequential steps in the research process: observation of the phenomenon under study, creation of a
56 hypothesis to explain the phenomenon, deduction of the most elementary consequences or propositions of
57 the actual hypothesis, and verification or corroboration of the truth of the principles deduced through
58 comparison with experience.
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3 ensure its survival” (decision-making problem from an ethical perspective); this work,
4 however, will take on “the underlying supposition that we shall ensure company
5 survival by reducing staff” (assessment problem from an ethical perspective).
6 Continuing with the example, if it is really necessary to cut down on staff to guarantee
7 the survival of the company $[x \rightarrow y]$, the problem of ethical decision focuses on what
8 criteria will determine how to go about the dismissals; but if alternative options exist $[\neg$
9 $x \rightarrow y]$ then the ethical decision must focus on seeking other alternatives to dismissals⁴.
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13 It might be true that the search for these underlying causal relations is not a problem of
14 ethical discipline and that it belongs to other research areas in economics and business
15 studies and, in general, the social sciences; but to not critically accept these premises and
16 base the analysis of moral decisions on them certainly involves a very serious problem
17 of “omission”. It will therefore be important to be able to reply to the following
18 question: how can we mitigate this problem via ethical discipline? As noted Feyerabenn
19 (1997) science is conservative in its methods, which particularly affects the social
20 sciences, and in particular the ethics; because of that with the aim of verify a hypothesis
21 it is needed to work with a comprehensive set of data from the past, what causes
22 significant delays in the integration of new perspectives and approach to understanding
23 the new phenomena. Moreover, the maintenance of the null hypothesis although it will
24 be in doubt, involves the robustness of previously established knowledge and this makes
25 it difficult modification of the null hypothesis. This, together with the natural resistance
26 of people to change our mindset, proven by Kuhn (1975), leading to maintenance of
27 "conventional wisdom" (Galbraith, 1958) and generate a significant delay in amending
28 that knowledge, furthermore the incorporation into other related scientific disciplines is
29 stopped. From ethical point, this is a major ethical problem; because moral choices can
30 be enduring scientific or conventional inadequate knowledge. Regarding social
31 discipline it is a challenge to be able to find shortcuts, within the scientific framework
32 of knowledge that allows us to anticipate this new knowledge, minimizing possible
33 delays associated with their development and incorporation. This paper shows how
34 possibilistic hypothesis based on single case methodology enable that ethics introduce
35 alternative or future knowledge in their analysis and decision parameters.
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45 **Single case methodology**

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47 Socio-economic reality and, consequently, business ethics is a matter of “complex
48 thought” (Morin, 2011), where the approach to the study of a phenomenon can be
49 tackled from two conflicting perspectives: one holistic, the other reductionist. The first
50 refers to an analysis involving the whole or multiple whole; and the second, to a study
51 by parts. In general terms scientific research is not capable of undertaking the holistic
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56 4 For example, as it is explained later on a following section the Spanish organization Lantegibatuak
57 (www.lantegi.org) in period of credit crisis in terms of getting the common good and with the aim to
58 increase the social value with excess production capacity they choose to create spaces for leisure, where
59 workers can use the surplus time.
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3 understanding of the whole, and is focussed from an analytic-synthetic perspective of a
4 markedly reductionist kind (Soldevilla, 1995), where the phenomenon is broken down
5 into its constituent parts in order to afterwards integrate those parts within a
6 comprehensive overview. In this process of division and integration, it is necessary to
7 suppress information and variables, as what allows us to apply scientific research is
8 precisely this reductionism.
9

10
11 The main methodologies that we can identify for studying one or more hypotheses are:
12 the experiment, the study of cases and questionnaires. They are shown in the following
13 table, where it must be borne in mind that the participatory observation has been
14 incorporated in the “Case Study” section, where the cases may be single or multiple (see
15 Table 1).
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20 [Insert Table 1 here]
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25 Of the three methods proposed in the above table -experiment, case study and survey-
26 the only one that excludes single cases is the questionnaire methodology, which by
27 definition demands work with a minimum number of cases. However, both experiment
28 and case analysis seem to start out from the unit, and a scientific approach would not be
29 linked so much to multiplicity as to replicable behaviour. Despite this methodological
30 diversity we are aware that empirical research within the company area and business
31 ethics almost exclusively employs the survey method (Brigley, 1995), which is
32 attributed greater “scientificity”, perhaps because the multiple problems of sampling,
33 internal and external validity that it displays are masked by the “hidden hand”
34 (Hischman, 1967) constituted by numerical “reality”. Continuing with this critical
35 perspective, we may consider that some of the problems attributed to case analysis are
36 unfounded. Of the five misunderstandings identified by Flyvbjerg (2006) about case
37 studies we find particularly interesting the second error relate to the belief that the
38 results from case studies cannot be generalized, and that therefore the single case study
39 cannot contribute to scientific development. The third critic or misunderstanding is
40 referred to that case study is not useful to generate hypotheses, while other methods are
41 more suitable for hypothesis testing and theory construction; but we do not agree with
42 this point. We consider that using a single case –falsify view- an empirical contrast of
43 falsification can be made (overcoming third misunderstanding); and it is possible to
44 propose some kind of generalization (overcoming second misunderstanding), which
45 contributes to the development of theory (overcoming third misunderstanding).
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52 Over recent years the use of questionnaires in social science investigations has been on
53 the increase; this is, at least, demonstrated by specific business ethics analyses that have
54 been carried out (Robertson, 1993; Randall & Gibson, 1990; Hosmer, 2000). In spite of
55 the numerous contributions and benefits of the questionnaire-based method, “Simpson’s
56 paradox” (1951) (or the Yule-Simpson effect) (Simpson, 1951; Yule, 1900) reveals that
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3 relations of causality established by aggregated data do not match those thrown up by
4 disaggregated data. This assertion proves to be particularly significant in business
5 ethics, where the assumptions are generally supported by aggregated data and the moral
6 decisions will be implemented in singular cases.
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8
9 In terms of experimental design, another technique, the fact is that the quasi-
10 experimental design has been widely used in research related to the company, let alone
11 business ethics. Nevertheless it is important to notice that the quasi-experimental
12 research in business ethics probably will have a significant correlation with the
13 development rise that is taking experimental economics.
14

15
16 Retaking the thesis of case analysis and with the aim to a better understanding of its
17 actual use in business a clear differentiation can be distinguished between cases within
18 the sphere of teaching and research cases (Myers, 2009), as is reflected in the following
19 table (Table 2).
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24 [Insert Table 2 here]
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28
29 Case analysis has been abundantly used in business ethics; however, its use has been
30 directed toward teaching whilst it has not received support from the research area due
31 probably to its results being perceived as lacking in reliability and the fact that they are
32 complex and difficult to disseminate (Brinkmann & Ims, 2004). Following Rosen
33 (1991) in this regard, we might point out that there is scant acceptance in scientific
34 publications of articles based on case methodology. Similarly, after consulting⁵ the
35 editors of the five main ethical journals (the European Business Ethics Network-Spain
36 lists them in alphabetical order: Business and Professional Ethics Journal, Business
37 Ethics: A European Review, Business Ethics Quarterly, Journal of Business Ethics,
38 Journal of Business Ethics Education) during 2016 concerning the number of articles
39 published using case analysis research methodology, we can conclude that there is a
40 large gap and lack in the use of this research method, because there are not significant
41 articles that systematically incorporate case analysis as research method. So, we may
42 assume that the deficit in research and in publication probably functions as a negative
43 cycle that generates a sensation of a “lack of scientificity” where the use of the single
44 case scientific research method is concerned; but this does not have to be the case.
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50 The case study as a research methodology is particularly relevant not only in teaching
51 but also in research let us say that it is, for instance, of special relevance for those cases
52 where a current phenomenon requires in-depth analysis, within its real context.
53 Particularly when the boundaries between phenomenon and context are not clearly
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57 ⁵ The consultation process has been conducted via mail, which has been accompanied by an own review
58 of the titles, abstracts and keywords of the articles' indexes of the most relevant journals on business
59 ethics. This study is purely exploratory, but highly explanatory. It has done on April 2016.
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3 evident this method is as valid as any of the others more frequently used (Yin, 2009). In
4 this regard, Stake (1995) had already pointed to the use of case analysis within three
5 complementary areas: 1) the intrinsic area, when the phenomenon is very complex and
6 does not lend itself to generalisations; 2) the instrumental, to grasp or capture an
7 emergent reality; and 3) collective analysis, when a concrete phenomenon is analysed
8 via several cases. In harmony with these authors case analysis may be deemed to be of
9 particular interest when the phenomenon is contemporary or emergent; when it is hard
10 to isolate and control the intervening variables; and when a complete analysis of the
11 phenomenon is sought. They are all aspects that can be observed in phenomena
12 associated with the field of business ethics.

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15
16 Most works connected with case analysis have been used in the exploratory phase for
17 the generation of hypotheses; nevertheless, it is a methodology that can be employed
18 explanatorily for hypothesis verification (Benbasat et al., 1987), as can be appreciated in
19 the following table (Table 3).

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24 [Insert Table 3 here]

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28 Independent of the undeniable potential of case analysis in the descriptive and
29 exploratory stages, it can definitively also be highly useful in hypothesis testing,
30 especially from the perspective of refutation, where single case study may be sufficient
31 to falsify a hypothesis. Likewise, multiple case works can increase explanatory value,
32 generating what Creswell (2007) terms 'multiple bounded systems'. In spite of all the
33 contributions of these methods and their unquestionable benefits, whose validity we do
34 not challenge, this work is grounded in a defence of the single case as a scientific
35 methodology for testing hypotheses⁶.

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38
39 In the utilisation of cases in scientific research two approaches are employed: the
40 positive and the interpretative approach (Myers, 2009). Without rejecting the
41 potentiality of the latter, we will focus on the former, which is more widely accounted
42 for and accepted (Yin, 2003; Dubé & Paré, 2003), where a good case analysis in the
43 scientific area must meet five requirements: a problem, propositions, units of analysis,
44 logic that links the data with the propositions and criteria for interpreting the results.

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48 From the foregoing it is evident that not just any case analysis will meet the conditions.
49 For this method to have explanatory effects within the research area it must, on the one
50 hand, be critical for the refutation of the hypothesis; and, on the other, the case must be
51 well formulated so that it enables replicability by other researchers. The main criticisms
52 levelled and the principal problems attributed to case analysis will thereby be solved,

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⁶ See the matrix proposed by Campbell (1975) to realize the potential of case analysis as part of scientific
57 methodology, taking into account four characteristics of the different methods; descriptive, explanatory,
58 and predictive control.

including lack of objectivity or rigor (Reményi et al., 1998), or even an absence of generalisation.

Single case refutation. Possibilistic hypotheses

In continuity with the approach of Yin (1981), Benbasat et al. (1987) and Eisenhardt (1989), we consider that single case methodology can be used in the context of hypothetical-deductive methodology. In first place, in the explanatory phase, leading to deeper knowledge of the phenomenon studied. In second place, at the confirmatory stage, through the refutation of hypotheses using single case study.

What can be deduced from the foregoing is that the single case will make it possible to refute the hypothesis provided that the hypothesis verified is, the type:

$\forall x : P(x)$ [*for all x is given P*]

If we find through case analysis or quasi-experimental methodology that:

$\exists x : \neg P(x)$ [*There is some x in which P does not*]

the consequence derived is that:

$\neg \forall x : P(x)$ [*It is not the case that for all x is P*]

Insofar as it is possible for there to be a multiple case analysis the number of cases in which P were not met could be increased, producing a subset of cases instead of a single case:

$\{x : \neg P(x)\}$ [*There is a set of x for which there is no P*]

While it is true that this inductive accumulation of negative cases proves to be insignificant in the initial logic of falsifiability (Popper, 1967), in later works both Popper himself (1982), and Lakatos (1983) in particular, reject this naive falsifiability because they consider that a case is highly unlikely to be capable of falsifying a hypothesis and, far less, a theory. The following are the three main reasons why naive falsifiability does not work (Lakatos, 1983). The first, that it is very difficult to identify experiments or crucial cases in the refutation of theories, although this is less the case when dealing with the refutation of hypotheses. The second, and this is very important for our discipline, when these negative tests are produced, the scientific community tends to pressure researchers so that they revise their methods, their data or their conclusions. In the third case, theories use ad-hoc hypotheses far more often than might be expected. Kuhn's thesis (1975) that a theory is not refuted until a generational change takes place is widely known. Whatever the case, the resistance of theories to refutation should make us more critical towards them; and ought to forewarn us about assumptions accepted in the field of business ethics, since both Lakatos (1983) and

Kuhn (1975), and even Popper himself, emphasise acceptance by the scientific community as a criterion for refutation.

In this regard, a single case will be unlikely to refute an established theory, and far less will it be able to propose an alternative theory; perhaps that is why it has been left out to a substantial degree as a tool for scientific research. Single cases can, however, serve to refute concrete hypotheses derived from theory, above all if these hypotheses are translated from the positive to the normative sphere. The following table (Table 4) presents a summary of the process that it is explained below.

[Insert Table 4 here]

Thus, if we have a normative proposition like this:

$\forall x : \Box P(x)$ [*For all x there is necessarily P*]

And we are able to identify a case in which:

$\exists !x : \neg P(x)$ [*There is at least one x for which there is no P*]

we can certainly not conclude that $\forall x : \neg P(x)$ [*For all x not given P*], nor even that in most cases that relation will be given, but what we are able to determine is that:

$\forall x : \neg \Box P(x)$ [*For all x is not necessary that P*], and hence $\forall x : \Diamond \neg P(x)$ [*For all x it is possible that not P*]

This possibility, alternative to the dominant assumptions and the normative hypotheses stemming from them, has been termed a “possibilistic hypothesis”⁷ in this work, and its great virtue is that it opens up a space of freedom and independence in the ethical decision; for moral imagination (Werhane, 1999; 2008). So the single case becomes a key methodology for the generation of “possibilistic hypotheses” (Johnson, 1993), since, through the quantitative analysis of aggregated secondary data, it will be very hard to falsify generalist hypotheses, particularly when they come from the accumulated heritage of culture, science and management.

From our perspective the possibilistic hypothesis does not necessarily have to become a hypothesis alternative to the previously accepted hypothesis, because a single or even multiple case is unlikely to facilitate such a leap. Nevertheless, the possibilistic

⁷ It is an alternative hypothesis capable of falsifying the null hypothesis, but incapable of being imposed as an alternative hypothesis of reference, since, in turn, it could be falsified in multiple contexts. It adequately reflects the “exception that confirms the rule”. Only the accumulation of many of these exceptions would change the theory (rule). But it proves that, although the theory may be the best to explain the facts, it is not able to optimize all contextual situations, thus breaking the strict normative character. (If $(x) \rightarrow (y)$. Since if (x) is possible (y) [majority solution]; and no (y) [the possibilistic solution]).

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3 hypothesis suggests to us that there are actually forms of causal explanation that are
4 alternative to P in relation to x, and that consequently the normative postulates derived
5 from them are not consistent. So then, the single case does not allow us, supposing that
6 p and q are alternative, to postulate that $\forall x : \Box \neg P(x)$ [For all x is necessary no P], but it
7 does let us postulate that $\forall x : \Diamond \neg P(x)$ [For all x is possible no P]; in this regard the
8 single case opens up a realm of freedom, critical for moral decision (Godwin, 2015;
9 Werhane, 2008). This and other explanations explained in previous sections are shown
10 in the following Figure (Figure 1).
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16 [Insert Figure 1 here]
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20 The rigor and reliability of the postulates posed comes from the confirmation of various
21 multiple antecedents for the use of single or multiple cases, not all of which are aimed at
22 generating possibilistic hypotheses, but they lie on the most radical plane; the
23 production of theories. So, for instance, we have the case of Coase, Nobel Prize winner
24 for Economics in 1991 for his property rights theory that was developed through the
25 well-known and much cited article entitled “The Problem of Social Cost” (1960), in
26 which scientific conclusions are arrived at from a set of cases, some of which are even
27 of a hypothetical nature. And we also have the equally renowned article by Demsetz
28 (1967) under the title “Toward a Theory of Property Rights”, where the Labrador
29 Peninsula case plays a crucial role in the grounding of his argumentation. Then again
30 the recent Nobel Prize Elinor Ostrom employs case analysis (Ostrom, 1990; 1994;
31 1998) to refute the commonly accepted thesis, based precisely on works by Coase
32 (1960), that property rights are the best way of avoiding the “tragedy of the commons”
33 described by Hardin (1968); this was in turn based on a fictitious case by the
34 mathematician Lloyd (1833). It is evident, and also argued through in all these examples
35 involving laureate economists, that single case study is fundamental; or has at least been
36 so, in terms of the grounding of theoretical contributions in the sphere of economic
37 sciences. Strangely enough, these are economic contributions that undeniably transcend
38 towards ethics, which does not, at least formally and directly, employ the research
39 method. If the economic and business research used the single method research and
40 indirectly their conclusions affect ethical issues; the reasons for non-use this method in
41 ethics are inappropriate; then it would be useful the use of the single research method in
42 business ethics directly. It therefore seems that the use of the case method is totally
43 legitimate, not only for business ethics teaching but also for business ethics research,
44 and possesses great potential judging by the results that are produced by it.
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55 **Case examples of applicability based on region and spirituality on companies’**
56 **management**
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We will shown the possibilistic hypothesis using five cases that refute the theory, because at least, there is a case that do not follow the normality; they are all relate to region and spirituality in the basic and also based on the management of companies and decision-making.

The first case illustrates the transposition of the principle of centrality of the person, typical of the *Social Doctrine of the Church*, in a context of surplus production, where the techno-economic option imposes the principle of adjustment between demanded productive capacity and manpower. In case for an organization reducing their demand that results in a surplus of labour, traditional knowledge would propose a reduction of labour to fit the optimal operational [$\forall x: P(x)$]. The ethical decision in this situation will be reduced to the executive aspects related to the reduction [$\forall x: \square P(x)$]. However, we find that at least an organization called Lantegi Batuak, instead of temporarily or permanently reduce staff chooses to fill staff with fun activities (table tennis, football ...) [$\exists x: P(y)$]. Consequently, although the easy answer should be reduce the staff, with this case it is shown that when there is an excess of staff there are at least two alternative decisions: reducing staff or occupy it with other non-productive activities. This second option is the hypothesis explained in this paper called possibilistic hypothesis [$\exists x: \neg \diamond P(x)$]. The decisions will not the same for all organizations or in all countries (suppose that the decision will be taken in countries in which the labour policy is flexible), of course; it is not the aim of this argument; hold workers in a non-productive activity, but it is an option that decision makers should consider being overstaffed [$\forall Md(x): \diamond P(x) \vee \neg P(x)$].

In a second case, we will consider the requirement of bank transparency, demanded by Islamic religion, to verify that there is no interest collection, prohibited by that religion. In the banking, the case of bank transparency is relevant as well; because traditional knowledge provides that banks' transparency is limited by bank secrecy, since this is necessary for financial institutions to carry out their activity [$\forall x: P(x)$]. However, we can identify multiple instances of ethical banks totally transparent in the placement of its assets [$\exists x: P(y)$]. May not be possible to propose that all banks should be fully transparent but is an option [$\exists x: \neg \diamond P(x)$] that could take, and therefore should be approached from an ethical perspective [$\forall Md(x): \diamond P(x) \vee \sim P(x)$].

The third case, more generalized actually has its origin in the opposition to any war; and in general, to the exigencies of religions, that the business activity does not contradict the moral principles defended by that religion. In case that we accept that an investment portfolio with the aim to produce a minimum return must be diversified within the inclusion of companies in a sector of dubious morality [$\forall x: P(x)$], the decision about the composition of the Ethical Fund will focus on include the companies causes the least negative impact [$\forall x: \square P(x)$]. In an extended analysis using the possibilistic hypothesis the answer will be after take into account that perhaps one or more investment funds get similar returns without including companies in this morally dubious sector [$\exists x: P(y)$] [$\forall x: \neg \square P(x)$]. Therefore decision-makers should ask the

ethical appropriateness of including or no companies of the dubious sector in the investment portfolio [$\forall Md(x): \diamond P(x) \vee \neg P(x)$].

Following, the fourth case is based on Mondragon Corporation (one of the biggest cooperative companies holding in the World, see www.mondragon-corporation.com). This group is precisely created for putting into practice the principle of cooperation based on the *Social Doctrine of the Church*, and main *leit motiv* of the founder of the group was the leader of this movement; the priest Jose Maria Arizmendiarieta (see <http://www.canonizacionarizmendiarieta.com/es/biografia/>). For cash management it is generally accepted the rule on advancing collects from clients and delay payments for suppliers [$\forall x: P(x)$], with the margin that allows us the Law and the power asymmetry [$\forall x: \square P(x)$]. However, it will be possible to identify some entities seeking joint optimization of cash flows [$\exists x: P(y)$]; which transforms a technical problem into an ethical problem [$\forall x: \neg \square P(x)$], because ethically will be necessary to ask about the impact of our cash management decision into the other organization [$\forall Md(x): \diamond P(x) \vee \neg P(x)$].

Another fifth case is based on the spirituality basic. It is commonly accepted that the professional development of workers is beneficial insofar as it contributes value to the company [$\forall x: P(x)$], but the spiritual scope thereof is somewhat alien to business management [$\forall x: \square P(y)$] (Mitroff & Denton, 1999). However, in the economy of communion, we can find that the development of spirituality becomes the fundamental goal of organization [$\exists x: P(y)$]; So that it is possible that the purpose of a company consists in the spiritual development of its workers [$\forall Md(x): \diamond P(x) \vee \diamond P(y)$].

To sum up, there are wide and varied cases in which a single case generates a possibilistic hypothesis that increases the degree of freedom in the decision (see Table 4). This hypothesis creates an ethical problem on an issue where none existed before, because there was no degree of freedom in the decision; but it opens to the morality.

Conclusions

The consequence of the de facto exclusion of single cases within the economic sciences field, has, to all purposes, been the defence of conventional wisdom. Statistical inference in particular has shielded itself against type II errors, so that it is much more complicated to verify a valid alternative hypothesis, than to confirm pre-existing knowledge; in consequence, the use of statistical data, especially if they be of a secondary kind, demands a significant delay between the appearance of a phenomenon and the possibility of analysing it. Complementarily, the complexity of theoretical systems does not permit the substitution of such data, even when they have been amply falsified. Therefore, although statistical inference is widely utilised in scientific research within the hypothetical deductive framework, this methodology is hardly apt for confronting new problems; and particularly those that demand ethical decision; or those

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3 where the ethical decision does not match the postulates established by conventional
4 wisdom.
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6 In this work an argument is made for single case methodology, through case analysis.
7 The explained hypotheses that we have defined as “possibilistic hypothesis” can
8 question or even refute causal relations accepted by conventional knowledge. These
9 relations might be critical for ethical decision-making, so, the capacity of verifying, via
10 single cases, that such a relation does not have a necessary condition, opens the door to
11 the possibility of alternative ethical options. It is a great implication for moral
12 imagination (Werhane, 2008). In this regard, even when single case analysis does not
13 enable substitution of the dominant hypothesis by another alternative, it does make it
14 possible to demonstrate that this hypothesis is not always fulfilled, generating a sphere
15 of alternative freedom, the scope of which is as yet unknown.
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20 Scientific possibility in the use of single case study as a tool for generating “possibilistic
21 hypotheses”, may lean towards a reconciliation between scientific methodology and
22 new emergent economic phenomena, in that business ethical researchers can approach
23 the latter through hypothetical deductive methodology and make specific alternative
24 contributions, without being obliged to replace the entire underlying theory or enter into
25 manifest contradictions with it.
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28 In the field of business ethics, where decisions demand immediacy and precision,
29 “possibilistic hypotheses” produce spheres of liberty and it could increase the ability
30 to make optional decisions and the corresponding moral responsibility in decision-
31 making. In consequence, for researchers in business ethics, the establishment of
32 “possibilistic hypotheses”, in the cases where they exist, is in turn an ethical
33 commitment, in the sense that it is essential to communicate to decision-makers all the
34 aspects of reality that might have a bearing on the taking of a decision.
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38 To sum up, this paper shows for the legitimacy that given hypotheses within the area of
39 business ethics; the “possibilistic hypotheses”, which make it possible to propose
40 alternatives that facilitate or increase the moral responsibility of decision-makers.
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43 In relation to the field of religion and spirituality, the possibilistic hypotheses allow
44 three areas of applicability, on the one hand, it is feasible to use in the corporate
45 management the principles and proposals from doctrinal corpus of each religion. On the
46 other hand, it is permitted the applicability of religion and spirituality to the proper
47 management of religious entities, making it possible to develop a specific and
48 differential management in relation to entities governed by other purposes or values.
49 This second aspect of applicability, tend to generate virtuous circles, because it would
50 allow new experiences that could be analyzed as unique alternative cases, and they
51 could be based on religion and spirituality. Last but not least, the possibilistic
52 hypotheses would allow their use in training, and it presents opportunities for solving
53 problems, in many cases, more coherent and consistent with the ethical and religious
54 principles of the participants.
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3 Despite the contributions of single case studies in business ethics, religion and
4 spirituality, one of the possible limitations lies in that the single case method, like the
5 rest of scientific methodology, depends on the “quality” of the research; if researchers
6 imbue to the analysis their own perspective, and the “possibilistic hypothesis” produced
7 will only reflect the opinion or personal perspective of the researcher. In this sense,
8 important lines of methodological research to be pursued for the development of
9 “possibilistic hypotheses” are to progress in terms of the conditions of replicability of
10 single case analysis; along with verification of multi-case and the meta-analysis.

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14 An interesting research line might be to assess the scope of possibilistic hypotheses,
15 through the attribution of a range of occurrence probability that might give rise to
16 probabilistic hypotheses.
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TABLES**Table 1.** A comparison between experiment, case study and survey

Experiment	Case Study	Survey
Small number of units (sometime one)	Small number of units (sometime one)	Larger number of units
Data collected and analyzed about small number of predetermined features of each unit	Data collected and analyzed about large number and often not predetermined features of each unit	Data collected and analyzed about small number of predetermined features of each unit
Study is organized to control different variables	The interest is about the variables in context	Units are selected to represent the study's population
Data are quantitative	Data can be quantitative or qualitative	Data usually could be quantified
Aim can be testing Theory or evaluation of an intervention	Aim is to understand and theorize	Aim can be testing Theory, evaluation of an intervention or generalize findings from sample to population

Source: adapted from Gomm *et al.* (2000).

Table 2. A comparison of teaching and research cases

Teaching cases	Research cases
Written primarily for students	Written primarily for researches
Designer to illustrate an existing theory or principle	Designed to contribute a new theory or explore/test an existing theory
Published on its own as a teaching case, often with notes for the instructor	Published as part of a research article in a journal, conference, or book

Source: adapted from Rowley (2002) and Myers (2009).

Table 3. Terminologies for Stages of Case Research Programs

Traditional Phases of Knowledge Accrual	Yin's Framework	Bonoma's Framework (1985)	Number of Cases
Exploration	Description	Drift	Single or Multiple Case(s)
Hypothesis generation	Exploration	Design	Multiple Cases
Hypothesis Testing			
-Confirmation	Explanation	Prediction	Multiple Cases
-Disconfirmation	Explanation	Disconfirmation	Single Critical case

Source: Benbasat *et al.*, 1987: 372.

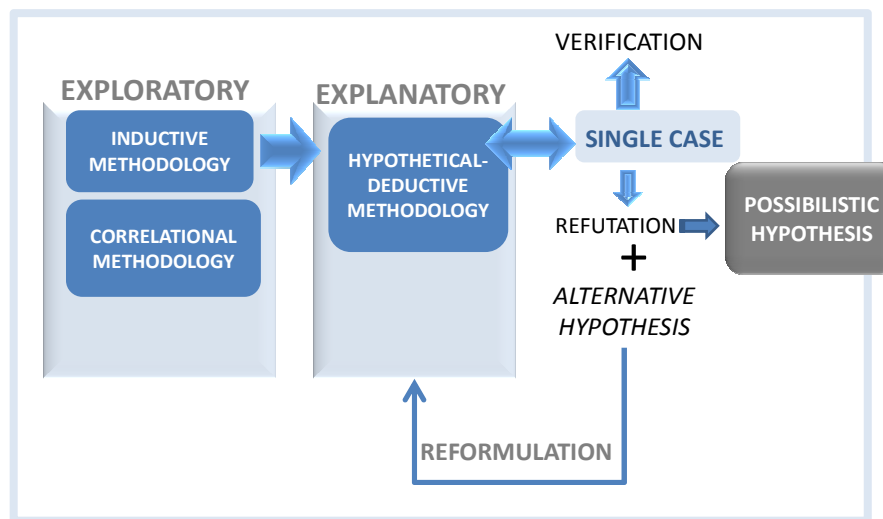
Table 4. Phases of logical reasoning from the possibilistic hypothesis

	PHASES	TYPE OF KNOWLEDGE	LOGICAL REASONING	DEGREES OF FREEDOM
1ST PHASE	PREVIOUS KNOWLEDGE [SCIENTIFIC / CONVENTIONAL]	POSITIVE	$\forall x : P(x)$	
2ND PHASE	DETERMINISTIC NORMATIVE CONCLUSION	NORMATIVE	$\forall x : \square P(x)$	Md = x Df = 0
3RD PHASE	SINGLE CASE	EMPIRICAL CONTRAST	$\exists ix : P(y)$ $\exists x : \neg P(x)$ $\neg \forall x : P(x) / \forall x : \neg P(x)$	
4TH PHASE	POSSIBILISTIC HYPOTHESIS (PH)	POSITIVE	$\forall x : \neg \square P(x)$ $\exists x : \diamond \neg P(x)$	
5TH PHASE	OPEN NORMATIVE CONCLUSION	NORMATIVE	$\exists Md(x) : \diamond \neg P(x)$ $\forall Md(x) : \diamond P(x) \vee \neg P(x)$	Md = x v y Md = x v -x* Df = ≥ 2

Md: Moral Decision Df: Degrees of freedom (Possible options)

Source: own elaboration.

Figure 1: The single case research and possibilistic hypothesis.



Source: own elaboration.