
The development of theories from the analysis of the organisation: case studies by the patterns of behaviour

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Abstract

This study presents an adaptation of case studies denominated by the patterns of behaviour, an ideal methodology for the development of theories explaining the organisation and its integrants' behaviour. In comparison with other alternatives, best results are obtained in the research of dynamic and complex processes that require analysis during a prolonged period of time, multiple sources of evidence, both quantitative and qualitative, and diverse analysis techniques, such as training and organizational culture. Its application also achieves to lay the foundations of the models and to make explicit the logic underlined in the hypothesis. This account is structured as follows. After an introduction, the case studies are characterized by patterns of behaviour before pointing out the stages of its application. Next, the possibility of generalizing the findings and the role of the methodology in the development of the theories in the organisation is discussed: finalising with a summary and conclusions.

Introduction

In recent years, we have witnessed a growing interest in the issue of the methodology applied to the study of organisations, as is shown by the creation of specific sections in scientific magazines, monographics and research forums. This greater attention is due partly to the requirements put forth by the new perspective theories that have highlighted the need to develop, parallel to the theoretical framework, new research methods catering to specific requirements. For example, the resource-based view suggests that the competitive advantage is sustained in the strategic assets, normally intangible and surrounded by isolating mechanisms, such as causal ambiguity which makes them difficult to observe. As a consequence, the development of this precise focus or methodology able to detect and analyse elements that, like these assets, are hidden in a some deliberate way.

On the other hand, it has been pointed out that the research carried out by the organisations lack, rigour in the foundations of the question researched, although very formalised models are used as a contrast to the hypothesis, and the percentage of variance explained is high.

An adaptation of the cases is presented in this study, useful for those who study organizations in general, as well as for a certain focus on management, such as the resource-based view.

Finally, due to its dynamic nature, the investigation of determined processes such as the accumulation of knowledge in the core of the company, can require the study of the organisation during long periods of time, through the use of diverse sources of evidence, quantitative and qualitative, as well as employing multiple analysis

techniques. In such cases, the study of cases by the patterns of behaviour shapes a research strategy that combines longitudinal and transversal tests and maintains coherence with the objectives; criteria employed and evidence gathered with time for each case. It is also an ideal framework for the resolution of conflicts between the research techniques used, ensuring its convergence.

The study of cases using patterns of behaviour is efficient for the formulation of the hypothesis and the elaboration of the theoretical models. At the same time, the results obtained maintain a singular harmony with the previous theoretical framework. In this way, the accumulation of scientific knowledge is guaranteed.

Another important aspect is that it does not discard the later use of other methods and techniques, on the contrary, it complements the posterior statistic verification of the emergent model. Therefore, the results of the investigation will often be the starting point for another analysis aimed at contrasting the hypothesis.

In the following epigraph the cases of patterns of behaviour will be characterised. Then the stages to follow in the research, as well as steps and norms to be taken into account for each, will be specified followed by a discussion on the generalisation and applicability of the method and finalizing with a summary and conclusions.

Characterisation of case studies by patterns of behaviour

The primary objective is to carry out an intensive analysis of certain selected examples, by means of a case study, in order to achieve a clear and astute understanding of the studied matter and to aid in setting out hypothesis to guide future research. Three aspects stand out (Ghauri *et al.*, 1995):

- 1 the contrast of hypothesis becomes secondary;



- 2 the intensity of the study must be such that enough information is gathered to permit the case characterisation; and
- 3 it must be a multidimensional study that permits integral interpretations.

The case studies can have different purposes (analytical and/or descriptive to a different degree) and use diverse methods, gathering information procedures and evidence analysis techniques (interviews, surveys, statistics, bibliometric and ethnographic analysis, etc.) in order for them to be of interest for the investigation. It is not, therefore, a concrete technique but a research strategy. For Yin (1981, 1989) it refers to an empirical study with the following distinctive features: a contemporary phenomenon is examined or investigated in its real surroundings; the boundaries between the phenomenon and its context are not clearly evident; and multiple sources of data are used. According to this definition, historic cases form a different analysis methodology.

More specifically, the case studies by patterns of behaviour are suitable for the construction of theories and the elaboration of explanations concerning the behaviour of organisations and their integrants. We seek explanations to a determined phenomenon, to know *what* factors influence it, *how* and *why*. It is founded on the exhaustive knowledge of the theoretical framework of reference, as well as previous research related to the object of the investigation. Its application requires the analysis of various cases, of which the first will be longitudinal and will have a descriptive and explorative orientation. The rest of the studies can be transversal studies and/or longitudinal, with a more explicative purpose.

As the study consists of multiple cases, the design of the investigation should follow a "replication logic" different to a "statistical logic" (Yin, 1989). In fact, a "statistical logic" would consider each case as a survey with one respondent from the sample to analyse the frequency of each previous response. However, in this type of study, one intends to explain the findings in its own context.

The "replication logic" is illustrated in Figure 1. From the theoretical framework, one selects the most appropriate cases for the objective of the investigation. Each individual case will be treated as a complete study in itself, so that evidence sought is analysed to find an explanation to the studied phenomenon. If this explanation seems credible then it shall be considered as relevant information to analyse the next case, as well as to establish the conditions

under which one assumes to find a determined phenomenon (literal replication) or under which one does not (theoretical replication) (Yin, 1989, p. 53).

Stages in the case studies by patterns of behaviour

The case studies permit ample discretion in all aspects of the research, in the selection of cases as well as the use of sources of evidence and analysis techniques, which make it essential to establish from the start a coherent design, clearly stating the guidelines of the study and avoiding that the high number of options as well as the ample authority of the researcher lead to arbitrary decisions and a low quality investigation.

The design will form a concrete plan, which establishes the different stages and its iterations (Figure 2). The idea that underlines this whole process is to ease the external validation by means of fixing, beforehand, the needs and criteria that justify each important decision, so that the auditor of the research can analyse if such criteria is adequate for the problem to be solved and if the decision taken adapts to it.

Objective of the research

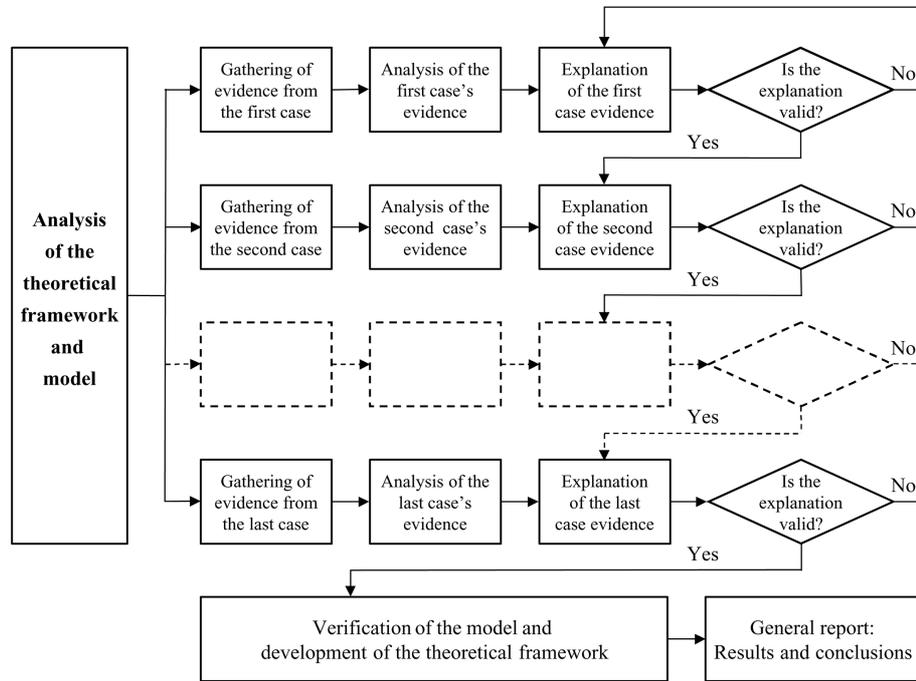
The starting point consists of determining the objective of the investigation. That is, setting the questions from which we seek the answers. Establishing well the objective will help the result of the study as in problem solving it is vital, from the beginning, that the problem is formulated in a way that enables the discovery of a solution (Ohmae, 1990, p. 12).

The objective will be formulated by a determined phenomenon, from which we seek to find out the factors that influence it. For example, the research can have the objective of finding out the factors that affect organisational training, the productivity of a special department or an organisation's capacity for innovation. If we want to go into this study in greater detail, then we can establish how and why such factors act, and why not others.

The theoretical framework

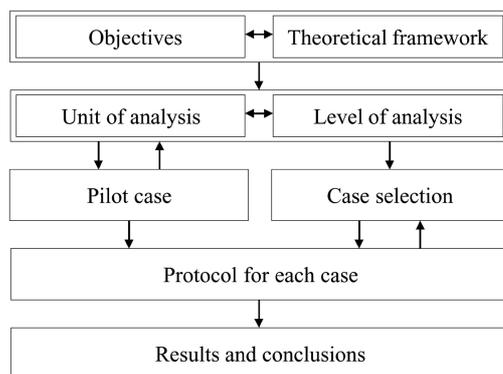
The theoretical framework of research undertaken should be taken into consideration for two reasons. First, the study should benefit from previous scientific contributions. This implies the need for an in-depth bibliographical revision that makes clear the current state of art, the previous related studies, as well as their contribution and gaps, suggestions, recommendations, etc.

Figure 1
The replication logic



Source: Inspired by Yin (1989)

Figure 2
Stages in the case studies by patterns of
behaviour



Source: Inspired by Eisenhart (1989), McClintock *et al* (1979) and Yin (1981, 1989)

Second, the starting point of the empirical research is going to be an initial combination of factors and its assumed relation with the phenomenon studied, resulting in a wide bibliographical revision. In accordance with this idea, Eisenhart (1989, p. 536) points out that when the objective of an investigation is to generate a theory, it is very useful to have a previous combination of variables or elements that possibly form part of it at one's disposal. In this way, if these elements contribute significantly throughout the

research, the empirical base of the resulting theory will grow. In this sense, the previous studies will act as a source of suggestions for the elaboration of the elements that will be the starting point of the analysis.

In this way, when taking into consideration the theoretical framework we specify a combination of variables that we suspect could influence the phenomenon studied. At this moment, we still do not know if all variables have been contemplated or if some previously unquoted ones exist. On the whole, we point out some elements that could form part of the model we intend to generate and that will serve as a starting point for the subsequent analysis of the field.

The unity and level of analysis

The results of the investigation will not be neutral under the definition made of the unity of analysis (Klein *et al.*, 1994). Consequently its correct definition is an untrivial question that can distort the results of any research if it is not resolved adequately. A small error in the conceptualization stage could affect the credibility of the obtained conclusion considerably. To clearly establish the unity and subunities of the analysis (the individual, the task, the activity, the transactions, the group, the department, the business, the company) implies explicitly

stating clear and objective delimiting criteria, in order to enable two independent researchers to establish similar analysis units. Otherwise, an irreconcilable schism is created between the theoretical framework reference and the empirical investigation one intends to carry out so that the subsequent development is founded on subjective, arbitrary pillars.

However, in spite of its importance and being “a problem that has tormented many researchers”, (Yin, 1989, p. 31) the literature concerning scientific methodology in the field of management does not contribute criteria nor recommendations further than mere common sense. It affirms that the correct unity of analysis must be sensitive to the particularities of the investigation objective and remain coherent to the theoretical framework; moreover, it should ease as much as possible, comparisons with similar studies.

In any case, the fundamental conditions that the chosen unity should comply with is the clear demarcation of the phenomenon to investigate so that in defining the first, the limits of the second become established. Therefore, if we intend to study enterprise co-operation, we would not choose the enterprise itself since it stems from the researched phenomenon. The co-operation as seen by other participant, would be left out of the unity. In this study, we would define the unity as the agreement between two or more independent firms. Although, if our objective were to analyse the effect of co-operation in the R&D department, the appropriate unity would be the R&D department itself, as opposed to the agreement.

On the other hand, if during the study we detect in the case itself entities with its own explicative capacity, we must differentiate between which of the following two situations it would fall under:

- 1 The analysis unit has been incorrectly formulated, as there are inferior entities, with a degree of sufficient independence, that could contribute a greater degree of significance.
- 2 Despite the existence of inferior entities, the unit of analysis has been correctly formulated, as these are not sufficiently explicative in themselves.

In the first case we must re-formulate the whole design of the investigation and redefine the unit of analysis, and in the second, we must take into consideration that we are dealing with a design of cases with sub-units.

For example, if the analysis unit is the development area of the company, the

“number of workers in the development area” could be a factor to study associated with the principal unit. However, if the company organises its R&D activities by projects, the number of employees assigned to each project could also be significant; in this case, the factor “number of workers of the project” relates to the principal unit by means of an intermediate level, the project. As a consequence, the need may arise to consider one or various intermediate levels of analysis in that the sub-unit appears as the natural field of a combination of factors which are specific, as well as related to the equivalent factors of the principal level.

The relationship between unit and sub-unit, as well as between the sub-units themselves, should be made perfectly clear. If we study the “number of workers of the project” as a factor linked to a superior “number of workers in the development area”, then we need to know the process of assigning workers to projects, at what moment a worker can change its assignments, if it is possible to work on more than one project simultaneously, and if there are any workers not assigned to projects. These relationships enable us to characterise the different sub-units as homogenous, independent, or heterogeneous, a subject discussed in detail by Klein *et al.* (1994).

Selection of cases

Once the unit of analysis has been specified, we need to select the case or cases to study. This task requires determining how many cases need to be analysed and the selection criteria or the requirements for those selected.

There are no defined criteria to determine the number of necessary cases. It has been stated that it does not matter how small the sample is (Mintzberg, 1979, p. 585), that the number of cases could vary from one to eight (Yin, 1981), that although there is no ideal number, between four and eight is appropriate (Eisenhart, 1989, p. 545) and other opinions.

Overall, the number of cases is conditioned by the scarcity of time and other available resources, and is explained by the tension that arises when you apply to this limitation two opposing criteria, cases studied versus depth of study. Generally, the more cases are analysed, the greater opportunity of detecting errors, of obtaining more general results and of achieving a wider perspective, as you analyse one phenomenon in different contexts. However, one must remember that the nature of this methodology requires obtaining integral interpretations of studied phenomenon and its relationship with other

phenomenon and variables, which one can only achieve by analysing in great depth. Each case requires an enormous cost in financial terms as well as time; in some cases, years of investigation are necessary. Having said that, one can always reduce cost and time by making the study more superficial. The goal lies in achieving a suitable equilibrium between the number of cases and the depth of each case.

On the other hand, whatever the criteria may be, the number of cases will always turn out to be inferior to the number of variables analysed, which will be decisive in the data analysing phase.

Yet, in fact, the number of cases studied becomes a secondary issue in respect to the selection criteria, a decisive aspect in the quality of the research. These should be adapted as much as possible to the objective and theoretical framework, and should be made explicit before the selection, which will enable different researchers to reach similar conclusions. The goal is to describe the characteristics of the ideal case, that which best allows us to analyse the phenomenon studied and then select, between those available, the one closest to the archetype.

In this way, a selection of an appropriate population from the suitable criteria enables us to control external variations in the phenomenon researched and helps in defining the limits of generalisation of the findings. One case may be chosen to argue against previous cases, a situation where one must try to achieve invariability of all factors or conditions not contemplated in the study. In this sense, it could be useful to carry out the selection according to Abell's dimensions (1980): technology, customers and functions. Nevertheless, if one intends to extend the existing theory to other contexts or collect theoretical categories not previously contemplated, or provide extreme examples, then one must explicitly justify the admitted variations.

The pilot case

Some elements in the investigation design may need field information not available in the previous stages, which is why it is convenient to carry out a pilot study, which will provide information about important aspects as well as its weaknesses, help in refining the procedures to follow, clarify aspects initially not contemplated, etc. The pilot will structure the analysis of the rest of the cases and will confirm a study prototype that will be formalised in the protocol.

The objective is a study chosen for its relevance and analysed with greater depth and detail, for its long period of study as for

the data collection procedures and the quantity and forms of analysis of the evidence collected. Consequently, the accessibility will be of vital importance, so the pilot selected will be one that permits a close and prolonged relationship with the people involved.

On the whole, the pilot case consists of a descriptive study in which a longitudinal, more than a transversal, study is performed and information is compiled in a way that is scarcely, if at all, structured. Thus, if in the rest of the cases one wishes to use the semi-structured interview as a source of evidence, on this occasion the qualitative interview may be more appropriate.

Moreover, this case will enable us to depurate the factors provided by the theoretical framework and its measures. In order to achieve this, we will act according to the iterative process shown in Figure 3 and its result being the suppression, modification and addition of factors with respect to those suggested initially in the revised bibliography. Thus, we shall not only look for evidence of the elements referred to by the theoretical framework, we will also make an effort in identifying others not taken into account up to now and whose significance can be demonstrated by our study.

The protocol of each case

The study of each case requires protocolising the tasks, instruments and procedures to execute. The protocol is the document that materialises the design of the investigation and contains the general rules and particular specifications that should be followed; although it is always very desirable, it becomes essential when the study consists of multiple cases. Protocolising the activities of the research will also redound to an increase in its quality, so that in a team formed by multiple researchers, this document ensures the search for information is uniformed and the data is dealt with in a homogeneous manner. It is also worth noting that this form of proceeding enables the separation of the investigation design and its implantation, phases that could even be performed by different teams. All of this largely eliminates the subjective character this methodology could lead to.

The most relevant aspects of the protocol are the sources of evidence, the gathering of data and the analysis of the evidence of each case. Below is a profile of the most relevant features.

Sources of evidence and procedures of gathering information

An essential characteristic of the study of cases is the combined use of diverse sources

of evidence. It is advisable to determine this in advance, as well as the procedures for the gathering of data. If a questionnaire or interview is to be used, one must indicate the most suitable type (qualitative interview, with open answers, structured) and to specify in advance the people who should answer, in relation to their knowledge, position, etc. Whenever possible one must use internal as well as external sources to the analysis unit.

The structured interview with open answers is of interest as it is a technique that combines the advantages of the use of closed questionnaires with those of a qualitative research interview, which can result to be perfectly suitable to capture the latest relationships between the factors studied (King, 1994, p. 16). This is the best type of interview if the nature and range of the participants' opinions on the issue being investigated are not known in advance and cannot be easily quantified or tabulated.

This interview can become progressively formalised to the point of adopting a more stable structure, in that one begins with the pilot case and a qualitative interview, and therefore very open, and as the interviews go on, one incorporates the obtained experience. Thus, little by little, one elaborates on one or various questionnaires. However, this greater structuralization should not make us forget the fact that we are not dealing with closed questions but, in fact, suggestions and points for reflection. For this reason, the correct form of action is the personal interview, discarding any of the techniques (mail, fax, etc.) that could impair the sense of the questions and lose the richness of detail that graces a relaxed conversation.

It is also important to point out that the questions in the questionnaire should not be

directed at the interviewee, but the interviewer, as in order to produce the necessary influence, it is fundamental to ask the questions orally and ensure each one is clearly understood. In this way, as the research goes on one will find that the requested clarifications, detailed accounts and suggestions will turn out to be just as revealing as the actual response, as well as being essential material for the progressive structuring. The notes on the field study should gather all those aspects, such as opinions, assumptions, conjectures not contemplated in the questionnaire.

Analysis of the case evidence

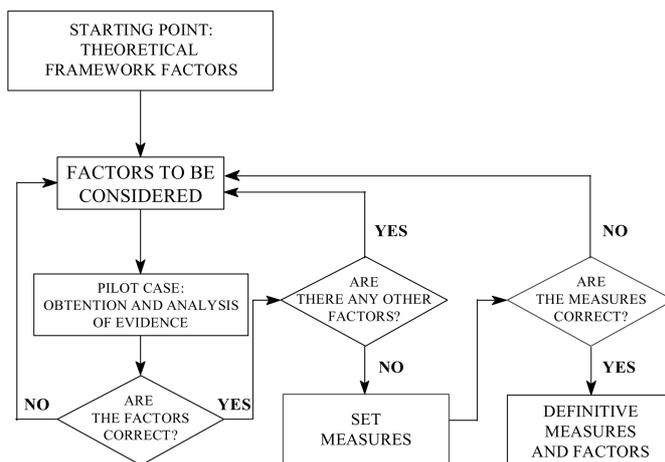
The analysis of the data consists of examining, categorising, tabulating and re-combining the evidence in a way that it is directed at the achievement of the research objectives. There is a consensus over the fact that this is the most important stage of the investigation, but given that the statistic analysis is not valid, as the objective is to analyse one or few cases which are influenced by many variables, it is the most difficult part and the least codified of the process (Eisenhart, 1989; Miles, 1979).

The form of analysis that this study proposes is the pattern of behaviour test (predicted pattern) inspired on the strategy named "pattern matching" (Yin, 1989). It consists of comparing the events, behaviour or circumstances that can be deduced from the theoretical propositions with the events, behaviour or circumstances proven in the case. The prevision of behaviour will be formulated by way of ruling or hypothesis, which will be confirmed, modified or rejected by the real behaviour.

For example, one can deduce from the theoretical framework that the training courses provided to the personnel of a company will improve the productivity of its workers. The pattern could simply be formulated in this way: "The training course has a positive influence in the productivity of the workers". The case study will enable us to analyse the productivity of the workers before and after completing the course, which could corroborate the pattern or not. However, the causes of the variation in productivity could be irrelevant to the course, thus it could be convenient to study another case with similar conditions awaiting analogous results (literal replication) or another case in which, for not having taken the course, one expects there be no variations in productivity (theoretical replication).

The test of the patterns of behaviour requires having previously specified measures to enable us to descend from the

Figure 3
Depuration of factors and measures using the pilot case



Source: Own study

conceptual level to the empirical level and thus accede to the analysis. In our example, previous to the verification of the pattern over the effect of the training course on the productivity of the personnel, one needs to set the way that such productivity is to be measured. If applicable, one must also establish a measurement of the intensity or quality of the course.

The patterns of behaviour will be compared to the obtained measurements, the variable as well as the studied phenomenon. This comparison can lead to the four following situations:

- 1 the measurements confirm the predicted behaviour of the pattern, in which case it will be considered verified in this case;
- 2 the pattern is confirmed although it must be reformulated;
- 3 although the obtained information indicates the confirmation of the pattern, there are signs that the evidence confirmed is not sufficient, where we will have to settle for a weak confirmation; and
- 4 the findings enable us to confirm that the pattern is not fulfilled, the reason why we must deny or refute the fulfilment of the pattern.

Throughout the investigation we will obtain elements of judgement to state exactly the pattern, specifying the characteristics of the course, the moment it is taking place, the type of workers and other details. After this process, the confirmed pattern can present this formulation: "The training courses longer than 35 hours whose knowledge is applied immediately, have a positive influence on the workers productivity".

Each deputed variable or factor will allow us to establish a pattern of behaviour of the studied phenomenon. At the same time, the combination of patterns results in the first formulation of the emerging theory.

The lack of precision is a noticeable characteristic of this form of analysis of evidence. In fact, due to the fact that the statistical techniques are not applicable in this strategy, the test of the different patterns does not allow for very precise comparisons, which can lead to a certain discretionary interpretation on the part of the researcher.

The patterns of behaviour test likens the result presentations to that of the quantitative studies, which enables the publication of the study in scientific journals, as otherwise, the propagation of the work carried out tends to require the length of a book rather than an article. In the same way, it enables the expansion of the study with others whose starting points are the conclusions obtained in the research and whose objective is the contrast of statistics or the verification of the conclusions in other fields.

In short, the pattern of behaviour test achieves a clearer overlapping with the theoretical framework, while at the same time, creating a better foundation of the research topic, enabling the propagation of the results of the study and aiding in the accumulation of knowledge since a harmony is created between the previous theoretical framework, the emerging theory and the diverse studies performed later with different expositions.

Normally, the necessary data analysis to verify the correspondent pattern of behaviour will require multiple techniques. Other possibilities include graphic representations of various types, frequency tabulation of significant events, order the information chronologically, etc.

Special attention should be given to the possibility of combining multiple techniques for the gathering of information and the analysis, known as "triangulation"; Jick (1979, p. 602) defines it as the combination of methodology in the study of a phenomenon and states that it increases the belief that a result is valid and not a methodological artifice. Thus, using multiple methods of gathering and analysing information contributes a firmer internal validity of the results whenever these converge. Should this not be the case, there are few guidelines to systematically order eclectic data and determine its convergence or validity, at the same time there are no tests to discriminate between methods and therefore judge its applicability.

In accordance to the replication logic, the explanations and conclusions obtained in a case will become very valuable material for the analysis of the next, so that the protocol of every new case will be modified to take into account the experience of previous cases. It is reasonable to assume that the variation of each new protocol will be increasingly smaller as a result of the studied reality, having an increasingly integral and complete interpretation. Similarly, the guide we use to introduce the study will also be modified as we obtain new knowledge on the researched matter.

In some cases, we must even redefine the case selection. Actually, once we have obtained an explanation to the gathered information, it may be convenient to repeat in another case with similar circumstances (literal) and/or different (theoretical) to increase the accuracy of the results and enrich the explanations with a wider perspective. As can be seen in Figure 1, with each new analysis we seek to harmonise previous findings with the new evidence.

Report and conclusions

It has been said that the typical case study report tends to consist of a very long narration that follows an unpredictable structure and is as difficult to write as it is to read. In fact, one of the most important criticisms concerning case studies is its low usefulness and chaotic structure of the confused narrative of the final report (Miles, 1979).

Nevertheless, the pattern of behaviour will now permit a clearer structure of the final report in relation to the different analysed variables. Thus, the dense descriptions are substituted by a combination of questions concerning the effect of some variables on the studied matter and its responses.

These questions will be formalised in the expected patterns of behaviour. The references provided by the theoretical framework and the modifications made from the pilot case will be included. Then the obtained results of the investigation will be exposed with an explanation of the selected measures, the value obtained, the necessity of searching for new evidence and the verification, refutation or, if applicable, the reformulation of a pattern. Optionally, comments one feels to be of significance for the overall interpretation of the study will be added, such as difficulties not overcome, new questions, limitations, possible future investigations, etc.

Discussion

Once the different stages of the case study by patterns of behaviour method has been exposed, we continue to discuss two relevant aspects: the generalisation of the resulting theory and the role of the method in laying down the scientific foundations of the emergent theories of the organization.

The generalisation of the obtained results and conclusions

In case studies, inductive research par excellence, we commonly intend to establish general conclusions from particular facts and circumstances. However, it has frequently been pointed out that the impossibility of generalising the findings of a few cases on the whole population was an unavoidable inconvenience that spoils the whole investigation. This criticism is founded on a prejudice of people exclusively familiarised with the application of statistical techniques. In this sense, one must remember that the multiple case studies, as well as the experiments, do not represent elements of a sample, but the study of a phenomenon under

various carefully selected circumstances. Consequently, the intention is to generalise theories (analytical generalisation) as opposed to numerating frequencies (statistical generalisation) (Yin, 1989, p. 21).

Generalisation, a question of degree more than binary decisions, can be carried out by means of specifying a combination of rules of deduction, which have its justification in the theoretical framework as well as the emergent theory, in the case selection and in the type and number of applied arguments. Thus, if the selected cases are very homogeneous, there will be fewer limits to the generalisation than if extreme cases were chosen. What is more, the reliability of the relationships, emergent hypothesis and described behaviour will be greater if they have been verified by means of literal and theoretical replications than if only one of the two were chosen (Kennedy, 1979).

An example to illustrate this. In a study carried out in five manufacturing companies of telecommunication equipment, one might be interested in finding out the influence of academic qualifications of the R&D personnel on the performance of the department. From the analysis of the first case it was found that between 80-85 percent of personnel that forms part of the development teams has a university degree, an aspect which influences positively on the studied phenomenon.

However, this conclusion raises certain questions as far as its limits of generalisation: The proportion of 80-85 percent of R&D personnel with university degrees is positive for the performance of the department but will it be valid for all companies? Moreover, other proportions could be better. Why not 50 percent or 95 percent of employees with university degrees? When arguing this study in the other four cases the results were almost exactly the 80-85 percent proportion. With such regularity, we could try a statistical generalisation, extrapolating this behaviour to the whole population and obtaining measures of significance. Or else, we could develop an analytical generalisation through explanations that we would include in the emergent theory. The second option, more appropriate in these type of studies, leads us to consider two questions: why 80-85 percent of employees have university degrees?; and, why 15-20 percent without?

From the study performed one can find the suitable answers. In this way, the need for technological skills typical of the development of telecommunication teams requires an elevated training in information technology (telecommunications engineers,

computer experts). But the development of a new product consists of a certain routine and low skilled tasks (alterations, certain tests ...) which only requires a medium skilled or professional training while there are reasons of cost and researcher motivation which suggest that these tasks should not be done by high skilled technicians.

Now we can harmonise better the limits of generalisation of this conclusion. The proportion 80-85 percent will be valid provided that circumstances that have motivated it exist: development of highly complex products, normally related to information technology, with certain routine, low skilled activities. Consequently, we could state that in the telecommunication equipment-manufacturing market, more than 80 percent of the R&D department would have university degrees. Yet, we can also assume a similar behaviour in other markets related to technology, such as electromedicine, robotics, instrumentation, etc. However, this conclusion would have been more general if a case had been found that did not comply with the 80-85 percent and whose performance had been affected by this reason (theoretical replication), or if case studies had been performed in other non-related sectors, such as the food trade or pharmaceutical industry.

In short, the analytical generalisation results from the development of the emergent theory, which will be confirmed or modified by each new case studied. The pattern of behaviour will be modified to encompass these specifics.

However, many times, the problem of generalising will remain outside of the field of study, being at the same time the objective of other quantitative studies whose starting point is precisely, the emergent theory.

Achieving a wider foundation in the study of organisations

If one conceives the organisation as complex, dynamic and heterogeneous with respect to other organisations, then, the research methodology we intend to apply should allow us to perceive the researched object as a sole entity. The explanation of its particularities requires a clinical study, an in-depth study of each case. In recent years, many authors have manifested the need for this type of study. For example, Porter (1991, p. 99), referring to a greater company performance, stated that a greater use of case studies would be necessary for real progress in this field.

In the same wave, Mintzberg (1979) denounces the loss of objectivity of the researcher, as he does not study the

organisation in itself, but instead insists on studying abstract categories defined by himself, using measurements that, in most cases, distort reality. For example, one proposes to measure a phenomenon, such as environment complexity, and for it creates a direct measurement based on asking some people about the topic, making them tick on a scale of 1-7. In this way, one obtains data ready to be processed on the computer, but one has no idea what they are measuring.

By means of applying the methodology hereby proposed, one studies the organisation directly and only if it is successful, the categories and relationships found are then described. In this way, one avoids the distortion of reality denounced by Mintzberg, as the theoretical model and, if applicable, the categories emerge from the existence of the organisation and its close observation. It is true that, as in all methods of field study, the researcher may modify the reality studied by his presence. Nevertheless, one is not free from this risk even if one expects a predicted behaviour in advance that one intends to verify and that can constitute prejudice or create expectations or rebound effects.

Moreover, the study of cases by patterns of behaviour is an answer to the deficiency of organisational studies with respect to the unscientific character required, as it is a useful tool to generate theories or making the underlining logic of the hypothesis explicit. Thus, although the use of highly formalised models in empirical studies is a current characteristic, these are only used to contrast the hypothesis through statistical research, and are rarely employed to establish the questions to be investigated, design the theoretical models or develop the logic underlining the hypothesis. As a consequence, previous to the contrast of the model, one must always carry out the study of a few significant cases, which would rebound to the quality of the research.

This methodology presents an additional advantage in that it enables us to deal with the dimension of time. Some current affairs, such as organisational culture or learning are conceived as dynamic processes. From the study of the longitudinal pilot case, and of various transversal case studies, the research design enables us to set the research period of each case according to the dynamism of the studied phenomenon.

What is more, the study of cases by patterns of behaviour is necessary for the development of a few new directions in the management of firms. Hence, the resource-based view is founded in the heterogeneity of the company (Wernerfelt, 1984) and the

difficulty in the observation of certain resources (Reed and DeFillippi, 1990).

By means of the case studies one achieves to research the heterogeneity of the company in itself. Collis (1991) in agreement with Montgomery (1990), states that it is the only appropriate methodology in the field of resource theories, given that the necessity of a subtle analysis in the interior of the company does not allow for a study of a wide sample and the lack of standardised characteristics of the fundamental concepts inhibit statistical analysis.

Another of the central expositions of the resource-based view is that the less observable a resource is, the greater are the barriers of imitation and the more defensible will be the competitive advantage obtained from the resource (Godfrey and Hill, 1995, p. 523). In fact, certain factors are not observable by nature, a characteristic that can bring about causal ambiguity and is therefore an efficient isolating mechanism. If such factors become observable, they would be easier to imitate and therefore its possible strategic character will decrease or disappear. But the observation difficulties encountered by competitors also exist for social researchers.

The case studies by patterns of behaviour are a suitable methodology for the resource-based theory as it maintains all the advantages of classical case studies. It enables us to analyse the organisation as a complex reality, it is sensitive to heterogeneity and can increase the researcher's capability of observation of certain elements and its interrelationships.

Moreover, the main problems and deficiencies related to generic case studies established by Miles (1979) have been corrected which had hindered its use in the study of organisations. Thus, the analysis of the evidence has been systematised by means of patterns of behaviour, which will also ease the structuring in the final report.

Quantitative and qualitative sources of evidence are also combined, so that one can make the most of all available information to achieve the research objectives. Yet, and probably most significantly of all, is the fact that the results of the case study by patterns of behaviour are not limited to a more or less accurate description of the object investigated, but can also be accumulated to the field of scientific knowledge.

Summary and conclusions

The study of cases by patterns of behaviour is a convenient research strategy, if the

objective of the investigation is the study of a determined phenomenon, the discovery of which factors influence it and why such factors influence it the way they do. Nevertheless, it is not an appropriate method to quantify the importance of the factors, to contrast hypothesis or establish periods of trust. This flaw does not reduce its value since it does not inhibit the posterior contrast of the emergent hypothesis using the suitable statistical analysis.

However, compared to other methodologies, the study of cases hereby discussed is of particular interest and offers best results in the investigation of dynamic and complex processes that require the analysis over prolonged periods of time, multiple sources of evidence, quantitative as well as qualitative and diverse analysis techniques.

The study stems from an intensive bibliographical revision that must provide a combination of variables likely to influence the analysed phenomenon, in addition to an exhaustive knowledge of the theoretical framework. The selection of the analysis unit and cases must be presided by a rigorous setting of selection criteria. The pilot case is a profile of the first longitudinal study of particular intensity and relevance for the objective of the investigation, up to the point that it will enable the obtention of sufficient information to protocolise every activity to be performed in the rest of the cases. The protocol (document that will include the group of tasks, procedures and instruments to be used) will ensure the quality of the investigation, since it allows for the separation of the design and implantation phases, in such a way that different researchers should reach analogous conclusions.

The sources of evidence and the procedures of gathering information will be pointed out in the protocol as well as the form of analysis of the evidence gathered in each case, the latter being the most important, difficult and less codified part of the whole process. This study proposes to commence from the theoretical propositions that underline the study and examine the patterns of behaviour that are deduced from them. The replication logic will preside over the general analysis. The final report will avoid falling into a confused narrative or journalist style and will be structured based on the verified or refuted patterns of behaviour, from which necessary explanations will be articulated.

The difficulty in generalising the results obtained will not always be a problem, since this matter will occasionally be the object of a different investigation with this specific

purpose. In another way, the emergent theory will be developed using the reflections in relation to its field of application.

This methodology enables a wider foundation of the models and theories of organisational studies, avoiding, at the same time, distortions of reality that could affect its validity. Moreover, the combination of a longitudinal study, with more or less transversal ones, allows us to modulate the design of the investigation so it will adapt perfectly to the necessities of the dynamic process analysis.

Obviously, the necessity to develop the underlining logic of a model is greater in those still poorly developed theories. As is the case in the resource-based theory which in addition, raises problems related to the difficulty in the observation of certain elements considered "strategic".

Finally, the development of the theories that study organisational behaviour are conditioned by the investigator's capability of progressing in the study of organisational heterogeneity. A methodology to confront this challenge is proposed in this article.

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Application questions

- 1 How would you obtain sufficient case data to ensure a comprehensive report?
- 2 Consider a recent event in your organization – how did it *really* affect performance?