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Methodological Opportunism in Management: The Use of the Case Study Method to Develop a New Construct Called IODD

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ABSTRACT

The different visions that organizational reality conveys generates a diversity of research methods allowing it to be approached from different perspectives. Such diversity of paths to reality in organizations often poses epistemological problems. In fact, by migrating from one vision of the organization to another we go through a continuum from subjective to objective and the methods of investigation change accordingly. In management sciences, this epistemological opposition between the positivist perspective and the constructivist one results in two research directions. Research traditions in management sciences generally mean that confirmatory research relies on quantitative techniques and exploratory research tends to adopt qualitative methods. However, can we really speak about antagonism between positivism and constructivism in management science? If not, what are the epistemological foundations of the case study as a research strategy in management sciences? Such a response marks, in our opinion, the need to adjust research paradigms by putting an end to the opposition between positivist positioning and constructivist positioning. Especially since such an opposition has been falsified since Piaget (1970) then by Latour (1991).

Keywords: Research Paradigm, Case Study, Digital Divides, Sustainability.

INTRODUCTION

The case study method, an essential pillar in management practice and in learning the manager's craft, has gained a pivotal role in becoming a research tool in its own right. The consensus is that management remains rooted in action. However, researchers' transition from the case study as a diagnostic tool to a fully-fledged study tool calls for considerable methodological know-how.

In fact, this transition, which pits the practitioner against the hard-nosed scientist, has its epistemological origins in the classic opposition between constructivists and positivists. The former scrutinize the field, highlighting in the process their qualities as practitioners, while the latter focus more on the scientific grounds of the used methods, relegating the field to an experimental stage.

In this regard, the methodological discussions in management sciences that focus on filling the gap between the two epistemological extremes are still very shy. Although many scientific applications, whether directly correlated to management, like automated planning, artificial intelligence, intelligence analysis and anthropology or indirectly affiliated like medicine, philosophy of science, applied or historical linguistics and computer programming has based their reasoning on the paradigms arrangement.

The question here is: can we speak of methodological opportunism in management? And what are the epistemological foundations of such a strategy? If so, how does the case study present itself as a research tool?

To this end, this paper will be structured around three sections. The first section outlines the epistemological background for research in general. The second section discusses the underpinnings and research implications of such an epistemological approach to management research. The third section tries to highlight how the case study method as an investigative tool for managers can align itself with the specificities of management research. The use of the case study method to develop a new construct will serve as an illustration.

Epistemological Foundations of the Research

According to Thiétart et al, (2003), the purpose of epistemology is to study the scientific bases of sciences. Specifically, it examines the methods and approaches adopted to produce knowledge, as well as assess its value and nature (Benbrahim et al., 2024). The usefulness of epistemological reasoning lies in its contribution to establishing a set of criteria for assessing the validity and reliability of research. In this regard, Thiétart et al, (2003) add that all research endeavors are intended to predict, prescribe, understand, or explain reality, in order to control it.

Nature of Knowable Reality According to the Epistemological Aspect

Generally speaking, the study of reality oscillates between two extreme epistemological positions: the positivist position, also known as hypothetic-deductive, and the constructivist position, known as holistic-inductive (Belharar et al., 2023).

For positivists, knowledge is fundamentally objective and acontextual (Thiétart & al, 2003). Thus, for Popper (1972): "knowledge in this objective view is totally independent of anyone's claim to knowledge; it is also independent of anyone's belief or disposition to assent (or assertion, or action). Knowledge in the objective view is totally knowledge without a knower; it is knowledge without a subject to the knower".

In contrast, constructivists speak of knowledge as inseparable from the individual knower and the context in which he or she is positioned. The most radical constructivists, such as Glasersfeld (1988), even go as far as asserting the non-existence of reality; instead, they speak of the invention of reality. Moderate constructivists (Thiétart et al, 2003) do not take a categorical stance on the presence of reality per se. However, they are adamant about the dependence between observed reality, its context and the consciousness of the observer. Such interdependence comes as a rejection of the objectivity principle strongly supported by positivists (Tech, 2018). Thus, according to the constructivist perspective, reality is nothing other than the fruit of interpretation that emerges from interactions between social actors in a specific context.

Realism and Access: Ontological Foundations

Bearing on the objective conception of reality, positivists defend the ambition of a universal reality. Even if they are aware that such a conception of reality remains too idyllic, even utopian (Thiétart et al, 2003), positivists persist in believing that apprehension of reality should be approached through the laws that govern it. These laws are then formulated in a deterministic way, in the form of a succession of causal links.

Causalities can be broadly classified in terms of two attributes: simple versus multiple, or linear versus circular (Iofrida et al., 2018). The aim here is to explain reality by quantifying and evaluating the meaning of the relationships between the variables likely to form it.

Constructivists, on the other hand, focus on the interpretations that social actors make of reality, and are more concerned with understanding than explaining phenomena. Indeed, the sought interpretations bear on the beliefs, expectations, motivations, intentions and reasons of social actors (Pourtois & Desmet, 1988). These are all the factors that bear more on practices than on objective facts. In this regard, Le Moigne (1995) adds that, "the real is constructed by the act of knowing rather than given by objective perception of the world". Knowledge of reality thus seems to be both a process and a result (Piaget, 1970; Hartley & Winburn, 2021).

Epistemological Specificities of Management Research

Organizational Reality

Burrel and Morgan (1979) distinguish four types of social reality in general and organizational reality in particular: functionalist, interpretivist, radical humanism and radical structuralist. Such approaches are translated into several metatheoretical hypotheses on the nature of knowable reality, the duality between objective and subjective dimensions, and the radical nature of the mechanisms regulating social change (Bogna et al. 2020).

The functionalist paradigm essentially bears on the principles of regulation and pragmatism, according to which social behavior is intended to produce a well-ordered, well-regulated state of affairs. The ontological assertions put forward under this paradigm are quite similar to the positivist epistemological position. Indeed,

everything suggests an objective apprehension of the reality of organizations, free from any value system, in which the researchers distance themselves from the token under study (Mills et, 2022).

Symmetrically opposed to this is the interpretive paradigm. This latter rejects the purely objective perspective of functionalists.

This paradigm rests on a vision of reality in which the ontological nature of knowledge is largely marginalized. In fact, social reality, and by extension organizational reality, does not have a concrete, well-defined meaning, but is systematically rooted in individual subjective and intersubjective experiences. Reality is explained from the point of view of the actors involved in regulating social laws and resources, rather than from that of the independent observer. Moreover, even if interpretivists share with functionalists the vision of a reality organized according to a specific order and patterns, the idea of achieving objective knowledge is totally excluded.

The world of organizations is seen as a set of practices that people in the field conceptualize subjectively. The scientific nature of the generated knowledge is thus considered problematic (Chafe, 2024).

A third paradigm is rightly rooted in the analysis of pathology; according to which human beings are prisoners of the reality they themselves have created (Oliveira, 2021). In fact, this paradigm, cherished by the radical humanist school, highlights the principle of alienation of individuals in their quest to apprehend reality. According to the proponents of this paradigm, the human spirit can be contaminated by psychic and social mechanisms inherent in the modes of thought and action that formalize life in industrial societies.

For radical humanists, the principles of social order in both the functionalists' and interpretivists' conceptions then appear as structures of ideological domination. The latter then set out to study the different relationships that social actors attribute to their practices, specifically in order to transcend their alienation.

Like the radical humanist perspective, reality as defined by the fourth radical structuralist paradigm is rooted in the mechanisms of social domination.

What changes here, however, is the nature of observable reality. Contrary to the radical humanist vision, reality exists as an objective manifestation.

Such reality features several intrinsic contradictions and tensions, leading inevitably to radical changes in the social systems that underpin it. The radical structuralist approach is applied to study power relations that create, alter or maintain these tensions. Despite visible oppositions to the nature of the reality envisaged, it is very challenging to position the organizational paradigms evoked as exclusively positivist or constructivist.

METHODOLOGY FOR ACCESSING ORGANIZATIONAL REALITY

The different visions that organizational reality conveys imply a diversity of research methods. This diversity in the ways to access reality of organizations often raises epistemological issues. In fact, as we migrate from one organization's vision to another, we move from a subjective to an objective continuum, where study methods change. Accordingly, the subjective extreme encourages a constructivist epistemological stance to understand the processes by which social actors perceive their relationships in the business world. This fundamentally phenomenological perspective assumes that the created knowledge is intimately linked to the personality of the scientist (Husserl, 1962). In contrast, the purely objective vision encourages a positivist epistemological stance that favors the study of causal links among the different dimensions of a given social structure. In this regard, understanding reality presupposes the empirical analysis of concrete relationships, in which the researcher positions themselves as outsiders of the phenomenon under study.

In management, this epistemological opposition between the positivist and constructivist perspectives is translated into two research paradigms (Thiétart et al, 2003).

The researcher who masters the object of their research will tend to engage in a confirmatory approach that tests theoretically formulated hypotheses.

Such an approach can be described as positivist. If, on the other hand, the researcher faces a theoretical inadequacy of the phenomenon under study, he will tend to adopt an exploratory approach based on theoretical constructions.

Management research traditions reveal that confirmatory approaches generally opt for quantitative techniques, while exploratory approaches tend to adopt qualitative methods (Silverman, 1998; Brabet, 1988). To this end, confirmatory approaches rely on deductive positivist approaches, with theoretical hypotheses as the starting point and objective truth as the end point. Exploratory approaches, on the other hand, take a constructivist view, under which general statements or theories are inductively derived from specific observations.

Glaser and Strauss (1967) believe that "there is no fundamental conflict between the aims and potentialities of qualitative and quantitative methods or data [...] each form of data is useful for verification and theory generation".

Indeed, the limitations of qualitative research in terms of generalizability have led researchers to give greater validity to quantitative approaches (Glaser & Strauss, 2017). However, qualitative methods offer more internal

validity to the results they produce (Thiétart et al, 2003). In this regard, Grawitz (1996) raises a fundamental question: "Is it better to find interesting things that you're not sure about, or to be sure that what you find is true even if it's not interesting?". The answer to this question can be found in Miles and Huberman's (1991) statement that "social phenomena exist not only in minds but also in the real world, and that some legitimate and reasonably stable relationships can be discovered between them". In our view, such a response shows the need to adapt research paradigms, putting an end to the opposition between positivist and constructivist positions. All the more so since such opposition has been contested since Piaget (1970) and then Latour (1991).

The Choice of the Case Study as a Strategy to Access Reality in Management: Illustration through the Development of a New Construct (IODD)

Conceptual Development of the Case Study Method

Given that management is first and foremost a science of action (Wacheux, 1996), the question of practice remains central to learning the management profession and to validating management concepts, whether using qualitative or quantitative approaches.

As a result, management seems to be a practical science concerned with human action. However, Debie and Bouyeure (1994) point out that, just as it is challenging to isolate purely theoretical approaches, it is also very difficult to consider the presence of pure practice dissociated from theory. "We see (therefore) that a practice can and must be understood within the framework of a dialectic and a trade-off between theory and practice (...) The alleged conflict between theory and practice is thus resolved by recognizing their mutual irreducibility, a condition for their complementarity." Debie and Bouyeure (1994), p62).

Positioning of management as a science of action in no way reduces the weight of the theoretical dimension. Indeed, for the researcher, in addition to the intellectual satisfaction of having identified a phenomenon, the validity of a theory and its refinement will come in return from the field (Lamy & Lapoule, 2015).

Research on digital inequalities has taken two perspectives, a global perspective, between developed and developing countries, and a regional one, between the poorest and the best served regions. However, the organizational perspective, especially that of companies, remains unexplored. Rogers' innovations diffusion and structuration theories allow for studying three types of inequality on a global scale. Strangely, Rogers' theory is limited to explaining the importance of organizational capacity to absorb ICTs diffusion, in terms of access, use and the resulting performance.

Given the novelty of the phenomenon reported in this study and the limited theoretical knowledge of it, the case study method presents itself as the most appropriate instrument to ensure this interaction between theory and practice (Amadi, 2023). Indeed, using the case study method "the boundary between what is academic research and what is management consultancy becomes blurred, offering even more opportunities for knowledge to be uncovered, as the researcher takes on the role of a consultant through these in-depth investigations into the organization and organizational behavior" Gummesson (1991). In this regard, case studies are becoming increasingly accepted as scientific tools in business administration.

The case study is a research strategy in its own right for researchers in the social sciences, just as experimentation is for researchers in the natural sciences. According to (Yin, 1994; Yin, 2018), the case study is the appropriate research method when the research questions target the "why" and "how" of a contemporary phenomenon (1). The latter is completely inseparable from the context in which it takes place; and the researcher has little or no control over events (2).

With this reasoning, our study of digital inequalities in the organizational context focuses on the following two questions: How do digital divides manifest themselves in companies? Why do such gaps exist in organizations (1)? Moreover, the contemporary and completely inseparable nature of the research context justifies well our study because of the growing difficulties of Tunisian companies to integrate themselves into this new IT-based division of labor (2).

The case study as a research strategy is a technique, which, through the use of multiple data sources, provides researchers with convincing answers to raised questions. Generalizability of case studies is not a prerequisite for the validity of this type of research. The case study method's relevance to the research questions is more important than its ability to be generalizable. (Theoretical/analytical generalization vs. statistical generalization)

Indeed, in response to these proposals, we first seek to understand the genesis of digital divides within organizations. Once our analytical perspective has been mapped out, we will develop a version of the digital divide that can be used to conceptualize the inequalities observed at the organizational level.

To this end, we will make sure that our study complies with Yin's (2003) and (2009) validity and reliability conditions, as presented in the following table:

Table 1. Conditions of Validity and Reliability of the Case Study Method

Tests	Features
Construct validity	• Access to the different players in the organization. • Access to as many documents as possible. • Maintenance of a database covering the material identified. • Contact with key players to validate content.
Internal validity	• Comparison between different stakeholders and use of an analysis grid. • Discussion with other stakeholders to explore possible explanations. • Boolean logic to build evidence.
External validity	• Investigation builds on theoretical developments discussed in the literature. • This investigation strategy may lead to other cases.
Reliability	• Case study protocol.

Source: Yin, R. K. (2003). Designing case studies. Qualitative research methods, 5(14), 359-386.

According to Stake's (1994) typology, the design of a case study is more akin to that of the "instrumental case study", where immersion is carried out on a single case in order to provide greater insight into the analysis of digital divides at the organizational level, and to improve related theories (Savin-Baden & Major, 2023).

In the same direction, Stake (1994) indicates that the case study method can focus on a process or a sequence of operations in which a behavior occurs. Studying, in this regard, individual behaviors or groups of individuals; taking into account the entire social and material context in which they manifest themselves. It is also possible, to compare several cases leading to the formulation or confirmation of a series of hypotheses.

According to Bell (1987), case study methodology has also been described as a unifying scheme of a group of research methods that share the ambition of focusing on a specific example or event. According to this author, the philosophy behind the case study is that sometimes just by carefully looking at a practical real-life example; a full picture can be obtained of the actual interaction of variables or events. To this end, the case study allows the researcher to focus on specific examples in an attempt to identify interactive processes that may be crucial but are difficult to capture by large-scale surveys.

Thus, the aim of the case study is to provide a three-dimensional picture of a given phenomenon (Bell & Davison, 2013). It should illustrate relationships, political-organizational problems and patterns of influence in a particular context. The scope of the case study is very broad, ranging from individuals to organizations, policies or national events. It is important to consider that most cases are aggregates of complex behaviors (Stake, 1994).

Paradigm Shift: Towards an Abductive Approach

As professional and academic reasoning increasingly converges in the field of management, it becomes more difficult to distinguish between the inductive approach favoured by constructivists, who in most cases are agents of the field, and the deductive approach favoured by positivists, who are generally academics (Aken, 2004).

In such circumstances, hybrid approaches emerged combining both induction and deduction. This is not at all surprising, given the nature of investigations involved in case studies.

In fact, case studies involve exploiting data from multiple sources to gather a rich picture of the phenomenon under study (Ellram, 1991; Yin, 2003). This makes it difficult to conform to a single research approach. In this regard, few case studies have adopted a deductive perspective without borrowing some axioms from the inductive approach (Stassen and Waller, 2002).

The abductive approach, which combines deduction and induction, takes on its full scope in this way. Some authors even argue that most of the great advances in science have followed neither the pure deduction nor the pure induction models (Kirkeby, 1990; Taylor et al., 2002).

For most thinkers, the term "abduction" goes back to Charles Sanders (Santiago) Peirce. However, Peirce himself refers to Aristotle. According to Peirce (1931), the term abduction results from a mistranslation of the word "retroduction", dear to the spirit of the abductive approach as understood by Aristotle. However, Peirce himself uses the term abduction to refer to "retroduction".

According to Kirkeby (1990), several types of abductive research streams can be identified in modern science, each of which has developed its own abductive approach. A first group of researchers sees abduction as systematized creativity or a kind of intuition in research to develop "new" knowledge (Andreewsky & Bourcier, 2000; Kirkeby, 1990; Taylor et al., 2002). Creativity is needed to overcome the limits of deduction and induction, which consists in delimiting and establishing relationships between constructs that are already known (Kirkeby, 1990). Taylor et al. (2002) add that, rather than struggling to follow logical processes, most scientific advances emerge intuitively, or abductively.

By introducing qualities such as creativity and intuition, the abductive approach clearly stands out by its research process (Danermark, 2001). Indeed, deductive research scans theory (e.g. in a literature review), draws

certain logical conclusions from the latter and presents them in the form of hypotheses (h) and propositions (p) and examines the latter in an empirical design to finally present general conclusions that confirm or falsify the theoretically elaborated h/p (see, for example, Kirkeby, 1990).

Figure 1. The logical sequence of the research process is as follows: **(**1) Law, (2) case, (3) result**.**

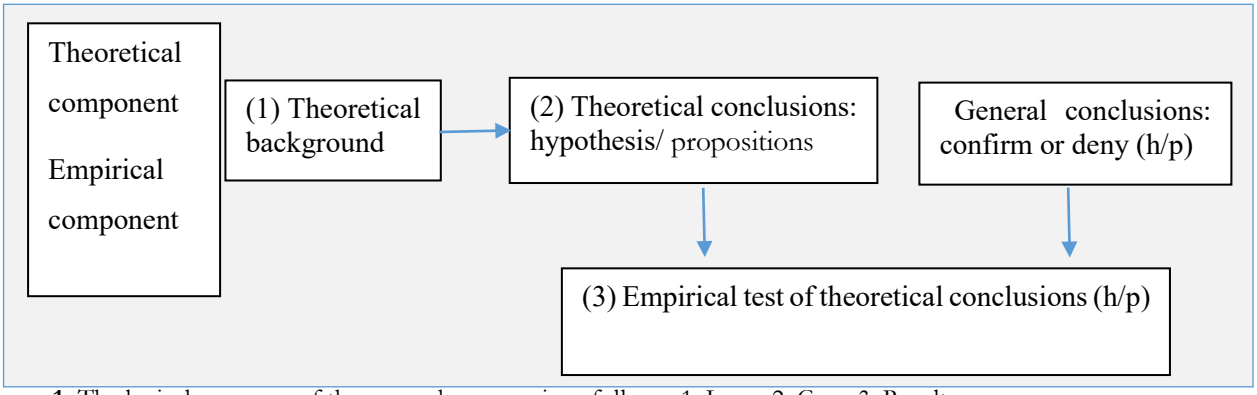


Figure 1. The logical sequence of the research process is as follows: 1. Laws, 2. Case, 3. Result

Inductive reasoning follows an opposite path: theoretical anchoring is not necessary (Andreewsky & Bourcier, 2000; Glaser & Strauss, 1967), instead, observation in the field leads to formulating propositions and their generalization within a theoretical framework. The logical sequence of the research process will thus be as follows:

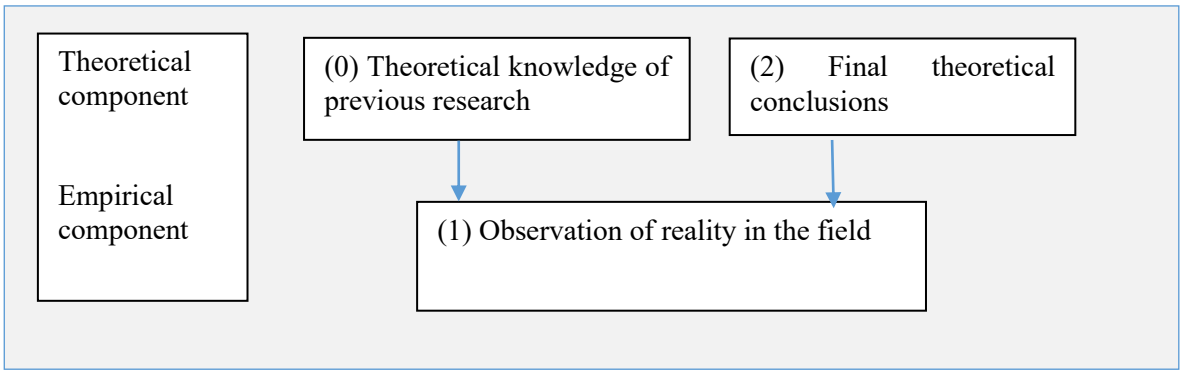


Figure 2. The logical sequence of the research process is as follows: (1) case, (2) result, (3) Law.

Abductive research, on the other hand, follows a different research process: (1) laws, (2) results, (3) cases (Danermark, 2001; Kirkeby, 1990).

In this direction, Williamson (2016) add that abductive reasoning is also important for philosophy itself to optimize the way they explain some philosophical "data" like our pre theoretic judgment about hypothetic cases.

In abductive reasoning, the case presents a plausible but not necessarily logical conclusion, provided that the laws advocated at the outset are correct (Danermark, 2001). On the other hand, abduction can also lead to "suggesting" general rules (Andreewsky & Bourcier, 2000; Kirkeby, 1990).

Instead of focusing on generalizations and/or only their specific manifestations, the abductive approach is more concerned with specific situations (exceptional cases) that present anomalies or are omitted from the general structure (Danermark, 2001; Danermark & Morgan, 2023).

As such, the abductive approach is very useful for determining which aspects of a situation can be generalized and which are specific, for example, in our case, organizational or behavioral factors. These strengths will subsequently lead to "suggesting" a new reformulation of general rules, hypotheses (h), propositions (p), or even theory (Andreewsky & Bourcier, 2000; Kirkeby, 1990; Mitchell & Education, 2018).

The creative-intuitive dimension of abductive research (Taylor et al., 2002), with its ability to distinguish the general from the particular (Danermark, 2001), makes it highly appropriate in the first phase of research, on the process of formulating and choosing hypotheses or propositions (Kirkeby, 1990; Mitchell & Education, 2018). In this regard, abductive research will help to identify H/Ps that can later be examined in a deductive phase of research.

By interpreting or re-contextualizing certain phenomena, abduction can also enable us to understand a phenomenon in a new way, or according to a new conceptual framework (Danermark, 2001; Dubois & Gadde, 2002 ; Yin, 2018). Here, abductive reasoning replicates a search for theories appropriate to an empirical observation, which Dubois and Gadde (2002) call "theory matching", or "systematic combining". In this process, data collection takes place simultaneously with theoretical construction, implying a kind of "learning loop" (Taylor et al., 2002), or at least a "back-and-forth" movement between theory and empirical study (Dubois & Gadde, 2002;

Yin, 2018). This interactive aspect between theory and empirical study is rather similar to that of action research methods and can also be adopted in case study-based research (Dubois & Gadde, 2002; Rashid et al., 2019). Innovations diffusion theory (Rogers, 1995) enables us to conceptualize the first level of digital inequalities, namely those related to access to ICT. Structuration theory (Giddens, 1987), on the other hand, is much more relevant to the conceptualization of the other two levels of divide, related both to inequalities in use and to the performance that results from them.

Table 2. Conceptualization of digital divide at global level

General scope	Global conceptualization of DD
• **Diffusion of innovation theory**: ICTs almost invariably follow a series of S-curves. Such curves are marked by a slow start-up phase, then a phase of accelerated growth, and finally a phase of maturity and fairly rapid decline. (**Rogers, 1995**)	The DD takes shape in the start-up phase of digital services, which manifests itself in inequalities of access to ICT between those who are equipped and those who are not. Those who are equipped will find themselves in a network of relationships, knowledge and skills, while those with little or no access risk being excluded from this dynamic (**Scadias, 2002**). However, such inequalities are bound to diminish over time.
• **General structuring theory**: Perceived opportunity and satisfaction with certain expectations will lead to a more or less developed usage dynamic. **De Sanctis and Poole (1994)**	Here, DD refers to the stakes and power relations in social organizations related to the use of ICTs. It is thus defined through the diversity of uses by organizations and individuals, which can explain the gaps and risks of exclusion (**Hacker & Van Dijk, 2000**).
• **Adaptive structuring theory**: Generally speaking, technology will be used to increase the resources of the most efficient users. **Van Dijk (1994)**	DD is the consequence of differences in the ability to optimize the use of ICTs. It is defined through the divergence in performance associated with the use of ICTs, which is expressed through the differentiated contribution of ICTs to the performance of individuals and organizations. **(Bresnahan et al., 2002**; **Greenan & Mairesse, 2004)**.

However, conceptualization of inequalities described above at the global level proves insufficient for their apprehension at the organizational level. Indeed, the contribution of innovation diffusion theory and structuration theory is limited to studying organizational capacity to absorb technological innovations, without explaining or delving into the resulting inequalities. Such absorptive capacity can be defined as: "the ability of a firm to acquire (1) new technologies, assimilate (2) then transform (3) and finally exploit (4) them for productive and commercial purposes" (Cohen & Levinthal, 1990; Zahra & George, 2002).

Indeed, the use of the two theories in question to study technology absorption capacity proves highly relevant to addressing the digital inequalities described above, but from an organizational perspective. Digital divides then seem to be the result of technological and organizational complementarity problems.

The nature of the complementarities required, according to the structurationist perspective (Giddens, 1991) and more specifically that of adaptive structuration theory (De Sanctis & Poole, 1994), is understood as the use of IT tools and the resulting performance being the fruit of emerging interactions between the structuring power of IT solutions, the structural properties of the organization and the interpretation of the use made of them by organizational players. Rogers' (1995) innovations diffusion theory also helps to identify the factors that can condition the above-mentioned complementarities effects. In fact, the direction of interactions between technological innovation and its acquisition, assimilation, transformation and exploitation process is strongly affected by the structural properties of the organization. The availability of IT tools is conditioned first and foremost by the structural properties of organizations, before being adopted by individuals. Such properties either facilitate or hinder access to and adoption of such tools.

From this point of view, and from a structurationist perspective, it is possible to conclude that just like the organization, information technologies also possess structural properties which, combined with those of the organization, will condition their use.

However, the act of using IT tools, even if facilitated by their harmonization with the context in which they are implemented, remains a human fact. This leads us to put forward, from a diffusionist perspective, the second factor that can condition the structurationist perspective of usage formation, namely, user characteristics.

Inequalities in the use of IT solutions can then be understood as the ultimate consequence of inconsistencies between the technical system making up IT tools and the social system making up organizational structures and the actors responsible for their operation.

Bearing on the above theoretical proposals, we propose the following research model in terms of inputs, processes and outputs.

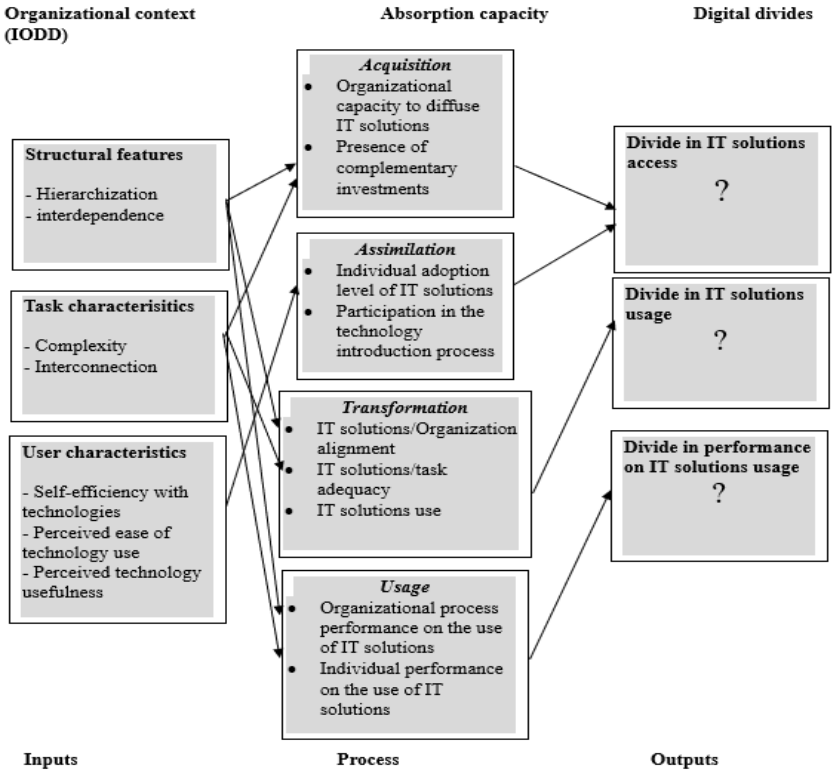


Figure 3. Research Model

Even if all the components of our analytical model, representing the implementation and use of technological innovation, as well as its absorption process, are sufficiently studied in terms of both their articulation and measurement, the resulting gaps remain empirically unexplored at the organizational level.

This is where the above theoretical proposals fit in with our empirical needs (Kivunja, 2018). The hypothetico-deductive approach adopted so far will be then used for inductive purposes. This need is not, of course, to be understood in terms of pure constructivist thinking, which rejects all theoretical a priori, but rather in terms of a more moderate position that tries to tailor paradigms to the purpose of this study.

Like induction, the abductive approach begins with observing the real world. However, for the researcher adopting an abductive approach, field observation is not only influenced by their theoretical knowledge, but also represents an opportunity to note deviations and inadequacies inherent to the latter.

In order to give substance to the newly identified construct, we base our immersion on the evidence identified by Yin (2003), using mainly interviews and system analysis as our main modes of data collection. Our data collection was supplemented by observations (participants) in the different studied environments, as well as by detailed analysis of available documentation and archives.

Table 3. Case study protocol

Data analysis	Participant observation	One-to-one interviews
An organization chart, job descriptions and job interaction sheets, a brochure on the IT solution, documents relating to the technical and financial offer submitted by the IT solution supplier, and documents relating to configuration work and user training.	Support for some events and processes, in particular: • Meetings held with the CEO and all managers to fine-tune system failures and identify any resulting training or specification needs. • Meetings with IT solution suppliers (CEO and engineers) to negotiate and plan actions to be taken. • On-site examination of the different users interacting with the IT solution.	• **Informal interviews**: help to better understand how users access applications to carry out their tasks, and the resulting functional and individual inequalities. • **Semi-structured interviews**: enable us to extract verbatims on the individual and organizational dimensions of differences in the use and performance of the IT solution adopted.

Turning to the approach adopted and the use of the above-indicated techniques, the study is structured around two immersion periods:

A two-month period devoted to observation, data analysis and a series of informal interviews:

- Exploration of the organizational context to understand the nature of the organizational structure and the resulting coordination needs.
- Identification of the different functionalities offered by the introduced IT solution, and their adequacy with coordination and individual task completion needs.
- Analysis of functional access gaps in terms of organizational capacity to disseminate technological innovation, quality of complementary investments and individual adoption rates. The results are then discussed using semi-structured interviews to explain the observed inequalities.
- Examination of the differentiated contribution of the introduced technology, both functionally and individually.

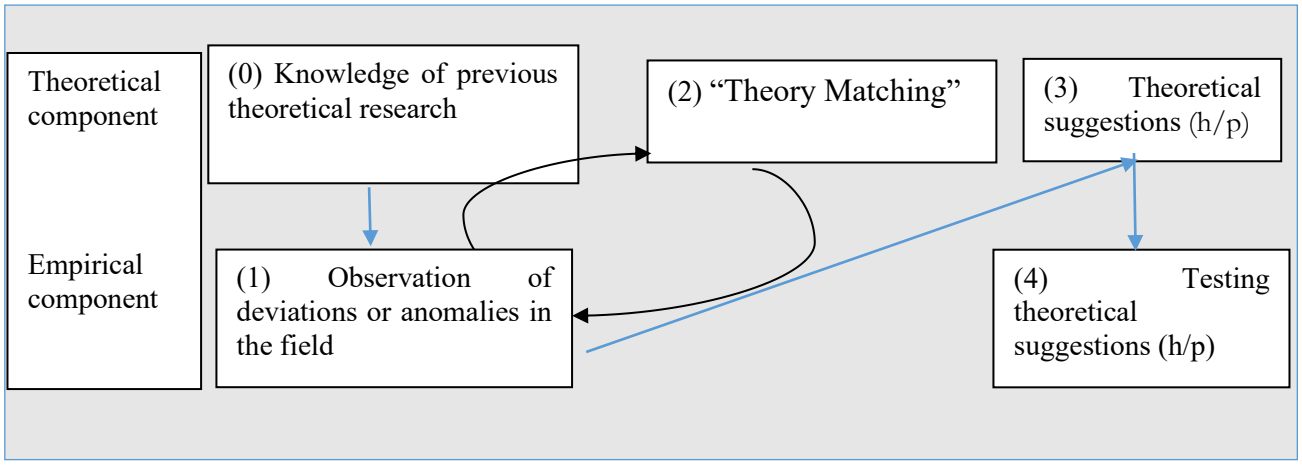
A two-month period devoted to a series of informal and semi-structured interviews, always complemented by observation of individual behavior when using the SAGE solution, in order to :

- Distinguish users' explanations of the functional and individual dimensions that make one user use the software more than another. Such explanations are then grouped and classified by theme.
- Discuss the differentiated functional and individual contribution of the introduced technology with the various users of the newly introduced IT system. The content of the discussions is then grouped and classified by theme.

Given the dual nature (functional and individual) of our analysis, our study and empirical results used two units of analysis: organizational functions and managers. In addition, we conceived the organization as a set of mechanisms designed to resolve coordination problems encountered by organizational actors while completing their activities (Crozier & Freidberg, 1995; Weick, 2004). Such conception led us to focus on the internal characteristics of the organization, which Rogers (1995) designated as factors of innovations diffusion and as factors of co-alignment with technologies introduced by structuration's (Godé, 2015; De Vaujany, 2000; DeSanctis et al., 1994; Orlikowski, 1992). The latter can be grouped under a set of two types of coordination mechanisms: the hierarchization of units and their interdependence (Brousseau & Rallet, 1998). Consequently, an iterative and creative process (Taylor et al, 2002), described by (Dubois & Gadde, 2002) as "theory matching" or "systematic combining", is undertaken to extend or adapt the theory(ies) used prior to this conception (Andreewsky & Bourcier, 2000). The empirical starting point that stipulates the presence of anomalies in observations does not mean that the abductive approach should necessarily be unconsidered (Galdon, Hall, & Ferrarello, 2021).

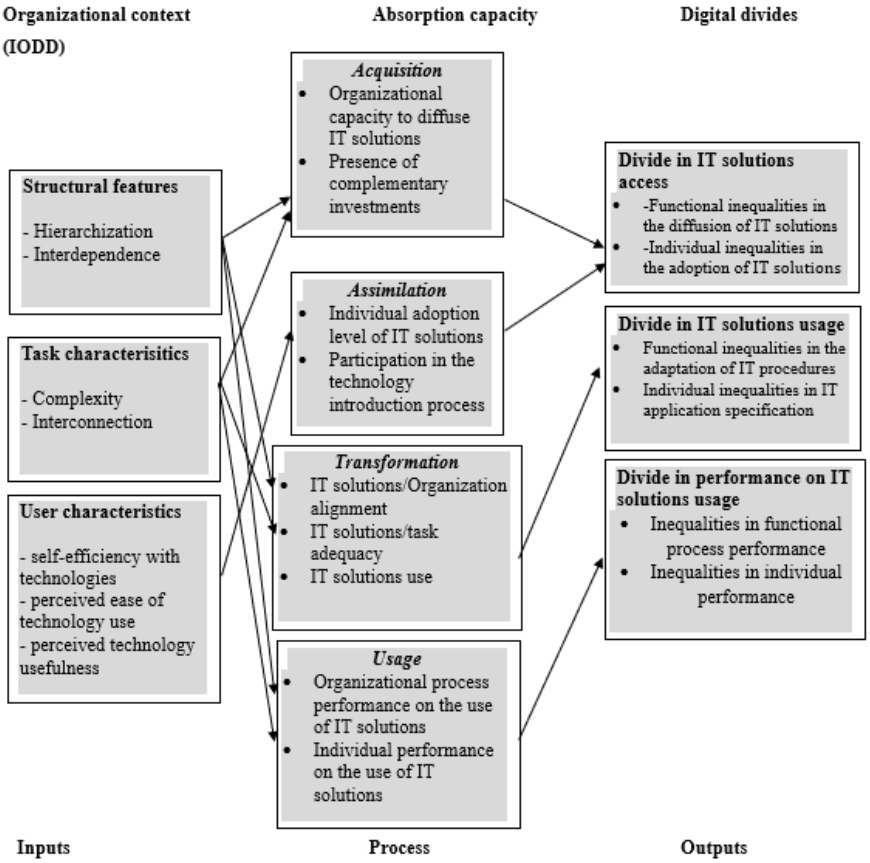
On the contrary, the researcher can deliberately be creative in applying new theories to already existing phenomena (Kirkeby, 1990; Eriksson & Engström, 2021). The aim of this process is to understand a new phenomenon and suggest new theories (Kirkeby, 1990; Eriksson & Engström, 2021) in the form of new hypotheses or propositions (Andreewsky & Bourcier, 2000). The abductive approach continues with the application of these H/Ps in an empirical design; however, this last stage can already be assimilated as the deductive part of the study.

Figure 4. The logical sequence of the research process is as follows: (1) laws, (2) results, (3) cases.



This methodological opportunism, which is becoming increasingly popular among researchers, has led us to substantiate digital inequalities in the organizational environment. These then take the form of both functional and individual inequalities, which vary according to the type of inequality under consideration. Moreover, the identified inequalities are themselves rooted in the theoretical perspective developed under the two innovations diffusion and adaptive structuring theories. Under the same theoretical perspective, three levels of digital divides

identified by innovation diffusion and structuring theories at the global level can also be found at the organizational level. Such divides, characterized globally by inequalities in access, use and performance in the use of IT tools, are also likely to emerge in the organizational context, but take on meanings specific to the latter. In fact, the output that emerges from the content analyses and the corresponding thematic analyses, as well as from their triangulation with multiple data sources, takes on both functional and individual manifestations for each of the three divide levels. Furthermore, these manifestations are systematically explained in terms of the different stages of technological absorption capacity, as conditioned by the organizational context and considered from a dual structural-diffusionist perspective. Apprehension of the latter as a source and genesis of digital inequalities then lends our research model explanatory power.



Research Model

CONCLUSION

In conclusion, we believe that dichotomous antagonisms between paradigms and approaches are now obsolete. Researchers are called upon to explicitly consider the epistemological issues rose in their research projects, and to question the nature of the reality they intend to apprehend, and the assessment approach they should adopt.

Social reality, and more specifically that of organizations, is complex enough to be apprehended by a specific paradigm, let alone a single approach. This is why many social scientists emphasize the need to transcend the weaknesses of the traditional scientific method (external paradigm) and connect universal knowledge with specific or contextual knowledge. Lewin (1931), Weber (1951) and Piaget (1970) have long supported the need to consider a new category of science, combining the rigor and standardization of positivist science with the relevance and pragmatism of other paradigms. This new scientific endeavor would be more action- and experience-based, praxis-oriented and self-reflexive (Evered & Louis, 1981; Alam, 2021). It was specifically by pursuing this pragmatic vision that Charles Sanders Pierce (1839-1914) proposed his abductive approach, enabling facts to be interpreted on the basis of theories, under a perspective of mutual enrichment between the two elements.

In this regard, given the limitations identified in Roger's innovations diffusion (1995) and structuration theories (Giddens, 1987), as well as the adaptive structuration (Van Dijk, 1999) theory, to identify digital inequalities that may manifest themselves at organizational level, the case study method, and more specifically the instrumental

type, proved to be an adequate research design. It is considered to be the most appropriate approach for this type of issues.

By adopting an abductive approach, going back and forth between theory and fieldwork, our study enabled us to identify three types of divides at a global level, but with manifestations specific to the organizational level. Such manifestations take the form of both functional and individual inequalities, the expression of which varies according to the type of divide under consideration. Emergence of the latter is interpreted as a function of the different stages in the process of absorbing technological innovations, by testing a series of hypotheses and propositions formulated to this end.

Such a characterization, the genesis of which is explained by the technological absorption process, could be more relevant if it led to the construction of measurement scales enabling assessment of the observed inequalities. Carrying out a quantitative survey to validate the scales developed for this purpose is therefore a natural extension of the research line carried out to date to conceptualize digital inequalities on an organizational scale.

The use of the case method as a research tool has proven to be very useful. In fact, in our view, the case study method is a concrete illustration of a research paradigm in which the deductive approach, favored by positivists, and the inductive approach, considered exclusively constructivist, coexist within the same research design.

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