



A methodological proposal for a strategic design investigation

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Abstract

This article presents the decisions that are presented in the transition from theoretical to methodological, as a means to establish coherence and validity in an investigation that addresses strategic design's contribution to organizational transformations. A coherent methodological proposal is presented between the ontological posture (intersubjectivity), epistemological posture (pragmatism), and research method (mixed) required to address the object of research in strategic design, and to consistently select the various techniques and procedures required. This proposal is pertinent to respond to the research question of what the role of strategic design might be, as related to organizational transformation, to the extent that it provides competencies (human capital), processes (structural capital), and a relationship model (relational capital).

Keywords Strategic design · Research methodology · Research paradigms · Organizational transformation

1 Introduction

In order to guarantee the scientific rigor of an investigation, the problem must be precisely specified, as must the question that gives rise thereto. Further, the proposal of a theoretical structure that permits one to respond to said question is essential, which requires appropriate methodological design selection (Bunge 2009).

In most cases, the methodological design is reduced to the use of techniques and procedures for the obtention of data and facts. This ignores that the method is, above all, a way to approach a given reality (it would be more accurate to discuss the portion of reality which constitutes the research problem). Method selection is a complex and reflective process, as it combines fundamentals of the pre-existing theory for the selection of concepts and structure regarding the way in which the object of study is to be approached,

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and whose application is closely associated with the conditions of the cognitive subject (Aguilera 2013).

In this article, it is assumed that, in order to traverse the methodological, researchers must determine, in coherence with the problem formulated, their position regarding reality and the way in which knowledge is generated about the specific reality selected. They must pose both ontological and epistemological questions, and, consequently, refer to the selection of the method that best fits such a worldview and knowledge generation (Creswell et al. 2007). Various authors have urged researchers to make their positions on these philosophical assumptions explicit, as it is rare to find articles in which the researcher shares said triangulation between the ontological, epistemological, and methodological. Many scientists hold that the adoption of a certain paradigm influences both the questions formulated and the method of responding thereto (Doyle et al. 2009).

In this regard, Guba & Lincoln (1994) believe that the logical order of a research process is as follows: (1) paradigm, (2) philosophical assumptions (ontological, epistemological, axiological), (3) method, (4) techniques, and (5) procedures. Paradigms, basic beliefs, or worldview guide researchers in the formation of ontological and epistemological foundations, and method selection. Thus, paradigm determines ontological posture, which in turn defines epistemological posture.

All of the elements indicated, as well as the research question, involve the selection of an appropriate method to address the specific investigation. According to Guba and Lincoln, (1994), although ontological-epistemological-methodological coherence is indispensable, said paradigm alone does not determine the method. For these authors, there are four research paradigms: positivism, postpositivism, critical theory, and constructivism, as well as two methods: quantitative and qualitative. Morgan (2007) identifies a new paradigm, called the “approach pragmatic”, so as to reduce the tension surrounding the paradigm concept, which has generated so much debate in the academic world. Morgan additionally identifies a new method, the mixed method, which surpasses the inclusion of traditional method techniques and procedures. In the literature, this is considered a new way to approach reality (Creswell and Plano Clark 2007; Creswell and Tashakkori 2007).

Indeed, the questions that researchers must answer, in accordance with the chosen paradigm, include: what is the form and nature of the reality to be studied (ontological question)? What is the nature of the relationship between the researcher and object/subject of study (epistemological question)? How can researchers learn what they wish to know (methodological issue)? (Guba and Lincoln 1994).

In the above-mentioned study, Morgan’s pragmatic approach (2007) is privileged, but considers previous developments, especially those of Guba and Lincoln (1994). In this regard, (Morgan 2007) contrasts the deductive (quantitative approach) and inductive perspectives (qualitative approach), in an effort to connect theory with data. Regarding the objectivity and subjectivity of traditional quantitative and qualitative methods, respectively, intersubjectivity is offered as an alternative, which opposes generalization (quantitative) and reduction to simple context (qualitative), or the transferability for data inference.

One example of the way in which this attempt at coherence causes the research journey to be an occasion to rethink the researcher role is presented here: investigations that relate strategic design to organizational transformation processes are used as a pretext to provide companies with design visions that transcend their centrality in good or service production to a specific application, in the strategic organizational process field. This goal is achieved through understanding the nature of transformations, alternative action proposals, the establishment of links with interest groups, and the achievement of the proposed objectives through inspiration, ideation, and implementation.

The present article seeks to contribute, based upon Morgan's proposal (2007), to the provision of a coherent ontological posture (intersubjectivity), epistemological posture (pragmatism), and methodological strategy (mixed methodology) proposal (Saunders et al., 2012). Said proposal may also be observed in the selection of the various techniques and procedures employed in this investigation. This proposal is successful in responding to the research question, as related to strategic design in the business management field.

2 Strategic design and organizational transformation: a pretext for analysis

The basic research for this analysis analyzes the contributions of strategic design, understood as intellectual capital, to organizational transformations. The general hybrid question is: what is, and how does strategic design contribute to organizational transformation processes? This question may be further distributed into the following questions: (1) What reasons give rise to organizational transformations?, (2) What conceptual perspectives are said transformations based upon?, (3) How is stakeholder involvement achieved?, (4) What barriers, results, and knowledge are identified (qualitative question)?, (5) Is there evidence of the application of abductive, creative, or empathic skills in the workers in the business group (quantitative question)?, (6) How do strategic design (human capital), design process (structural capital), and participatory design approach (relational capital) competencies facilitate organizational transformation processes (qualitative question)?, (7) Do those internal and external organization documents studied support the strategic design for organizational transformation (quantitative question)?.

The case study was chosen as the research design for this investigation (Stake 2005). The following criteria were used for case selection: a business group with various business units, protected by the same parent company or diversity of analysis units, which lend it multiple characters, as stated by Yin (2009). In addition to the subordination link, there must be homogeneity of purpose and direction between business units, and in recent years, they must have undergone organizational transformation processes.

The business group is considered both an analysis unit and an observation unit that has experienced organizational transformation processes in recent years. In order to understand these processes, critical incident interviews, in-depth interviews, focus groups, surveys, and documentary analysis were used.

3 Intersubjectivity: ontological research orientation

Regarding the positivist paradigm, which assumes the existence of an external reality, independent of the subject, and which is finished and totally objective, several authors have proposed alternative paradigms that, like constructivism, suggest the existence of multiple social realities that are the product of human intellect, and are constructed by subjects (Morgan 2007).

One way to construct such a reality is by way of so-called intersubjectivism. For Schütz (1972), this is not only a methodological notion, but above all, is ontological. For said author, the everyday world is a group of meanings that have been constructed through interactions between current and previous humans. In terms of Berger and Luckmann (1993), the world is a human environment within a social and historical society. In reality,

it is impossible to consider pure objectivity or subjectivity. Therefore, intersubjectivity was the best alternative for comprehension of this reality (Morgan 2007). However, this does not mean organizational denial of the existence of objective realities, independent of the actors that compose them (Bryman and Bell 2015).

An example of this intersubjective reality generally corresponds to organizations, or more specifically, to companies, within the context of this investigation. In accordance with (Harari 2018), it may be affirmed that an organization is structured by a communication network that links individuals' subjective consciousness. In other words, it is a reality constructed by consensus and agreements that, although they do not constitute a physical reality, do exist for many purposes in everyday life. Subjects that interact socially, and consequently have experiences which acquire meaning when agreements for their interpretation are reached coexist in this business reality (Schütz 1972).

One of the many human actions that reflects intersubjectivity in companies is the way in which its members perceive their particular contribution to company transformation, and within this, the presence of strategic design as a facilitator. With this intersubjectivity, individuals reconstruct the experiences that constitute the daily life of the phenomenon in question (organizational transformation, unit of observation in the present study). On the other hand, the subjects of this study, based upon their business experiences and particular contexts, allowed for intersubjective exchange with researchers, and maintained interaction and dialogue, which facilitated the understanding/interpretation of the role of strategic design in organizational transformation processes. Hence, resorting to intersubjectivity as a means and instrument enables one to learn of organizational human realities (Barrera 2012).

4 Pragmatism: an epistemological basis for research

In positivism, given that reality exists independently of researchers, their role in knowledge generation is to attempt to capture that reality objectively. In constructivism, knowledge is a more or less consensual construction, which surrounds a phenomenon that is being interpreted. These constructions are constantly evolving, in a permanent dialectical process, so that even multiple intelligences can coexist around a phenomenon. Thus, knowledge accumulates as constructions are enriched and sophisticated through hermeneutic and dialectical processes (Guba and Lincoln 1994).

Pragmatism is understood, in this investigation, as an epistemological foundation, according to which, if one wishes to unravel the way in which a given reality works, it is necessary to understand knowledge as a form of action (Faerna 1996), and accept that it consists of the following: utility (technique), satisfaction (practice), and truth (theoretical) (Valladares 2011). In this regard, (Johnson and Christensen 2014) consider that, in mixed research pragmatism, it helps to listen carefully to the ideas, assumptions, and approaches found in quantitative and qualitative research, in other disciplines, and as provided by stakeholders and social groups.

As Johnson and Clark (2006) note, when researching in the business and management fields, one must be aware of the philosophical commitments made by one's research strategy choice, as this significantly impacts not only in what is done, but also in the way in which that which is being investigated is understood, as well as its effects on utility, practice, and truth. Specifically, and in the terms of Goldkuhl (2012), pragmatism helps in the

understanding of organizational change and artifact construction, as knowledge and action intersects to favor participation in the world, and beyond mere observation. This was an essential element in the present study, whose purpose was to develop a proposal to guide organizational transformation from strategic design, as intellectual capital.

The direct collection of information from participants, at the individual and group levels, analysis of printed and digital documents, and assembly of facts and evidence, among other activities, adds significant information to the present study, nourishes the quantitative data collected at the workplace and analyzed in a particular context, in this case, in a business group. This reinforces Cross (1999) view of the importance of pragmatism in the design research field, where knowledge must be approached from the person (inquire about the ways in which individuals design), process (development and application of techniques and methodologies used in their work), and product (in the material and intangible attributes that it creates).

On the other hand, pragmatism is the most common paradigm, as a philosophical foundation, when mixed research methods are utilized (Tashakkori and Teddlie 2003). This paradigm is effective when applied to scenarios with complex social phenomena. Specifically, pragmatism addresses the consequences of actions of business world practices, such as that considered in the present study. This requires companies to face organizational transformation processes, including its processes, structure, and culture systematically, so as to effectively meet the demands of an increasingly challenging context (Pole 2009).

5 Mixed method: selected option

Traditionally, quantitative and qualitative approaches have been recognized as research methods. However, a new alternative, called mixed research methods, has emerged in recent decades (Fetters and Molina-Azorin 2019; Fetters 2018). This method is not considered to be the simple combination of quantitative and qualitative method techniques and procedures. These should be integrated from the paradigmatic view, collection of facts and data, analysis, and interpretation of findings to be considered mixed (Hanson et al. 2005).

Mixed methods are used for five reasons: (1) triangulation (currently known as data convergence, which is expected to improve credibility) (Turner et al. 2017), (2) development (using the results of one method to support another method), (3) initiation (one method finds contradictions or new frameworks to be developed by another method), (4) expansion (trying to broaden the scope of research using multiple methods), and (5) complementarity (seeking a more holistic understanding of the phenomenon) (Alatinga and Williams 2019).

In accordance with the preceding, the research approach used to answer the research question employs the mixed method for reasons of complementarity, as this facilitates a complete understanding of the phenomenon under study, through the use of evidence from numerous types of data (Chen 2006). It also increases the interpretive richness of research (Johnson and Onwuegbuzie 2004). In accordance with Tashakkori and Creswell (2007), and considering that the research is not sequential but concurrent, it was decided to formulate a general hybrid question, and subsequently, quantitative and qualitative questions were formulated. Finally, this evolved into the integration, during the results analysis phase.

Based upon Johnson and Christensen (2014) matrix, which crosses the temporal dimensions (concurrent or sequential) and emphasis paradigm (equal emphasis on quantitative–qualitative, or greater emphasis on one of these), this study employed a concurrent

design (the qualitative and the quantitative portions were performed more or less simultaneously), and greater emphasis was given to the qualitative paradigm. Similarly, abduction (alternative to induction-deduction), was determined to be the most appropriate perspective to establish theory-data relationships herein, as it was recognized as a mixed research opportunity (Morgan 2007).

6 Methodology: design, structure, instruments, and validity and reliability criteria

Morgan (2007) considers that, in certain conceptual currents, epistemological research has been overvalued, and in others, the process of losing awareness of the nature of knowledge and the efforts made for its generation it has become instrumentalized. Therefore, Morgan proposes a pragmatic approach, which means placing the methodological in the middle, between the epistemology and method. Thus, the methodology, considered epistemological, ontological, and method aspects will require certain designs, general methodological work structures, and techniques and procedures to carry out the research process.

Research design. This type of research requires the case study design, in which a contemporary phenomenon is investigated in the context of real business life, and various types of evidence and data sources which, necessarily, require a triangulation exercise (Yin 1994). The case study is a type of research design based on one or more cases that are taken as complete units (holistic) as they are experienced (Johnson and Christensen 2014). Although said mode of study was initially devised to analyze qualitative data, it was subsequently utilized in mixed-method investigations. It is useful to answer descriptive, explanatory, or interpretative research questions (Stake 1995).

An important aspect of this type of design is that, although generalizations cannot be made as expected with quantitative methods, it is not reduced to a contextual view, as with qualitative methods. This design is transferable which, in the terms of Morgan (2007), implies questioning which part of the knowledge one has may be useful for the generation of new knowledge, which is applicable to other circumstances, and the guarantees for this.

The case study was chosen for the present study because it enables the deep and comprehensive examination of an analysis unit to respond to the problem statement (Stake 2005). This type of research design has been used in the field of business and organizational behavior, and in particular, in organizational change processes (Larrinaga and Rodríguez 2010). This makes permits comprehension of the phenomenon, in its own environment or context, and considering the various variables relevant thereto (Aaltio and Heilmann 2010), using multiple sources of information with both qualitative and quantitative data or evidence, which are triangulated to answer the research question (Eisenhardt 1989).

Based on the research design selected and supported by Larrinaga and Rodríguez (2010) and Martínez (2011), the following was proposed as a general work structure: problem formulation (problem statement, research question, and objectives), theoretical model construction, fieldwork, information processing, and achieved results.

Techniques and instruments, interviews, and focus groups are used to answer qualitative questions. Thus, in order to reveal the reasons that engender organizational transformations, the conceptual perspectives that guide them, stakeholders involvement, obstacles, results, and lessons learned, critical incident interviews are conducted with responsible individuals or participants in the organizational transformation processes of

the business group under study. This technique allows for a deep understanding of the experiences undergone by companies during these processes, as suggested by Garcia and Gluesing (2013). According to (Flanagan 1954), critical incident interviews permit the accurate description of the events or conditions of success and failure in a given situation, which are part of that which is sought in the present investigation.

In order to learn the extent to which the intellectual capital components of strategic design contribute to organizational transformations, in-depth interviews and focus groups are used. In-depth interviews permit comprehension of the perspectives of various participants, in terms of organizational transformation processes, from their personal experiences and daily lives. It is up to the researchers to unravel how much they perceive the contributions of intellectual capital from strategic design in these dialogues. Focus groups, conversely, work as frameworks to capture the ideological representations, values, imaginary and effective formations about a reality, identify contradictions, conflicts, and consensus that complement individual perspectives (Ortí 2000).

Quantitative questions require surveys and documentary analysis. The question about the application of design competencies by workers in the business group is made through a survey, in which the three components are differentiated: abductive competence, creative competence (Ponti 2001), and empathic competition (Olivera et al. 2011). The instrument is applied to a simple random sample of company personnel, distributed into the three organizational levels: strategic (upper management), tactical (middle management), and operational (auxiliary and operative employees). The evidence recorded on physical or electronic media, whether internal or external, is carried out via the document review technique (Larrinaga and Rodríguez 2010).

Validity and reliability criteria. Johnson and Christensen (2014) believe that the validity and reliability criteria of quantitative and qualitative methods (multiple validity) must be met with the mixed research method, but that, additionally, it must meet eight validity or legitimation criteria, typical of mixed-method techniques: internal–external validity (emic—etic points of view), paradigmatic validity, validity of approximation to commensurability, validity of minimization of weakness, sequential validity (not applicable in the present investigation), validity of conversion, validity of sample integration, and socio-political validity (Onwuegbuzie and Johnson 2006). Below, both the multiple and specific validities of mixed method are discussed.

For validity in critical incident interviews, two criteria are used: reliability and credibility. Reliability is achieved through triangulation, apparent validity, and reliability among evaluators (Tirri and Koro-Ljungberg 2002). For credibility, the proposal of Butterfield et al. (2005) is employed: conduct second interviews with study participants, also known as participant cross-verification, routinely track the point at which completeness or redundancy is reached, verify theoretical study agreement, indicating the underlying assumptions thereof, and by comparison, emerging categories in the academic literature, and obtain descriptive validity, or, confidence in that which is being stated, that the information is not being invented or distorted (Maxwell 1992).

There are no defined criteria that guarantee the reliability or validity of in-depth interviews. Therefore, a pilot test was used on a representative group, depending upon the total population of research participants, so as to identify whether there were failures, limitations, or other weaknesses in the guidelines, as well as to apply the relevant corrective measures before their definitive application (Van Teijlingen et al. 2001).

To ensure the reliability and validity of the focus groups, Hamui-Sutton and Varela-Ruiz (2013) recommendation was followed, in relation to logbook use, proper use of the process of information analysis, through the careful recording of actions such as:

comments about the method of analysis, notes on problems during the data collection process, and observations related to coding, among others. All are used in research. In essence, the rigor of method application and interpretation coherence are the criteria established to guarantee result reliability.

For assessment of the validity and reliability of the abductive, creative, and empathic skills questionnaire, the content validity assessment was used, via expert judgment (Escobar-Pérez and Cuervo-Martínez 2008). The panel of judges consisted of professionals who are experts in the subject of the aforementioned competences, and in order to record their judgements, a template was used to record their work results in the categories of sufficiency, clarity, coherence, and relevance, for each of the questions (Galicia et al. 2017). Once the expert information was collected, a decision was made about the conservation, modification, or exclusion of any of those items prepared for competency measurement.

In order to determine the reliability of the competence questionnaire, a pilot test was applied to a business group separate from the study group. Additionally, the Cronbach's Alpha coefficient was calculated, so as to assess the homogeneity or internal consistency of the questions or items (Franco and Josefina 2009).

Within the validity and reliability of document treatment, conditions regarding access, availability and information use are considered, as is their completion the three phases provided by Lafuente López (2001) for their treatment: the establishment of origin, content

Table 1 Actions to guarantee the validity criteria with the mixed research method

Validity criteria	Actions carried out in the study in the search for these criteria
Internal-external	Result presentation clarifies participant points of view (emic point of view), includes quotes from their speech that demonstrate the meaning they intend, while in the interpretation of these findings, the external position of researchers (etic point of view) is clarified
Paradigmatic	Four actions guarantee this validity: prior and exhaustive inquiry in the specialized literature on the paradigms used, utilization of previous researcher experiences in qualitative and quantitative studies, discussion during all phases of study, among researchers, regarding these aspects, discussion with other researchers about the groups to which the authors belong
Commensurability	Researchers consciously attempt an integrative worldview, and for this, they constantly move between quantitative explanation and qualitative understanding of the reality studied. Frequent role reversal among researchers helps in this aspect
Weakness minimization	Researchers' previous knowledge of the weaknesses and strengths of the qualitative and quantitative methods allows for a selection of techniques that were complementary, and minimized said weaknesses. For example, the in-depth interview complements subjective aspects that the survey could not capture
Sequential	Not applicable to this investigation
Conversion	The use of categorizations, frequency, and recurrence measures, as combined with discourse analysis, among other things, are used to achieve meta-inferences
Sample integration	Statistically significant samples are used for quantitative aspects and convenience sampling, in interviews and focus groups
Socio-political	The study takes considers and respects the views of various interest groups that were related to the topic studied

In order to enhance the validity criteria in the first column, consultation of Johnson and Christensen (2014) and Onwuegbuzie and Johnson (2006) Source: Author elaboration

classification, and linkage to the scope of analysis. Concerning the specific validity or legitimation criteria of the mixed research method, Table 1 reflects the actions performed.

7 Conclusions

It is a rare article in which the researcher presents decisions made, in order to delineate the passage between theory and methodology, and thereby demonstrate the coherence and validity of a study. The present article analyzed the methodological elements that permit an approach to the object/subject of study in a strategic design investigation. A successful proposal is shown in order to respond to the following research question: How can strategic design contribute, as intellectual capital, to organizational transformation processes? This question must be accompanied by a robust theoretical structure, which permits the proper selection of the study's methodological design.

It is evident that the use of the mixed research method, when appropriate validity and legitimation criteria are used, adds value to the results. This is caused not only through the use of various sources, acceptance of paradigms, that in some cases, were considered irreconcilable, and complementary techniques, but by the potentiality generated to achieve the meta-inferences characteristic of this method.

In order to respond to the above question, intersubjectivity, or the way with which one understands the form and nature of the reality studied, must be recognized as an ontological process. In this case, this means to understand that everyday life in organizations is created by way of the interactions between those who work there, thus weaving multiple meanings and significant experiences, and in the case of investigation, organizational transformation and strategic design.

Pragmatism is similarly viewed as an epistemological posture, as it permits the comprehension of knowledge as a type of action. Thus, the way in which a given reality functions, by way of its multiple forms of expression, may be understood by listening to ideas, suppositions, and stories. It is essential, at this crossroads of knowledge and action, that one performs research not only in order to observe a phenomenon, but also to take action.

It is concluded, then, that when investigative methods are derived from ontological and epistemological postures, they become more reliable. This is the case of the decision regarding the mixed methods used in the present investigation, in which subsequent decisions, in terms of the collection of facts and data, their analysis, and even the interpretation of findings, were performed in a more rigorous manner, as were the techniques and procedures for information capture.

Similarly, it is shown that the use of mixed research methods, as a way to approach reality, when appropriate validity and legitimation criteria are utilized, add value to the results. This occurs not only owing to capitalization upon diverse sources, owing to the acceptance of paradigms, which in certain cases, were considered irreconcilable, or complementary techniques, but by potentiality specifically, which is generated to achieve those meta-inferences characteristic of this method.

Finally, it is concluded that the transition from theoretical to methodological is crucial in any research process, and should not be taken on as an instrumental exercise by which to define samples, questionnaires, and interview guides, but considering this from serious aspects of the paradigms upon which they are based. In particular, a mixed research model was utilized, which is not the sum of qualitative and quantitative techniques, but rather an integrative process, in which literature advances in this method are reflected.

Learning can be important for those who wish to approach this mixed method in design research, but can also be inspiring for those who work from qualitative and quantitative positions. It may pose challenges for them in the development of their own configurations, which may be successful in the research exercise.

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Declarations

Conflict of interest The authors declare that they have no conflict of interest.

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