AUTHOR

ALFONSO ESTRAGÓ
Sociology of Work Study Centre, Faculty of Economics, University of Buenos Aires (Argentina)
alfonso.estrago@fce.uba.ar

Measuring the Organisational Horizontality in Argentinian Software SMEs: The "Worker Ownership – Horizontality of Management" Scale

ABSTRACT

Based upon economic democracy conceptions, and taking organisational management as its central dimension, the article has a twofold purpose. Firstly, it proposes a conceptual elucidation for "horizontality of management", a construct that represents the scope and depth of collective participation in the manifold organisational decision-making domains. Secondly, it offers a methodology to provide a measurability framework for this concept, taking a sample of 17 Argentinian software SMEs of varied legal forms (worker cooperatives and traditional ownership firms) as empirical reference. In this sense, a mixed nature study for constructing a summative scale is conducted, allowing the mapping of the surveyed organizations onto the biaxial space "worker ownership – horizontality of management". Such a comparison platform enables the sorted and consolidated display of the diverse experiences of participation/democratisation in organisational ownership and/or management that were studied. Thereupon, some insights of interest emerge. On the one hand, the analysis provides a common framework for spotlighting the existence of (quite) distinct "flavours" (profiles) regarding (workers) "self-management" configurations reviewed in the literature. On the other hand, the study offers further analytical insights of the multi-level decision-making channels that might reinforce the perceptual separation between legal ownership and organisational management. Finally, while worker cooperatives are the ones that hold the natural conditions to attain the highest horizontality of management, the article presents evidence that they do not—*per se*—reach up to that potentiality in all cases. Indeed, an instance is found where organizational management is significantly less "horizontalised" than in some firms with non-democratic ownership structures.

1. Introduction

The study of the democratisation of economic realms constitutes a subject that emerged almost concurrently with the first industrial revolution. In this regard, several disciplines such as economics and political science have rendered valuable contributions ever since, focusing primarily on political-legal issues (democratisation of the ownership structure) and economic issues (equitable participation in added value/profits).

In this regard, the different forms of democratic participation in the economic sphere vary widely, sharing—nonetheless—a common basic denominator: the transformation of existing power relations, entailing a significant increase in decision-making prerogatives for stakeholders other than the capital factor. Thus, the specialized literature offers multiple definitions for the "economic democracy" notion, which include the following characterisations: the support on the right to an active citizens' participation in economic affairs, the transfer from minorities to majorities of decision-making rights in economic matters, redistribution of wealth and equal access to economic opportunities and conditions, a system of collectively owned economic enterprises democratically governed by the people working in them, and the fulfilment of the general democratic promise that people have the right to participate in all decisions directly affecting them (Albrecht, 1983; Christie, 1984; Dahl, 1985; Lane, 1985; Johanisova and Wolf, 2012; Sekerák, 2012).

Complementarily, this article aims at analysing an understudied dimension of the economic democratisation process: *organisational management.* In this respect, its gap-filling contribution revolves around the proposition—and the empirical appraisal—of the "horizontality of management" concept, a construct that describes the scope and depth with which the economic democracy notion develops throughout the organisational decision-making dynamics. Specifically, the study proposes a conceptual elucidation and a methodology to provide a measurability framework for this construct, taking Argentinian software sector SMEs of varied legal forms (worker cooperatives and traditional ownership firms) as empirical reference.

Indeed, the software industry—as illustrated by its Argentinian SMEs case presented below—constitutes a thriving and dynamic sector, embodying a gigantic technological as well as an extraordinary "social" laboratory, with fascinating and non-stopping organisational innovations. In particular, over the last decades this industry in Argentina positioned itself as an outstanding sector of the national economy, comprising more than 5,700 organisations in which 141,400 people (60.5% more than a decade earlier) are employed in high-skilled jobs. Its exports exceeds USD 2.6 billion, placing it among the main export-oriented clusters in the country (OPSSI, 2023). Complementarily, several reviews about the sector suggest the presence of a noticeable diversity of corporate types (traditional companies, partnerships or cooperatives) and (especially) of management styles derived from them (Barletta et al., 2013; Zanotti, 2016; Hatum, 2017; Revista Mercado, 2020). Hence, the Argentinian software conglomerate represents an outstanding experimental reference for exploring and inquiring about diverse management styles.

Thereupon, the assessment of the horizontality of management, and its graphical representation against the degree of legal ownership's democratisation, will enable the attainment of a comparability basis for juxtaposing dissimilar organisational management realities (i.e., for contrasting diverse "flavours" or profiles of democratic organizational management)[1]. This integrated reference frame will facilitate the discernment of answering concepts for problematizing questions like: are there different varieties of workplace democracy? Is it possible to accommodate them within a singular comparative ordering? Do worker cooperatives always have, by definition, a more democratic management than organizations with non-democratised ownership structures?

To these ends, section 2 begins by providing a brief overview of the academic background, both from economics and from classical and heterodox approaches to management studies, on the subject of workers' participation in management. Section 3 then develops the theoretical framework consisting in the construction of biaxial space "worker ownership – horizontality of management". Section 4 presents the methodology used to carry out the fieldwork. Section 5 displays the results obtained from the field study. Finally, section 6 concludes and presents suggestions for future research.

2. Background

The first academic writings on the subject of worker participation in organisational management came from scholars who witnessed 19th century cooperative movement's emergence, such as the British economist John Stuart Mill (Olivera, 1995). From there, a specific economics branch developed, devoted to the study of the effects that this type of configuration exerts on workers' incentives. However, the analysis is centred almost exclusively on issues relating to governance and authorities' election (carried out by worker-members as cooperative's owners), rather than on day-to-day management of production dynamics, which generally retains a hierarchical functioning similar to that of the classic pyramidal structure (Potter, 1891; Vanek, 1970; Ben-Ner, 1984; Dow, 2018; Estragó, 2021).

Turning to classic management authors, possibly the first in-depth studies are found in the texts of Mary Parker Follett (1940), whose conceptions—mostly developed within the first quarter of the 20th century—advanced organisational analysis thinking by several decades. Her central idea of creative integration during conflicts, typically between workers and managers, allowed her to conceive a management schema of "power with" (instead of "power over"), in which workers who

---

[1] This proposal is inspired in the many approaches that self-perceive as movements that foster the democratisation of economic-organisational spheres. For instance, compare the work on Mondragon cooperatives by Altuna Gabilondo (2008) with the "socio-technical paradigm" review by Van Eijnatten (1993); or with the lean management depiction as "democratic Taylorism" by Adler (1992), in its turn adopted by an important Mondragon cooperative (Altuna and Urteaga, 2014). These various studies highlight, each in its own way and with contrasting scopes, important elements related to workplace democracy.

receive humanised treatment, transparency, trust, profit-sharing and opportunities for decision-making, reciprocate with responsibility, judicious decisions and pride in their work, benefiting the organization as a whole. Following this line of argument, McGregor's (1960) renowned "Theory Y" states that beyond a certain level, material incentives become less relevant for the fulfilment of higher order needs, which are linked—instead—to the self-actualization that workers experience when obtaining greater freedom to make decisions that affect their immediate working environment. For his part, Drucker (1984) argues that organisations based on workers' autonomous teams reach an effective and a much more flexible functioning than traditional schemas; as such teams attach to the maxim "fixed mission – changing tasks" by which all members get competent on the group's work cycle execution, and feel responsible for it. Likewise, Mintzberg (1981) describes the "missionary" organisational configuration, where members' identification with the organisational objectives is so significant that high levels of psychic and emotional contributions are obtained from them. Therefore, the need to control their behaviour is drastically reduced, since preferences and objectives for the organisation are widely shared, allowing people to make their own decisions. In such sense, this author also identifies the "quasi-missionary" organisations: those for which —in principle—a missionary configuration would not be expected, though in fact they end up adopting it through the emergence of a robust guiding ideology. This engenders a fertile environment for participation and democratic management, carrying out ordinary work in a very different and satisfactory way for people's higher order needs. Finally, more contemporary authors like Hamel and Breen (2007) argue that the typical bureaucratic management frame is far from representing the most efficient system, as it carries several hidden costs, rarely captured by the accounting records. Upon these costs, characteristic situations where management takes up a problem only when it becomes serious—and is already costly to solve—should be added. If, on the other hand, problems could be handled as soon as they sprung up, with people given the freedom to act such costs would not grow disproportionately; nor would there be a need to worry about control and discipline, since peer pressure attains far more loyalty than hierarchy.

Among the more heterodox approaches to management, the first to stand out as an alternative to the Fordist-Taylorist vision, dominant during immediate post-war period, was the Socio-Technical paradigm. In this line, authors such as Emery and Thorsrud (1976) and Cummings (1978) conceptualize the essence of organizations as the interaction between two subsystems: the technical and the social. Therefore, attainment of higher productivity, satisfaction and quality in the workplace requires the joint optimization of both subsystems. On its turn, its achievement demands—as *sine qua non* condition—the establishment of autonomous work-teams, implying that work methods undergo a radical transformation: from the typical Taylorist system of atomized and repetitive tasks under foremen's supervision to a schema where self-managed groups assign and exchange internal tasks, assuming joint responsibility for the organization, coordination and supervision of an entire operational cycle. Closer to the present times, Laloux (2014) develops the "teal", an ideal type of organization made up of self-managed teams that, in addition to taking care of typical operational tasks, assume joint responsibility for those coordinative efforts traditionally

reserved for managers: priorities and objectives setting, analysis of problems, planning, individual and group performance assessment, responsibility for economic results (or measurable objectives), making tough decisions, etc. In addition, they often assume responsibility for specific support functions (e.g., recruitment and strategic planning). Based on studies and interviews conducted in certain organizations taken as representative cases[2], this author concludes that such an additional effort on the part of rank-and-file workers is possible due to the motivation and self-actualization generated by freedom for decision-making, which summons vital energies impossible to obtain in organisational configurations grounded on Weberian "iron cages".

An additional heterodox stream that decidedly deepened the analysis of worker involvement in organisational management is the collectivist approach. Emerged from the US 1960s and 1970s counterculture movements, collectivist organizations quickly became a remarkable instance of management and organizing without bureaucratic-hierarchical patterns of authority, by relying on strong participatory practices (as direct democracy, decisions by consensus or job rotation to eliminate expertise differentials) aiming at "the abolition of the pyramid in toto" (Rothschild and Whitt, 1986). On the other hand, their profound social-values orientation seemed to entrap them into dynamics that required below-subsistence payment jobs. Moreover, together with an apparent difficulty to develop goods and services production scales requiring above 20 or so fulltime working members (due to the implied horizontal communication overload), the phenomenon appeared to encapsulate mainly into the social movements' arena (Rothschild and Leach, 2007), or the volunteerism and non-market realm. However, much seems to have been learned since those earlier times. Specifically, some current consolidated examples demonstrate that by the democratic and participative setting up of day-to-day management rules, standardizations and formalizations, economic efficiency and market competitive scales for production are achieved whilst the dreaded bureaucratic phantom is kept in check (Meyers, 2022). This is confirmed by other examples outside the direct US collectivist movement's influence (Cornforth, 1995; Estragó, 2022).

Regarding developing countries, related literature has emerged in recent decades that analyses workplace democratization experiences such as "*autogestión*" in Argentina (Vieta, 2019). However, most *autogestión* studies focus on the arduous struggle (against the judicial system that does not favour workers or against cultural prejudices) to recuperate—usually through occupations followed by the creation of cooperatives—failed enterprises. Once this is achieved organisational management usually retakes, albeit in a more softened way, classical pyramidal arrangements (Atzeni and Ghigliani, 2007; Estragó, 2021).

All in all, these reviews indicate the existence of various theoretical and practical approaches, both classical and with a long history as well as heterodox and contemporary, that validate the stability, effectiveness and efficiency of more participatory, democratised or horizontalised

---

[2]   Although it could be criticised that the chosen cases vary significantly in especially what regards the actual levels of power granted to workers for managing certain decision-making domains, signalling in this respect a seeming laxity of the "teal" umbrella concept.

organisational management dynamics; that is, with a greater distribution of decision-making power among organizations' base workers. There would still remain the challenge of how to integrate configurations of this sort within a common comparative base, so as to clarify their contrasts and overlaps in the light of a shared assessment pattern. The following sections advance with a proposal for this topic.

3. Theoretical framework: the emergence of the "worker ownership – horizontality of management" biaxial space

The study's fundamental approach consists in the demarcation and revaluation of organisational management as the most crucial dimension, when analysing the depth and development achieved by more participatory and democratic decision-making dynamics. In this sense, a differentiation between management and ownership is of utmost significance. To be sure, such a conceptual separation facilitates the distinction of similarities and (especially) the noticeable differences between the diverse traditions or paradigms that propose to "democratize" work, organizations, etc.

Therefore, leaning on the combination of concepts and propositions reviewed by Mintzberg (1979), Puranam, Alexy and Reitzig (2014) and Estragó (2020), the following definition for organisational management is assumed:

> A dynamic system for the elaboration and making of interrelated decisions, which enables selection and implementation of some specific form of simultaneous resolution to the four problems of organisational functioning, consisting on division of tasks, assignment of tasks, provision of compensation and provision of information.

The above definition implies that organisational management is made up of many more activities than those usually reserved for ownership title holders; it entails a thorough system of decisions, ranging from the selection of basic strategic guidelines to their complete materialization in practice, which involves going beyond the mere appointment (or removal) of top executives and managers. In this sense, several theoretical references (e.g., Michels, 1915; Berle and Means, 1933; Mintzberg, 1981; Spear, 2004) support the conjecture that ownership is not always the most important factor when it comes to controlling an organization's behaviour.

Put differently, organizational management is an overlooked dimension of economic democracy since it is commonly confounded with "ownership". As soon as this confusion is clarified, management emerges as a distinct organisational dimension that—to a great extent—might be separately discussed. In this sense, management schemas of varied democratic traits could be analysed through the "horizontality" notion, considered next.

Horizontality, a term introduced to English-speaking scholars by Sitrin (2006) in her recount of Argentinian grassroots organizations reactions to the country's 2001 neoliberal collapse, refers to "new forms of social relationships that are developing in place of traditional methods of political

organizing" which imply "a flat plane upon which to communicate" through "direct democracy and the striving for consensus, processes in which attempts are made to let everyone be heard" (Sitrin, 2014: 44). Since then, several authors adopt the concept to reflect the non (or anti) hierarchical organizing practices of diverse contestation socio-political movements across the globe. Indeed, horizontality entails a constant challenge of power inequalities, seeking its decentralisation—through networked relationships running upon anti-authoritarian principles—for deciding about common concerns, as representative structures are deeply distrusted or considered a total failure (Maeckelbergh, 2011; Lorey, 2014; Cohen, 2021). Notwithstanding the term's relative novelty, its concerned practices stem from certain 19th anarchist doctrines (Graeber, 2002; Sitrin, 2006), an origin that recognizes common ground with collective organizations' management practices mentioned above (Rothschild and Whitt, 1986).

Based on the afore-presented explications for (a) the differentiation between ownership and organisational management, and (b) the linkage between horizontality, hierarchy and organisational management, it is possible to elaborate an organizations' classification schema, for which the following variables are proposed:

- Worker ownership: consisting of the proportion of the total number of workers who hold organization's legal ownership titles, together with the percentage of equity capital in their hands, representing the degree of symmetry/asymmetry in the distribution of legal ownership when taking workers as the central subject. Thus, the greater the number of workers who participate in such ownership, and the closer the level of such participation is to 100%, the more "democratised" an organization is in this sense[3,4].

- Horizontality of management: represents the degree of symmetry/asymmetry with which the distribution of the various organization's decision-making prerogatives is promoted among workers, so as to curtail hierarchical-pyramidal dynamics as far as possible/desired. In other words, it indicates the scope and depth with which the process of collective participation in (or direct-type democratisation of) management takes place within an organization.

---

[3]   The spirit is that a significant portion of ownership is equitably distributed among workers as a whole, so that the *de jure* power of each is (or tends to be) the same. Naturally, there could be cases where a small group of workers owns significantly more shares than the rest. In such situation, democratisation of ownership would be distorted, moving away from the notion of symmetry.

[4]   Estragó (2020) also analyses the possibility of approaching the democratisation of ownership from a "humanistic" point of view, that is, considering whether owners' assembly representing the corporate will follows the "one person, one vote" principle, regardless of capital contributed by each person (and regardless of whether they actually work in the organization). This is the perspective usually taken when analysing social economy organizations. For a more in-depth study, see for example Vuotto (2003).

Therefore, it is possible to plot both variables as Cartesian axes, as shown in Figure 1 below.

Figure 1. Biaxial space "worker ownership – horizontality of management"
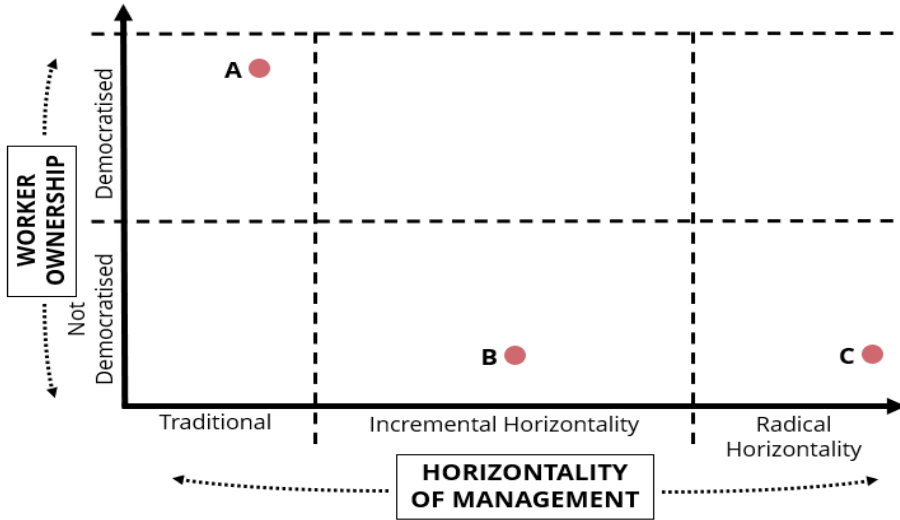
Source: Author's own elaboration.

Starting from the origin, the further away an organization's point of representation lies along the vertical axis, the higher the percentage of its legal ownership held by workers (and the higher the proportion of worker-owners). At a particular level, when these percentages and proportions exceed a certain threshold (e.g., 50%), the organization could be labelled as "democratised" in terms of its legal ownership.

Equivalently, the further to the right of the chart, the higher the level of management's horizontality with (relative) independence of its legal ownership structure and distribution. Thus, a point close to the origin would indicate an organization with a "traditional" (i.e., hierarchical-pyramidal) management dynamics, in terms of little or no symmetry in the distribution of decision-making prerogatives. As the degree of such distribution's symmetry increases the horizontality of management advances, either settling into the "incremental" terrain, or reaching the "radical" level for the most remarkable cases.

This approach enables the recognition of particular configurations of theoretical and practical interest. For instance, point A in Figure 1 represents organisations where ownership tends to full democratisation (among those who work in the organisation), while at the same time the administration of that ownership is carried out through steep hierarchical arrangements (i.e., with low horizontality of management). For its part, point B represents organisations where ownership is not democratically structured (i.e., there are few or no worker-owners), although management

runs on certain dynamics that reveal a noticeable level of symmetry in the distribution of specific decision-making prerogatives among workers (incremental horizontality). Finally, point C reflects a situation similar to point B in terms of legal ownership's democratisation, with the difference that organisational management reaches high levels of worker participation and democratisation (radical horizontality). This last representation would resemble, at least in what refers to the organisational management axis, to the "participatory bureaucracy" proposed and described by Meyers (2022).

4. Methodology

After outlining the "horizontality of management" notion, an exploratory-descriptive field study—with Argentinian software SMEs as the empirical reference—is undertaken, whose aim consists of:

- Inquiring into the specific management practices adopted by organisations with different legal forms (corporations, cooperatives, etc.), with special emphasis on features that entail a horizontal management approach.
- Measuring and comparing the degree of "horizontality of management", as defined in the previous section, of the surveyed organizations.

4.1 Research design

Field study's design is framed within a non-experimental-cross-sectional approach, as it proposes the exploration and description of the horizontality of management at a given moment in time, whilst it is not possible to manipulate situations or variable's values: rather, they are observed and recorded as they manifest in reality.

Further, the research is based on mixed methods, which Hernández Sampieri, Fernández Collado and Baptista Lucio (2010: 546) define as: "a set of systematic, empirical and critical research processes [that] involve the collection and analysis of quantitative and qualitative data, as well as their integration and joint discussion, in order to make inferences from all the information collected (meta-inferences) and achieve a better understanding of the phenomenon under study". In this sense, one of the greatest discernible applications for mixed methods is their ability to convert one type of data into another (from "quali" to "quanti" or vice versa). In particular, the possibility of using qualitative data as a basis for developing quantitative measurement and characterisation tools (Pole, 2009) constitutes a fundamental attribute for the purposes of the field study proposed here.

For its part, research's units of analysis consist of SME organisations with different legal forms belonging to the software sector in Argentina, to which an analysis of variables representing their management practices is conducted (see following section). On the other hand, the units of observation (referents used to obtain data about the studied variables) are constituted by the interviewees working in the surveyed organisations.

4.2 Variables and indicators

Table 1 (see next two pages) offers an operational framework for assessing the previously defined "democratisation of ownership" and "horizontality of management" variables. Thus, along the first row the variable that reflects an organisation's democratisation of ownership is developed, so that the last column displays four ordinal categories used for its measurement (indicating the levels of proportion of non-founder workers holding ownership titles).

Likewise, it is posited that the measurement of the horizontality of management is divided into four components, as the first column shows. On the one hand, the three decision-making levels usually taken for organisational management's segmentation: operational, tactical (or administrative) and strategical (Mintzberg, 1979). On the other hand, a fourth component is added, which groups together diverse contextual factors that usually operate transversally to the aforementioned decision-making levels, by reinforcing (or inhibiting) depth and scope of the horizontality of management.

Thereafter, in its third column, Table 1 presents the dimensions that make up each of the four components, understood as sub-variables or sub-units of organisational management. Their identification stems from the contributions of several researches about diverse management configurations (Emery and Thorsrud, 1976; Rothschild and Whitt, 1986; Ackoff, 1994; Romme, 1996; Ostrom, 2005; Hamel and Breen, 2007; Buck and Endenburg, 2010; Laloux, 2014; Lee and Edmondson, 2017). In addition, fieldwork interviews allowed the recognition of new dimensions (sub-variables) not manifestly indicated in the surveyed literature (highlighted with red dotted lines).

For the measurement of the first three components Busck, Knudsen and Lind (2010) proposal is adopted. These authors define participation as the transfer of decision-making power to workers, comprising three categories: informative-consultative (managers have the last word), co-decision (joint decision between workers and managers, where each party has veto power) and self-determination (workers decide autonomously without the possibility of managers' intervention). In this regard, the last column in the table puts forward a four-level ordinal scale (i.e., a fourth category is added) in order to consider situations that reflect combinations between the three categories of participation.

Finally, for the assessment of the last component (contextualization of horizontal dynamics), specific ordinal scales are elaborated.

Table 1. Variables to characterise and measure the democratisation of ownership and the horizontality of management

Variable	Definition	Dimensions (sub-variables)	Indicators	Ordinal categories
WORKER OWNERSHIP	Extent of legal ownership by a significant number of non-founder employees	Percentage of all workers, excluding founders, who participate in the organization's legal ownership	Percentage of non-founder workers holding shares of the organization	1: Less than 5% 2: 5% or more but less than 50% 3: 50% or more but less than 100% 4: 100%
HORIZONTALITY OF MANAGEMENT **Horizontality of operational decisions**	Within the *operational* sphere, the level of participation and/or freedom for decision-making given to all workers	Decisions about operational tasks (ordering, scheduling and execution) Decisions about roles (definition and distribution among team members)	Degree of participation and/or freedom given to the workers to decide on these topics	1: Informative-consultative (IC) 2: Mostly IC, with few COD or SD cases 3: Co-decision (COD), or mostly SD, with few IC cases 4: Self-determination (SD)
Horizontality of tactical decisions	Within the *tactical* sphere, the level of participation and/or freedom for decision-making given to all workers	Decisions about area/team objectives Performance appraisal Decisions about hiring and dismissals Decisions about allocation of financial resources Decisions about team staffing Appointment of area/team leadership	Degree of participation and/or freedom given to the workers to decide on these topics	1: Informative-consultative (IC) 2: Mostly IC, with few COD or SD cases 3: Co-decision (COD), or mostly SD, with few IC cases 4: Self-determination (SD)
Horizontality of strategical decisions	Within the *strategical* sphere, the level of participation and/or freedom for decision-making given to all workers	Decisions about structural design Planning and strategic guidelines decisions Decisions about purpose definition (mission and vision) Decisions on basic rules for financial compensation Basic rules for advancement, promotion and recognition Decisions on other exceptional and wide-ranging issues	Degree of participation and/or freedom given to the workers to decide on these topics	1: Informative-consultative (IC) 2: Mostly IC, with few COD or SD cases 3: Co-decision (COD), or mostly SD, with few IC cases 4: Self-determination (SD)

Variable	Definition	Dimensions (sub-variables)	Indicators	Ordinal categories
HORIZONTALITY OF MANAGEMENT (cont.)	Contextualization of horizontal dynamics	Diverse contextual factors that reinforce the horizontality of management		
		Use of task forces	Frequency of task forces use	1: Never/very infrequent 2: Intermediate frequency 3: Very frequent
		Provision of economic and financial information	Scope of economic information that is made transparent to workers	1: Not shared 2: Partial scope 3: Full scope
		Provision of monetary rewards	Scope of profit share	1: None 2: Low percentage 3: High/full percentage
		Organisational conflict management	Degree of worker participation in the resolution of conflicts	1: Management only 2: Management + some worker participation 3: Fully or mostly workers
		Predominant type of aggregation rule[a]	Predominance of symmetric/ nonsymmetric aggregation rules in group decision-making	1: Nonsymmetric (hierarchy) 2: Mostly nonsymmetric (hierarchy, with focused symmetry) 3: Balanced combination of asymmetry and symmetry 4: Mostly symmetric[b] 5: Symmetric
		Plenum or assembly decisions	Existence and scope of assembly decision-making	1: None 2: Certain assembly decisions of limited scope 3: Wide-range, full sovereignty assembly decisions

Notes:
a. For more on symmetric/nonsymmetric group decision-making aggregation rules, see Ostrom (2005).
b. Examples of symmetric rules are: sociocratic consent, backward delegation or advise process (see Laloux, 2014).
Source: Author's own elaboration.

4.3 Sampling of Argentinian software SMEs

For fieldwork design, the exploratory nature of the study—along with the usual difficulties for the implementation of a probabilistic approach—makes it advisable to adopt qualitative sampling strategies. Hence, a convenience-selective sampling perspective is assumed, with maximum variation (diversity) in key characteristics as the main selection criteria. Consequently, cases that promise to reveal a great variety of novel characteristics in their management dynamics are intentionally "chased after". To conduct this purposive search, various sources are consulted: local newspapers and

magazines articles dealing with the subject "democratic, horizontal, participative, etc." management, reviews on specialised websites (of cooperative federations and software professionals, among others) and references from already interviewed organisations.

As a result of this selection process, a sample of 17 organizations holding a variety of characteristics (management style, size, age and legal form) is obtained.

4.4 Collection techniques and interview coding

To conduct the fieldwork, a semi-structured questionnaire was administered to a small sample of intentionally (self-) selected experts in each participating organisation, ideally consisting of (at least) a founder, or alternatively a relevant figure (CEO, C-Level manager or equivalent) and an operational expert with in-depth knowledge of day-to-day functioning. Dates of interviews ranged from August 2020 to February 2021, and were conducted through online meeting platforms.

Once completed, the interview's recordings were carefully reviewed, transcribed and analysed. Thereupon, the coding procedure consisted in identifying general patterns of response with the sub-variables proposed in Table 1, so as to finally assign an ordinal category value accordingly. In this way, a response pattern is transformed into an ordinal value (see below).

5. Results and analysis

The current section presents the results of the field study carried out within sample's 17 organisations, together with an analysis that posits their clustering into five horizontality of management profiles.

5.1 Sample description

Tables 2a and 2b provide a first characterisation of participating organisations. As can be observed, surveyed Argentinian software SMEs display a wide range in terms of size—measured as number of workers—, varying from 21 (close to the minimum of 20 set as inclusion criteria for this research) to a maximum of 350. The average staffing is around 88 (median 53), with a standard deviation indicating a significant dispersion. When analysing organisational age, values are rather more homogeneous, with a mean length of 12.1 years (median 11 years) and a standard deviation of 5.6 years. This variable reflects a foreseeable average "youth" for companies in this sector, with a maximum of 26 years, while one case presented a history of only four years. Regarding its legal forms, the vast majority of sample's organizations (82.4%) adopt traditional formats (mainly LLC and PLC), while the worker cooperative format was used on three occasions (17.6%).

Table 2a. Descriptive indicators of organisations that constitute the sample

	People	Age (years)
Mean	87.9	12.1
Standard deviation	93	5.6
Median	53	11
Maximum	350	26
Minimum	21	4

Table 2b. Legal forms of organisations that constitute the sample

Traditional (LLC, PLC, etc.)	14	82.4%
Worker cooperative	3	17.6%
Total	17	100.0%

5.2 Measurement of proposed variables

Following the methodological procedure outlined in subsection 4.4, the qualitative information captured during the interviews was transformed—through the identification of response patterns—into the ordinal categories described in Table 1.

In this sense, Appendix I presents concrete examples of the transformation of interview segments into ordinal categories for four different combinations of variable and dimension (sub-variable). It also illustrates how each textual segment is moulded into its respective paraphrase.

In this way, through the interviews' collected and coded information, each participating organisation is assigned a set of ordinal values intended to reflect both, their respective situations for the dimensions (sub-variables) that compose the horizontality of management and the democratisation of ownership constructs.

Table 3 on the next page presents the obtained dataset for the 17 surveyed organisations, where the first column assigns a random letter (the "Id" of the case) for analytical purposes. After this column, the sub-variables are displayed in the same order as presented in Table 1, with their respective ordinal categorical values.

Table 3. Ordinal values for worker ownership, horizontality of management dimensions (sub-variables) and derived normalised ordinal score for each surveyed organization

Id letter	Worker ownership	Operational tasks	Roles	Team/area objectives	Performance appraisal	Hiring & dismissals	Financial resources allocation	Team/area staffing	Leadership appointment	Structure design	Strategic planning	Mission & vision (purpose)	Financial & compens. rules	Advancement & promotion	Exceptional issues	Task forces	Economic & financ. information	Monetary rewards	Conflict management	Aggregation rule type	Assembly decisions	Normalised ordinal score
A	1	4	4	3	3	4	4	2	2	2	3	3	3	2	2	3	3	3	3	4	3	72.6
B	4	4	4	4	4	4	4	4	3	4	4	4	4	4	4	3	3	3	3	5	3	98.4
C	4	4	4	4	3	4	4	4	4	4	4	4	4	4	4	3	3	3	2	5	3	96.8
D	1	4	4	1	1	1	1	2	1	1	1	2	1	1	1	3	2	2	2	2	1	32.3
E	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	4.8
F	1	4	4	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	2	1	22.6
G	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.0
H	3	3	1	1	1	1	1	1	1	1	3	4	4	1	3	2	3	3	1	3	3	37.1
I	1	4	4	3	3	3	3	2	4	2	2	2	1	1	1	3	3	3	3	4	3	64.5
J	1	3	2	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	1	2	1	14.5
K	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3.2
L	1	3	3	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	2	1	16.1
M	1	4	3	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	2	1	19.4
N	1	4	4	4	4	3	4	4	4	3	3	3	3	3	3	3	3	3	3	5	3	87.1
O	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3.2
P	1	4	3	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	1	2	1	21.0
Q	2	4	4	3	4	4	4	3	3	3	3	2	2	2	3	3	3	3	2	4	2	75.8

At this point, for the horizontality of management variable, it is possible to use the data matrix to construct a "summated rating scale", following the guidelines of Spector (1992). After adjusting to a 0-100 scale, a normalised ordinal score (last column) is calculated for each participating organisation[5,6]. Consisting of a strictly ordinal relationship, it is only possible to establish rankings, but not distances or ratios[7].

The corollary of this proposition is the chart presented in Figure 2 below, which replicates the schema developed in section 3. The horizontal axis reflects the normalised ordinal score (i.e., the horizontality of management) while the vertical axis depicts the workers' ownership level, according to the criteria laid out in Table 1.

Figure 2. Mapping of sample organizations onto the "worker ownership – horizontality of management" space and its resulting profiles outline
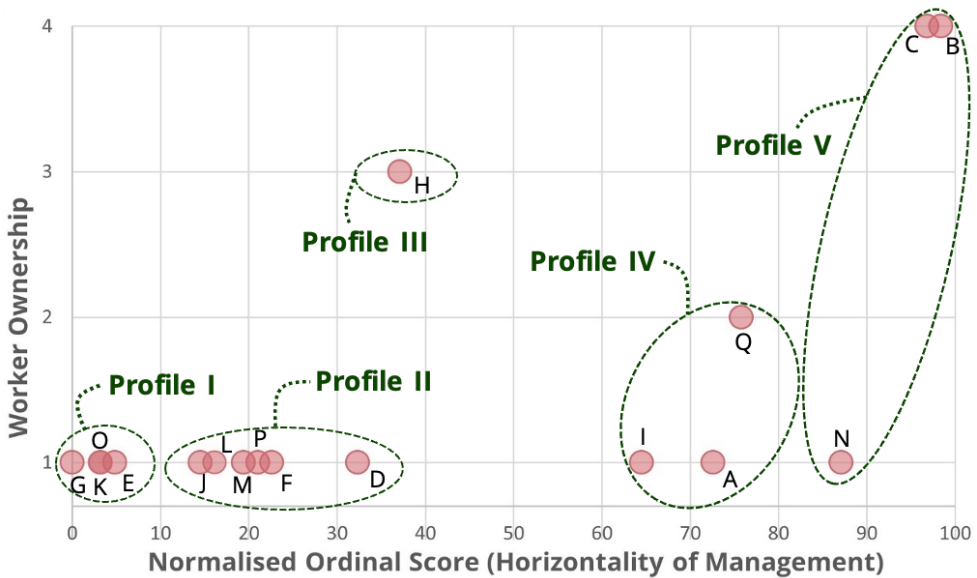
Source: Author's own elaboration.

---

[5] This is done through the simple sum (uniform weights) of each ordinal value, except for the first two (work and roles) related to the operational sphere, which are double weighted (2x) to represent their importance for the majority of workers. Therefore, taking case D as example, the weighted sum of the ordinal values results in 42. From this value, the minimum possible (22) is subtracted, and divided by the difference between the maximum and the minimum possible (84-22=62), obtaining a per centage ordinal score of 32.3.

[6] The statistical validation of this scale was run with SPSS 25.0, yielding a Cronbach's alpha of 0.974.

[7] For instance, an organisation with a normalised ordinal score of 72 does not imply the attainment of a horizontality of management's degree twice as high as another scoring 36. It is only possible to state that the latter presents—in relation to the first case—a management dynamics closer to mainstream, together with a deeper horizontality compared with an 18-score organization.

A noticeable scatter pattern is observed, mainly along the horizontality of management's axis. Regarding the vertical axis, only three of the surveyed organizations present a "democratised" ownership (all of them are worker cooperatives)[8], whereas—out of the remaining cases—only one organization has a policy to promote legal ownership access among its employees (although it is still far from the 50% threshold, falling instead within category 2)[9].

5.3 The diversity of management styles in Argentina's software sector

Figure 2 above presents five clusters proposed to group the diverse organisational management profiles observed. Each one points to specific traits, associated with the type of horizontal management adopted by the several decision-making domains within every organisation. Based on the interview coding, the following paragraphs expand upon the identified profiles, whilst Appendix II presents—for each cluster—a set of paraphrases that illustrate their management dynamics.

Profile I (cases E, G, K, O). This set of organisations presents management features which are the closest to traditional arrangements (classic bureaucracy). Indeed, the operational level shows significant influence from area/team leaders, who retain their conventional preponderance in decision-making power regarding task execution and role distribution. However, certain intra-organisational situations are spotted, in which this traditional dynamic is partially modified through clients who require an adaptation towards agile methodologies[10], implying an incipient shift towards a (slightly) more horizontal management style.

Regarding tactical and strategical levels, the traditional configuration is perceived as dominant, with an absence of horizontal management in spheres such as objectives-setting, financial resources allocation, the determination of rules for recognition and promotion or decisions concerning the structuring of areas, among others.

Finally, in connection with the contextualisation factors, the overall picture maintains its full adherence to conventional perspectives, with hierarchy as the pre-eminent element regarding the resolution of decisional disputes.

---

[8]   One cooperative presented ordinal level 3 for worker ownership, since it established a small subsidiary abroad. As the Argentinian cooperative law (which obliges every worker in a worker cooperative to become a full member after six months) does not contemplate this situation, such foreign subsidiary was set up as a traditional stock company.

[9]   The case consists of three founders with 52 employees, out of whom seven (approximately 13.5% of the non-founding staff) were gradually invited (on the basis of merit, seniority, etc.) to participate in an experimental stock ownership programme. However, this experiment is still at an early stage as the founders together hold the vast majority of the equity capital.

[10]   Set of practices, consolidated by the Manifesto for Agile Software Development (2001), intended to achieve greater agility and flexibility in software construction. Rather than focusing on engineering dimensions, they highlight—in essence—the importance of frequent collaborative relationships between the various human groups that make up a project. One of these principles states: "The best architectures, requirements, and designs emerge from self-organizing teams". For further discussion see Hoda and Murugesan (2016) and Hoda, Salleh and Grundy (2018).

Profile II (cases D, F, J, L, M, P). Organizations within this grouping consolidate some management traits that clearly differentiate from the previous profile, primarily for dimensions related to the operational and contextualisation domains. Thus, in terms of Figure 1, there is an approximation and—in some cases—a shift into an incrementally horizontalised management. Indeed, the operational domains are moving towards agile methodologies with greater determination, with some clients now taking on a limiting role rather than a stimulating one.

However, turning to the tactical and strategical spheres, the decision-making dynamics mostly retake more traditional management processes, except for some exceptional situations of incipient participation in organisational purpose's forging.

With regard to the contextual dimensions, it can be observed that—while retaining its last resort dominance—hierarchy grants more relevance to decision-making through dialogue and agreements. Additionally, there are some situations where task forces acquire a distinctive relevance. Lastly— though not a generalised feature—organisations that implement some gainsharing measures are distinguishable, either as direct profit share or through the achievement of intermediate objectives.

Profile III (case H). This management cluster reported only one sample case. Although it presents a horizontality of management score akin to the previous profile, it holds a particular nature that merits its distinctness. Indeed, while Profile II is generally made up of organisations that aim for a resolute horizontality of operational dynamics, this case shifts the focus to certain decision-making domains at the strategical level, together with particular contextualization dimensions. Such refocusing is explained by the case structuring as a worker cooperative, where the vast majority of workers are at the same time owners.

This distinctive characteristic confers formal decision-making rights to the mass of worker-members—through general assemblies—for matters concerning: mission and vision (organisational purpose), strategic planning, definition of basic compensation rules and treatment of certain exceptional issues with wide-range impact. These decision-making dynamics are supplemented by the wide dissemination of organisational economic-financial information and the distribution of profits among the membership. Nonetheless, the presence of several decision-making domains running upon dynamics similar to those observed in the traditional profile (mainly at the tactical and, to a lesser extent, operational levels) define a singular context where symmetric and nonsymmetric aggregation rules coexist.

Profile IV (cases A, I, Q). The rightwards shift on the mapping projected by Figure 2 represents an approaching-scenario to management with radical horizontality. Most or virtually all of the decision-making domains studied, as the case may be, present ordinal degrees above 1. Starting from the complete liberation of operational dynamics, a *sine qua non* condition for this profile normally driven through agile methodologies with self-organisation at their core (e.g., Scrum), horizontalization is expanded in varied ways and combinations for tactical and (to a lesser extent) strategical decision-making domains. In fact, crucial areas such as the appointment of team/area leaders, the setting of objectives, performance appraisal or hiring and firing present a decisive level of workforce participation.

For their part, strategical domains show the greatest "reserves" of hierarchy (generally under founding partners' control), even though active and equal participation across the organization is the predominant guiding maxim. The latter clearly manifests in the contextual dimensions: generalisation of task forces, full dissemination of all economic-financial information (including salaries paid to everyone), significant levels of profit-sharing, conflict management entirely in workers' hands and worker-assemblies for important and wide-range decision-making.

All in all, the landscape is one where the bulk of major decisions are reached by agreement and sociocratic consent[11], except on specific issues where the (diffuse) formal leadership may want to retain the last word.

Profile V (cases B, C, N). Finally, to constitute the most radical profile in terms of horizontal management the organisations with the highest ordinal scores, regardless of its legal form, were selected. Therefore, this group consists of two cooperatives and one organization with traditional ownership regime. Despite this difference, the horizontality of management levels scored roughly similar for the three cases.

The common characteristic of this organisational landscape is the almost non-existent entirely hierarchical decision-making: direct democracy dynamics or (if the number of teams involved require it) representative committees, with robust accountability and immediate recall practices, are set up. Certainly, as Appendixes I and II reveal, decision-making processes evolve in an "organised chaos" where people can, from self-select into specific work teams, to determine individual and team's work objectives. The sole and fundamental organising element of this "chaos" lies in customers' demands, which are directly related to the organization's purpose and survival. In turn, these characteristics are virtuously coupled with the possibility of self-managing other nodal decision-making domains, such as the way economic results are shared, peer review processes, conflict management, mission and vision (purpose), etc. Last but not least, contextual features align with the prevailing scenario, leaning back on the generalized use of symmetric group decision-making mechanisms (sociocratic consent, backward delegation, advise process or similar), often supported by network technologies.

---

[11]   This type of decision agreement is not a direct synonym for "consensus", in the sense of rigid unanimity about what should be done. Rather, it is about reaching a state of minimum group acceptance for action, without implying that all decision-makers regard the chosen alternative as optimal, or as the most preferred by everyone. Seen from another angle, consent implies unanimity in "non-objection" or "non-rejection" of a particular course of action. It is not necessary that everyone says "yes", it is sufficient that nobody states a "no". Such objection—if raised—must be solidly posed, a situation that demands debate and creativity to find new overcoming solutions. Consequently, consent usually requires time and effort from team members, though once agreement is reached, solutions implementation is substantially sped up, concurrently reducing risks of hidden dissenters' blockages (Romme, 1996).

6. Conclusion

The purpose of the article consists of, on the one hand, the elucidation of the "horizontality of management" concept. To that end, section 3 develops an approach to posit management as a crucial dimension when analysing more democratic decision-making dynamics within organizations, and to clarify its differentiation—and its possibility of separate analysis—with respect to ownership. Thence—after discussing its manifest overlaps with the "horizontality" notion adopted in the field of socio-political movements' organizing research—a definition for the concept is reached, consisting in the degree of symmetry/asymmetry assumed for the distribution of decision-making power among workers, within the varied organisational decision-making domains. In this way, horizontality of management represents a construct that reflects the facet of economic democracy related to organisational management. Hence, the deeper an organisation's horizontality of management, the greater its workers' degree of participation in all kinds of decisions (operational, tactical, strategical and contextual) directly affecting them, and therefore, the higher the level of economic democracy in this aspect.

On the other hand, the article offers a methodology to measure the horizontality of management in any organization, regardless of its legal form. To achieve this, a field study is carried out in which competent interlocutors from 17 Argentinian software SMEs are interviewed. From there, qualitative codable information is obtained and transformed into ordinal categories, allowing the construction of a statistically validated summative scoring-scale.

Hence, degrees of horizontality of management are assigned to every surveyed organisation, which together with their respective characterisations of legal ownership's distribution enables the mapping onto the "worker ownership – horizontality of management" biaxial space. This graphical representation reveals a constellation of five horizontality profiles, illustrating the most representative management traits that the various decision-making domains of the studied organisations present, which are summarised by Appendix III.

As a corollary, the article's gap-filling contribution lays in the elaboration of a consolidated juxtaposition platform (represented by Figure 2), capable of orderly displaying the manifold experiences of participation/democratisation in organisational ownership and/or management. Thereupon, some insights of interest emerge.

Firstly, the analysis provides a common framework for spotlighting the existence of (quite) distinct "flavours" (profiles), regarding (workers) "self-management" configurations reviewed in the empirical literature (e.g., Peters, 1993; Hamel and Breen, 2007; Laloux, 2014; Getz and Carney, 2015). Put in another way, the proposed comparison space offers a reference scale to properly differentiate and disentangle apparently homogeneous cases, frequently encompassed by vague or "catch-all" concepts (e.g., "liberation management"). In terms of the schema obtained for Argentinian software SMEs, the nature of the "freedom" for managing actually allocated to the workforce is markedly different for profile II than for profile IV or V cases.

Secondly, the study offers further analytical insights of the multi-level decision-making channels that might reinforce the perceptual separation between legal ownership and organisational management. In that sense, a hypothesis for worker cooperatives could be ventured: a (relatively) low degree of horizontality of management brings about (and reinforces) a lack of psychological ownership (Pierce, Kostova and Dirks, 2001) in the workforce, as was apparent—for instance— during some of the Mondragon's cooperatives observations (Greenwood and González, 1992; Kasmir, 1996; Altuna and Urteaga, 2014).

Finally, while legal ownership regime and doctrinaire principles confer worker cooperatives with an evident natural advantage to attain the highest horizontality of management, they do not—*per se*—reach up to that potentiality in all cases. Actually, for some worker cooperatives organizational management could be run with significantly less horizontality, when compared against certain firms whose ownership is not democratically structured. The result of such comparison depends on how flattened and distributed the structures of the several decision-making domains are; or put the other way around: on how entrenched (bureaucratic) hierarchy is within the authority structures that make up the operational, tactical and strategical organisational levels. In terms of Meyers (2022) approach, it depends on how close the organizational management dynamics is to the "participatory bureaucracy" schema. The closer, the higher the horizontality of management degree, as reflected by the top-score cases on Table 1: B and C (corresponding to worker cooperatives). On the other hand, case H reflects an instance of a worker cooperative—with marked hierarchical functioning for specific decision-making domains—whose horizontality of management degree falls behind non-cooperative cases clustered within profiles IV and V.

By way of conclusion, Argentinian software sector's unique and cutting-edge business and social environment allows, through the exploratory-descriptive research presented in this article, a deeper comprehension of the variety of possible alternatives—in terms of organisational dynamics and configurations—and of the sorting relationships among them, illuminated by the horizontality of management concept.

For future research focusing on economic democracy that manifests through organisational management, a wider and deeper evaluation of this concept, its scope and its explanatory contribution could be of interest. In order to advance further in this respect, the following recommendations may be considered (non-exhaustively) to overcome the limitations of the current research:

- Expand the units of observation beyond a panel of representative experts, for example, by surveying as many organization's members as possible. In this way, experiences and visions related to the horizontality of management could be obtained from the whole workforce, and not only from top-level representatives such as founders, CEOs, C-levels or managers.
- Broaden the economic sectors and regional contexts in order to examine the horizontality of management's functioning beyond the software industry or a particular cultural idiosyncrasy.
- Conduct correlational studies with organisational variables, for example, to evaluate associations that might exist between horizontality of management and organisational climate.

- Investigate, in worker cooperatives, the possible correlation between horizontality of management and members perceived (psychological) ownership of the organisation.
- Explore the need of adjusting-methodologies for the horizontality of management's assessment (e.g., by considering the variance of its components within each organization).

Therefore, it is hoped that the contributions that this article makes result in a useful starting point for research programmes that focus on the possibilities offered by more participatory and democratic organisational management styles; that is, with the capacity to reap the benefits from the whole of the potentialities offered by human diversity.

References

Ackoff, R. L. (1994). *The democratic corporation: A radical prescription for recreating corporate America and rediscovering success*. Oxford University Press. DOI: https://doi.org/10.1093/oso/9780195087277.001.0001

Adler, P. S. (1992). *The Learning Bureaucracy: New United Motor Manufacturing, Inc*. University of Southern California.

Albrecht, S. L. (1983). Forms of industrial and economic democracy: A comparison of prevailing approaches, *Mid-American Review of Sociology*, 8(2): 43-66. DOI: https://doi.org/10.17161/STR.1808.4951

Altuna Gabilondo, L. (2008). *La experiencia cooperativa de Mondragon: Una síntesis general*. LANKI Kooperatibismoaren Ikertegia. DOI: https://doi.org/10.48764/8vy7-ax69

Altuna, R., & Urteaga, E. (2014). La cooperativa Fagor Ederlan: El "lean manufacturing" como modelo de gestión, *CIRIEC-España, Revista de Economía Pública, Social y Cooperativa*, 82: 29-64.

Atzeni, M. & Ghigliani, P. (2007). Labour process and decision-making in factories under workers' self-management: empirical evidence from Argentina, *Work, Employment and Society*, 21(4): 653-671. DOI: https://doi.org/10.1177/0950017007082875

Barletta, F., Pereira, M., Robert, V. & Yoguel, G. (2013). Argentina: Dinámica reciente del sector de software y servicios informáticos, *Revista de la CEPAL*, 110: 137-155. DOI: https://doi.org/10.18356/2813fe44-es

Ben-Ner, A. (1984). On the stability of the cooperative type of organization, *Journal of comparative economics*, 8(3): 247-260. DOI: https://doi.org/10.1016/0147-5967(84)90055-6

Berle, A. A. & Means, G. C. (1933). *The Modern Corporation and Private Property*. The Macmillan Company.

Buck, J. A. & Endenburg, G. (2010). *The creative forces of self-organization*. Sociocratic Center.

Busck, O., Knudsen, H. & Lind, J. (2010). The transformation of employee participation: Consequences for the work environment, *Economic and Industrial Democracy*, 31(3): 285-305. DOI: https://doi.org/10.1177/0143831X09351212

Christie, D. (1984). Recent Calls for Economic Democracy, *Ethics*, 95(1): 112-128. DOI: https://doi.org/10.1086/292604

Cohen, Y. (2021). Horizontality in the 2010s: Social Movements, Collective Activities, Social Fabric, and Conviviality, *Mecila Working Paper Series*, n. 40. São Paulo: The Maria Sibylla Merian Centre Conviviality-Inequality in Latin America. DOI: https://doi.org/10.46877/cohen.2021.40

Cornforth, C. (1995). Patterns of Cooperative Management: Beyond the Degeneration Thesis, *Economic and Industrial Democracy*, 16(4): 487-523. DOI: https://doi.org/10.1177/0143831X95164002

Cummings, T. G. (1978). Self-Regulating Work Groups: A Socio-Technical Synthesis, *Academy of Management Review*, 3(3): 625-634. DOI: https://doi.org/10.5465/amr.1978.4305900

Dahl, R. A. (1985). *A Preface to Economic Democracy*. University of California Press. DOI: https://doi.org/10.1525/9780520341166

Dow, G. K. (2018). The Theory of the Labor-Managed Firm: Past, Present, and Future, *Annals of Public and Cooperative Economics*, 89(1): 65-86. DOI: https://doi.org/10.1111/apce.12194

Drucker, P. F. (1984). *La Gerencia: Tareas, responsabilidades y prácticas*. El Ateneo.

Emery, F. & Thorsrud, E. (1976). *Democracy at Work: The Report of the Norwegian Industrial Democracy Program*. Martinus Nijhoff Social Sciences Division.

Estragó, A. (2020). Organizaciones horizontales: Viejas aspiraciones en ideas de gestión que se renuevan, *Revista del Centro de Estudios de Sociología del Trabajo (CESOT)*, 12: 39-74.

Estragó, A. (2021). Dualidad y disonancia en la gestión de las cooperativas de trabajo, *Ciencias Administrativas*, 17: 85-96. DOI: https://doi.org/10.24215/23143738e078

Estragó, A. (2022). El "nuevo estilo de relaciones": ¿vislumbre futurista de la gestión organizacional?, *SaberEs*, 14(1): 1-19.

Getz, I. & Carney, M. B. M. (2015). *Freedom, Inc.: How Corporate Liberation Unleashes Employee Potential and Business Performance*. Somme Valley House.

Graeber, D. (2002). The New Anarchists, *New Left Review*, *January-February*(13): 61-73.

Greenwood, D. J. & González, J. L. (1992). *Industrial Democracy as Process: Participatory Action in the Fagor Cooperative Group of Mondragon*. Van Gorcum.

Hamel, G. & Breen, B. (2007). *The Future of Management*. Harvard Business School Press.

Hatum, A. (2017). Un mundo sin CEO: Cómo funciona la empresa argentina libre de jefes, *La Nación*, 9 August. Available at: https://www.lanacion.com.ar/economia/negocios/un-mundo-sin-ceo-como-funciona-la-empresa-argentina-libre-de-jefes-nid2051208/ [Accessed: 11 April 2024]

Hernández Sampieri, R., Fernández Collado, C. & Baptista Lucio, P. (2010). *Metodología de la investigación* (5a ed). McGraw-Hill.

Hoda, R. & Murugesan, L. K. (2016). Multi-level agile project management challenges: A self-organizing team perspective, *Journal of Systems and Software*, 117: 245-257. DOI: https://doi.org/10.1016/j.jss.2016.02.049

Hoda, R., Salleh, N. & Grundy, J. (2018). The Rise and Evolution of Agile Software Development, *IEEE Software*, 35(5): 58-63. DOI: https://doi.org/10.1109/MS.2018.290111318

Johanisova, N. & Wolf, S. (2012). Economic democracy: A path for the future?, *Futures*, 44(6): 562-570. DOI: https://doi.org/10.1016/j.futures.2012.03.017

Kasmir, S. (1996). *The Myth of Mondragon: Cooperatives, Politics, and Working-Class Life in a Basque Town*. State University of New York Press.

Laloux, F. (2014). *Reinventing Organizations: A Guide to Creating Organizations Inspired by the Next Stage of Human Consciousness*. Nelson Parker.

Lane, R. E. (1985). From Political to Industrial Democracy?, *Polity*, 17(4): 623-648. DOI: https://doi.org/10.2307/3234567

Lee, M. Y. & Edmondson, A. C. (2017). Self-managing organizations: Exploring the limits of less-hierarchical organizing, *Research in Organizational Behavior*, 37: 35-58. DOI: https://doi.org/10.1016/j.riob.2017.10.002

Lorey, I. (2014). The 2011 Occupy Movements: Rancière and the Crisis of Democracy, *Theory, Culture & Society*, 31(7-8): 43-65. DOI: https://doi.org/10.1177/0263276414550835

Maeckelbergh, M. (2011). Doing is Believing: Prefiguration as Strategic Practice in the Alterglobalization Movement, *Social Movement Studies*, 10(1): 1-20. DOI: https://doi.org/10.1080/14742837.2011.545223

Manifesto for Agile Software Development (2001). Available at: http://agilemanifesto.org/ [Accessed: 11 April 2024]

McGregor, D. (1960). *The human side of enterprise*. McGraw-Hill Book Company, Inc.

Meyers, J. S. M. (2022). Participatory Bureaucracy: Addressing Gender Inequality in Worker Cooperatives, *Journal of Entrepreneurial and Organizational Diversity,* 11(1): 23-54. DOI: http://dx.doi.org/10.5947/jeod.2022.002

Michels, R. (1915). *Political parties. A sociologial study of the oligarchical tendencies of modern democracy.* Hearst's International Library Co.

Mintzberg, H. (1979). *The Structuring of Organizations.* Prentice-Hall.

Mintzberg, H. (1981). *Power in and Around Organizations.* Prentice-Hall.

Olivera, J. H. (1995). Teoría económica y sistema cooperativo, *Realidad Económica*, 131: 25-36.

OPSSI - Observatorio Permanente de la Industria del Software y Servicios Informáticos (2023). *Evolución de ventas, exportaciones y empleo en Software a 2022.* CESSI. Available at: https://cessi.org.ar/wp-content/uploads/2023/07/Evolucion-indicadores-Software-2022.pdf [Accessed: 11 April 2024]

Ostrom, E. (2005). *Understanding Institutional Diversity.* Princeton University Press. DOI: https://doi.org/10.1515/9781400831739

Parker Follett, M. (1940). *Dynamic administration: The collected papers of Mary Parker Follet.* Harper and brothers.

Peters, T. (1993). *Liberation management: La gerencia liberadora.* Atlántida.

Pierce, J. L., Kostova, T. & Dirks, K. T. (2001). Toward a Theory of Psychological Ownership in Organizations, *Academy of Management Review*, 26(2): 298-310. DOI: https://doi.org/10.5465/amr.2001.4378028

Pole, K. (2009). Diseño de metodologías mixtas. Una revisión de las estrategias para combinar metodologías cuantitativas y cualitativas, *Renglones*, 60: 37-42.

Potter, B. (1891). *The co-operative movement in Great Britain.* Swan Sonnenschein & Co.

Puranam, P., Alexy, O. & Reitzig, M. (2014). What's "New" About New Forms of Organizing?, *Academy of Management Review*, 39(2): 162-180. DOI: https://doi.org/10.5465/amr.2011.0436

Revista Mercado (2020). Baufest se transformó en una Partnership, 10 December. Available at: https://mercado.com.ar/protagonistas/baufest-se-transformo-en-una-partnership/ [Accessed: 11 April 2024]

Romme, G. (1996). Making organizational learning work: Consent and double linking between circles, *European Management Journal*, 14(1): 69-75. DOI: https://doi.org/10.1016/0263-2373(95)00048-8

Rothschild, J. & Leach, D. (2007). Avoid, Talk, or Fight: Alternative Cultural Strategies in the Battle Against Oligarchy in Collectivist-Democratic Organizations. In: R. A. Cnaan & C. Milofsky (Eds.), *Handbook of Community Movements and Local Organizations.* Springer US, pp. 346-361. DOI: https://doi.org/10.1007/978-0-387-32933-8_23

Rothschild, J. & Whitt, J. A. (1986). *The Cooperative Workplace: Potentials and Dilemmas of Organisational Democracy and Participation.* CUP Archive.

Sekerák, M. (2012). Ideological sources of the economic democracy and its historical development, *Journal of Interdisciplinary Research*, 2(2): 81-90.

Sitrin, M. (Ed.). (2006). *Horizontalism: Voices of Popular Power in Argentina* (Illustrated edition). AK Press.

Sitrin, M. (2014). Definitions of Horizontalism and Autonomy, *NACLA Report on the Americas*, 47(3): 44-45. DOI: https://doi.org/10.1080/10714839.2014.11721832

Spear, R. (2004). Governance in Democratic Member-Based Organisations, *Annals of Public and Cooperative Economics*, 75(1). 33-60. DOI: https://doi.org/10.1111/j.1467-8292.2004.00242.x

Spector, P. E. (1992). *Summated rating scale construction: An introduction.* Sage Publications. DOI: https://doi.org/10.4135/9781412986038

Van Eijnatten, F. M. (1993). *The paradigm that changed the work place.* Van Gorcum.

Vanek, J. (1970). *The general theory of labor-managed market economies.* Cornell University Press.

Vieta, M. (2019). *Workers' Self-Management in Argentina: Contesting Neo-Liberalism by Occupying Companies, Creating Cooperatives, and Recuperating Autogestión.* Brill. DOI: https://doi.org/10.1163/9789004268951

Vuotto, M. H. (2003). *Economía social: Precisiones conceptuales y algunas experiencias históricas.* Universidad Nacional de General Sarmiento.

Zanotti, A. (2016). Cooperativas de trabajo en software y servicios informáticos ¿subversión al capitalismo cognitivo?, *Chasqui: Revista Latinoamericana de Comunicación*, 133: 129-145.

Appendix I. Examples of interview segments coding, their transformation into ordinal values and the paraphrasing used for exposition

Predefined code			Live coding	
Variable and dimension	Ordinal category	Ordinal value	Verbatim	Paraphrase
Horizontality of operational decisions – Decisions about operational tasks	Informative-consultative (IC)	1	"Departments have coordinators and leaders; their main function is to coordinate the prioritization of tasks to meet objectives."	Area managers are the ones who decide on task prioritization (and related issues).
	Mostly IC, with few COD or SD cases	2	"We always had a proposal (...) in which a leader was appointed. As time went by, it became undermined because the agile teams began to be created, where the leader began to lose (...) the ability to assign tasks. (...) [However] there are [situations] where (...) there is a leader (...) who follows closely."	Usually, the team leader assigns tasks, although there are circumstances in which agile methodologies are imposed and reduce this capacity.
	Co-decision (COD), or mostly SD, with few IC cases	3	"So, there are cases where over time, we try to use a mixed methodology, where at least the internal team is agile. But how closer to one or the other you are depends on the service to the client. But always tending towards more agile methodologies."	Agile methodologies are implemented as far as possible, except when the client's methodology limits it.
	Self-determination (SD)	4	"Each team is self-managed. Since it has a delineated objective, it only takes an internal chatter about who is left in charge of a [certain] task."	Self-management is complete in all aspects of implementation and scheduling, as well as in the organization of operational tasks.
Horizontality of tactical decisions – Decisions about area/team objectives	Informative-consultative (IC)	1	"All the leaders (...) meet once a month and define guidelines (...)."	Area managers are the ones who decide on area/team objectives.
	Co-decision (COD), or mostly SD, with few IC cases	3	"We measure the quality of our services (...). So, the teams self-manage by these assessments, we don't ask them to set goals, kinda 'continuous challenge'. Of course, they have the obligation to continuously improve, that is, they have to be growing, learning, improving all the time."	In general, teams themselves set and follow up their own objectives, albeit under the watchful eye of the leadership team.
	Self-determination (SD)	4	"The team estimates the effort. For example, the PM comes in and says: 'we have to do these five windows, they're like this, like this and like that.' So people respond: 'we estimate 20 hours for each one'. Then, the PM turns around and says to the client: 'look, in 100 hours we could have it ready, that's going to be, calculating holidays, it's going to be ready by the end of the month'."	Teams determine objectives and the resulting commitments completely autonomously (without the intervention of managers or leaders). The only adjustment framework is the customer's requirements.

Appendix I. (cont.)

Predefined code			Live coding	
Variable and dimension	**Ordinal category**	**Ordinal value**	**Verbatim**	**Paraphrase**
Horizontality of strategical decisions – Basic rules for advancement, promotion and recognition	Informative-consultative (IC)	1	"We team leaders (…) evaluate whether [people are] due for a role change, we look after their promotion or we eventually see if they change lines, or if they are given more responsibility."	Managers and leaders are the ones who decide on advancement and promotion issues.
	Co-decision (COD), or mostly SD, with few IC cases	3	"[We do] a review on (…) technical, management, communication aspects (…). The person who wants to be reviewed, (…) chooses other people who are (…) above or ahead in that (…) [aspect]."	Peer review is a fundamental aspect in the advancement and recognition within the organization, under the watchful eye of organisational leaders.
	Self-determination (SD)	4	"We do some voting where we evaluate, and where everyone votes whether a person should move up the ladder (…). This represents the group's idea of a person's work. There is also a space where everyone can comment on why they vote for or against."	All members of the organization participate, on an equal footing, in the evaluation of the progress and recognition of their peers.
Contextualization of horizontal dynamics – Predominant type of aggregation rule	Nonsymmetric (hierarchy)	1	"[To settle discussion/debate] the decision is made, depending on the issue, by one of the senior partners."	Debates and discussions are settled by hierarchical mechanism.
	Mostly nonsymmetric (hierarchy, with focused symmetry)	2	"It is not a bad thing that two people disagree, (…). The issue is that these people have sufficient capacity to build consensus. Sometimes it happens, (…) [that] a technical tie-break is needed with decisions. So in that case I do get involved, (…) but not in a 'directive' or authoritarian way."	Agreements and consensual rather than imposed decisions are encouraged, although hierarchy is the always present mechanism of last resort.
	Mostly symmetric	4	"We are using (…) consent and that sort of things. And then we have plenary meetings where we try not to vote (…), but to talk and in any case propose [alternatives] (…). Serious issues go to the board of directors."	Decisions are generally consensual, except for specific issues of utmost importance in which the formal leadership decides.
	Symmetric	5	"It is not (…) simply (…) to present a proposal and vote, but if you do not reach an agreement, you have a tool, Loomio, to comment and discuss, (…) to reach a middle ground and ask the other person: 'what is it, that it does not add up to you? what is bothering you?', (…). And in that case, if you find it reasonable, I change my proposal. It's not just abstaining and blocking."	Widespread use of decision-making mechanisms similar to sociocratic consent, supplemented by IT tools.

Appendix II. Representative paraphrases for management profiles of the studied organizations

	Profile I	Profile II	Profile III	Profile IV	Profile V
Horizontality of operational decisions	- Area managers are the ones who decide on task prioritization (and related issues). - Usually, the team leader assigns tasks, although there are circumstances in which agile methodologies are imposed and reduce this capacity.	- Agile methodologies are implemented as far as possible, except when the client's methodology, or old-school leaders, limit it. - Rank-and-file decision-making is empowered, and afterwards everyone is held accountable for their commitments and results.	- Agile methodologies are implemented, although this depends on the methodology the client works with. - Roles are defined mainly by team leaders.	- Software development is in charge of self-managed teams that have a very high degree of autonomy. - Tasks distribution is collective and by self-assignment. No one has the authority to assign; if something is important, someone always ends up taking responsibility for it.	- Self-management is complete in all aspects of implementation and scheduling, as well as in the organization of operational tasks. - Role distribution within a team is as simple as asking who is willing and able to take on a particular task.
Horizontality of tactical decisions	- Area managers are the ones who decide on area/team objectives. - Decisions on the allocation of financial resources are defined by top management in consultation with middle management.	- Classical structures are maintained, with an organisational chart that is respected. - Management is based on the 80-20 model, in which 80% of your time is predetermined and the remaining 20% you choose another team to work in.	- Performance evaluation is conducted by those in management and leadership positions. - Managers define who is given greater responsibilities.	- Not everyone decides on everything, all the time. Someone who is a specialist on a particular topic puts forward a concrete proposal, on which the self-managed team decides by sociocratic consent. - There is no project manager with formal authority. Everyone in a team is accountable for the common goal and all aspects of the work.	- People self-select to work in this or that team, having the organisational needs as a central reference and guide. - Teams determine objectives and the resulting commitments completely autonomously (without the intervention of managers or leaders). The only adjustment framework is the customer's requirements.
Horizontality of strategical decisions	- Bosses and leaders are the ones who decide on issues of advancement and promotion. - If deemed necessary, senior management intervenes in areas, modifying their structure and functioning.	- Determination on planning and strategy in the hands of top management. - Mission and vision should be built in a more participatory way, so some non-manager referents are invited to contribute in this regard.	- Strategic plans, mission and vision are shaped through assemblies and multiple discussion groups. - Senior management is responsible for structuring the organisational chart.	- The board of shareholders is the one that discusses and decides on strategic guidelines, or on the percentages of profitability to be shared with workers. - Wage levels can be discussed during assembly meetings, but the final decision rests with top management.	- In order to define how to distribute the money, multiple discussion groups are set up, pooling ideas into one final proposal for assembly approval. - All members of the organization participate, on an equal footing, in the evaluation of the progress and recognition of their peers.

Appendix II. (cont.)

	Profile I	Profile II	Profile III	Profile IV	Profile V
Contextualization of horizontal dynamics	- Debates and discussions are settled by hierarchical mechanism. - Information, of a very general nature, on organisational performance is provided by top management to middle management only.	- Agreements and consensual rather than imposed decisions are encouraged, although hierarchy is the always present mechanism of last resort. - There are task forces of horizontal nature that deal with different needs.	- All economic-financial information is shared and made public; it is presented and explained as clearly as possible. - Conflicts are handled within the hierarchies of the organization.	- Decisions are generally consensual, except for specific issues of utmost importance in which the formal leadership decides. - There are assembly meetings where people can bring issues to be discussed, which are then prioritised by voting.	- Widespread use of decision-making mechanisms similar to sociocratic consent, supplemented by IT tools. - For conflict resolution, all parties involved are expected to come together to talk as adults. Eventually other members may participate in the resolution.

Appendix III. Summary of the main horizontality of management features of the surveyed Argentinian software SMEs

	Profile I (Traditional)	Profile II (Traditional/ incremental horizontality)	Profile III (Incremental horizontality)	Profile IV (Incremental horizontality/ radical)	Profile V (Radical horizontality)
Operational level - Operational tasks - Roles	- Area/team leaders retain preponderance with regard to decision-making on task execution and role distribution. - Only partially modified if the client requires adaptation to agile methodologies.	- Operational domains mostly guided by agile methodologies. - Exceptions when the customer or old-school team leaders ask to limit them.	- Management traits as a mixture of Profile I and Profile II features.	- Complete liberalisation of operational dynamics driven by the generalisation of agile methodologies (mainly Scrum). Self-organisation of teams as the core of action.	- Operational management traits very similar to Profile IV.
Tactical level - Team/area object. - Performance appr. - Hiring and dismiss. - Financial res. alloc. - Team/area staffing - Leadership appoint.	- Management traits very similar to traditional schemas.	- Management traits similar to traditional schemas. - Exception when some workers are invited to participate in the elaboration of the mission and vision (purpose).	- Management traits very similar to traditional schemas.	- Varying degrees of horizontalisation applied to key decision domains: team/area leaders' appointment, determination of objectives, performance appraisal, etc.	- Maximum generalised horizontality for all or almost all tactical and strategical decision-making domains (organised chaos). - Only constraint (and aligning element) is the customer's requirements.
Strategical level - Structure design - Strategic planning - Mis. & vis. (purpose) - Financ. comp. rules - Advance. & promot. - Exceptional issues			- Worker cooperative where workforce has formal rights of decision-making in certain strategic domains.	- Equal participation as the predominant guiding maxim, although some hierarchy "reserves" are kept for (mainly) founders, within a few key decision-making domains.	

Appendix III. (cont.)

	Profile I (Traditional)	Profile II (Traditional/ incremental horizontality)	Profile III (Incremental horizontality)	Profile IV (Incremental horizontality/ radical)	Profile V (Radical horizontality)
Contextualization - Task forces - Economic & financ. info. - Monetary rewards - Conflict management - Agreggat. rule type - Assembly decisions	- Hierarchy as the pre-eminent mechanism for major decision-making.	- Promoting dialogue and consent-based decision-making, although hierarchy remains the mechanism of last resort. - Task forces may acquire a distinctive relevance. - Some cases implementing gainsharing programmes.	- Dissemination of economic-financial information and distribution of economic earnings among workers. - Mix of symmetric and nonsymmetric decisions.	- Widespread horizontalisation of contextual factors. - Predominance of symmetric mechanisms for group decision-making (consent, advise process, etc.), maintaining a few hierarchical enclaves.	- Widespread horizontalisation of contextual factors. - Generalisation of symmetric group decision-making mechanisms (consent, advise process, etc.).