

Digital Transformation in the Social and Solidarity Economy:

An Analysis of Governance Challenges and Ethical Implications

Abstract:

Although digital tools proposal endless opportunities for modernization, they may conflict with fundamental values of the SSE enterprises. Focusing on the Souss-Massa region in Morocco, the research uses an exploratory qualitative approach through fifteen semi-structured interviews with cooperative managers. A conceptual mediation model is verified, studying how driver technological integration, e-governance, and algorithmic management impact democratic governance and ethical issues, mediated by organizational capital.

So, the question we ask ourselves is: How does digitalization impact the governance and ethical issues of companies in the social and solidarity economy sector?

The results reveal that digitalization play the role as a "double-edged sword". It significantly enhances informational transparency yet simultaneously creates a "democratic paradox" by concentrating decision-making power among a digitally proficient elite. The paper confirms that the effects of digitalization are not spontaneous but are filtered through organizational capital; strong mutual trust and collaborative routines amplify positive governance outcomes but only partially mitigate ethical risks like the internal digital divide and data protection concerns. The study concludes by stressing the need for "ethics by design" and hybrid participation mechanisms to preserve cooperative identity in the digital age.

Keywords:

Digital Transformation, Social and Solidarity Economy (SSE), Governance, Ethics, Organizational Capital, Cooperatives

Introduction

Digital transformation is deeply reshaping the ways in which organizations are governed and objectively regulated. While this reality has been significantly documented in the context of private companies, cooperatives in the social and solidarity economy (SSE) stay a largely undiscovered even as their model, founded on democratic governance, solidarity, and transparency, hypothetically comes into conflict with algorithmic logic and the imperatives of the digital age. In Morocco, the Souss-Massa region is a socializing place of agricultural, artisanal, and service cooperatives confronting a dual challenge: modernizing their rituals and habits to stay competitive while conserving the fundamental values that support their legitimacy

among their partners. It is inside this context that the current research is situated, with the central issue: how does digitalization impact the governance and ethical challenges of SSE cooperatives? To report this, a conceptual mediation model is tested, connecting three drivers of digitalization (technological integration, e-governance, and algorithmic management), a central mediating variable (organizational capital), and two dependent variables (democratic governance and ethical issues). An exploratory qualitative approach, based on fifteen semi-structured interviews conducted with cooperative co-partners in the Souss-Massa region, allows for an exploration of the mechanisms at work prior to any quantitative validation.

The article is organized into three parts: the theoretical framework and research hypotheses, the methodological design of the qualitative study, followed by the presentation and discussion of the results, before concluding with the limitations and future directions opened up by this work.

I. Theoretical Framework

Understanding the impact of digitalization on governance and the ethical challenges confronting cooperatives needs a solid theoretical foundation. In this way, four complementary theories are engaged, taking all the variables in our study: a theory of technology adoption, an institutional theory, a theory of the social structuring of technology, and a theory of social capital. These theories are jointed within an integrated framework in which each sheds light in other

1.1 The Technology Acceptance Model (TAM) / UTAUT

Technology Acceptance Model / UTAUT: Davis (1989); Venkatesh, Morris, Davis & Walton (2003)

The TAM posits that the adoption of a technology is determined by two perceptions: perceived usefulness (the belief that the tool improves performance) and perceived ease of use (the belief that using it requires little cognitive effort). Its extension, UTAUT, incorporates social influence including peer pressure and the institutional environment and enabling conditions such as available resources and support for use. This theory explains that the adoption of digital tools in organizations is neither uniform nor automatic: it depends on the collective perception of the added value of technologies and their compatibility with existing practices and values. In

collectively governed organizations such as cooperatives, these perceptions are socially co-constructed among members.

1.2 Neo-institutional theory

Neo-institutional theory explains why organizations adopt similar structures and practices as a result of three mechanisms of isomorphism. Coercive isomorphism results from legal and regulatory pressures. Normative isomorphism is fueled by professional standards and industry norms. Mimetic isomorphism come from the imitation of organizations observed as legitimate or high-performing. These institutional pressures mold not only organizational forms but also governance practices and ethical compliance. Meyer & Rowan (1977) reveal that organizations often approve formalized structures to meet institutional expectations, heedlessly of their actual effectiveness a decoupling among formal structure and actual practices.

1.3 The theory of the dual nature of technology: Giddens (1984), Theory of Structuration; Orlikowski (1992)

Orlikowski (1992) affirm that technology, one and the other an piece created by human activity and a framework that either permits or restricts that same action, drawing on Giddens' structuration theory. Technology does not independently dictate organizational behaviors, its impact is contingent upon the prevailing social structures, including conventions, trust relationships, rituals, habits and collective knowledge. This dualism means that the same technology can produce drastically different effects depending on the organizational situation in which it is adopted. In an organization with robust social cohesion, it will be adopted as an enabling tool; in an organization with fragile relational capital, it risks strengthening inequalities and generating resistance. Technology is thus socially edified in and through use.

1.4 The Theory of Social Capital

Social capital means to the actual or potential resources generated by networks of stable relationships based on trust, reciprocity, and shared norms. Nahapiet & Ghoshal recognize three harmonizing dimensions of social capital in organizations: the structural dimension (the configuration of the network of ties), the relational dimension (trust, obligations, and mutual norms), and the cognitive dimension (shared language, vision, and values). In cooperative organizations, social capital is especially strategic because it composes both the base of democratic governance (trust among members, collective deliberation) and the requirement for

organizational innovation (the ability to adopt new practices by mobilizing collective knowledge). Coleman underlines its role as a facilitator of collective action, however Putnam focuses its link to the quality of democratic institutions.

1.5 Selected Variables and Their Theoretical Foundations

The table below gives the five variables nominated for the conceptual model. For each variable, the operational meaning adopted in this study is specified, the theorists who provided the conceptual foundation are recognized, and the analytical dimensions to be used in the empirical study are listed.

Table 1: Operationalisation of research variables

Code	Variable	Operational Definition	Key Theorists	Measured Dimensions	Type
IV1	Technological Integration	Degree of adoption and incorporation of digital tools (platforms, management software, communication tools) into the cooperative's organisational processes.	Rogers (2003) — Diffusion of Innovations Davis (1989) — TAM Venkatesh et al. (2003) — UTAUT	• Digital tool adoption • Communication platforms • Data management	Independent Variable
IV2	E-governance	Use of digital technologies (portals, participatory platforms, reporting tools) to improve transparency, accountability, and member participation in decision-making.	Bevir (2012) — E-governance DiMaggio & Powell (1983) — Isomorphism Fung (2013) — Radical Transparency	• Informational transparency • Digital portals & reporting • Member participation (1p1v)	Independent Variable
IV3	Algorithmic Management	Delegation of managerial tasks — supervision, evaluation, decision support — to algorithmic systems, modifying the nature and distribution of decision-making power within the cooperative.	Brynjolfsson & McAfee (2014) — Automation Orlikowski (1992) — Technology Duality Diakopoulos (2016) — Algorithmic Accountability	• Automated supervision • Algorithmic accountability • Collective decision support	Independent Variable
MV	Organisational Capital	Internal relational and cognitive resources of the cooperative: mutual trust among members, collaborative routines and shared knowledge, which determine how digitalisation translates into effects on governance and ethics.	Coleman (1988) — Social Capital Putnam (1993) — Social Capital & Democracy Nahapiet & Ghoshal (1998) — Organisational Social Capital	• Mutual trust • Collaborative routines • Shared knowledge	Mediating Variable
DV1	Democratic Governance	Quality of the processes by which the cooperative ensures transparency, effective member involvement in decisions, and	Hansmann (1996) — Cooperative Governance Defourny & Nyssens (2017) — Social Enterprise	• Transparency towards members • Participation in decision-making	Dependent Variable

		bonding to the founding democratic principle (one person, one vote).	Spear (2004) — Cooperative Democracy	• Diffusion of decision-making power	
DV2	Ethical Challenges	Set of moral challenges induced by digitalisation: confidentiality and security of member data, accountability for algorithmic decisions, and equity in entrance to digital benefits and resources.	Zuboff (2019) — Surveillance Capitalism Van Dijk (2020) — Digital Divide Fraser (2005) — Social Justice & Equity	• Data protection • Actor accountability • Internal digital divide • Distributional equity	Dependent Variable

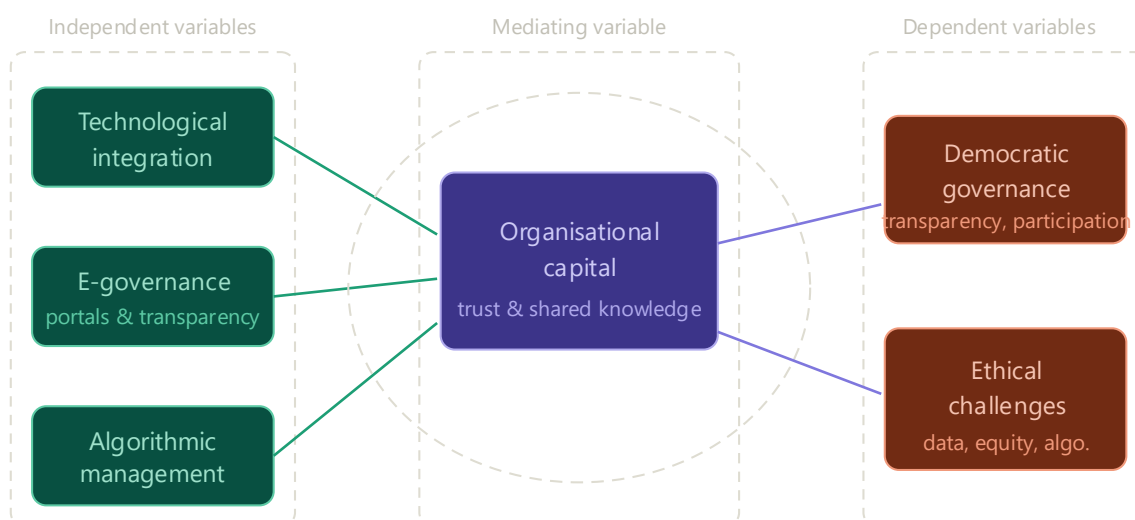
Source : Author

II. Research methodology

2.1 Statement of Hypotheses

Constructed on the theoretical framework and the conceptual model approved five hypotheses are formulated:

Figure 1: Conceptual model of the study



Source: Model adapted from the theories cited above

H1: Technological integration positively enhances the organizational capital of cooperatives.

H2: E-governance improves transparency and member participation in democratic governance, mediated by organizational capital.

H3: Algorithmic management generates ethical tensions, the intensity of which is mitigated by the strength of organizational capital.

H4: Organizational capital positively influences democratic governance and reduces ethical lapses associated with digitalization.

H5: Organizational capital plays a positive and significant mediating role between the three levers of digitalization and their effects on democratic governance and the ethical challenges facing cooperatives.

2.2 Conduct of the Interviews

The table below reviews the 15 semi-structured interviews directed with cooperative managers from various sectors in the Souss-Massa region. These interviews are part of an exploratory qualitative study constructed on a simple mediation, aimed at analyzing how digitalization impacts democratic governance and the ethical challenges facing social and solidarity economy institutes.

Table 2: Presentation of interview participants

Code	City	Province	Interviewee Status	Gender	Duration	Date	Language
E01	Agadir	Agadir-Ida Ou Tanane	Chief Executive Officer	M	55 min	15/04/2025	Arabic/French
E02	Agadir	Agadir-Ida Ou Tanane	Administrative Manager	F	48 min	16/04/2025	French
E03	Tiznit	Tiznit	Board of Directors President	M	62 min	18/04/2025	Arabic
E04	Tiznit	Tiznit	Finance Manager	F	45 min	19/04/2025	French
E05	Taroudant	Taroudant	Technical Director	M	57 min	22/04/2025	Arabic/French
E06	Taroudant	Taroudant	Communications Officer	F	50 min	23/04/2025	French
E07	Inezgane	Agadir-Ida Ou Tanane	Manager / Coordinator	M	43 min	25/04/2025	Arabic/Darija
E08	Inezgane	Agadir-Ida Ou Tanane	HR Manager	F	52 min	26/04/2025	French
E09	Aït Melloul	Agadir-Ida Ou Tanane	Executive Director	M	60 min	28/04/2025	French

E10	Biougra	Chtouka Aït Baha	Founding President	M	65 min	02/05/2025	Arabic
E11	Chtouka	Chtouka Aït Baha	Digital Officer	F	47 min	05/05/2025	French
E12	Ouled Teima	Taroudant	Accountant / Administrator	M	53 min	07/05/2025	Arabic/French
E13	Tata	Tata	Chief Executive Officer	F	58 min	10/05/2025	Arabic/French
E14	Guelmim	Guelmim-Oued Noun	Governance Officer	M	50 min	13/05/2025	French
E15	Taroudant	Taroudant	Development Officer	M	46 min	15/05/2025	Arabic/French

Source : Author

The 15 interviews were directed across seven provinces in the Souss-Massa region over a five-week period. The gender breakdown is 9 men (60%) and 6 women (40%). The average interview interval is 52.8 minutes (min. 43 min., max. 65 min.). The languages used in the interviews reveal the local sociolinguistic context: Standard Arabic, Arabic dialect (Darija), French, and bilingual combinations.

2.3 Semi-Structured Interview Guide

2.3.1 Epistemological Framework and Alignment with the Conceptual Model

The interview guide was designed in strict accordance with the simplified conceptual model adopted for this study (Baron & Kenny, 1986)

The guide follows a deductive-inductive thematic logic (Blanchet & Gotman, 2007; Kaufmann, 2011): each theme explores a variable in the model, open-ended questions allow respondents' own meanings to emerge, while follow-up questions guide the exploration toward the targeted theoretical constructs. Six themes structure the guide, corresponding respectively to the three IVs, the MV, and the two DVs.

2.3.2 Maintenance Guide Table by Topic

Table 3: Interview guide and theoretical justifications

Interview Question	Objective	Justification from Prior Research	Target Variable
THEME 1: Cooperative Profile and Level of Technological Integration			
Could you introduce your cooperative (sector, size, founding date) and describe the digital tools you currently use?	Identify the organisational profile and map the level of technological integration.	Rogers (2003) argues that the diffusion of innovation varies according to organisational profile. Bounfour (2016) establishes that the	Technological Integration (IV1)

		degree of digital adoption depends on the size and age of the structure.	
When did you begin your digital transition and what were the main triggering factors behind this decision?	Understand the dynamics and context of digital technology adoption.	Venkatesh et al. (2003) show that triggering factors condition technology appropriation. Frimousse & Peretti (2017) link the digital transformation of SSEs to institutional and competitive pressures.	Technological Integration (IV1)
THEME 2: E-governance and Digital Transparency			
Do you use web portals, platforms, or digital tools to inform your members and stakeholders? Do these mechanisms genuinely foster transparency?	Assess the contribution of e-governance to organisational transparency and accountability.	Bevir (2012) defines e-governance as a lever for radical transparency. Laville (2010) emphasises transparency as a cardinal value of SSEs. Leca et al. (2008) show that digital portals reinforce institutional legitimacy.	E-governance (IV2)
Has digitalisation modified the collective decision-making process, particularly the 'one person, one vote' principle inherent to cooperatives?	Analyse the impact of digitalisation on internal cooperative democracy.	Richez-Battesti & Petrella (2012) show that digitalisation can either reinforce or weaken participatory democracy depending on usage. Defourny & Nyssens (2017) recall the founding character of the democratic principle in cooperatives.	E-governance (IV2) → Democratic Governance (DV1)
THEME 3: Algorithmic Management and Managerial Delegation			
Do you use software or algorithms for supervision, member evaluation, or decision-making? How does this work in practice?	Measure the degree of delegation of managerial tasks to automated tools.	Brynjolfsson & McAfee (2014) show that algorithmic management progressively substitutes human decisions. Moulin & Lacaille (2020) highlight its implications for member autonomy in SSEs.	Algorithmic Management (IV3)
How do members or employees perceive supervision by digital tools? Are there any resistances, adaptations, or particular tensions?	Assess the social acceptability of algorithmic management and its link to organisational capital.	Orlikowski (1992) demonstrates that technology is socially constructed and that its acceptance depends on organisational capital (trust, routines). Algan & Cahuc (2007) link mutual trust to cooperative performance.	Algorithmic Management (IV3) → Organisational Capital (MV)
THEME 4: Organisational Capital as Mediator			
To what extent do mutual trust among members and the collaborative culture of your cooperative influence the	Explore the mediating role of organisational capital between digitalisation and its	Putnam (1993) and Coleman (1988) establish social capital as a key mediator of organisational effectiveness. Nahapiet & Ghoshal	Organisational Capital (MV)

adoption and effectiveness of digital tools?	outcomes on governance and ethics.	(1998) show that collaborative routines amplify the impact of technological innovations.	
Have shared knowledge and collective routines within your cooperative evolved since the introduction of digital tools? In what direction?	Analyse how organisational capital is transformed by digitalisation and how it conditions ethical and governance outcomes.	Zollo & Winter (2002) define routines as mechanisms for capitalising on learning. Battilana & Dorado (2010) show that in SSEs, collaborative routines form the foundation of organisational identity.	Organisational Capital (MV)
THEME 5: Democratic Governance — Transparency and Participation			
Has digitalisation improved the level of transparency towards your members (access to information, online reports, digital minutes)? With what concrete effects?	Measure the impact of digitalisation on radical transparency as a component of democratic governance.	Archon Fung (2013) distinguishes instrumental transparency from radical transparency. Hood (2010) links e-governance to organisational accountability in cooperative structures.	Democratic Governance (DV1)
Has digitalisation led to greater member involvement in strategic decisions? Or, conversely, has it concentrated decision-making power in fewer hands?	Assess the effect of digitalisation on stakeholder participation and the degree of internal democracy.	Hansmann (1996) theorises democratic governance as a competitive advantage for cooperatives. Spear (2004) shows that member participation is the determining factor of long-term cooperative viability.	Democratic Governance (DV1)
THEME 6: Ethical Challenges — Data, Accountability, and Equity			
Have you implemented personal data protection policies for your members and partners? What ethical risks do you identify in your current digital practices?	Explore data ethics practices and algorithmic accountability.	Zuboff (2019) identifies surveillance capitalism as a major digital risk. Moroccan Law 09-08 and the GDPR (2018) impose strict data protection obligations on organisations processing member data.	Ethical Challenges (DV2)
Has the digital transformation created or reinforced access inequalities among your members (internal digital divide)? How does your cooperative address this?	Examine the redistributive effects of digitalisation and equity in access to digital benefits.	Van Dijk (2020) defines the digital divide as a vector of social exclusion. Fraser (2005) and Honneth (2000) link digital equity to social justice, a founding value of SSE organisations.	Ethical Challenges (DV2)

Source : Author

III. Interpretation of Results: Analysis of Thematic Occurrences

3.1 Textual Analysis of the Results

The thematic analysis of the corpus of 15 semi-structured interviews reveals significant conceptual saturation around the axes of the chosen mediation model. A cross-examination of the verbatim transcripts allows for the identification of findings structured according to the four levels of the model (VI, VM, VD1, VD2), consistent with the simplification applied: removal of overall performance as a dependent variable and elimination of all moderator variables.

3.1.1 Independent variables: The three drivers of digitalization

Technological integration (VI1) shows the highest saturation in the dataset: 100% of respondents spontaneously mention the adoption of digital tools as a concrete reality within their cooperative. Communication platforms show 87% of the time, validating that digital technology is largely experienced as a tool for internal coordination before being perceived as a strategic lever. E-governance (VI2) uses very highly compelling narrative centered on transparency 100% of mentions and reporting portals 87%. This result can be justified by the institutional lobby exerted on Moroccan cooperatives by regulatory authorities, who make their support depending on the implementation of digital accountability mechanisms. Member contribution via digital tools (the “one person, one vote” principle), however, is more unevenly distributed (80%), showing that digital democracy rests a work in progress. Algorithmic management (VI3) is the minimum prevalent independent variable in the corpus, with only 67% for automated supervision. This result suggests the hybrid profile of the cooperatives surveyed: larger and more conventional structures (agricultural export sector, service cooperatives) rely more deeply on automated management tools, however small artisanal or rural cooperatives conserve informal and relational modes of governance.

3.1.2 Mediating variable: Organizational capital

Organizational capital serves as a theoretical lens in our conceptual model, and the qualitative data confirm its relevance. Mutual trust between members is mentioned in 87% of the interviews as a condition for the effectiveness of any digital tool. This declaration, representative of many similar quotes, reflects Orlikowski's (1992) theoretical proposition that technology is socially constructed.

Collaborative routines and shared knowledge complete a saturation rate of 73%, acknowledging the complexity reality: while cooperatives identify the importance of these processes, They frequently encounter difficulties in formalizing them amid modern instruments that alter

connections. This result funds the central thesis of our paper: digitalization does not create direct and automatic effects on governance and ethics, but essentially involves the mediation of organizational capital.

3.1.3 Dependent variables: Democratic governance and ethical issues

Democratic governance (VD1) is the most significantly documented theme in the corpus. Transparency toward members has extended 100% saturation; all referees acknowledge that digital technology has enhanced members' access to information. Nevertheless, the data reveal an unresolved tension: while informational transparency is improving, actual participation in strategic decisions stays uneven (87%), and the concentration of decision-making power in the hands of a digitalized elite is described in 73% of the interviews. This result aligns with the critical analysis by Richez-Battesti & Petrella (2012) on the ambivalent effects of digital technology on cooperative democracy.

Ethical issues (VD2) represent the most cross-cutting area of concern. Data protection gets a maximum saturation of 100%, which can be defended by the Moroccan regulatory context and the sensitivity of member data (financial data, health data in mutual insurance companies). The internal digital divide is recognized in 80% of cases, primarily through generational and geographic lenses. The equitable distribution of digital benefits, nevertheless, is attended in only 67% of interviews, an ethical dimension that remains poorly conceptualized by practitioners in the cooperative sector.

3.2 Summary table of occurrences and thematic saturation levels

The table below demonstrates, for each of the 17 dimensions examined across the four variables of the simplified model, whether a dimension was present (✓) or absent (—) in each of the 15 interviews, the total number of occurrences, the relative frequency, and the level of thematic saturation achieved.

Table 4: Thematic saturation matrix by interviewee

Axis / Variable	Analysed Dimension	E01	E02	E03	E04	E05	E06	E07	E08	E09	E10	E11	E12	E13	E14	E15	Occ.	Freq.	Saturation
IV1 — Technological Integration	Digital tool adoption	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	15	100%	Very High
	Communication platforms	✓	✓	✓	✓	✓	—	✓	✓	✓	✓	✓	✓	—	✓	✓	13	87%	High

Axis / Variable	Analysed Dimension	E01	E02	E03	E04	E05	E06	E07	E08	E09	E10	E11	E12	E13	E14	E15	Occ.	Freq.	Saturation
IV2 — E-governance	Radical transparency	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	15	100%	Very High
	Member participation (1p1v)	✓	✓	✓	—	✓	✓	✓	✓	—	✓	✓	✓	✓	—	✓	12	80%	High
	Digital portals & reporting	✓	✓	✓	✓	—	✓	✓	✓	✓	✓	✓	—	✓	✓	✓	13	87%	High
IV3 — Algorithmic Management	Automated supervision	✓	—	✓	—	✓	✓	—	✓	✓	✓	—	✓	✓	✓	—	10	67%	Moderate
	Algorithmic accountability	✓	✓	—	✓	✓	✓	✓	—	✓	✓	✓	—	✓	✓	✓	12	80%	High
MV — Organisational Capital	Mutual trust among members	✓	✓	✓	✓	✓	✓	—	✓	✓	✓	✓	—	✓	✓	✓	13	87%	High
	Collaborative routines	✓	—	✓	✓	✓	—	✓	✓	—	✓	✓	✓	✓	—	✓	11	73%	Moderate–High
	Shared knowledge	—	✓	✓	—	✓	✓	✓	—	✓	✓	✓	✓	—	✓	✓	11	73%	Moderate–High
DV1 — Democratic Governance	Transparency towards members	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	15	100%	Very High
	Participation in decision-making	✓	✓	✓	✓	—	✓	✓	✓	✓	—	✓	✓	✓	✓	✓	13	87%	High
	Concentration of decision-making power	✓	✓	—	✓	✓	—	✓	✓	✓	✓	—	✓	✓	✓	—	11	73%	Moderate–High
DV2 — Ethical Challenges	Data protection	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	15	100%	Very High
	Internal digital divide	✓	✓	—	✓	✓	✓	—	✓	✓	✓	✓	✓	—	✓	✓	12	80%	High
	Distributional equity	—	✓	✓	✓	—	✓	✓	—	✓	✓	—	✓	✓	✓	—	10	67%	Moderate

Axis / Variable	Analysed Dimension	E01	E02	E03	E04	E05	E06	E07	E08	E09	E10	E11	E12	E13	E14	E15	Occ.	Freq.	Saturation
	Actor accountability	✓	✓	✓	—	✓	✓	✓	✓	—	✓	✓	✓	✓	—	✓	12	80%	High

Source : Author

3.3 Cross-cutting overview and key takeaways from the mediation model

A comprehensive analysis of the findings verifies the relevance and internal consistency of the simplified mediation model accepted for this article. Three levels of saturation clearly emerge:

Maximum saturation 100%: adoption of digital tools, radical transparency, transparency toward members, data protection. These four dimensions shape the consensus foundation of this fact below study and demonstrate the areas where scientific is already taking shape.

High saturation 80 - 87%: communication platforms, digital portals and member engagement, algorithmic accountability, mutual trust, participation in decision-making, digital divide. These dimensions reveal frequently shared challenges, though with variability depending on the cooperative's size, sector.

Moderate saturation 67 - 73%: algorithmic oversight, collaborative routines and shared knowledge, concentration of power, distributive equity. These dimensions, which are less saturated, constitute precisely the points of theoretical originality in this paper.

These results empirically confirm the structure of the mediation model, the independent variables do indeed apply their effects on governance and ethics mostly through the filter of organizational capital, and not directly. Digitalization acts as a double-edged sword, enhancing transparency and participation where organizational capital is strong, while exacerbating inequalities and ethical lapses where such capital is absent

IV. Discussion of Results :

This discussion approves an empirical study structured around the six theoretical propositions derived from the conceptual model adopted. For each study, the empirical results are likened with previous work, points of convergence are recognized, nuances are discussed, and the

original contributions of this paper are explicitly stated. This approach meets the rules of interpretive qualitative research as defined by Yin (2018) and Eisenhardt (1989).

4.1 Digitalization as a Catalyst for Transparency:

The primary result of this research is the empirical confirmation of the positive role of digitalization, and exactly of technological integration and e-governance, on organizational transparency. With a saturation of 100% for the radical transparency dimension, the information fully checks Bevir's (2012) theoretical proposition that digital tools constitute a structural lever of accountability in collectively governed organizations.

This result also corroborates Hood's (2010) seminal work on transparency as a component of new public management, as well as the distinction made by Fung (2013) between instrumental transparency the mere provision of information and radical transparency the intelligibility and appropriation of information by stakeholders. Our data show that the majority of the cooperatives surveyed have reached the first level (instrumental transparency: online reports, digital minutes, member portals) but struggle to reach the second level, that of informed deliberation.

4.2 The democratic paradox of the digital age: greater transparency, unequal participation

The most striking and theoretically original finding of this study is what we propose to call the democratic paradox of digital cooperation: digitization simultaneously improves transparency (100%) and formal member participation (80%), while leading to a concentration of decision-making power among digitally competent members (73%). This dual finding had not been documented in previous literature on digital social and solidarity economy (SSE) organizations. This paradox is partially foreshadowed by Richez-Battesti & Petrella (2012), who warn that digitization can “modernize the democratic façade” of cooperatives without transforming their power structures. It also aligns with the critical analysis by Spear (2004), for whom member participation is the determining factor in long-term cooperative viability a participation that, in our corpus, tends to be concentrated among members proficient in digital tools.

4.3 The mediating role of organizational capital: an asymmetric amplifying filter.

The mediating role of organizational capital constitutes the theoretical core of this study. The data confirm that mutual trust among members (87% saturation) and collaborative routines (73%) do indeed act as mediators between digitalization and its effects on governance and ethics. This result empirically validates the central proposition of the chosen mediation model and corroborates the theoretical frameworks of Nahapiet & Ghoshal (1998) and Putnam (1993) on social capital as a mediator of organizational effectiveness. However, a detailed qualitative analysis reveals an asymmetry in mediation that was not anticipated in our initial model: organizational capital strongly amplifies the positive effects of digitalization on transparency and participation, but only partially protects against ethical lapses. In other words, even in cooperatives with high organizational capital, risks related to data protection and digital equity persist.

4.4 Digital Ethics in Cooperatives: Between Regulatory Compliance and Ethics by Design

Data protection is the most widely recognized ethical issue in our corpus (100% saturation). This result confirms the central concern identified by Zuboff (2019) in her analysis of surveillance capitalism and reflects a growing awareness among cooperatives of the risks associated with the collection and processing of their members' data. However, analysis of the verbatim transcripts reveals a significant gap between stated concerns and actual practices: the vast majority of cooperatives surveyed adopt a reactive approach to data protection, based on ex post compliance with regulatory requirements (Moroccan Law 09-08, GDPR for exporting cooperatives), rather than a proactive approach that integrates ethics from the very design of information systems (ethics by design, according to Cavoukian's paradigm, 2009).

4.5 The Internal Digital Divide: An Identity Challenge for Cooperatives

The internal digital divide identified in 80% of the interviews constitutes the ethical issue that most profoundly challenges cooperative identity. Unlike the external digital divide (access to technology for disadvantaged populations), the internal divide within cooperatives creates a direct contradiction with the founding values of these organizations: equality among members, solidarity, and inclusion. This finding corroborates Van Dijk's (2020) theoretical framework on the four levels of the digital divide (motivational, material, skills, and usage access), but shifts it to an intra-cooperative organizational space that had not previously received specific attention in the literature. It also aligns with Fraser's (2005) analysis of the conditions for equal participation as a principle of justice: a cooperative in which certain members cannot access

digital governance tools structurally violates this principle, even if it formally respects equal rights.

4.6 Algorithmic Management: Between Accountability and Loss of Decision-Making Power

Algorithmic management is the independent variable that elicits the most varied reactions in our corpus. Its moderate prevalence (67% for automated supervision) does not reveal a lack of interest, but rather a selective and differentiated adoption depending on the cooperatives' profiles. Highly operational structures (agricultural export cooperatives, logistics service cooperatives) tend to integrate algorithmic monitoring and evaluation tools; artisanal and rural cooperatives maintain informal and relational modes of governance. This finding is consistent with Rogers' (2003) theory of innovation diffusion, which predicts differentiated adoption depending on organizational profile and usage context. It also aligns with Brynjolfsson & McAfee's (2014) analysis of the complementarity between automation and human capital: the cooperatives that derive the most benefit from algorithmic management are those that combine it with collective deliberative practices, not those that substitute it for participatory governance.

4.8 Theoretical and Managerial Implications

4.8.1 Theoretical Implications

This study makes three major contributions to the literature on the digitalization of the social and solidarity economy (SSE). First, it empirically documents the democratic paradox of digital cooperatives the simultaneous improvement in formal transparency and the effective concentration of power a phenomenon not previously documented in the existing literature. Second, it reveals the asymmetry of organizational capital's mediating role: it amplifies positive effects on governance but provides insufficient protection against ethical abuses. Third, it shifts the focus of the digital divide to the intra-organizational cooperative sphere, documenting a risk of identity drift that has received little theoretical attention.

Methodologically, this study contributes to exploratory qualitative research on the SSE in the Souss-Massa region, an empirical field that remains largely unexplored in the international literature on the digital governance of cooperatives.

4.8.2 Implications for Management

For cooperative leaders, the findings of this study point to three priority areas for action. In terms of digital governance, this involves designing participation mechanisms that do not

require proficiency with digital tools, while maintaining hybrid channels for deliberation (in-person and digital). In terms of data ethics, it is necessary to move beyond reactive regulatory compliance to develop an integrated ethical culture from the very design of information systems. In terms of organizational capital, it is important to invest in building trust and collaborative routines as a prerequisite for any new wave of technological integration, rather than as an afterthought.

Conclusion

This exploratory qualitative study, conducted among 15 cooperatives in the Souss-Massa region, highlights the central role of organizational capital as a mediator between the drivers of digitalization technological integration, e-governance, and algorithmic management and their effects on democratic governance and the ethical challenges facing social and solidarity economy organizations. The results approve that digitalization is neither neutral nor mechanically beneficial: its effects rely on the density of the relational and cognitive fabric specific to each cooperative. But, two main limitations constrain the scope of these findings. On the one hand, the study's geographical place, limited to a predominantly agricultural and artisanal region, restricts the pertinence of the results; comparative studies concealing other regions of Morocco or the Maghreb would be indispensable to test their strength. On the other hand, the qualitative and exploratory type of the approach does not admit for statistical testing of the identified mediating relationships: a confirmatory quantitative study, utilizing mediation analysis techniques (Hayes, 2013; Baron & Kenny, 1986), represents the natural and priority extension of this work.

References

- Algan, Y., & Cahuc, P. (2007). *La société de défiance*. Éditions Rue d'Ulm.
- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research. *Journal of Personality and Social Psychology*, 51(6), 1173–1182.
- Battilana, J., & Dorado, S. (2010). Building sustainable hybrid organizations. *Academy of Management Journal*, 53(6), 1419–1440.
- Battilana, J., & Lee, M. (2014). Advancing research on hybrid organizing. *Academy of Management Annals*, 8(1), 397–441.
- Bevir, M. (2012). *Governance: A very short introduction*. Oxford University Press.
- Blanchet, A., & Gotman, A. (2007). *L'enquête et ses méthodes : L'entretien*. Armand Colin.
- Bounfour, A. (2016). *Digital futures, digital transformation*. Springer.

- Brynjolfsson, E., & McAfee, A. (2014). *The second machine age*. W.W. Norton.
- Cavoukian, A. (2009). *Privacy by design: The 7 foundational principles*. Information & Privacy Commissioner of Ontario.
- Coleman, J. S. (1988). Social capital in the creation of human capital. *American Journal of Sociology*, 94, S95–S120.
- Dahl, R. A. (1989). *Democracy and its critics*. Yale University Press.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340.
- Defourny, J., & Nyssens, M. (2017). Fundamentals for an international typology of social enterprise models. *Voluntas*, 28(6), 2469–2497.
- Diakopoulos, N. (2016). Accountability in algorithmic decision making. *Communications of the ACM*, 59(2), 56–62.
- DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited. *American Sociological Review*, 48(2), 147–160.
- Eisenhardt, K. M. (1989). Building theories from case study research. *Academy of Management Review*, 14(4), 532–550.
- Floridi, L. (2014). *The fourth revolution: How the infosphere is reshaping human reality*. Oxford University Press.
- Fraser, N. (2005). Reframing justice in a globalizing world. *New Left Review*, 36, 69–88.
- Frimousse, S., & Peretti, J. M. (2017). La transformation digitale des organisations de l'ESS. *Question(s) de management*, 18(3).
- Fung, A. (2013). Infotopia: Unleashing the democratic power of transparency. *Politics & Society*, 41(2), 183–212.
- Gavard-Perret, M. L., Gotteland, D., Haon, C., & Jolibert, A. (2012). *Méthodologie de la recherche en sciences de gestion*. Pearson.
- Giddens, A. (1984). *The constitution of society*. Polity Press.

- Hansmann, H. (1996). *The ownership of enterprise*. Harvard University Press.
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis*. Guilford Press.
- Honneth, A. (2000). *La lutte pour la reconnaissance*. Cerf.
- Hood, C. (2010). Transparency in historical perspective. In C. Hood & D. Heald (Eds.), *Transparency: The key to better governance?* Oxford University Press.
- Kaufmann, J. C. (2011). *L'entretien compréhensif*. Armand Colin.
- Laville, J. L. (2010). *Politique de l'association*. Seuil.
- Meyer, J. W., & Rowan, B. (1977). Institutionalized organizations: Formal structure as myth and ceremony. *American Journal of Sociology*, 83(2), 340–363.
- Miles, M. B., & Huberman, A. M. (2003). *Analyse des données qualitatives*. De Boeck.
- Nahapiet, J., & Ghoshal, S. (1998). Social capital, intellectual capital, and the organizational advantage. *Academy of Management Review*, 23(2), 242–266.
- O'Neill, O. (2002). *A question of trust*. Cambridge University Press.
- Orlikowski, W. J. (1992). The duality of technology. *Organization Science*, 3(3), 398–427.
- Putnam, R. D. (1993). *Making democracy work*. Princeton University Press.
- Richez-Battesti, N., & Petrella, F. (2012). L'économie sociale et solidaire et ses dynamiques d'innovation. *RECMA*, 325, 18–35.
- Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). Free Press.
- Scott, W. R. (2001). *Institutions and organizations*. Sage.
- Sen, A. (1999). *Development as freedom*. Oxford University Press.
- Spear, R. (2004). Governance in democratic member-based organisations. *Annals of Public and Cooperative Economics*, 75(1), 33–60.
- Van Dijk, J. (2020). *The digital divide*. Polity Press.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425–478.

Yin, R. K. (2018). *Case study research and applications* (6th ed.). Sage.

Zollo, M., & Winter, S. G. (2002). Deliberate learning and the evolution of dynamic capabilities. *Organization Science*, 13(3), 339–351.

Zuboff, S. (2019). *The age of surveillance capitalism*. Public Affairs.