MUNICIPALITY DIGITALISATION AND LOCAL ENGAGEMENT: THE CASE OF CHILE

Digitalisation, local governments and civic engagement

The modernisation of local governments remains a key challenge for both emerging and established democracies, with digital transformation playing a central role. Digitalisation is often considered a mechanism to enhance transparency, improve service efficiency, and increase accessibility, thereby fostering higher levels of civic engagement (Gasco Hernandez, 2024). By enabling broader participation and facilitating interaction between citizens and local administrations, digitalisation has the potential to reduce spatial inequalities and promote inclusion.

Over the last decade, scholars have increasingly highlighted the existence of left-behind areas, where residents experience economic decline, spatial inequality, and political or cultural marginalisation (Dijkstra et al., 2020; McCann, 2020; Rodríguez-Pose, 2018; Rodríguez-Pose et al., 2023, 2024; Cramer, 2012; Fierro et al., 2025). This phenomenon extends beyond individual grievances, influencing broader contextual factors that may contribute to the rise of populism, anti-elitism, and nationalism in both consolidated and emerging democracies (Essletzbichler & Forcher, 2022; Faggian et al., 2021; Ziblatt et al., 2023). A critical question, therefore, is how marginalised territories—and their inhabitants—can be effectively included in political processes.

Addressing this question requires analysing the role of digital platforms and technology in fostering engagement and inclusion. Scholars increasingly recognise that the study of governments and local administrations cannot be separated from their digital dimension (Gasco Hernandez, 2024). However, the impact of digital tools is not uniform, as they can also exacerbate existing inequalities by reinforcing offline patterns

of exclusion, thus acting as “weapons for the strong” (Boulianne et al., 2023; Norris, 2001; Schlozman et al., 2010). Yet, this reinforcement effect may not apply uniformly, particularly in highly centralised or spatially concentrated contexts, where digital platforms may provide opportunities for political inclusion among marginalised communities.

At the attitudinal level, an important concept for examining this phenomenon is political efficacy, a classical idea developed by Campbell et al. (1954) that refers to an individual’s belief in their ability to influence political processes. Scholars have adapted this concept to the online sphere (Sasaki, 2016, 2017), demonstrating that in centralised political systems, residents of peripheral areas may perceive the Internet as a tool for political empowerment, enhancing their sense of influence and agency (Fierro et al., 2023).

At the behavioural level, research has examined how digitalisation influences local engagement. The increasing necessity—or inevitability—of digitalising local governments has led scholars to explore how the Internet contributes to the civic development of local communities. In Spain, Haro-de-Rosario et al. (2016) found that online transparency, interactivity, and local governments’ activity on social media are key drivers of citizen engagement. Similarly, in Greece, Lappas et al. (2022) emphasised the importance of dialogic approaches and the integration of offline activities into social media platforms in fostering online engagement.

Research Objectives

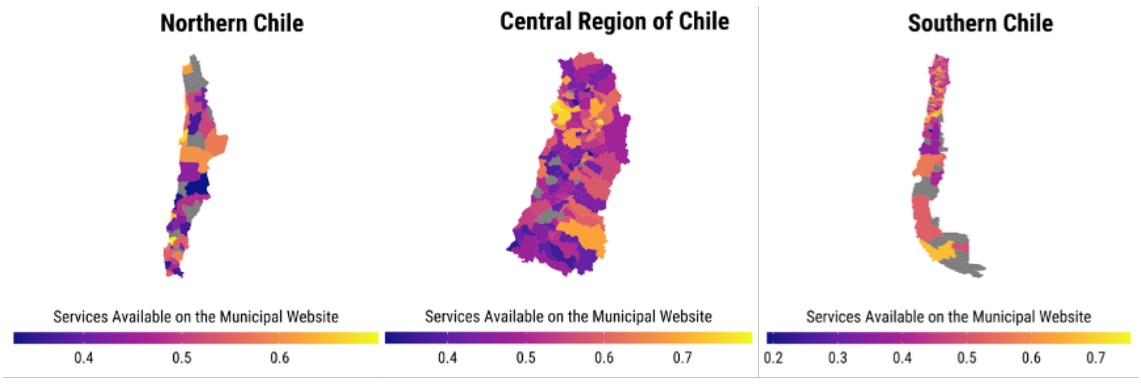
To better understand digitalisation and its political consequences in the Global South, this paper has a dual objective. First, it seeks to identify the factors that influence the

digitalisation of local governments. Second, it examines how digitalisation relates to political engagement at the individual level, considering both attitudinal and behavioural dimensions.

Data and Methods

To test the hypotheses and address the research questions, this study employs a sequential research design incorporating two phases of data collection. The first phase examines the contextual factors influencing digital performance across municipalities using municipal-level data. The analysis relies on the Digital Municipality Index (see Figure 1), developed by the Millennium Nucleus of Inequalities and Digital Opportunities (NUDOS), which evaluates the availability of online information and services provided by municipalities. This data is complemented with official records from the National System of Municipal Information (SINIM), provided by the Chilean Government.

Figure 1 Map of Digital Municipality Index



Own elaboration with data publicly available at https://indice.nudos.cl/

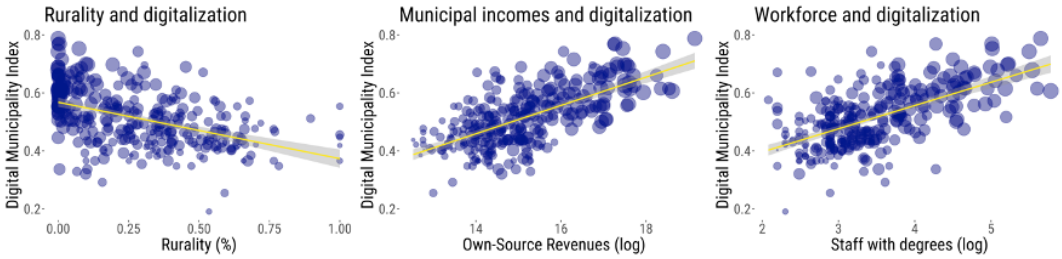
The second phase explores the relationship between local government digital performance and citizen engagement at the individual level. This analysis uses survey

data from Fundación P!ensa, covering 9,924 face-to-face interviews conducted in the Valparaíso region between 2018 and 2023.

Findings

At the national level, the analysis of the Digital Municipality Index reveals a relationship between municipal digitalisation and key contextual factors, including population size, rurality, municipal income, and workforce professionalisation. Descriptive results suggest that more urban, densely populated municipalities with a more qualified workforce tend to have higher digitalisation scores (see Figure 2).

Figure 2. Dispersion diagram of the Digital Municipality Index, considering population, rurality, municipal income and qualified municipal workforce.



Source: Own elaboration with data from SINIM and the Digital Municipality Index publicly available in https://indice.nudos.cl/

However, inferential analysis provides a more nuanced perspective. While municipal income appears to be the strongest predictor of digitalisation, rurality and workforce qualifications do not show significant effects. Population size, though close to significance, also plays a role (see Table 1). The analysis further highlights regional differences in a highly centralised country. In southern Chile, population size and municipal income emerge as the primary drivers of digitalisation, whereas in central Chile, workforce qualifications and municipal income exert greater influence (see Figure

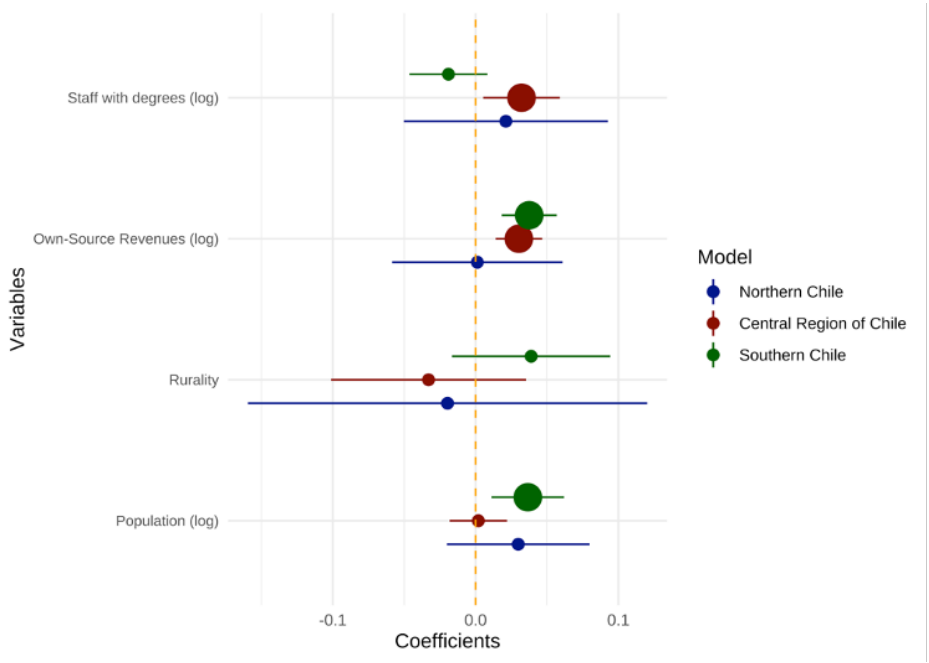
3). These regional variations underscore the need to consider how local contexts shape digitalisation processes.

Table 1 OLS for Digital Municipality Index at the municipal level

	Coef.
Population (log)	0.016†
	(0.009)
Rural Population (%)	0.003
	(0.025)
Municipal Income (log)	0.03***
	(0.007)
Qualified Municipal Workforce (log)	0.015
	(0.011)

Note: Std. err. In (). p-value < ,1 †; p-value < 0,05 *; p-value < 0,005 **; p-value < 0,001 ***.

Figure 3. OLS for Digital Municipality Index at the municipal level (central, southern and northern Chile)



Note: In the figure are presented the coefficients with the confidence interval at the 90%. The big circle indicates a significance with a p-value < 0.1.

At the individual level, the study examines whether municipal digitalisation influences online political engagement, focusing on attitudinal and behavioural dimensions. The findings present a complex picture. Living in a digitalised municipality has a significant impact on online political efficacy, at least in one measure, which is defined as the belief that the Internet empowers citizens politically. However, living in a wealthy municipality shows a negative and significant relationship with these attitudes in at least three measures. In other words, individuals in marginalised areas with poorer municipalities are more likely to perceive the Internet as a tool for political empowerment (see Table 2).

Table 2 OLS for Online Political Efficacy at the Individual Level

	OPE (Factor)	**ope1**	**ope2**	**ope3**	**ope4**
Contextual dimension					
Living in a digitalised municipality	0.183698	0.3681049*	0.1972689	0.250258	-0.0119673
	(0.1213143)	(0.1723867)	(0.1768510)	(0.171315)	(0.1661097)
Living in a Wealthy Municipality	-0.0279262*	-0.0227264	-0.0317399†	-0.046720**	-0.0401690*
	(0.0124830)	(0.0177382)	(0.0181976)	(0.017628)	(0.0170923)
Attitudes					
Political Interest	0.3904228***	0.4221601***	0.5013642***	0.515928***	0.3692303***
	(0.014)	(0.0275152)	(0.0282278)	(0.027344)	(0.0265133)
Sociodemographic					
Sex	-0.1221419***	-0.1458109***	-0.1555127***	-0.160642***	-0.0968882***
	(0.0178191)	(0.0253208)	(0.0259766)	(0.025163)	(0.0243989)
Age	-0.0053530***	-0.0043021***	-0.0067916***	-0.014181***	-0.0003038
	(0.0005332)	(0.0007577)	(0.0007773)	(0.000753)*	(0.0007301)
Socioeconomic Status	0.033739**	0.0436365**	0.0344686*	0.042987	0.046279**
	(0.0119056)	(0.0169178)	(0.0173559)	(0.016813)	(0.0163018)
Education	0.018304***	0.0223831**	0.0209949**	0.037164***	0.0062745
	(0.0054467)	(0.0077398)	(0.0079402)	(0.007692)	(0.0074580)
Year Fixed Effect	YES	YES	YES	YES	YES

Note: Std. Err. In (). p-value < ,1 †; p-value < 0,05 *; p-value < 0,005 **; p-value < 0,001 ***.

Table 3. Logit-Probit regression for Municipality Webpage use at the Individual Level

	know_web	use(factor)	use_adm	use_info	use_transp	use_other
Contextual dimension						
Living in a digitalised municipality	2.107829***	0.2217469***	2.159166***	1.91149***	0.99775*	3.324581***
	(0.339595)	(0.0352143)	(0.381490)	(0.354132)	(0.46824)	(0.495082)
Living in a Wealthy Municipality	-0.253695***	-0.0278394***	-0.211273***	-0.236131***	-0.21803***	-0.394456***
	(0.034820)	(0.0036240)	(0.038892)	(0.036385)	(0.04899)	(0.051216)
Attitudes						
Political Interest	0.730417***	0.0857302***	0.640133***	0.82804***	0.96316***	0.864697***
	(0.057367)	(0.0057487)	(0.064984)	(0.061062)	(0.08521)	(0.086263)
Online Political Efficacy	0.085168**	0.0121413***	0.035195	0.10942***	0.13298**	0.090065*
	(0.029654)	(0.0030985)	(0.032909)	(0.030800)	(0.04086)	(0.041931)
Sociodemographic						
Sex	0.176164***	0.0178051***	-0.066125	0.240881***	0.15498*	0.143215*
	(0.049505)	(0.0051856)	(0.054179)	(0.051482)	(0.06848)	(0.069221)
Age	-0.020295***	-0.0018173***	-0.013808***	-0.018900***	-0.01990***	-0.017069***
	(0.001499)	(0.0001556)	(0.001681)	(0.001575)	(0.00216)	(0.002179)
Socioeconomic Status	0.065282*	0.0018937	0.057807	0.017189	-0.04779	-0.003923
	(0.032318)	(0.0034570)	(0.035205)	(0.033125)	(0.04304)	(0.043532)
Education	0.277412***	0.0268919***	0.246204***	0.254644***	0.15674***	0.213807***
	(0.015226)	(0.0015819)	(0.016983)	(0.015807)	(0.02086)	(0.021461)
Year Fixed Effect	YES	YES	YES	YES	YES	YES

Note: Std. err. In (). p-value < ,1 †; p-value < 0,05 *; p-value < 0,005 **; p-value < 0,001 ***. For use(factor), it was estimated as an OLS regression.

The analysis of behavioural engagement yields more consistent results. Living in a digitalised municipality is positively associated with awareness and use of municipal websites (see Table 3). In contrast, living in a wealthy municipality shows an opposite relationship, suggesting that efforts toward digitalisation, rather than municipal budget size, play a more critical role in fostering local engagement.

Although all models were estimated with year-fixed effects, an additional pandemic variable was introduced to examine its potential impact on these relationships. The findings indicate that the pandemic significantly influenced both attitudinal and behavioural engagement. From 2021 onwards, individuals reported

higher levels of online political efficacy and increased use of municipal websites (see Table 4).

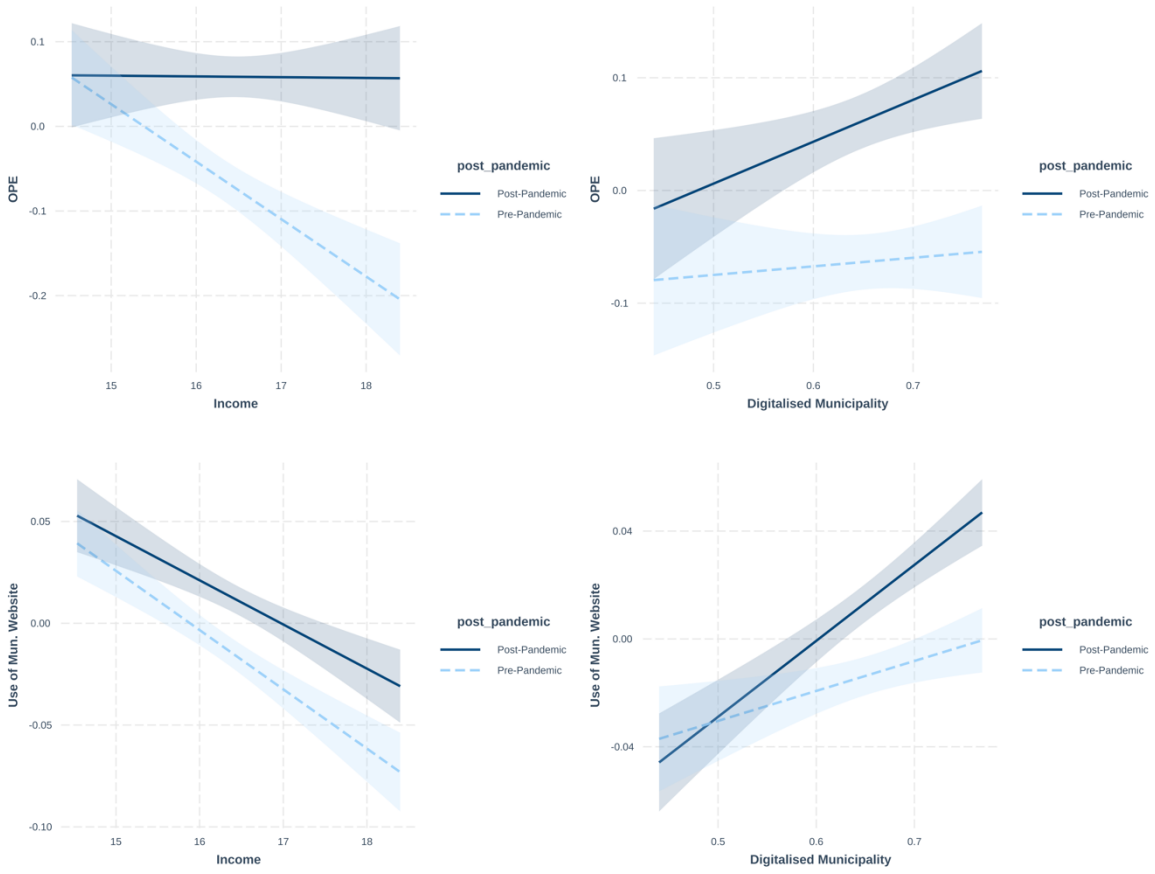
Table 4 OLS for Online Political Efficacy and Municipality Webpage use with interactions

	OPE			USE		
	Pre-Post	Inter. 1	Inter. 2	Pre-Post	Inter. 1	Inter. 2
Contextual dimension						
Living in a digitalised municipality	0.2304143†	0.2292225†	0.0762032	0.200175***	0.20009***	0.1111118**
	(0.1206761)	(0.1205729)	(0.1476112)	(0.035086)	(0.035083)	(0.0428849)
Living in a Wealthy Municipality	-0.0351266**	-0.0678727***	-0.0344183**	-0.025465***	-0.029097***	-0.0250638***
	(0.0123432)	(0.0147885)	(0.0123477)	(0.003590)	(0.004307)	(0.0035889)
Attitudes						
Political Interest	0.404187***	0.4058642***	0.4045632***	0.082989***	0.083257***	0.0832944***
	(0.0192557)	(0.0192437)	(0.0192543)	(0.005736)	(0.005738)	(0.0057327)
Online Political Efficacy				0.011849***	0.011647***	0.0116326***
				(0.003103)	(0.003105)	(0.0031010)
Sociodemographic						
Sex	-0.1205735***	-0.1200441***	-0.1208453***	0.01676**	0.016794**	0.0165765**
	(0.0178380)	(0.0178231)	(0.0178363)	(0.005199)	(0.005198)	(0.0051954)
Age	-0.0053217***	-0.0053302***	-0.0053251***	-0.001754***	-0.001756***	-0.0017574***
	(0.0005336)	(0.0005331)	(0.0005335)	(0.000156)	(0.000156)	(0.0001559)
Socioeconomic Status	0.033874**	0.0341294**	0.0337035**	0.00321	0.003245	0.0031184
	(0.0119170)	(0.0119070)	(0.0119158)	(0.003466)	(0.003465)	(0.0034634)
Education	0.0187347***	0.0186375***	0.0187279***	0.026914***	0.026907***	0.0269142***
	(0.0054572)	(0.0054526)	(0.0054565)	(0.001587)	(0.001587)	(0.0015863)
Pandemic						
Post Pandemic (=1)	0.1254509***	-0.9708419***	-0.0666476	0.027145***	-0.094152	-0.0838341**
	(0.0176213)	(0.2737936)	(0.1073761)	(0.005137)	(0.079706)	(0.0311957)
Interaction						
Post Pandemic * Wealthy Mun.		0.0669685***			0.007411	
		(0.0166904)			(0.004860)	
Post Pandemic * Digitalised Mun.			0.2953475†			0.1706703***
			(0.1628510)			(0.0473206)

Note: Std. err. In (). p-value < ,1 †; p-value < 0,05 *; p-value < 0,005 **; p-value < 0,001 ***. For use(factor), it was estimated as an OLS regression.

To further examine these relationships, interaction terms between the pandemic and contextual dimensions—specifically, living in a wealthy municipality and living in a digitalised municipality—were included in the models. The results suggest that the impact of the pandemic introduces greater complexity into these relationships (see Figure 4). The negative relationship between municipal income and online political efficacy was stronger in the pre-pandemic period. Conversely, the positive relationship between living in a digitalised municipality and municipal website use became more pronounced in the post-pandemic period.

Figure 4 OPE, Municipal Website Use, and the interaction between pandemic and contextual dimensions.



Source: Own Elaboration based on models from Table 4.

Conclusion

These findings confirm that digitalisation plays a crucial role in shaping local political engagement, but its impact varies depending on the context. While digitalisation fosters engagement in some cases, its benefits are not evenly distributed, and its potential to reduce political inequalities depends on broader structural conditions. The study also highlights the pandemic's role in accelerating digital engagement, reinforcing the importance of considering digitalisation within a dynamic framework of political and social change. Understanding these mechanisms is particularly relevant for the Global South, where digitalisation efforts continue to evolve, and their political consequences remain underexplored.

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