Citizens' social media adoption in Paraguay

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This article aims to identify factors associated with the use of social media by Paraguayan citizens in their relationship with the government. We gathered data using a vignette survey, which recorded the responses to four public service problems and collected scores on perceived effectiveness, capability, social influence, trust in government, trust in social media infrastructure, and social media anxiety. Multivariate analysis was used to test the hypotheses. Perceived effectiveness, social influence, and trust in social media infrastructures were found to be significantly correlated with citizens' use of such media to report public service issues. On the other hand, capability, trust in government, and social media anxiety were not found to be associated with citizens' social media use. The results urge further theorization to disentangle how perceived effectiveness, social influence, and trust in social media infrastructures affect digital citizen engagement and participation and under what conditions proprietary social media platforms such as Facebook and Twitter contribute to a vibrant democracy.
Keywords: social media; e-government; digital democracy; flawed democracy; adoption; diffusion; innovation.

Adoção de redes sociais por cidadãos no Paraguai

Este artigo tem como objetivo identificar os fatores associados ao uso das redes sociais pelos cidadãos paraguaios nas relações cidadão-governo. A coleta dos dados foi feita usando uma pesquisa com vinhetas na qual as respostas a quatro problemas com serviços públicos foram registrados. Também foram coletadas pontuações sobre a percepção de eficácia, capacidade, influência social, confiança no governo, confiança na infraestrutura das redes sociais e ansiedade em relação às redes sociais. Uma análise multivariada foi usada para testar as hipóteses. A percepção de eficácia, a influência social e a confiança nas infraestruturas das redes sociais estão significativamente correlacionadas com o uso que os cidadãos fazem das redes sociais para relatar problemas nos serviços públicos. Por outro lado, a capacidade, a confiança no governo e a ansiedade em relação às redes sociais não foram associadas ao uso das redes sociais pelos cidadãos. Os resultados nos incentivam a formular mais teorias e desvendar como a percepção de eficácia, a influência social e a confiança nas infraestruturas das redes sociais afetam o envolvimento e a participação digital do cidadão, e em que condições as plataformas proprietárias de redes sociais, como o Facebook e o Twitter, contribuem para uma democracia vibrante.
Palavras-chave: redes sociais; governo eletrônico; democracia digital; democracia imperfeita; adoção; difusão; inovação.

Adopción de redes sociales por parte de los ciudadanos en Paraguay

Este artículo tiene como objetivo identificar qué factores están asociados con el uso de las redes sociales por parte de los ciudadanos paraguayos en las relaciones ciudadano-gobierno. Recopilamos datos mediante una encuesta basada en técnica de viñeta en la que se registraron las respuestas a cuatro problemas de servicio público, además de puntuaciones sobre la eficacia percibida, la capacidad, la influencia social, la confianza en el Gobierno, la confianza en la infraestructura de las redes sociales y la ansiedad con relación a las redes sociales. Se utilizó un análisis multivariado para probar las hipótesis. Se encontró que hay una correlación entre la efectividad percibida, la influencia social y la confianza en las infraestructuras de las redes sociales con el uso de las redes sociales por parte de los ciudadanos para informar sobre problemas de servicio público. Por otro lado, no se encontró que la capacidad, la confianza en el Gobierno y la ansiedad con relación a las redes sociales estuvieran asociadas con el uso de las redes sociales por parte de los ciudadanos. Los resultados nos instan a teorizar y desentrañar aún más cómo la efectividad percibida, la influencia social y la confianza en las infraestructuras propietarias de las redes sociales afectan el compromiso y la participación digital de los ciudadanos, y bajo qué condiciones las plataformas propietarias de las redes sociales propietarias -como Facebook y Twitter- contribuyen a una democracia vibrante.
Palabras clave: redes sociales; gobierno electrónico; democracia digital; democracia imperfecta; adopción; difusión; innovación.

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1. INTRODUCTION

Throughout the world, social media have been embraced by governments as an institutional and technological innovation, with the purpose of fostering an open dialogue between government and citizens (Bertot, Jaeger & Grimes, 2010; Mergel, 2013; Thomas & Streib, 2005). In general, proprietary social media platforms such as Twitter and Facebook allow (1) government agencies to disseminate information in a more dynamic way than by posting messages on government websites, (2) policymakers and citizens to engage in co-production of solutions to societal problems and (3) citizens to express concerns about issues or poor quality of public services they may face, thus playing a more active role in public affairs (Feeney & Porumbescu, 2020).

The perennial question in the empirical study of innovations, including but not limited to social media, is how to explain adoption and diffusion of artefacts (Criado, Sandoval-Almazan & Gil-Garcia, 2013). In studies of European local governments' adoption and diffusion of social media, researchers have linked governments' presence and application of dialogic principles on social media platforms with demographic, socio-economic and political explanatory factors (Agostino, 2013; Bonsón, Perea & Bednárová, 2019; Bonsón, Torres, Royo & Flores, 2012; Faber, Budding & Gradus, 2020; Hofmann, Beverungen, Räckers & Becker, 2013; Silva, Tavares Silva & Lameiras, 2019). An observation that is echoed throughout studies of government's social media use is that the exchange of informationis rather unidirectional (Alam & Lucas, 2011; Balaban, Abrudan, Iancu & Irimies, 2016), with citizens' input lagging behind (Bonsón et al., 2019).

Until date, with few exceptions (Homburg, Moody, Yang & Bekkers, 2020; Lu, Zhang & Fan, 2016) which we will discuss in section two, the literature has yet to identify factors that explain citizens' behavioral intention to use social media in conversations with governments (Gintova, 2019). Furthermore, studies of governments' presence and activities on social media platforms have focused on contexts with relatively high scores on democracy indices (Abu-Shanab, 2015; Högström, 2013), with studies in flawed democratic settings being less prevalent (for exceptions, refer to Triantafillidou, Lappas, Yannas & Kleftodimos, 2016; Yang, Homburg, Moody & Bekkers, 2018).

This article addresses these gaps in the literature and focuses on social media use in citizen-government relations in Paraguay, a country that has faced persistent authoritarian continuities from the Stroessner regime (1954-1989) onwards, including compromised effectiveness of government institutions (Fournier & Burges, 2000; Tartakoff, 2019). The following research question is addressed: which factors explain citizens' use of social media in citizen-government relations in Paraguay? We have adopted a deductive, quantitative approach, with which we formulate and test hypotheses with original survey data gathered in Paraguay.

The contribution of this article is that it aims to enlarge our understanding of citizens' online participatory practices in a regime that features characteristics of an 'illiberal democracy' (Fournier & Burges, 2000). The distinguishing feature of this article is that we blend theories often used in the e-government literatures, such as the Technology Acceptance Model and the Unified Theory of Acceptance and Use of Technologies (Araujo, Reinhard & Cunha, 2018), with lines of reasoning

that originate in political theory and institutionalism (such as anxiety, trust in government and trust in social media infrastructures) in order to better understand the adoption and diffusion of social media in citizen-government relations.

The structure of this article is as follows. First, we describe relevant aspects of the political system in Paraguay (section two). Then, we develop hypotheses regarding Paraguayan citizens' adoption of social media in citizen-government relations (section three), followed by analysis of survey data and testing of hypotheses in section four. Conclusions and reflections on the findings are presented in section five.

2. CITIZENS' ADOPTION AND DIFFUSION OF SOCIAL MEDIA IN PARAGUAY

2.1 Context: Paraguay's flawed democracy

As studies have demonstrated the relevance of demographic, socio-economic and political variables in the adoption of social media, we briefly take stock of the institutional reforms that Paraguay has witnessed in the most recent decades.

Paraguay stands out for its high degree and long history of administrative centralization since its independence in 1811, with recent territorial transformations signaling a slightly more important role for local governments (Sili, 2019). Paraguay's 20th century history is marked by the critical juncture of the breakdown of the Stroessner regime in February 1989, by means of which a long-standing right-wing dictatorship ended. The country has long been characterized by a strong two-party system, with the right-wing conservative Asociación Nacional Republicana (ANR, colloquially called the Colorado party) almost uninterruptedly having been in power since 1947, and the liberal Partido Liberal Radical Auténtico (PLRA) having formed the opposition. Paraguayan voters' identification with their party of choice is quite strong, often across many family generations (Cañete-Straub, Miquel-Florensa, Straub & Van der Straeten, 2020).

Paraguay has, for over a century, been one of the most open economies in the region, with a relatively small yet highly politicized, informal and inefficient government apparatus, largely due to rent-seeking activities by government officials and institutional corruption through which elites and public employees were bound to the political regime (Nickson & Lambert, 2002). Although the 1992 National Constitution provided an institutional basis for electoral democracy (Fournier & Burges, 2000; Setrini & Duarte-Recalde, 2019) with a time-limited presidential term of office (Tartakoff, 2019), authoritarian continuities have (1) sustained citizens' articulation of preferences and requests through clientelist practices rather than through political parties' official channels (Setrini & Duarte-Recalde, 2019), (2) limited competition between various political parties and fueled party factionalism (Fournier & Burges, 2000) and (3) preserved *stronista* and military establishment's prerogatives and hegemony (Fournier & Burges, 2000)

In the 1980s and 1990s, an external coalition of International Monetary Fund (IMF) World Bank, Inter-American Development Bank, United States Agency for International Development (USAID) and European Union (EU) pushed for New Public Management reforms, including privatization of state companies, civil service reform, and decentralization. According to Nickson and Lambert, these reforms were resisted by politicians from the then-ruling Colorado Party, as well as by private sector lobbies, as both amassed their wealth through, and not in opposition to, the state (Nickson & Lambert, 2002).

In the 2020 The Economist Intelligence Unit's Democracy Index (Abu-Shanab, 2015; Högström, 2013), Paraguay scores a 67th place (and is classified as a 'flawed democracy') with electoral process scoring above, and political culture below the country's mean democracy score. In the 2020 Transparency International Corruption Perception Index, Paraguay scores a 137th place (Transparency International, 2021).

On the basis of the abovementioned developments, it is possible to describe Paraguay as a country with weak institutions, with its citizens displaying low degrees of public involvement and volatile trust in political institutions. This is the context for our explanatory study of Paraguayan citizens' adoption of social media in citizen-state relations, of which the hypotheses are developed in the subsequent subsections.

2.2 Social media as a technological and institutional innovation

Social media bear with them a promise of a more inclusive, online civic engagement (Feeney & Porumbescu, 2020), both for 'thinner' (i.e., more ad-hoc and individual) and 'thicker' (i.e., the more deliberative and group-based) forms of participation (Leighninger, 2014). An example of the former is crowdsourcing citizens' reports of infrastructure failures (Sjoberg, Mellon & Peixoto, 2017); the latter is exemplified by online citizen sourcing of ideas for a new constitution in Iceland (McNutt, 2014). In the context of Paraguay, social media can be interpreted as an additional channel for participation that potentially serves as an alternative to the semi-official clientelist chain of command that has traditionally been available for Paraguayan citizens wishing to report complaints, to state preferences, or otherwise to participate in public decision-making processes.

In this study we limit ourselves to thinner forms of citizens' participation, in particular to citizens' reporting of poor public service quality. This choice was motivated by the overall deductive research design, which necessitates unambiguity with respect to contents of interaction between citizens and government.

In order to develop hypotheses regarding Paraguayan citizens' adoption of social media in citizen-state relations in a flawed democratic regime, we draw on two bodies of knowledge:

1. The more generic study of adoption and diffusion of web-based services in relations between citizens and governments (Azam, Qiang & Abdullah, 2013; Carter & Bélanger, 2005; Horst, Kuttschreuter & Gutteling, 2007; Kurfalı, Arifoğlu, Tokdemir & Paçin, 2017; Rana, Dwivedi, Williams & Weerakkody, 2016; Venkatesh, Thong & Xu, 2016), with special attention to e-government studies in an Ibero-American context (Araujo et al., 2018; Cunha, Coelho & Przeybilovicz, 2017); and
2. Studies of adoption and diffusion of social media by individual users generally (Al-Debei, Al-Lozi & Papazafeiropoulou, 2013; Khan, 2017; Lai & Shi, 2015; Malinen, 2015).

2.3 Performance expectancy

According to many authors working from a Technology Acceptance Model or Unified Theory of Adoption and Utilization of Technology-frame of reference (Araujo et al., 2018; Venkatesh et al., 2016), a first and presumedly most influential variable to explain adoption of innovations (Venkatesh, Morris, G. Davis & F. Davis, 2003) is perceived effectiveness, defined as the degree to

which an individual expects that posting a message on social media will help solving a problem with which that individual is confronted. The line of reasoning indicates that citizens will only spend precious time and energy on online activities if they think these activities will yield personal benefits and value (Al-Debei et al., 2013). In e-government studies, a positive association between (1) perceived effectiveness of e-government, and (2) use was observed (Carter, Schaupp Hobbs & Campbell, 2011; Kurfalı et al., 2017; Rana et al., 2016). In a more generic study of why Facebook users generally keep coming back to the platform, Al-Debei et al. (2013) found that users' perceived value of social media platforms is an important determinant of users' decision to continue using the platform (Al-Debei et al., 2013).

These elements of the line of reasoning lead to the formulation of H1.

H1	The more effective a citizen perceives social media to be, the higher the likelihood a citizen uses social media to address concerns or issues in citizen-state relations.

2.4 Capability

Araujo et al. (2018; Cunha et al., 2017) suggest to use Sen's capability approach to offset some of the limitations of an overly rationalistic, logic of consequence-based line of reasoning, exemplified by emphasizing perceived effectiveness as the dominant factor in explaining adoption. Following a capability approach, appropriation of social media for participation requires citizens to self-assess their social media capabilities in order to decide whether and how to use social media to achieve their effective use. In adoption studies, elements of the capability approach have been used by hypothesizing that a technology's ease of use is related to adoption (Carter et al., 2011; Carter & Bélanger, 2005; Rana et al., 2016), as well as individual users' skills and knowledge relating to the technology's appropriation (Carter et al., 2011; Rana et al., 2016). In this study, social media capability is defined as the degree to which a citizen believes that she or he possesses the required skills and knowledge to use social media to initiate a conversation with relevant government agencies or authorities. In e-government adoption and diffusion studies, capability was found to be significantly correlated with citizens' intentions to use e-government services (Carter et al., 2011; Rana et al., 2016), whereas no support was observed in Kurfali et al. (2017). This leads to the formulation of H2.

H2	The more advanced a citizen's social media capability, the higher the likelihood a citizen uses social media to address concerns or issues in citizen-state relations.

2.5 Social influence

Social influence, defined as norms held by one's nearest and dearest, is also expected to affect citizens' decisions to adopt technologies (Carter & Bélanger, 2005; Homburg et al., 2020; Qin, Strömberg & Wu, 2017; Venkatesh et al., 2003). The relevance of social influence for the adoption of technology in citizen-state relations is confirmed in various e-government adoption studies (Carter & Bélanger, 2005; Horst et al., 2007; Kurfalı et al., 2017; Rana et al., 2016). This leads to the formulation of H3.

H3	The more a citizen perceives social influence, the higher the likelihood a citizen uses social media to address concerns or issues in citizen-state relations.

2.6 Trust

According to Meijer, Koops, Pieterson, Overman and ten Tije (2012), mutual trust is an essential ingredient for every sound citizen-government relation, and conducive to cooperative information relations between citizens and governments. In this study, we define trust as an individual (A)'s belief that exists only in reference to other individuals or institutions (B) (Homburg et al., 2020). We define trust as A's expectation that B will refrain from exploiting A's vulnerabilities while B has the power to actually do so (Pavlou & Gefen, 2005). Trust is conducive to adoption of electronic services by citizens (Carter et al., 2011; Carter & Bélanger, 2005; Horst et al., 2007; Kurfalı et al., 2017; Venkatesh, Thong, Chan, Hu & Brown, 2011). Homburg et al. (2020) found that in Chinese citizen-state relations, citizens' trust in individual officials was positively associated with the adoption of Weibo (which underlines the importance of densely knit personal *quanxi* relationships in China), whereas citizens' trust in government institutions was not significantly associated with adoption (Homburg et al., 2020).

A closer inspection of existing studies reveals that there are at least two above-individual connotations of trust: trust in government as an institution that provides public services and creates public value (Carter et al., 2011; Carter & Bélanger, 2005; McKnight, Choudhury & Kacmar, 2002; Welch, Hinnant & Moon, 2005), and trust in the conglomerates of Internet Service Providers, social media businesses and regulatory agencies that govern privacy and safety of online communication and transactions (Kurfalı et al., 2017; Rana et al., 2016; Venkatesh et al., 2011). The latter is relevant since social media platforms are proprietary and not necessarily designed and built to strengthen democracy. Users are dependent on media industry's efforts to, for instance, combat trolling, prevent abuse and leverage social media platforms to allow for democratic participation (Feeney & Porumbescu, 2020). In our study, we define trust in social media and its technological and business infrastructures as the degree to which an individual believes that whereas there are potential risks in using social media, he or she will not be confronted with negative consequences. Trust in government is defined as the degree to which an individual believes governments act competently, fairly and responsively. This leads to the formulation of H4 and H5.

H4	The higher a citizen's trust in social media infrastructure, the higher the likelihood a citizen uses social media to address concerns or issues in citizen-state relations.
H5	The larger a citizen's trust in government, the higher the likelihood a citizen uses social media to address concerns or issues in citizen-state relations.

2.7 Social Media Anxiety

An addition to theories on technology adoption in citizen-state relations is the variable 'anxiety'. In everyday usage, trust (see section 2.6) and anxiety may be seen as overlapping concepts; in this study, we conceptualize social media anxiety as an individual, internalized negative affective emotion, whereas trust is assumed to be an attribute of social relations. Especially early technology adoption models featured computer anxiety as a predictor for adoption of ICTs (Igbaria, 1990; Zmud, 1979). The role of anxiety in the interaction of users with technologies has also been extensively studied in the digital divide and senior citizens literatures (Lee, Chen & Hewitt, 2011; van Deursen & Helsper, 2015) and in a study of the use of Weibo in Chinese citizen-state relations (Homburg et al., 2020). Here, anxiety refers to citizens' emotions regarding unanticipated and uncontrolled social media use consequences (Qin et al., 2017). In a study on adoption of e-government services in India, Rana et al. (2016) concluded that anxiety negatively affected citizens' behavioral intention to use online government services. In this study, we focus on possible anxiety of social media use and define 'social media anxiety' as a citizen's general negative affective emotion of arousal that results from consequences of individual citizens' use of social media that are beyond the control of that particular citizen. This leads to the formulation of H4.

H6	The more a citizen experiences social media anxiety in citizen-state relations, the lower the likelihood a citizen uses social media to address concerns or issues in citizen-state relations.

2.8 Control variables

Before putting the hypotheses to the test by confronting hypotheses with empirical data, we identified controls with which we could isolate variable of interests' effects on the dependent variable from possible confounders. Technology adoption literature suggests that relevant control variables include gender (Venkatesh, Morris & Ackerman, 2000), age (Liébana-Cabanillas, Sánchez-Fernández & Muñoz-Leiva, 2014) and education level (Yera, Arbelaitz, Jauregui & Muguerza, 2020). Furthermore, existing empirical studies of adoption use age, gender and education level either as covariates or moderators (Homburg et al., 2020; Silva et al., 2019; Van Schaik, 2009; Venkatesh et al., 2003; Venkatesh et al., 2011). Specific empirical studies have disregarded the use of age, gender and education-level

variables as moderators because of lack of theoretical motivations for the specific direction of the moderating effects, and because in empirical data sets, age and gender were asymmetrically distributed hence complicating the moderation testing (Kurfalı et al., 2017; Van Schaik, 2009). In our study we therefore refrained from testing moderation with gender, age and education level and included these variables as covariates in order to increase internal validity.

3. METHODOLOGY

3.1 Research design

Taking into account the deductive character of the research objective, we chose a deductive research design, in which we opted for a *large-n* online survey questionnaire to gather data among Paraguayan citizens. In order to measure adoption of social media in realistic contexts, we presented respondents with vignettes in which a protagonist is confronted with a specific issue or problem related to poor public service quality and has chosen to act up on social media to address the problem. The respondent is asked to score the perceived realism of the situation (which is used for validation purposes but not in the hypothesis testing in this study) and the degree to which he or she would react in the same way when confronted with such a situation.

The use of vignettes in survey research has a number of advantages over more generic and abstract survey items like 'I would use social media to speak up about public issues'. According to Steiner, Atzmüller and Su (2017), validity is increased as responses are embedded in a more concrete, realistic context; furthermore, impact of social desirability is limited (Steiner et al., 2017; Wallander, 2009). The vignettes are included in Appendix (Box A).

3.2 Measurement of variables

Use of social media is measured with three items with which the respondents' likeliness of using social media is measured. An example of an item is "I would have also posted a message on the agency's social media page". Performance expectancy, capability, social influence and anxiety were measured with multiple Likert items that were based on existing measurement constructs found in studies that are inspired by the Unified Theory of Adoption and Utilization of Technology- model, yet slightly adapted to fit the context of social media use in citizen-state relations.

Performance expectancy was measured using four Likert items. An example of an item is "Posting messages on governments' public social media accounts would help in solving my problems" (Venkatesh et al., 2003). Capability was measured using six Likert-items. An example of such an item is "I find social media are easy to use" (Bamberg & Schmidt, 2003; Venkatesh et al., 2003). Social influence was measured using three items (Homburg et al., 2020), with "In general, most people around me use public social media to communicate with their government" being an example. Social media anxiety is measured using seven items adapted from (A. Osman, Barrios J. R. Osman, Schneekloth & Troutman, 1994). An example of an item is "Doing what the characters in the stories did could cause serious problems". Trust in social media technological and business

infrastructures were measured with three items slightly adapted from Carter and Bélanger (2005) and Zhou (2011). An example of an item is "I feel assured that legal and technological structures adequately protect me from problems on social media". Trust in government was measured using items that were adapted from McKnight et al. (2002). An example of an item is "I feel that my government communicates information honestly". All questionnaire items are reported in Appendix (Box B).

3.3 Data collection

In order to gather the data, Qualtrics was commissioned to distribute an online questionnaire among a panel of Paraguayan citizens of 18 years and older. The questionnaire was phrased in the Spanish language and pretested by a Spanish native speaker. Data was not gathered through river-sampling but rather through double opt-in, actively managed research panels, meaning that respondents had to sign up and provide personal information before being eligible for inclusion in randomized survey panels. This allows for the composition of a much more representative panel from which data are extracted than river-sampling does. In order to avoid self-selection, survey invitations did not include specific details about the contents of the survey and were instead kept very general. Data were gathered between 23 July and 30 July 2020. Analysis of the data was conducted with SPSS 27.

4. FINDINGS

4.1 Data screening

Before conducting any statistical analyses, data were screened for usability. We removed two respondents' data as there was zero variance in scores on the Likert items (all ones and fives). No obvious outliers in age could be identified. Variable screening did not result in the discovery of missing values. In total 298 useful observations could be recorded in the dataset.

4.2 Common method bias

A possible hazard of data gathering with a cross-sectional method like a survey is the occurrence of common method bias (P. M. Podsakoff, MacKenzie, Lee & N. P. Podsakoff, 2003). We checked for common method bias by inspecting the total variance in an unrotated principal component analysis of all Likert items in data set; if one factor contributes to more than 50% of the variance, there is reason to assume problems associated with common method bias. In our data set, the first factor accounted for 11.9% of total variance, implying that none of the factors explain the majority of variance and common method bias is not likely to have occurred during the process of data gathering.

4.3 Realism

In order to verify the perceived realism and relevance of the vignettes, we inspected the reported realism scores (measured on a two-item, five-point Likert scale) for each of the vignettes. Consistency of the measurement of realism was acceptable to good and reported levels of realism rather satisfactory (Table 1). Based on the reported levels of realism of all vignettes used in the questionnaire we found no reason to exclude specific vignettes from the analysis.

TABLE 1   PERCEIVED REALISM, SCORE 1-5, FOR VARIOUS VIGNETTES, CRONBACH'S ALPHA (C.A.), MEAN (M) AND STANDARD DEVIATION (SD)

REALISM SCORES	C.A.	*M (SD)*
'pothole' vignette	.808	4.63 (.67)
'passport' vignette	.739	4.57 (.70)
'taxes' vignette	.876	4.51 (.79)
'vaccination' vignette	.905	4.33 (.95)

Source: Elaborated by the authors.

4.4 Demographics in the sample

A total of 298 useful responses were recorded in the survey. Table 2 displays a comparison of sample characteristics and known estimates of the same characteristics in the Paraguayan population. Even though there is a small but notable difference in education in the sample and known 2012 estimates of the population level of education, and taking into account that in the practice of research every sample shows some kind of sampling error, we decided not to post-stratificate or discard the sample and to include all 298 responses in the analysis.

TABLE 2   SAMPLE CHARACTERISTICS (POPULATION STATISTICS DERIVED FROM), PERCENTAGES AND MEAN (M) AND STANDARD DEVIATION (SD) (UNITED NATIONS, 2021)

	Population paraguay 2020	SAMPLE
Gender	Male: 50%, Female: 50%	Male: 58%, Female: 42%
Age	Median = 29.7 year	Median = 28.5 year
LEvel of education (gross enrollment ratio in secondary education)	75.9% (estimated 2012 percentage)	97.3%

Source: Elaborated by the authors.

4.5 Analysis: scale construction and regression results

As there is scarce existing empirical research on social media in citizen-state relations in Paraguay, we carried out a principle component analysis in order to identify the underlying structure of the measured variables in the data set (Table 3). All Likert items showed a correlation of at least .3 with at least one other item, suggesting factorability. The Kaiser-Meyer-Olkin measure for sampling adequacy was .835 (well above the required minimum of .6) and Bartlett's test of sphericity was significant (χ^2 (630) = 7095.766, p < .001). All communalities were above .3, further confirming that each item shared at least some common variance with at least one other item. Given the aforementioned considerations, factor analysis was deemed to be suitable with all items.

In the course of the actual factor analysis with Varimax rotation, a simple factor structure could not be realized with all items included. After elimination of SMA1, SMA3, SMA5 and SMA7, a 10-factor solution could be identified with which 77.1% of total variance could be explained.

TABLE 3   ROTATED COMPONENT MATRIX (PRINCIPAL COMPONENT ANALYSIS, VARIMAX ROTATION)

	Component									
	1	2	3	4	5	6	7	8	9	10
Capabilities1	.843									
Capabilities2	.857									
Capabilities3	.896									
Capabilities4	.686									
Capabilities5	.831									
Capabilities6	.846									
Trust in government1		.787								
Trust in government2		.849								
Trust in government3		.864								
Trust in government4		.833								
Performance expectancy1			.758							
Performance expectancy2			.809							
Performance expectancy3			.842							
Performance expectancy4			.820							

	Component									
	1	2	3	4	5	6	7	8	9	10
Trust in sm infrastructure1				.749						
Trust in sm infrastructure2				.847						
Trust in SM infrastructure3				.845						
Trust in sm infrastructure4				.795						
V3Taxes1					.897					
V3Taxes2					.867					
V3Taxes3					.902					
V2Passport1						.892				
V2Passport2						.836				
V2Passport3						.889				
V4Vaccine1							.904			
V4Vaccine2							.919			
V4Vaccine3							.896			
V1Road1								.805		
V1Road2								.762		
V1Road3								.828		
Social influence1									.792	
Social influence2									.858	
Social influence3									.751	
SM anxiety2										.753
SM anxiety4										.813
SM anxiety6										.815

Source: Elaborated by the authors.

Table 4 displays the reliability of the scales, mean scores and standard deviations of all variables, bivariate correlations between the independent variables and Variance Inflation Factors (VIF) of the independent factors.

TABLE 4   **DESCRIPTIVES (*P<0.05; ** P<0.01; *** P<0.001) CRONBACH'S ALPHA (C.A.), MEAN (M) AND STANDARD DEVIATION (SD)**

	CA (number of items)	M (SD)	1.	2.	3.	4.	5.	6.	VIF
Gender (1=female)		.42 (.49)							
Age		31.2 (9.58)							
Education (1=higher)		.74 (.43)							
V Road	.892 (3)	4.27 (.83)							
V Passport	.888 (3)	3.81 (1.14)							
V Taxes	.931 (3)	3.83 (1.24)							
V Vaccination	.940 (3)	3.84 (1.23)							
V All vignettes	.914 (12)	3.94 (.78)							
Perceived effectiveness	.869 (4)	2.86 (1.10)	1						1.35
Capability	.822 (6)	4.49 (.74)	.209**	1					1.10
Social influence	.845 (3)	2.96 (1.16)	.457**	.164**	1				1.39
Trust in SM infrastructure	.878 (4)	3.18 (1.04)	.287**	.199**	.354**	1			1.29
Trust in Government	.887 (4)	2.12 (1.01)	.292**	-.029	.314**	.362**	1		1.30
Social media anxiety	.730 (3)	2.60 (.99)	.015	-.105	..095	.077	.219**	1	1.06

Source: Elaborated by the authors.

Multiple regression analysis was deemed appropriate to test the hypotheses. The model assumptions for such an analysis were met: the correlations between the independent variables and relatively low Variance Inflation Factor scores signal no problems with multicollinearity; homoscedasticity was checked using a scatter plot of standardized residuals and predicted values and no anomalies were found. Independent errors were checked using the Durbin-Watson statistic, and the values of 1.95, 1.85, 2.02, 2.09 and 1.98 (for the social media use scores in the respective vignettes, and the vignettes combined) revealed no problems associated with this assumption. Inspection of the Q-Q plots revealed a relatively normal distribution, therefore concluded that this assumption was also met.

The regression equation for estimating standardized coefficients b (with $V_{i,j}$ referring to respondent i's response V to the jth vignette) is expressed in Equation 1.

$$V_{i,j} = b_{1,j}.GENDER_i + b_{2,j}.AGE_i + b_{3,j}.HE_i + b_{3,j}.PE_i + b_{4,j}.CAP_i + b_{5,j}.SI_i$$
$$+ b_{6,j}.TSM_i + b_{7,j}.TIG_i + b_{8,j}.TIG_i + b_{9,j}.SMA_i + b_{0,j} + \varepsilon_{i,j}$$

Equation 1: regression equation for testing the hypotheses with unstandardized regression coefficients (GENDER is gender, AGE is age, HE is higher education, PE is perceived effectiveness, CAP is capability, SI is social influence, TSM is trust in social media infrastructure, TIG is trust in government, SMA is social media anxiety).

Table 5 summarizes the results of the regression analyses with which coefficients of independent variables are estimated. The table presents estimated standardized coefficients β for the each of the independent variables x_k (with $\beta_{j,k} = b_{j,k}.\frac{s_{x_k}}{s_{v_j}}$). The column to the right presents standardized coefficients for the equation with responses to four vignettes combined as dependent variable.

TABLE 5   **REGRESSION RESULTS WITH STANDARDIZED COEFFICIENTS (β) (*P<0.05; ** P<0.01; *** P<0.001)**

	V_1(Pothole)		V_2(Passport)		V_3(Taxes)		V_4(Vaccination)		$V_{1+2+3+4}$ (All)	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Gender (1=female)	.091	.088	.064	.066	.042	.037	.015	.011	.069	.066
Age	-.008	-.019	-.041	-.059	.053	.044	.025	.018	.014	-.001
Education (1=higher education)	-.014	.025	-.002	.030	.016	.046	-.015	.019	-.004	.044

Continua

	V₁(Pothole)		V₂(Passport)		V₃(Taxes)		V₄(Vaccination)		V₁₊₂₊₃₊₄ (All)	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Perceived effectiveness		.090		.125		.078		.080		.131*
CAPABILITY		.136*		.029		-.034		-.096		-.005
social influence		.171**		.090		.181**		.151*		.209**
Trust SM infrastructure		.225***		.074		.205**		.193**		.244***
Trust in government		-.051		.027		-.108		-.069		-.074
Social media anxiety		-.108		-.050		-.063		-.023		-.080
F	.841	7.350***	.622	2.215*	.452	3.877***	.083	2.964**	.469	7.017***
R^2	.09	.18	.00	.06	.00	.10	.00	.085	.00	.18

Source: Elaborated by the authors.

This leads us to the following conclusions regarding our hypotheses: we found limited support for hypotheses one (perceived effectiveness) as in the 'pothole'-vignette, as well as in the combined responses, significant correlations could be observed. Hypotheses three (social influence) received support (on the basis of support in three out of four vignettes, and all vignettes combined; hypothesis four (trust in social media infrastructure) received support on the basis of support in three out of four vignettes, and all vignettes combined. Hypotheses two (capabilities), five (trust in government) and six (social media anxiety) received no support.

5. CONCLUSIONS AND DISCUSSION

The results of this study contribute to an explanation of why Paraguayan citizens adopt social media platforms to engage in online political participation. Multivariate analysis of vignette survey data indicate that neither capabilities, nor trust in government nor social media anxiety are significantly related to citizens' use of social media platforms to interact with government. Rather, multiple regression analysis suggests that the strongest predictor for citizens' 'thin' participation on social media in Paraguay's flawed democracy is citizens' belief in social media platforms being a robust and safe environment for sharing personal experiences or opinions. In this context, it may be relevant to note that social media platforms are not necessarily designed and constructed to enable or yield political participation, and that the Cambridge Analytica scandal has shown that social media companies have not always expressed sincere interests in, or are having difficulties with, controlling manipulation of their users (Feeney & Porumbescu, 2020). Furthermore, 'thin participation' is also associated with citizens' expectations of what their nearest and dearest urge them to do, and their expectations of the outcomes of their social media activities.

The results as presented above lead to a number of conclusions for researchers and practitioners in the field of social media and political participation alike.

For researchers, this implies a challenge to, arguably through more qualitative and inductive research designs, disentangle the mechanisms and lines of reasoning that link citizens' expectations of their nearest and dearest on whether or not to participate digitally, their expectations of safety and robustness of social media platforms, and citizens' expectations of how their online activities are linked to outcomes, with digital participation on social media platforms. The Paraguayan context, with its strong intergenerational transfer of political and democratic values and relatively weak formal institutions, could prove to be an interesting test bed for a study of how social influence interacts with participation generally and participation on social media platforms in particular. Arguably, institutional views on social media, focusing on how citizens' beliefs and formal and informal rules affect use of technologies, are promising vantage points for improving our understanding of how technology and institutions are interrelated, as well as for bridging epistemological differences between the academic disciplines of public administration systems and information systems (Orlikowski & Barley, 2001).

For practitioners wishing to stimulate political participation on social media platforms, this study' results imply that longer term consequences of proprietary social media platforms such as Facebook and Twitter as infrastructures for citizen engagement and participation should be taken into account, and that social media platforms' legal and technological safeguards as conditions for political participation should be taken seriously. Neglecting robustness of social media platforms may yield untrustworthy channels for participation in flawed democracies, and consequently exacerbation instead of mitigation failing institutions and democratic deficits.

The above conclusions have to be understood in the light of limitations.

First of all, we explicitly limited ourselves to 'thinner' forms of participation, and 'thicker' online participation behaviors (such as calls to vote, volunteer and protest) may be explained with different variables and lines of reasoning.

Second, the explained variance in our models (14% for the passport vignette to 27% for all vignettes combined) leaves room for the inclusion of other explanatory variables. A possible avenue for selecting additional variables to be included in future research endeavors could be Malinen's literature review on user participation in online communities (Malinen, 2015). Although Malinen focuses on online communities such as Wikipedia and photo-sharing platforms, her findings could arguably inspire research on interaction on government-initiated social media platforms. Malinen discussed research findings that suggest personality traits (ranging from neuroticism, agreeableness, extraversion and conscientiousness) could affect digital participation, as could degrees to which individuals hold materialistic values. Arguably, also existence of alternative channels to vent anger or ask for resolutions for public services-related issues citizens are confronted with (think of the accessibility of ombudsmen at various levels of government) could arguably be used to better explain citizens' use of social media in citizen-government relations in Paraguay and far beyond.

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APPENDIX

BOX A   VIGNETTES

vignette label	vignette text
'Pothole'	Trudy lives in a small urban community and travels to a neighboring city four times a week by a public road. Trudy notices that due to weather conditions, the condition of the road deteriorates up to the point where there are big cracks and holes in the road. As Trudy travels down this road regularly, she knows where the cracks and holes are, but she realizes that other people might crash and hurt themselves. Trudy is worried about what might happen to fellow-citizens and uses the public social media account of the public works agency responsible for road maintenance to post pictures of the holes and cracks in the road, and to notify the public works agency of the bad condition of the road under her own name.
'Passport'	Jimmy submits a request for a new passport. Jimmy is a bit late as he has planned a visit to his family abroad in three weeks, and the regular procedure might take slightly over three weeks. Jimmy explains the situation to the civil servant that processes his request, and much to his surprise the civil servant explains that she will use the express procedure if Jimmy is willing to pay a 25% surcharge. Jimmy gladly accepts this offer, gets his passport within a week, and then finds out that no such thing as an official express procedure with a 25% surcharge exists. Although Jimmy appreciates the service that was delivered to him, he feels bad about the situation and decides to share his experience on the issuing agency's public social media account under his own name.
'Taxes'	Vincent is a small business owner, as all people Vincent has to pay taxes on his revenues. Vincent has appropriately filed his taxes and did not make any mistakes. However, to Vincent's surprise the amount of taxes he has to pay according to the tax collection agency is far higher than it should be. Obviously, they have made a mistake and need to adjust the amount of tax Vincent needs to pay. Vincent is upset about this and decides to voice his discontent about this on the public social media page of the tax collection agency under his own name.
'Vaccination'	Rebecca is a mother of two children and wants her children to be vaccinated against common diseases. The health department of the country in which Rebecca is a resident offers these vaccinations for free. Every parent in this country will receive a letter when their child is a certain age, appealing them to visit their doctor to obtain their vaccinations. Apparently, the health department has made a mistake and forgot to send the letter to Rebecca. Her children therefore missed their vaccination at the appropriate age. Rebecca is worried about this and decides to ask the health department on how she should proceed in order for her children to still obtain their vaccinations on their public social media under her own name.

Source: Elaborated by the authors.

BOX B   MEASUREMENT USED IN QUESTIONNAIRE

Variable	Likert items (1=completely disagree 5=completely agree)
Perceived effectiveness	PE1 Posting messages on governments' public social media accounts would help in solving my problems. PE2 Posting messages on governments' public social media accounts increases my chances of realizing my objectives. PE3 Posting messages on governments' public social media accounts allow me to solve my problems more quickly. PE4 Posting messages on governments' public social media accounts would help my effectiveness in dealing with problems.
Capability	C1 Learning how to use social media is easy for me. C2 I find social media are easy to use. C3 It is easy for me to become skillful at using social media. C4 I find it easy to get social media tools to do what I want to do. C5 I have the resources necessary to use social media. C6 I have the knowledge necessary to use social media.
Trust in social media infrastructure	T1 Social media have enough safeguards to make me feel comfortable using them to post personal opinions/experiences. T2 I feel assured that legal and technological structures adequately protect me from problems on social media. T3 I feel confident that encryption and other technological advances on social media make it safe for me to use it. T4 In general, social media are now a robust and safe environment.
Social Influence	SI1 People who influence me think I should use public social media to communicate with my government. SI2 People who are important to me think I should use public social media to communicate with my government. SI3 In general, most people around me use public social media to communicate with their government.
Trust in government	TIG1 I feel that my government communicates information honestly. TIG2 I feel that my government is capable of doing its task. TIG3 I feel that my government is fair. TIG4 I feel that my government wants what is best for its citizens.

Continue

Variable	Likert items (1=completely disagree 5=completely agree)
Social media anxiety	SMA1 Any problems resulting from the actions by the characters in the stories will never go away. SMA2 Something terrible would happen if I did what the characters in the stories did. SMA3 While what the characters in the stories did could be harmful, I would be okay (R). SMA4 I am afraid of what may happen if I did what the characters in the stories did. SMA5 Any problems resulting from what the characters in the stories did will go away in time (R). SMA6 Doing what the characters in the stories did could cause serious problems. SMA7 My computer/telephone/tablet could be compromised if I did what the characters in the stories did.
Use (X=protagonist's name in vignette)	USE1 I would do the same as X did. USE2 I would have also posted a message on the agency's social media page. USE3 I would have done the same as X did when confronted with the same situation.
Realism	REALISM1 The situation is realistic. REALISM2 I can image this situation happening to people.

Source: Elaborated by the authors.