



Research Article

Immersive Metaverse in a Public University in Central Mexico

Cruz García Lirios*, Julio E. Crespo, Juan Guillermo Mancilla

Universidad de la Salud, CDMX, México.

Universidad de Los Lagos, Osorno, Chile.

Universidad Católica de Temuco, Chile.

*Corresponding Author: Cruz García Lirios

Universidad de la Salud, CDMX, México.

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ABSTRACT

Social reliability arises after an agenda is established with issues focused on political corruption that, far from directing a debate and public consensus, generate negative emotions that result in social desperation, a favorable scenario for the propaganda of the state leadership authoritarian. The objective of this work is to establish a model for the study of the phenomenon in question. A documentary study was carried out with a non-probabilistic selection of sources indexed to national repositories, considering the year of publication in the period 2020 to 2024, as well as the inclusion of concepts such as "reliability", " millennials ", "Internet users" There are lines of research regarding the extension of the model and its contrast in electoral processes.

KEYWORDS: Agenda, Immersive, Reliability, Metaverse, Internet.

INTRODUCTION

Social reliability, for the purposes of this work, refers to a system of conferences, perceptions and dispositions of trust, empathy and commitment around a public service such as water supply, leak repair or desalination sewers that, due to their degree of need and social expectation, imply a dependence of citizens on the State (García, 2019). In such a scenario, social reliability has been a determinant of electoral preference, voting intention and effective suffrage of the electorate that establishes a pragmatic relationship with its authorities and possible local and federal representatives (Aldana et al., 2018). Social reliability due to its degree of economic dependence of civil society on its rulers has recently been observed in communities and youth sectors with access to information, such as the Internet millennials (Villegas et al., 2018). That is, if social reliability consists of a relationship of exchange of political support for an economic or in-kind amount during federal or local political contests, then access to information should limit and inhibit social reliability (Villegas et al., 2019). Therefore, in the case of millennial virtual communities, such a phenomenon would not exist given the production and dissemination of information against the political class or the reporting of corruption cases involving officials (García Espinoza & Carreón, 2018).

Social reliability would be mediated at least by the dynamics of digital networks such as Facebook, Twitter, Instagram, WhatsApp or Snap Chat, production and content in the face of political contests, parties or candidates (Huang, 2019).

In this sense, a review of the state of social reliability, mediated by technologies, devices and electronic networks, will allow us to notice the degree of support that a system, party or candidate could have if said social reliability is not inhibited by the use intensive use of digital networks (Turan & Karabey, 2023).

The theoretical frameworks that explain social trustworthiness are: 1) rational choice theory, 2) human capital theory and 3) emerging agenda theory.

The theory of rational choice, by explaining the differences between expected costs and benefits, opens the discussion around the distrust or reliability of a civil sector towards an authority, official, potential candidate or representative (Chen, 2013). In this sense, rational choice precedes social reliability if the expected benefits clearly exceed the expected costs (Carreón & García, 2013).

However, the rational choice, being determined by the degree of access and information processing capacity, the estimation of possible losses and benefits, linked to political support, is determined not only by access to electoral propaganda, but by the capacity for discernment of the electorate to which the promotion is directed (Carreón, De la Cruz & Maganda, 2015). In the case of millennials, a social sector that is distinguished by its capacity to access and process information, social reliability seems to be reduced to a minimal phenomenon as in the case of posters or allusive videos that ridicule a political party or candidate (Carreón, García & Hernández, 2014).

In this way, the theory of rational choice only warns that the access and processing of political proselytism can be effective if it is intensified on social networks in such a way that the benefits begin to exceed the costs and ridicule that Internet users spread among themselves. regarding a political contest (Carreón et al., 2017). It will be the theory of human capital that will clarify the panorama of political promotion on digital networks by showing that the capabilities of Internet users are determinants of electoral propaganda on digital networks (Hill & Lee, 2009).

This is because virtual communities develop computational skills based on their degree of affinity (Beck, Morgado & O'Shea, 2020). In this sense, Internet users themselves are the promoters of an electoral preference, voting intention or effective suffrage among their contacts and through strategies of espionage (*stalking*), ridicule (*bullying*) or discredit (*trolling*) towards candidates or parties (García, 2014).

Social reliability, according to the human capital approach, is an effect of computational skills that specialize in discrediting political parties and candidates, establishing an agenda of aggression and violence against the political class, officials or local authorities; on the contrary, they activate reactions. supporting emerging parties or candidates with whom Internet users feel more identified due to their image as critics of the government system or apolitical (García, 2015).

Precisely, computational skills that generate ideas contrary to a political system, government regime or form of State, involve strategies for promoting emerging parties and candidates that benefit hegemonic parties and candidates in electoral contests (De Freitas et al., 2010). This is because the Internet electorate, in relation to other voters who do not have access to the Internet or produce or disseminate information on digital networks, is susceptible to seeking alternatives for information, preferences and political choices (García et al., 2015).

The theory of the emerging agenda to explain that traditional media will disseminate information that occurs on digital networks, is a scenario of opportunities and capacities for processing and generating information

in which the differences between Internet users and non-Internet users are exacerbated, opening up the discussion. around an emerging agenda (García et al., 2016). In this way, social reliability is part of that emerging agenda in which uncertainty, discredit, distrust and discredit of political and social actors prevail, fostering a collective fear that borders the electorate against another for the party that knows how it will govern in the future. future (Carreón et al., 2017).

In short, social reliability is the result of a process of rational choice, human capital and emerging agenda, which reflects a risk scenario and threatens the economic, political, social and emotional stability of the electorate, favoring electoral preference, voting intention and suffrage in favor of the most traditional party that, due to its degree of authoritarianism, legitimizes the use of violence and repression against dissidents whose knowledge of the Internet contributes to the climate of anxiety, desperation and fear in electoral contests (Kuhail et al., 2022).

Social reliability studies have focused their interest on demonstrating indicators of the phenomenon to establish a public agenda focused on helplessness, farsightedness or distancing of a people governed with authoritarianism, but susceptible to greater political corruption (Carreón, García & Hernandez, 2014). Some works address asymmetries in governments and governments governed by social reliability because, while the former show distrust in international governance guidelines such as transparency and accountability, the latter rather resort to bribery of political officials (Carreón, De la Cruz & Maganda, 2015).

Works on social reliability also distinguish it from political adhesion and identity (De Freitas & Neumann, 2009). While social reliability is the result of a latent threat of corruption and ungovernability, political adhesion implies a formation or politicization of civil society in the face of a common problem and political identity refers to a civic formation materialized in civil, environmental participation or community (Carreón, García & Hernández, 2014).

However, social reliability studies have also anticipated scenarios of conflict and social change, such as public services in general and the electricity or water supply system in particular (De Freitas et al., 2009). In such examples, social reliability studies have shown that this is a determinant of the intention to vote or vote in favor of candidates and parties that propose the regularization of the supply system, the freezing of rates or the offer of subsidies such as condonations. due to untimely payment (Carreón & García, 2013).

In relation to other variables such as quality of life and subjective well-being, social reliability is associated with those groups that develop satisfaction with life such as self-management of electricity or water, as well as with

the positive and meaningful expectations and experiences of the user towards public services (Carreón, García & Hernández, 2014).

This is how social reliability is a mediating factor in the effects of government policies, programs and strategies rather than the result of institutional action or the quality of bureaucratic care (Altun & Lee, 2020). That is, social reliability seems to be more of a predisposition to trust imposed by the supposed protection or certainty of a regime compared to the uncertainty and potential corruption of emerging parties and candidates (García et al., 2015).

However, social reliability studies have not reliably explained the condition of access, processing and dissemination of information regarding groups that are distinguished by their Internet skills compared to other sectors of civil society (Carreón et al., 2017). In the case of millennials, their degree of access to information, horizontal communication, bilateral motivation and shared decision making seems to show that within groups they inhibit social reliability, but at the same time, they activate and diversify in the groups. other sectors of society. the population (García et al., 2016). Therefore, it is necessary to formulate a model that includes axes, trajectories and relationships between the factors used in the literature consulted to explain and anticipate scenarios of social conflict or reliability, as well as future social changes or exacerbation of local political authoritarianism among social actors. and government actors (Fernandes et al., 2023).

A model is a representation of the relationships between the factors that explain a phenomenon with what social reliability is and in relation to other processes such as agenda setting, rational choice, human capital, quality of life, subjective well-being. (Ryan et al., 2022). Sociopolitical reliability, indicated by discredit, stalking, ridicule or harassment, is a scenario prone to propaganda by the State's leadership in private affairs, defender and protector of security on digital networks in cases of theft or identity violation. Of privacy. More specifically, social reliability would be indicated by the degree of discredit of the government in power and the possibility of a political change with the promotion of a party or candidate close to Internet users, their needs for access, privacy and identity, as well as their expectations regarding technological advances.

However, such sociopolitical reliability could not arise if there were not promoters who, unintentionally, spread fear among Internet users, generating anxiety and defense against any cyber-attack, hacking of their information, theft or impersonation of their identity. but essentially the feeling of being harassed by strangers of digital networks (Dengel & Mägdefrau, 2020).

Precisely, the objective of this work is to establish a model for the study of social reliability in electronic

networks. The project is framed in the discipline of Social Work, an area of documentary studies, but includes terminology from cyberpsychology, the sociology of information and economics.

Method

First study

A documentary study was carried out with a selection of sources indexed to leading repositories in Mexico, considering the publication period of 2020-2024.

The selected information was processed following the Delphi technique, which consists of comparing and integrating the data to propose new explicit concepts of the phenomenon in a model of axes and trajectories of relationships between the factors in question.

Second study

A cross-sectional, exploratory and exploratory study of the dimensions of Internet reliability was carried out, for which a non-probabilistic sample of 340 students ($M = 22.1$ and $SD = 2.1$ years, $M = 6' 897.21$ and $SD = 456.34$ admissions) was surveyed. monthly), participants in programs for access to scientific information. The Internet Reliability Scale was used, which includes six dimensions: General Satisfaction, Impact on Practical Skills, Perceived Effectiveness, Integration in Learning, Technological Skills and Confidence, Access and Use of Technology. Each item is answered with one of five options ranging from 0 = "unlikely" to 5 = "fairly likely." The information was processed in the statistical package for social sciences version 24.0 to establish normality, adequacy, sphericity, validity, correlation and adjustment.

RESULTS

The sample adequacy analysis indicates the probability of carrying out multivariate analyzes if the KMO value exceeds 0.6 (see Table 1). The results show a close value at a general level and in each item the value is higher except for the first items. Consequently, it is possible to carry out more robust analyzes on the reliability and validity of the instrument.

Table 1: Kaiser-Meyer-Olkin Test.

Overall MSA	0.584
Access	0.509
Frequency	0.515
Skills	0.409
Trust	0.425
Integration	0.622
Support	0.594
Engagement	0.473
Motivation	0.608
Comprehension	0.603
Retention	0.725
Application	0.768
Satisfaction	0.607

The factor analysis of principal axes with promax rotation indicates the structure of Internet use (see Table 2). The findings demonstrate three factors related to satisfactory application, a climate of trust and frequent

accessibility. In relation to the original structure of six factors reported in the literature and the original scale, only three were established in the present study.

Table 2. Factor Loadings.

	Factor 1	Factor 2	Factor 3	Uniqueness
Satisfaction	0.926			0.270
Comprehension	0.710			0.497
Application	0.547			0.731
Engagement		0.834		0.387
Trust		0.511		0.772
Frequency			0.672	0.537
Access			0.633	0.595
Skills				0.989
Integration				0.638
Support				0.788
Motivation				0.878
Retention				0.773

Note. Applied rotation method is promax.

The analysis of variance indicates the percentage of explanation of each factor (see Table 3). The results indicate that the first factor related to satisfactory application reached a value of 16%, the trust climate

factor a value of 9%, but associated they manage to explain 26% of the variance and added to the third factor a total of 3. 4%.

Table 3. Factor Characteristics.

	Eigenvalues	Unrotated solution			Rotated solution		
		SumSq. Loadings	Proportion var.	Cumulative	SumSq. Loadings	Proportion var.	Cumulative
Factor 1	2,568	2007	0.167	0.167	1938	0.162	0.162
Factor 2	1,666	1,122	0.093	0.261	1,178	0.098	0.260
Factor 3	1,598	1,017	0.085	0.345	1,029	0.086	0.345

The correlation analysis, in the context of validity, suggests collinearity between the factors if their relationship is close to unity (see Table 4). Values close to zero are seen which indicate an absence of linear relationship between the factors.

The analysis of the residuals suggests the degree of homoscedasticity between the manifest variables (see Table 5). Values being close to zero indicate a low probability of multicollinearity between the items. Consequently, both in the analysis of correlations between factors and in the residual matrix, the reflective structure of Internet use is corroborated.

Table 4: Factor Correlations.

	Factor 1	Factor 2	Factor 3
Factor 1	1,000	0.394	0.047
Factor 2	0.394	1,000	0.027
Factor 3	0.047	0.027	1,000

Table 5. Residual Matrix

	Yo	II	III	IV	V	VI	VII	VIII	IX	x	XI	XII
Access	0.595	0.027	0.027	-0.025	-0.001	-0.051	0.001	0.035	0.018	0.040	-0.043	0.007
Frequency	0.027	0.537	-0.057	-0.024	-0.062	0.019	0.047	-0.016	0.009	-0.035	0.075	-0.017
Skills	0.027	-0.057	0.989	-0.038	0.094	-0.040	-0.005	0.028	-0.037	0.025	-0.051	0.011
Trust	-0.025	-0.024	-0.038	0.772	0.111	-0.167	0.061	-0.093	-0.008	-0.023	-0.021	0.069
Integration	-0.001	-0.062	0.094	0.111	0.638	0.122	-0.078	-0.063	-0.066	0.036	-0.018	0.038
Support	-0.051	0.019	-0.040	-0.167	0.122	0.788	-0.025	0.128	-0.092	0.069	-0.047	-0.046
Engagement	0.001	0.047	-0.005	0.061	-0.078	-0.025	0.387	0.032	0.059	-0.040	0.038	-0.009
Motivation	0.035	-0.016	0.028	-0.093	-0.063	0.128	0.032	0.878	-0.062	0.033	0.007	0.002
Comprehension	0.018	0.009	-0.037	-0.008	-0.066	-0.092	0.059	-0.062	0.497	0.049	0.053	0.041
Retention	0.040	-0.035	0.025	-0.023	0.036	0.069	-0.040	0.033	0.049	0.773	-0.062	-0.061
Application	-0.043	0.075	-0.051	-0.021	-0.018	-0.047	0.038	0.007	0.053	-0.062	0.731	-0.003
Satisfaction	0.007	-0.017	0.011	0.069	0.038	-0.046	-0.009	0.002	0.041	-0.061	-0.003	0.270

The analysis of the parallels indicates the eigenvalues that define the number of factors in the model (see Table 5). Three factors can be seen that correspond to

eigenvalues between 1,598 and 2,568, which indicate a structure of reflective relationships.

Table 6: Parallel Analysis.

	Real data component eigenvalues	Simulated data means eigenvalues
Factor 1*	2,568	1,355
Factor 2*	1,666	1,258
Factor 3*	1,598	1,187
Factor 4	1,101	1,114
Factor 5	1,034	1,060
Factor 6	0.854	1,004
Factor 7	0.788	0.953
Factor 8	0.694	0.911
Factor 9	0.577	0.866
Factor 10	0.460	0.826
Factor 11	0.382	0.765
Factor 12	0.278	0.701

Note. '*' = Factor should be retained. Results from PC-based parallel analysis.

The adjustment parameters and residuals [$\chi^2 = 13.24$ (23df) $p = .05$; GFI = .990; CFI = .995; RMSEA = .008] suggest the non-rejection of the null hypothesis regarding the significant differences between the theoretical model and the empirical model.

DISCUSSION

The contribution of this work lies in the contrast of the dimensions reported around the use of the Internet for immersive learning with respect to the observations of this work. The results show the prevalence of three factors related to satisfactory application, climate of trust and frequent accessibility that explained 34% of the total variance.

Immersive learning, facilitated using the Internet, is a growing trend in education (Gordon & Brayshaw, 2017). Microsoft Learning Tools offers a simple and effective way for teachers to support students with different abilities (Adnan, 2020). Immersive Intelligence provides cybersecurity training through a browser-based platform, demonstrating the potential of immersive learning in online environments (Abdelaziz, 2014). Meta Immersive Learning explores the evolution of information access from desktop computers to mobile devices, highlighting the role of the Internet in expanding learning opportunities.

Immersive technologies, such as virtual reality, have been shown to improve learning outcomes in healthcare settings, particularly in the teaching of clinical skills. Microsoft's Immersive Reader is a powerful tool that improves reading comprehension, language learning, and decoding for readers with dyslexia, showing the potential of immersive learning for diverse learners (Gaspar et al., 2020). The future of online learning is likely to incorporate immersive learning experiences, with a focus on areas such as online, remote and HyFlex learning (Abdraimova, Zh & Zhorabaev, 2020). Immersive learning involves the use of technology, such as headsets

or mobile applications, to create realistic virtual environments for students, offering a more engaging and interactive educational experience (Schrader, 2008). The concept of metaverse education presents opportunities and challenges for immersive learning, as online users interact with virtual environments through games and digital platforms such as Fortnite, Minecraft (Roblox Ntaba & Jantjies, 2021). By leveraging the metaverse, students can benefit from immersive learning experiences that improve engagement and facilitate more interactive lessons (6 Benefits of Immersive Learning with the Metaverse - ViewSonic).

In relation to the reviewed literature where there is a growing volume of Internet use for immersive learning, this work has established three of the six factors that make up the educational metaverse. Consequently, the areas of opportunity of the proposed model lie in the breadth of the scale in order to achieve a greater percentage of total variance.

CONCLUSION

The objective of this work was to compare an empirical model with respect to the theoretical dimensions reported in the literature. The results only demonstrate three of the six factors with an explanation of 34% of the variance. The areas of opportunity for the study lie in the breadth of the scale in order to increase the percentage of variance. It is recommended to extend the study to other contexts and samples in order to provide validity and reliability to the scale that measures Internet use around immersive learning.

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