UN-ESCAP Good Governance Principles in Practice: Examining SMC's Digital Transformation and Its Impact on Citizens

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Abstract:

This research paper analysis the effect of digitalization on good governance and citizen satisfaction in municipal service delivery in Surat Municipal Corporation. Descriptive statistics, reliability analysis (Cronbach's alpha), correlation analysis and hierarchical regression models were used for primary data analysis. The findings also indicates that digital transformation positively influences good governance and citizen satisfaction. Digital skills and digital access do not moderate the association between digitalisation and good governance, but both these variables significantly improve the impact of digitalisation on citizen satisfactions. The results underscore the need for digital governance to undertake complementary efforts for promoting digital skills and digital access in order to capitalize on citizen level benefits as a supportive element not as a conditioning factor.

1. Introduction:

1.1 Background — Digital Governance and Good Governance

According to different researches and surveys Digital Governance or e-governance has notable impacts on Public Administration. These positive impacts are clearly observable in all countries especially in developing countries including India. Furthermore, digitalization has been used as a tool to overcome on administrative weakness; improve public service delivery and to limit corruption and intermediations. Apart from this, digital governance act as an instrument to enhance good governance practices like accountability, transparency and responsiveness. In addition to bridging the gap between citizen and public affairs institutions like SMC; it also removes the barriers which hinder the direct communications among citizens and different department of public organizations. In this regard, digitalization has been proved as an effective mean to be applied for an better result where institutional changes occur very slowly. The absolute effectiveness has systematically been found in all initiatives regarding increasing transparency, openness of information and equal service accessibility to all citizens and data driven decision and AI approaches (Khan et al., 2021).

Some other empirical studies and academic research papers show strong corelation between corruption and digitalization. It means that higher level of digitalization and its adoption by people and using online services reduce corruption in all developing countries. That is to say, these great impacts have significantly improved all principles of good governance which were established by UNSECAP and were published in 2009. Similarly, some studies which were carried out before, show that there is strong relation between level of satisfaction and e-governance practices in many countries globally. On the other hand, digitalization not only reduce corruption but also enhances the overall function and performance of the public sector.

In additions to these, a studies on electronic procedures says that online portal and services, information and different document and forms boost efficiency and effectiveness in urban governance (Basyal et al., 2018). Other researches show that easy access to online services, documents and information and speed of processes facilitate citizen satisfactions and make authorities more accountable. For example, mobile apps and web portals enable citizen to share their feedbacks and complaints easily and timely. As a result, these feedbacks are reflected in policy formulation and service delivery (Hochstetter et al., 2023). There are some standard principles and rules for good governance which make a criterion for assessing the quality of good governance and establish a roadmap for shifting public administration to mobilize on new standards. United Nation Economic and Social Commission for Asia and Pacific (UNESCAP) define 8 core principles for good governance and advices to the countries in the specific region to make these principles as a corner stone for services delivery and general functioning of public institutions. For better understanding these principles (accountability, transparency, responsiveness, effectiveness and efficiency, participation, rule of law, consensus orientedness and inclusiveness) are considered as a key factors or dimensions for assessing the performance and evaluation of governance (UN ESCAP, 2009). The above mentioned are the core principles established and published by UNESCAP which are widely adopted in policy formulation and good governance index analysis. This is very credible document which is recommended for developing countries located in Asia and Pacific to align their reforms with it. Furthermore, public trust, service sustainability are key points to capture both normative and administrative qualities of public administration. In short, it covers both qualities like equity and rights as well as practical dimension of good governance like transparency, accessibility and responsiveness (UN ESCAP, 2009).

accordingly digital governance is technological upgrade in municipal governance as well as an implementation and strengthening of good governance principles. It makes urban governance more transparent, responsiveness and accountable. In such types of governance citizens experience easy access to services and continues improvement in the overall functions of public administration. Apart from this, in urban governance digital transformation and normative good governance framework is a key context for analyzing SMC services in everyday interaction with citizens (UNDESA, UNDP, & UNESCO, 2012).

1.2 Urban Governance and Digital Transformation in India

Fast urbanization in India and the traditional governance model faced municipalities with huge pressure. In fact, this type of governance needs in person appointment, hard copies of the application and paperwork, manual records, and a lot of other bureaucracy to complete tasks

and receive services. Despite this, it was associated with delays inefficiency, limited transparency and was struggling to manage and complete day-to-day activities (Yadav & B. Singh, 2012) In response to these problems, after 1990, India started tangible promotion of digital governance, and even more intensified after 2006 by initiating NeGP. These efforts started at various levels, including municipal levels, with simple steps like digitization of office records, online billings, computerization of licence and tax-related processes, and GIS mapping. As a turning point, India still needed a decisive shift in digital governance, which started in 2015 with the inception of Digital India and Smart Cities Missions

(Parkar & Purandare, 2023). On the other hand, these recent initiatives and all-out shift were preceded by early stages of e-governance and computerization, which first started in 1970 and continued to 1990. In 1970 Department of Electronic established, and after that, in 1990, wider adoption of e-governance practices started by incorporating digitalization in the election, land record, and tax filing systems. Moreover, after this date, another key program that started was NeGP; it brought a swift shift in digital transformation. NeGP aimed to make services accessible to all citizens and had 31 projects (Vaishampayan et al., 2020) Once the Aadhar project was launched in 2009, it paved the way for systematic and efficient service delivery and other welfare programs by assigning a specific ID number for every citizen. The Digital India Program was launched in 2015 to make online services available and accessible to everyone. Internet connectivity, digital literacy, online portals, and mobile Apps were designed and started working to facilitate service delivery, public participation in decision-making, and electronic payments. In addition to this, it also promoted e-health, e-education, and online documentations like death and birth certificates. So, this got government more responsive, transparent, and less dependent on paperwork (Kumarendra & Singh, 2023). Smart cities mission was also lunched in 2015 and it covered 100 cities, and it specifically focuses on digitalization in urban areas by introducing technology to make cities more efficient, safe and citizen friendly. It also introducing new approaches like cloud computing, big data, Ai and real-time data-based decisions.

SMC has launched website, mobile apps, and online portals for service delivery, CCTV for public safety and city management, a central traffic control system, and water and waste management is highly digitalized but still offline human elements are involved (Parkar & Purandare, 2023)

1.3 Surat Municipal Corporation (SMC)

SMC is one of the municipalities in India that has undergone large-scale structural and administrative reforms. In fact, these reforms in SMC started after a plague outbreak in 1994.

These reforms changed the type of governance in SMC from a rigid bureaucratic system to a more decentralized and citizen-centric urban governance. Consequently, institutional changes were implemented in public health and service delivery mechanisms (Jariwala et al., 2015). In addition, the shift paved the way for innovative e-governance practices and institutional improvement. So, the SMC became more accountable and responsive. Moreover, the new ICT-based governance enabled the SMC to conduct disease surveillance, implement early warning systems, and improve its public service delivery capacity (Jindani & Maheta, 2022). As a post-plague transformation, SMC has been continuously bringing changes and updates to digital technologies in different domains of municipal governance. When we glance over different research studies, it is clearly noticeable that in Indian municipalities, SMC was the first which started using ICT-based administration to simplify rules and procedures, improve transactions and records. Also, these initiatives save time and money in everyday interaction with citizens and make processes more transparent and corruption-free (Jariwala et al., 2015). In this regard, a major milestone was the introduction of the Virtual Civic Center in April 2012. The Virtual Civic Center is designed to deliver services online without office visits. This civic center is capable of providing online services to citizens, government departments, and businesses. A study was conducted in 2022 by Jindani and Mehta; they surveyed Surat citizens and found from the factor analysis that the SMC portal is not only time- and cost-saving for citizens, but it has also been revealed as the best portal based on the CWESTSA model assessment (Jindani & Maheta, 2022) In back-end digitalization, SMC has also adopted different initiatives and is hugely investing for smoother running of the portal and mobile app. For example, software updates, data security, and GIS systems are the focal points. In 2015, SMC launched its GIS system for town planning, tax collection, designing roads and water networks, and other civic services. This GIS system is used as a common platform for different departments, especially in the field of spatial project and budget monitoring, which significantly improves the decision-making process (Department of Administrative Reforms, 2015).

1.4 Research Problem

This research paper is going to study role of digitalization on good governance principles. Namely (Accessibility, Transparency, Responsiveness Inclusiveness) established by UNESCAP. To exactly find the role of digital tools on specific good governance principles was unclear in case of Surat Municipal corporation. Despite India's rapid municipal digitalisation, it remains unclear whether these technological initiatives genuinely strengthen these core good-governance principles or not. Existing studies examine e-governance platforms and citizen satisfaction but they do not evaluate how specific digital-service features

can be converted into measurable governance outcomes. In this study we will try to find evidence based result from primary and secondary data to contribute to academic literature especially in urban governance. This role will be explained with solid evidences and analysis to show how digitalization contribute to good governance recognized by UNESCAP and fill the gap by research and will documented method.

2. Review of Literature

2.1 Digitalization

Empirical research in public administration increasingly views digitalization as a governance reform tool rather than only a technological change. As research has indicated, e government has an implication on the substantive outcomes of good governance through the redesign of administrative procedures, restriction of freedom, as well as enhancing the state-citizen interaction. According to the UN-ESCAP, transparency, responsibility, access and inclusiveness are one of the governance requirements that should be taken into account when assessing performance where there is a direct effect of digital service delivery (UN-ESCAP, 2009). It is a well-established fact that digital governance facilitates transparency variability since it uniformizes the practices, enables self-disclosure of information via the internet and excludes mediators. Digitalization of public services across the countries and sector-specific studies also observe that information gap is reduced by the opportunities of being caught, while prospects of corruption can become particularly evident in the conditions of developing/public (urban) governance (Basyal et al., 2018; Khan et al., 2021). The online platforms/digital processes at the city level facilitate traceability on services such that the citizens are less pessimistic about transparent government. It (the digitalization) is also more responsive, as it makes the service process shorter, and a more real-time connection between the citizen and the administrative agencies. It has been seen that such mechanisms as text-digital complaint redressal and feedback reporting also result in higher response times, and more consistent monitoring of service performance, which is of great interest to local governments where the speed of service delivery directly affects the governance attribution (Hochstetter et al., 2023). Accessibility in the digital platforms also has the benefit of enhancing reach to services by reducing physical and procedural barriers mor. However, research highlights that utility gains exist exclusively under some conditions i.e., its design, ease-of-use and the infrastructure it has; hence demonstrating that its governance impacts variables on quality of implementation rather than digitization (UNDESA et al., 2012). Similarly, the impact of digital governance on inclusiveness depends: whereas digital services could increase participation, literacy- and

access-based digital inequalities can restrain the inclusion experience unless user-centred and open systems had existed (Khan et al., 2021).

2.2 Quality of Services

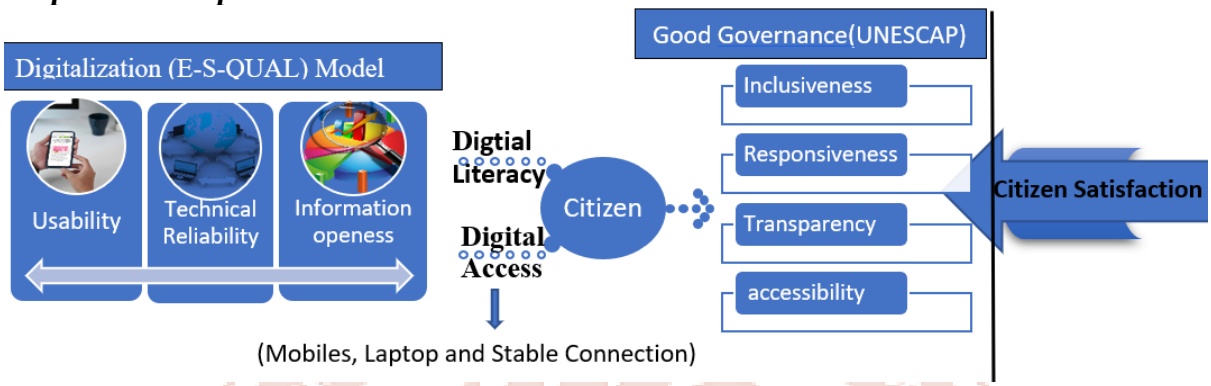
It is known that usability is one of the primary success factors in e-governance. Research done using the E-S-QUAL model established by Parasuraman, Zeithaml and Malhotra (2005) suggests that effective site navigation and efficiency of the system enhances the ability of the users to conduct service delivery and transact independently. In the case of public deployment, the ease of use reduces the barriers to procedures, and serves to provide a more accessible and responsive online service. technical reliability technological stability or security and operation of online services. Lack unreliable systems in an practical view, undermine customer confidence and reduce their usage of e-government services and a trustworthy platform and the security it offers facilitates timely service provision in addition to the accountability of institutions (DeLone and McLean, 2003). Digital transparency is anxiogenic because openness of information is typically measured based on the quality attributes of, e.g., accuracy and clarity. The research also points to the possibility that when information in all its splendor is available and readable to the citizens through the web, then the former will have the opportunities to imitate processes and results that will increase transparency and accountability in the field of services (Pribadi et al., 2021). Even though these dimensions are terminologies that are frequently used in the e-governance research, current literature seems to debate how (use of service or customer satisfaction) and not whether/which e-good governance outcome(s) is directly associated with each of these new e-gov strategy perspectives. This weakness highlights the need to empirically correlate dimensions of digital service quality with the performance of principle-wise governance in municipality.

2.3 Citizen Satisfaction and Digital Governance.

Studies on the field of public administration identify satisfaction among citizens to be a notable outcome of good governance rather than a reaction to the use of technology. In the context of digital governance, satisfaction in this case implies the degree to which the citizens feel online services add to the quality of governance outcomes such as transparency, responsiveness, accessibility and inclusiveness. Some studies indicate that electronic channels guaranteeing the availability of transparent information and providing traceability of services and informing about the timeliness allow raising the satisfaction levels with the public entities (Hochstetter et al., 2023). The municipal level results also present the finding that accountability and transparency are particularly essential triggers of satisfaction with online grievance systems and portal cutting delays, vague and delegation to an intermediate. Another

problem is accessibility and inclusion: the greater the DSA services are lowered in terms of physical and procedural obstacles and made to address the needs of as wide an assortment of different users the less citizens view them as not fair and citizen-focused. Conversely, limited or exclusionary digital design compromises satisfaction effects (by user) though services may be made accessible via internet (UNDESA et al., 2012).

Proposed Conceptual Model



Note. Adopted from E-S-QUAL (2005) and UN-ESCAP (2009) Framework

This conceptual framework illustrates how digitalization, operationalized through service usability, technical reliability, and information openness (E-S-QUAL model), influences good governance outcomes in line with UN-ESCAP principles, which in turn shape citizen satisfaction. The model further recognizes digital skills and digital access as moderating factors that condition the strength of the relationship between digitalization and governance outcomes. Based on this model following hypothesis are established.

H1: Digitalization has a significant positive effect on good governance.

H2: Digitalization has a significant positive effect on citizen satisfaction.

H3: Digital skills and digital access moderate the relationship between digitalization and good governance.

H4: Digital skills and digital access moderate the relationship between digitalization and citizen satisfaction.

3. Research methodology

In this research we use a quantitative empirical study based on survey to examine the relationship/effect between digitalization and good governance and citizen satisfaction in SMC. A total of 160 online SMC service users were surveyed for the collection of primary data using the structured questionnaires by 1-5 Likert style by non-probability convenience sampling method. The data were subjected to analysis with statistical software (Excel, Jamovi) and descriptive as well as inferential (correlation and simple/hierarchical regression) and

mediation analysis were used to test the theoretical relationships. This approach allows testing the conceptual model and hypotheses empirically.

4. Data Analysis and Findings

4.1 Summary of Respondent Demographics (N = 160)

Characteristic	Category	n	%
Age	18-25 years	96	60.0
	26-35 years	42	26.2
	≥36 years	22	13.8
Gender	Male	63	39.4
	Female	93	58.1
	Other	4	2.5
Education	School	76	47.5
	Graduate and above	84	52.5
Frequency of use (online Services)	Regular (daily/weekly)	76	47.5
Primary access device	Mobile phone	100	62.5
	Laptop/both	60	37.5
Internet access type	Mobile data	88	55.0
	Wi-Fi/ethernet	72	45.0

Note. N = total number of respondents; n = frequency; % = percentage.

As the table of frequency shows, the pool of respondents was mainly (60.0%) young and educated, and there were more (58.1%) women respondents. Almost half of the respondents have indicated that they used SMC online services on a regular basis, and the main (62.5%) means of digital access was mobile phones and 55.0% mobile data, which demonstrates a highly mobile trend in the use of municipal services.

4.2 Mean and standard deviation

Variable	Mean	SD
Digitalization	3.59	0.60
Good governance	3.45	0.67
Citizen Satisfaction	3.80	0.71
Digital Skill	3.77	0.82
Digital Access	3.78	0.87

The findings demonstrate that there are mostly positive perceptions of all the study variables, with the citizen satisfaction having the highest mean score. The above-average mean values on digitalization and good governance also demonstrate positive user opinions regarding municipal digital services and the results of governance. The medium standard deviations

indicate certain variations in the experiences of respondents, especially in the case of digital skills and digital access, and in this regard, they can be considered to be relevant as moderating variables.

4.3 Reliability Test

Construct	Cronbach's α
Digitalization	0.804
Good governance	0.808
Citizen Satisfaction	0.822
Digital Skill	0.751
Digital Access	0.78

Reliability of the study constructs was examined using Cronbach's alpha, with all values exceeding the acceptable threshold. Good governance with 0.89 and digital access 0.75 which show good internal consistency of measurement scale.

4.4 Pearson Correlations Among Composite Variables

Variable	1	2	3	4	5
1. Digitalization	-				
2. Good Governance	.734***	-			
3. Citizen Satisfaction	.718***	.683***	-		
4. C. Digital Skills	.592***	.491***	.585***	-	
5. C. Digital Access	.615***	.494***	.564***	.651***	-

Note: *p < .05, **p < .01, ***p < .001.

The five major constructs Digitalization, Good Governance, Citizen Satisfaction, Digital Skill and Digital Access have positive and significant linkages with one another with Pearson r of 0.49 to 0.73 and p-values of all less than 0.001 which points to the fact that the constructs are statistically significant. The pair wise deletion has the highest correlation between Digitalization and Good Governance (r= 0.73) and Digitalization and Citizen Satisfaction (r= 0.71).

4.5 Simple Linear Regression

4.5.1 Effect of Digitalization on Good Governance

Model Fit Measures

				Overall Model Test			
Model	R	R^2	Adjusted R^2	F	df1	df2	p
1	0.734	0.539	0.536	180	1	154	<.001

Note. Models estimated using sample size of N=156

Model Coefficients - Good Governance

Predictor	Estimate	SE	t	p
Intercept	**0.466**	**0.2264**	**2.06**	**.041**
Digitalization	**0.833**	**0.0620**	**13.42**	**<.001**

The simple linear regression analysis reveals that the digitalization is a significant predictor to the good governance outcomes. The model accounts 53.9% of the variation in good governance (R2 =0.53) and the influence of digitalization is positive and statistically significant (B)=0.833, p <.001).

4.5.2 Effect of Digitalization of Citizen satisfaction

				Overall Model Test			
Model	R	R^2	Adjusted R^2	F	df1	df2	p
1	0.718	0.516	0.513	166	1	156	<.001

Note. Models estimated using sample size of N=158

Model Coefficients - Citizen Satisfaction

Predictor	Estimate	SE	t	p
Intercept	0.754	0.2406	3.13	.002
Digitalizaion	0.852	0.0661	12.89	<.001

The regression results show that digitalization significantly predicts citizen satisfaction, explaining 51.3% of the variance (R^2 = 0.51). The effect of digitalization is positive and statistically significant (B = 0.852, p < .001).

4.6 Moderated regression: digitalization, digital skill and good governance

Model Coefficients - Good Governance

Predictor	Estimate	SE	t	p
Intercept	0.3887	0.2326	1.67	.097
Digitalizaion	0.7710	0.0763	10.11	<.001
Digital Skill	0.0787	0.0571	1.38	.170

Model Coefficients - Good Governance

Predictor	Estimate	SE	t	p
Intercept	-0.4653	0.8946	-0.520	.604
Digitalizaion	1.0353	0.2780	3.724	<.001
Digital Skill	0.2926	0.2237	1.308	.193
Digitalizaion ✻ Digital Skill	-0.0652	0.0659	-0.989	.324

The interaction between the digitalization and digital skill was not found to be statistically significant (p = 0.324) meaning that digital skill does not moderate the relationship between digitalization and good governance. The non-significant interaction means that the good governance effects of digitalization are similar irrespective of the level of digital skill. The addition of the interaction term caused the negligible increase in explained variance (ΔR2 = 0.003) and the moderation effect did not significantly influence.

4.7 Moderated regression: digital access and good governance

Predictor	Estimate	SE	t	p
Intercept	0.4266	0.2289	1.86	.064
Digitalization	0.7795	0.0781	9.98	<.001
Digital Access	0.0604	0.0542	1.11	.267

Model Coefficients - Good Governance

Predictor	Estimate	SE	t	p
Intercept	0.0200	1.0196	0.0196	.984
Digitalization	0.9015	0.3081	2.9260	.004
Digital Access	0.1612	0.2520	0.6395	.523
Digitalisation ✻ Digital Access	-0.0297	0.0725	-0.4093	.683

The interaction between digitalization and digital access did not have a significant statistical value (p =.683) and so it means that there is no moderation effect of digital access in the relationship between digitalization and good governance. The addition of the interaction term did not lead to a significant shift in the explained variance (ΔR^2 =.001 non significant p=.683), which means that there was no moderating effect of the digital access.

4.8 Moderated regression: digital access and citizens satisfaction

Model Coefficients - Citizen Satisfaction

Predictor	Estimate	SE	t	p
Intercept	–1.672	1.0498	–1.59	.113
Digitalizaion	1.417	0.3179	4.46	<.001
Digital Access	0.733	0.2598	2.82	.005
Digital Access ✻ Digitalizaion	–0.171	0.0748	–2.28	.024

The positive influence of digitalization is strong and significant on the satisfaction of the citizens (B=1.41, p=<.001). Digital access is also significantly positively directly impacting this (B=0.733, p=.005). The interaction term (Digital Access × Digitalization) is also

statistically significant and negative (B=-0.171, p = .024) which implies that the relationship between digitalization and citizen satisfaction is moderated by digital access with a moderating negative effect that is significant. ($\Delta R^2 = 0.151$) p value is less than <.05.

4.9 Moderated regression: digital skill and citizens satisfaction

Model Coefficients - Citizen Satisfaction

			95% Confidence Interval			
Predictor	Estimate	SE	Lower	Upper	t	p
Intercept	−1.350	0.9071	−3.142	0.4417	−1.49	.139
Digitalizaion	1.276	0.2833	0.716	1.8352	4.50	<.001
Digital Skill	0.694	0.2266	0.246	1.1415	3.06	.003
Digital Skill ✻ Digitalizaion	−0.147	0.0671	−0.280	−0.0144	−2.19	.030

The impact of digitalization on the satisfaction of the citizens is substantial and positive (p < .001). There is also a strong positive direct impact (p =. 003) of digital skill. Digitization and digital skills interaction are statistically significant (B = -0.067, p =.030) and it means that digital skill moderates the relationship between digitalization and citizen satisfaction, but the moderating effect is negative with slight decreae. The addition of the interaction term resulted in the statistically significant and model fit (ΔR^2 0.013, ΔF = 4.80, p =.030), which demonstrates that the moderator makes a contribution to the model.

4.10 Mediation Effect of Good Governance on the Affect Between Digitalization & Citizen Satisfaction

Effect	B	SE	95% CI Lower	95% CI Upper	P
Indirect	0.297	0.0802	0.123	0.440	<.001
Direct	0.534	0.1164	0.329	0.800	<.001
Total	0.831	0.0738	0.692	0.981	<.001

The indirect effect of digitalization on citizen satisfaction through good governance was significant The mediation findings reveal that, the positive impact of digitalization on citizen satisfaction is indirect via good governance (indirect effect = 0. 297, p < .001, bootstrap = 5,000), which supports the presence of the good governance mediator. The direct influence of digitalization on the level of satisfaction of citizens is also positive and significant (estimate= 0.534, p <.001). The overall impact is statistically significant (overall impact = 0.831, p <.001) which means they are partially mediated.

4.11 Hypothesis Testing Results

H1 is accepted, as digitalization has a significant positive effect on good governance ($p < .001$).

H2 is accepted, as digitalization has a significant positive effect on citizen satisfaction ($p < .001$).

H3 is not supported, as neither digital skill nor digital access shows a statistically significant moderating effect on the relationship between digitalization and good governance ($p > .05$).

H4 is accepted, as both digital skill ($p = .030$) and digital access ($p = .024$) significantly moderate the relationship between digitalization and citizen satisfaction but the interaction terms show slightly negative impact.

5. Discussion

The findings show that digitalization contributes greatly to good governance and citizen satisfaction with their municipal service provision. This good governance impact implies the efficiency of administrative services and transparency in municipal agencies through digital systems. Conversely, depth of digitalization on the citizens satisfaction is conditional. Although, digital skills and digital access do not change the governance outcomes, it tends to moderate the linkage between digitalization and citizen satisfaction, which also suggests that, the citizens with more digital skills gain less advantages of the digital public services. This finding shows that digital governance reforms alone are not enough for citizens to benefit. To achieve real benefits in the citizen level comprehensive digital inclusion initiatives need to be adopted.

6. Conclusion

This paper finds that digitalization is a vital agent for good governance performance and greater citizen satisfaction in the provision of municipal services. Though digital reforms have always improved the results of governance, their effects on citizen satisfaction depend on the digital capability of the citizens and their ability to access the internet. These results imply that digital governance projects are the most appropriate ones in the state of including strategies that allow citizens to have complete access to digital services. Policy wise, the municipal authorities should concentrate on investing not only in digital infrastructure and the digital literacy program and fair access to digital technologies. Enhancing the user support systems, making digital services interfaces easier, and providing more affordable internet access may assist in making sure that the advantages of digitalization would be spread more equally among the various social groups. These would augment the role of digitalization as an effective tool to promote good governance as well as inclusive service delivery by the state.

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