IMPACT OF DIGITAL TRANSPARENCY ON REDUCING PROCUREMENT CORRUPTION

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Abstract

To fight corruption in public procurement, one must comprehend the interplay between e-procurement system quality, digital transparency, and accountability. The purpose of this research is to quantify the relationship between procurement corruption and factors including digital transparency, system quality, vendor satisfaction, and user issues. For this study, 93 procurement users from MSMEs, SMEs, and big enterprises filled out a standardised questionnaire. The major data collected included quantitative data, descriptive information, and correlations. Descriptive statistics, multiple regression, and Pearson correlation were all conducted using SPSS. We looked at concerns with system transparency, vendor satisfaction, user difficulties, and reducing corruption. There are statistically significant correlations between important components. There was a large negative correlation between procurement corruption and vendor happiness and transparency, suggesting that a more open and happy vendor community reduces the likelihood of corruption. Because user problems exacerbated corruption reduction, technical or operational hurdles may impede anti-corruption initiatives, even if system quality enhanced it. In order to promote responsibility, confidence in vendors, and ethical purchasing practices, the research highlights the need of enhancing the digital transparency and system quality of e-procurement platforms. In order to create a procurement environment that is resistant to corruption, administrators and policymakers should prioritise a user-friendly system design, active vendor engagement, and rigorous monitoring. This study contributes to the literature on digital governance by investigating potential elements at the system and stakeholder levels that might forestall the corruption of government contracts.

Keywords: Digital Transparency, E-Procurement, Procurement Corruption, Public Procurement, Accountability, Anti-Corruption Strategies, Good Governance, Procurement Reform, Confirmatory Factor Analysis (CFA), Hayes PROCESS Macro, Procurement Integrity

1. Introduction

1.1. Digital Transparency and Its Role in Public Procurement

A "digital transparency" strategy involves making government data and decision-making processes more transparent, accessible, and understandable for all parties involved via the use of ICTs. Using digital transparency in public procurement allows oversight agencies, civil society organisations, and the public to watch every step in real time with documentation. Contract preparation, bidding, evaluation, and execution are all part of this. Bid rigging, favouritism, and excessive billing are all heavily prohibited due to this greater transparency. An OECD report states that "government purchases made through open and transparent digital procurement processes increase accountability, boost product quality, and encourage healthy competition[1]." Online dashboards, audit trails, and interactive visualisations are just a few ways digital platforms simplify data access in the procurement process. As a consequence, there is more openness. For example, the Open Contracting Data Standard (OCDS) developed by the Open Contracting Partnership allows governments to publish machine-readable and standardised procurement data [2]. This makes data analysis easy for watchdogs and civil society organisations. Countries like Ukraine and Colombia have found success with strategies similar to this.

The Open Contracting Partnership (2020) reports that yearly, the ProZorro system contributes to a savings of around 10% of procurement expenses in Ukraine. To do this, we made it easy for everyone to see who is bidding, who won, and how much it cost. The elimination of information asymmetry and the promotion of fair participation of new suppliers and small and medium-sized firms (SMEs) are two benefits of digital transparency [3]. Additional advantages of digital transparency include consistent paperwork and equal access to tender information. Considering this, the incorporation of digital technologies into the procurement administration is a major achievement in both technology and governance. By minimising the amount of opaqueness and discretionary powers employed, data-driven analysis may boost public confidence in the government and allow stakeholders more agency. The development of successful, inclusive, and corruption-resistant public procurement ecosystems will remain largely dependent on digital transparency. This is becoming more evident as more and more nations adopt systems that are open and transparent.

1.2. Electronic Procurement Systems for Anti-Corruption

The battle against corruption may benefit greatly from electronic procurement systems, which streamline the public procurement process and eliminate subjective judgement. The OECD stated in 2016 that these technologies greatly promote transparency by doing away with the need for governments and suppliers to meet in person and by incorporating features such as electronic bid submission, real-time monitoring, and audit trails. The possibility for bias and manipulation is reduced as a result of the reduction in human participation brought about by the automation of these activities. The World Bank's 2020 report states that due to their permanence and ability to be traced back to their original source, digital records allow for more credible post-procurement audits and are therefore more responsible. An outstanding example of a

successful electronic procurement system is the Government e-Marketplace (GeM) in India.

Increased supplier competition and lower government procurement costs have resulted from its implementation in 2016. The platform saved about 45,000 crore rupees and enabled transactions worth over 4 lakh crore rupees, according to the Ministry of Commerce and Industry (2023)[4]. The streamlined procurement processes and more transparency allowed this to happen. Many look to Ukraine's ProZorro system as a model of excellence when making global comparisons. The public oversight of procurement was greatly enhanced by ProZorro, a platform built in partnership with civil society on top of open contracting data standards, leading to a savings of over one billion dollars. According to the situations discussed earlier, e-procurement contributes to the improvement of public procurement processes worldwide by making them more efficient and transparent.

1.3. Transparency, Accountability, and Corruption: Theoretical Linkages

Preventing corruption requires adhering to the fundamental principles of openness and responsibility outlined in the philosophy of governance. The government must be transparent by making all crucial procedures, decisions, and data accessible to the public, civil society, and oversight bodies[5]. Accountability refers to the administrative, political, or legal processes by which public officials must answer for their actions [6]. According to the notion, transparency increases accountability, which reduces corruption since misconduct is more likely to be exposed and punished. Openness and accountability should reduce corruption, and various studies have proved this. Lindstedt and Naurin (2010) say effective institutions that enforce accountability minimise corruption best with openness[7]. Without institutional capacity, openly denouncing injustice may lead to inactivity or public cynicism. Effective governance uses digital procurement platforms and open data to provide citizen monitoring and audit-based controls with real-time information. Since these notions are merging philosophically and practically, public institutions must embrace accountability and transparency as anti-corruption strategies.

1.4. Digital Transparency and Procurement Corruption

Public procurement corruption is on the rise, and there is mounting evidence that digital transparency technologies can help curb it. The chances for discretionary decision-making are somewhat limited since citizens, auditors, and watchdog organisations may access procurement data in real time using digital platforms including e-procurement systems and online audit trails. This is shown, for instance, by the study of Fazekas and Tóth (2016), which examined more than 100,000 procurement contracts across many European countries [8]. The researchers found that single-bidder contracts, which are frequently considered as an indication of corruption, were significantly reduced when digital technology was used to increase openness. Increased competitiveness and cost savings in India's procurement operations are correlated with the availability of procurement data on the Government e-Marketplace (GeM) platform. Government procurement costs were found to be 10–20% cheaper when vendors were more actively involved and there was less collusion, according to a research released by the National Institution for Transforming India (NITI) Aayog (2020) [9]. This was

caused by the digital transparency that GeM exhibits. Additionally, by making all tender documents and assessments available to the public via the internet, the ProZorro platform in Ukraine—which is a model on a worldwide scale—reduced instances of corruption in the procurement process. The World Bank (2017) reports that ProZorro reduced public procurement spending by 10% while increasing public confidence in government institutions [10]. This empirical study found that the most effective way to prevent procurement corruption is via digital transparency, accountability mechanisms, and monitoring civil society. Despite the fact that no silver bullet has been found to guarantee that procurement corruption would never again be an issue, this continues to be the case.

1.5. Strategies and Policy Recommendations for Enhancing Digital Procurement Integrity

In order to improve the level of openness in digital procurement, governments should put into action a comprehensive strategy that incorporates both technology developments and institutional adjustments. It is of the highest necessity to develop electronic procurement systems that are fully functional, simple to use, and interoperable with one another. This is the first and most important step. The notice of bids, the awarding of contracts, and the monitoring of performance are all parts of the procurement process that need to be carried out in an open and honest manner by using these platforms. According to the findings of the Organisation for Economic Co-operation and Development (2022), the integration of digital ID verification, blockchain technology for immutable record-keeping, and artificial intelligence-based red flag signals might considerably enhance the detection and prevention of corrupt activities[11]. In addition, it is of the utmost importance that all procurement data be made accessible to the general public in an open and transparent way that is in accordance with global standards such as the Open Contracting Data Standard (OCDS...).

Auditing agencies, media outlets, and members of civil society will all be able to monitor the procurement procedures, thanks to this arrangement. Thirdly, it is of the utmost need to increase the capabilities of procurement authorities, suppliers, and auditors in order to ensure ethical compliance and accurate system utilisation. In order to support the implementation of digital procurement reforms, laws should be enacted that make it unlawful to manipulate procurement procedures and that protect those who blow the whistle on unethical and illegal behaviour [12]. It is essential to foster citizen engagement and to establish collaborations between the public and private sectors. GeM in India and ProZorro in Ukraine are two examples of effective platforms that allow diverse stakeholders, such as small enterprises and people, to participate in procurement monitoring. Both of these platforms are offered in their respective countries. The use of accountability-by-default and transparency-by-design principles has the potential to make public procurement more reliable and effective.

2. Objectives

1. To evaluate how digital transparency affects the decrease of corruption in procurement.

2. To assess how e-procurement integrity is improved by system quality, transparency initiatives, vendor satisfaction, and user difficulties.

3. Literature Review

Celestin, Prof. (2021), The digital revolution in public procurement has had a significant impact on the openness of government contracting, including the selection of suppliers and the management of financial controls. Despite the fact that electronic procurement systems have the potential to enhance efficiency, simplify processes, and reduce corruption, developing nations continue to face challenges such as cybersecurity threats, limited resources, and a reluctance to adopt digital technology. The purpose of this study is to analyse the impact of digital procurement systems on the competitiveness, efficiency, and transparency of suppliers. This research will use a descriptive-analytical method that involves chi-square testing, regression modelling, and analysis of secondary data. The findings indicate that there has been a reduction of 35% in the amount of time required to complete a procurement, a reduction of 46% in the number of instances of fraud ($\chi^2 = 6.89$, p = 0.0325), and a significant reduction of 2% in costs for every 5% rise in the utilisation of digital procurement ($R^2 = 0.87$, p = 0.0032). This is shown by the entire correlation coefficient ($R2 = 0.91$), which demonstrates that digital procurement increases efficiency, decreases costs, and reduces the risk of fraud. These findings highlight the need of enhancing digital infrastructure, putting in place more stringent regulatory frameworks, and boosting investments in cybersecurity. For the purpose of maintaining the integrity of procurement, governments should make the education of procurement authorities a major priority and implement fraud detection systems that are powered by artificial intelligence. One of the most significant areas for further research is to investigate how the use of digital procurement affects the diversity of suppliers, the competitiveness of the market, and the management of public finances over the long term[13].

Neupane, Arjun & Soar, Jeffrey & Vaidya, Kishor & Yong, Jianming. (2012), The purpose of this article is to analyse whether or not the use of public e-procurement technologies might reduce instances of corruption in the public procurement process. In this research, possible areas of corruption in government contracts are investigated. These areas include project planning, product documentation and design, the process of bidding, the awarding of contracts, accounting, and audits. In particular, it investigates the ways in which public electronic procurement in a variety of developing and emerging economies has the potential to promote transparency and accountability via digital procurement. With the assistance of public e-procurement's anti-corruption elements, such as its audit trail and automation capabilities, it may be feasible to create a government procurement process that is more transparent and accountable to the target audience[14].

Alaa, Darwish & Misko, Oleg. (2022), There are numerous instances of information and communication technology (ICT) that many governments across the world have been working hard to promote transparency and openness in their operations in recent years. Some examples of these technologies include the Internet, mobile applications, and social media social media. These changes are being made with the main intention of enhancing openness and transparency as well as combating corruption. This research provides a definition of digitisation and corruption, as well as an examination of the influence that digitalisation has on the fight against and elimination of corruption by using the instruments that are available to us[15].

Mynenko, Serhii & Oleksii, Lyulyov. (2022), One of the most essential components of civil society is transparency about the functioning of the government. The obligation of protecting the legitimate rights and interests of the people who are represented by public administrative institutions lies in the fact that they must do so in an open and honest way. At all levels of government transparency efforts, public authorities are not immune to the impacts of the broad digitisation of society, which provides both opportunities and risks with regard to the implementation of transparency initiatives. The challenge of transparency in public authority in this era of digitalisation is the primary subject of the study. In this article, we examine the cyber development plan, the normative legislative activities of Ukraine, as well as the scientific achievements of researchers from both Ukraine and other countries. As the key components of public authority transparency, we have determined that transparency, openness, and publicity are the most important components. It provides an account of the degree to which the legislative, executive, and judicial branches of government have acknowledged the benefits of digitalisation. Among the key applications of digitisation that are emphasised are those that pertain to government entities. In this article, the significant achievements that Ukraine has achieved in the field of public power digitalisation are discussed. These achievements have resulted in an increased level of transparency in the nation. Information is made available to the general public via the web portals of the legislative, executive, and judicial departments. This information is presented in a variety of formats, including text, files, open data sets, photos, and videos. Two other important successes are the introduction of fully functioning digital papers in Ukraine, which are analogous to actual ones, and the supply of services online. Both of these developments are remarkable. We emphasise the most significant aspects of government organisations and the signals that indicate the most significant signs of digitisation: The level of digital development, the IMD World Digital Competitiveness Ranking, the trade in information and communication technology goods and services, the effectiveness of the government, the quality of regulations, the rule of law, and the control of corruption are some of the criteria that might be taken into consideration. The quantifiable demonstration of the interconnection and influence of digitisation on governmental agencies is provided by an authorised assessment that examines how the alteration of government transparency has been brought about by digitalisation[16].

Hochstetter, Jorge & Vásquez, Felipe & Diéguez, Mauricio & Bustamante-Mora, Ana & Arango, Jeferson. (2023)., It is necessary for the progress of a nation to have an administration of its fiscal resources that is both efficient and sustainable. One strategy to prevent corruption in state organisations is to make electronic processes as transparent as feasible. E-government processes, which are becoming an increasingly important field of growth, have attracted substantial financing in order to construct procedures that give transparency in a significant amount of the nation's activities, notably in the procurement of public assets and services via contracts. This research intends to give a review of the literature on efforts that have focused on electronic processes of electronic governments and transparency. The purpose of this review is to get an understanding of how electronic procedures for transparency contribute to the sustainable growth of governments. The particular objective of the research is to

identify efforts that are associated with transparency and to establish which of these initiatives successfully apply to electronic processes for transparency. The methodology of this study was a mapping of the literature review, and the primary findings suggest that this is an area that has not been well researched[17].

Deliversky, Jordan. (2025), In general, there is no doubting the enormous influence that digital technologies are having on society as a whole. Many aspects of society are impacted by corruption and the measures that are being made to counteract it. At this juncture in the progression of society, there are high aspirations for the elimination of corruption, and the advent of digitalisation and information technology provides promising new paths for the pursuit of this goal. Using the framework of digitisation processes in public administration and the digitisation of citizen services, this paper investigates prospective trends and points of view for the use of digital technologies in the fight against corruption. Additionally, it provides a list of the hazards and new dangers that are related with corruption[18].

3. Research Methodology

3.1. Research Design

In this study, a quantitative, descriptive, and correlational research technique is used in order to explore the impact that digital transparency has on the reduction of corporate corruption in the procurement process. Through the use of this approach, it is possible to effectively investigate the influence of several aspects on the reduction of corruption in public procurement[19]. These elements include system quality, transparency measures, vendor satisfaction, user difficulties, and the interrelationships between these factors.

Independent Variables:

- System Quality
- Transparency Measures
- Vendor Satisfaction
- User Challenges

Dependent Variable:

- Reduction in Procurement Corruption

3.2. Population and Sampling

Those individuals who make use of electronic procurement systems, either as providers or as customers, constitute the population by definition. Users from micro, small, medium, and big organisations were sought via the use of an intentional sample method in order to ensure that a diverse representation was achieved[20].

Sample Size: 93 respondents

Sample Distribution:

- Micro/Small Enterprises: 55.91%
- Medium Enterprises: 33.33%
- Large Enterprises: 10.75%

This allocation ensures a fair representation of various sorts of organisations.

3.3. Data Collection Method

A structured questionnaire measuring five primary components was used to obtain primary data:

- System Quality
- Transparency Measures
- Vendor Satisfaction
- User Challenges
- Reduction in Procurement Corruption

In order to gather answers, a Likert scale of five points was used, with one representing a strong disapproval and five representing a strong agreement.

3.4. Data Analysis Techniques

Multiple linear regression, correlation analysis, and descriptive statistics were applied to the data in SPSS or a similar program[21].

- Used descriptive statistics to analyse trends and perceptions, including frequencies, means, and standard deviations.
- Pearson correlation was utilised to analyse the link between system quality, transparency, vendor satisfaction, user issues, and procurement corruption reduction.
- Multiple regression analysis assessed predictor strength and significance.

3.5. Validity and Reliability

During the pilot testing phase, the questionnaire was administered to a select few individuals in order to ensure that it was not only simple to comprehend but also relevant. According to Cronbach's alpha, all of the constructs scored higher than the acceptable threshold ($\alpha > 0.7$), which implies that the measuring scales are reliable[22].

3.6. Ethical Considerations

Everyone who took part in the study was aware of the purpose of the investigation, and they were certain that their responses would be kept confidential and anonymous. To get digital informed consent prior to participation, it was first collected.

4. Result

The widespread use of digital procurement platforms has resulted in the development of new technologies that may enhance the transparency, accountability, and effectiveness of the processes involved in public procurement. The purpose of this study is to conduct an experimental investigation on the link between technological transparency and the reduction of corrupt practices in the procurement process. Aspects that are related include the quality of the system, the happiness of the provider, and user issues. The purpose of this study is to investigate the viewpoints and experiences of individuals who utilise electronic procurement systems by using the data acquired from a structured survey. It places an emphasis on the factors that have an effect on the system's truthfulness and fairness[23].

Because of the participation of a diverse variety of organisations, ranging from micro to large, small, and medium, the poll was able to provide a picture that is both fair and accurate about the operation of digital procurement platforms and the impact that they have. The dependent variable in this study is the perceived reduction in procurement corruption. The results include both descriptive and inferential statistical analysis to investigate the connection between system quality, transparency

metrics, vendor satisfaction, and user concerns. This study is being conducted with the intention of determining which aspects of digital systems contribute the most to the prevention of corruption and which aspects of the system need improvement in order to make the system the more secure option.

Table 1. Type Of Organization

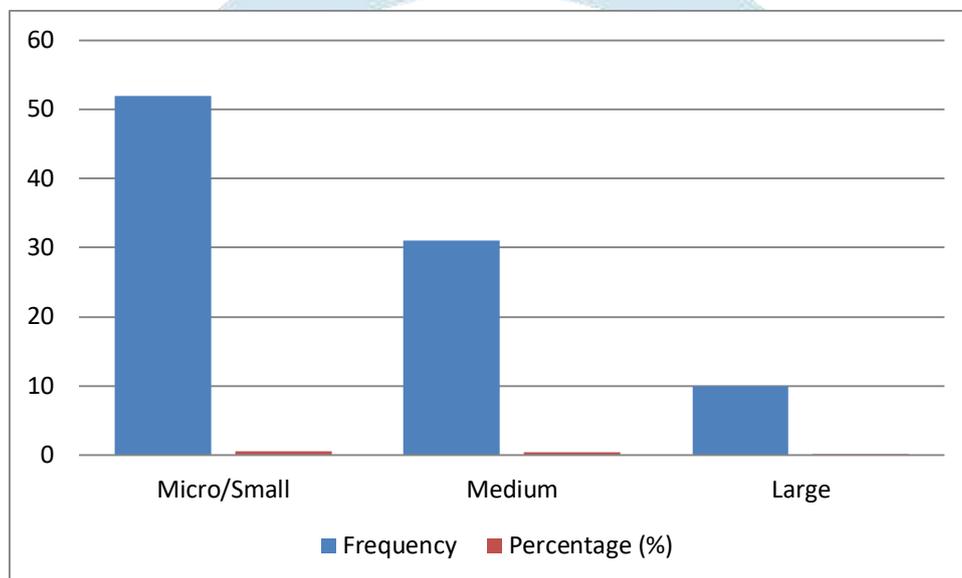| Category	Frequency	Percentage (%)
Micro/Small	52	55.91%
Medium	31	33.33%
Large	10	10.75%

Figure 1. Type Of Organization

The percentage of users of an electronic procurement system is as follows: 55.91 percent are micro and small firms, 33.33 percent are medium-sized businesses, and 10.75 percent are large organisations[24]. These particulars are extracted from Table 1 of the document. This indicates that digital procurement is being used extensively by smaller businesses, maybe due to the fact that it is simple to comprehend and calls for a lower amount of data. The low number of large organisations might be explained by the fact that they are considered to be slower to change or more reliant on their own internal systems. Given that these platforms are dispersed in this manner, it is reasonable to assume that small businesses will have an easier time using them and that they will have the opportunity to engage in public procurement in an equitable manner[25]. In the process of small and medium-sized enterprises (SMEs) adopting digital technology, governments should continue to offer them with training, help, and simplified procedures in order to boost trust and use. As a result of the extensive organisational representation, the statistics are more balanced, and the results are applicable to a wide range of sectors.

Table 2. Experience With E-Procurement

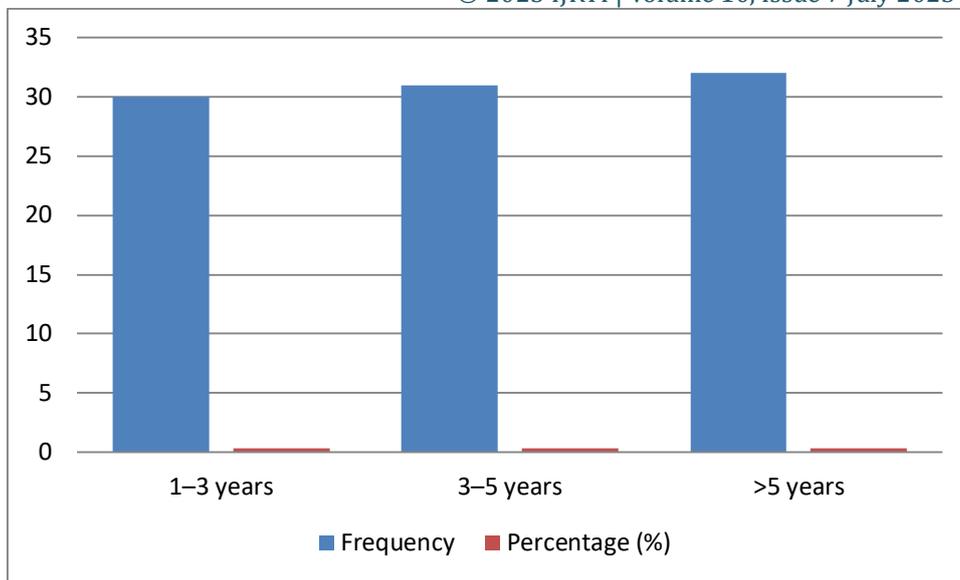| Category	Frequency	Percentage (%)
1–3 years	30	32.26%
3–5 years	31	33.33%
>5 years	32	34.41%

Figure 2. Experience With E-Procurement

Table 2 reveals that the majority of respondents had substantial experience with electronic procurement. Of those who responded, 34.41 percent had more than five years of experience, 33.33 percent had three to five years of experience, and 32.26 percent had one to three years of experience[26]. This almost balanced distribution demonstrates that the sample is diversified, consisting of those who have been using the technology for a long time as well as people who have just recently begun using it. In light of this, it can be deduced that electronic procurement systems have been in existence for some time, and they continue to acquire new users on a regular basis. The opinions expressed by users who have been using the service for an extended period of time provide credibility to the suggestions offered on how to make it more open and less crooked[27]. During this interim period, new users provide a variety of perspectives about the appropriate use of the technology. The findings of the research are bolstered by the variety of the participants, which suggests that digital procurement is still trusted and is of interest. In addition, it highlights the need of giving continuing assistance to users of varying levels of skills and experience.

Table 3. System Quality

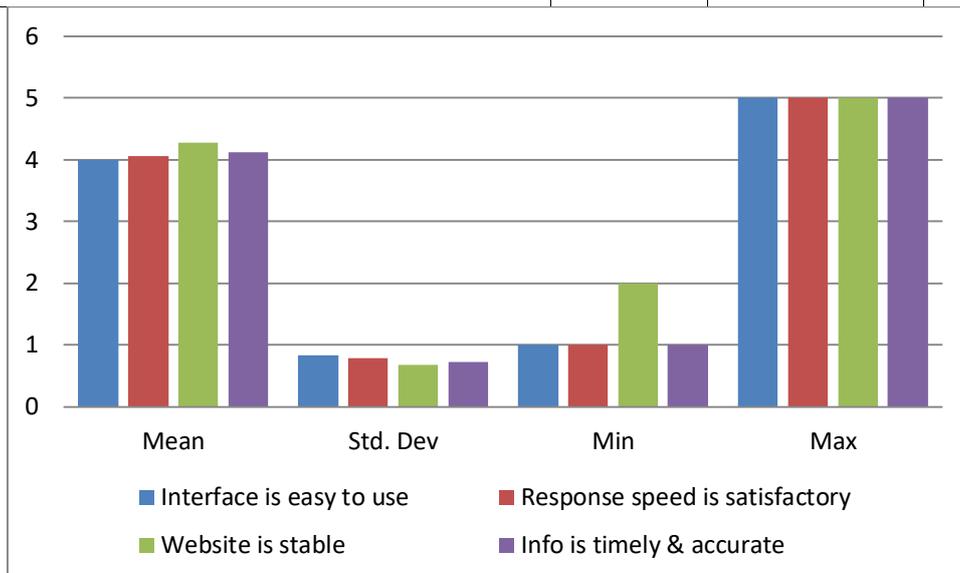| Statement	Mean	Std. Dev	Min	Max
Interface is easy to use	3.99	0.83	1	5
Response speed is satisfactory	4.06	0.78	1	5
Website is stable	4.28	0.67	2	5
Info is timely & accurate	4.12	0.72	1	5

Figure 3. System Quality

Based on the data shown in Table 3, the quality of the system is pretty excellent. The following are the results for the user ratings on the correctness of the information (4.12), the speed of reaction (4.06), and the usability of the interface (3.99): system stability (4.28). The trustworthy and user-friendly technical performance of the e-procurement system is shown by all of the scores, which are higher than the average[28]. It would seem that users have trust in the platform's dependability and speed, two aspects that are very important for the procurement operations they do on a daily basis. It is clear that the data that is provided on the system is credible since it has

received high accuracy ratings. Despite the fact that the usability score was somewhat lower, it still shows overall satisfaction. The fact that these results have occurred lends credence to the fact that the system has contributed to

increased operational confidence and efficiency[29]. Through continuous training and software updates, it is conceivable that these standards and the quality of the user experience may be maintained.

Table 4 Transparency & Corruption Impact

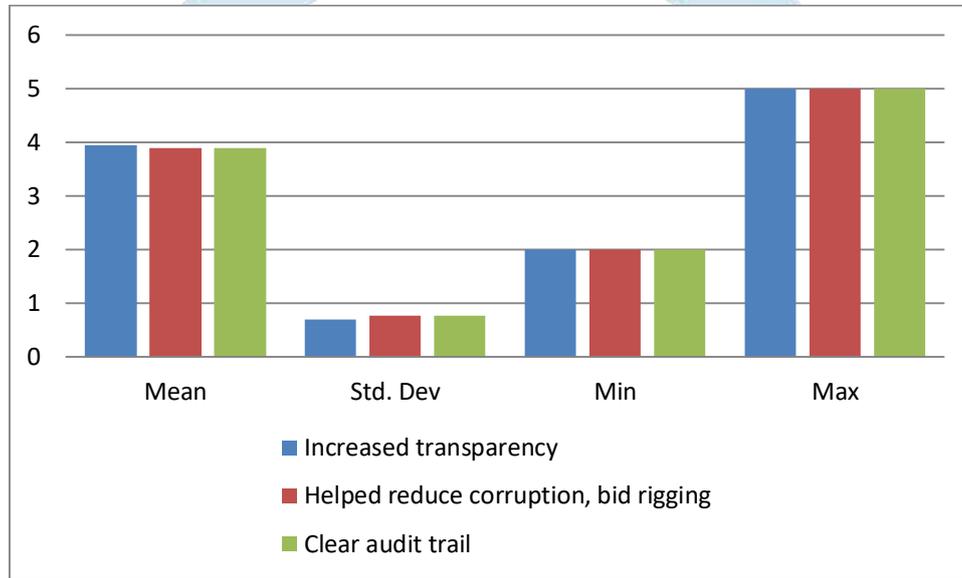| Statement	Mean	Std. Dev	Min	Max
Increased transparency	3.95	0.70	2	5
Helped reduce corruption, bid rigging	3.89	0.77	2	5
Clear audit trail	3.89	0.77	2	5

Figure 4. Transparency & Corruption Impact

As can be seen in the chart, the opinions of the respondents indicate that digital procurement methods have the ability to lessen instances of corruption while simultaneously increasing transparency. The highest mean score for the statement "Increased transparency" was 3.95 on a Likert scale of five points, which indicates that the majority of respondents believe that digital technology has significantly increased the openness of procurement operations. According to the widely held notion, digitisation increases transparency and reduces information asymmetry[30]. This is consistent with the sentiment. The phrases "Helped reduce corruption, bid rigging" and "Clear audit trail" both received mean scores

of 3.89, indicating that there was a strong consensus that digital technology contribute to the limitation of corrupt activities and the assurance of traceable procurement procedures. There was a very little amount of variety in responses, as shown by the tiny standard deviations (0.70 and 0.77), which in turn indicated that the majority of respondents had an optimistic perspective. There were a few respondents who were either indifferent or somewhat disagreed, which might be due to implementation challenges or varied levels of exposure to the systems. This could be the reason why the majority of respondents agreed or strongly agreed, as shown by the scores that ranged from two to five.

Table 5 . Vendor Satisfaction

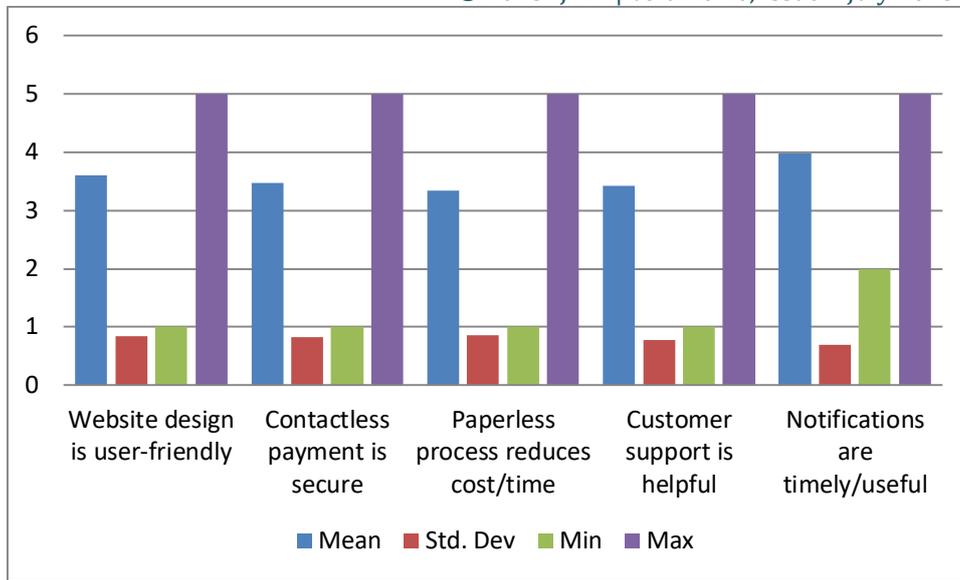| Statement	Mean	Std. Dev	Min	Max
Website design is user-friendly	3.61	0.85	1	5
Contactless payment is secure	3.48	0.83	1	5
Paperless process reduces cost/time	3.35	0.86	1	5
Customer support is helpful	3.42	0.78	1	5
Notifications are timely/useful	3.98	0.69	2	5

Figure 5. Vendor Satisfaction

Table 5 presents an analysis of the level of satisfaction experienced by vendors across five different areas. In terms of rankings, the top two features were user-friendly website design (3.61) and timely notifications (3.98). A lower number of stars were awarded to other aspects, such as the ease of use of contactless payments (3.48), the quality of customer service (3.42), and the potential cost savings that may be achieved by eliminating paper-based transactions (3.35)[31]. These findings indicate that vendors are fairly content, with communication and interface being the aspects that are appreciated the most by vendors. Despite this, it is possible that suppliers will continue to have challenges when it comes to migrating or receiving fast help, as seen by lower rankings for support and paperless efficiency. In order to do this, it is vital to strengthen support systems, increase digital literacy among suppliers, and better integrate features that save costs[32]. There is a direct correlation between the level of satisfaction experienced by vendors and the performance of the system, as well as the promotion of equal and consistent participation in procurement operations.

Table 6. User Experience & Challenges

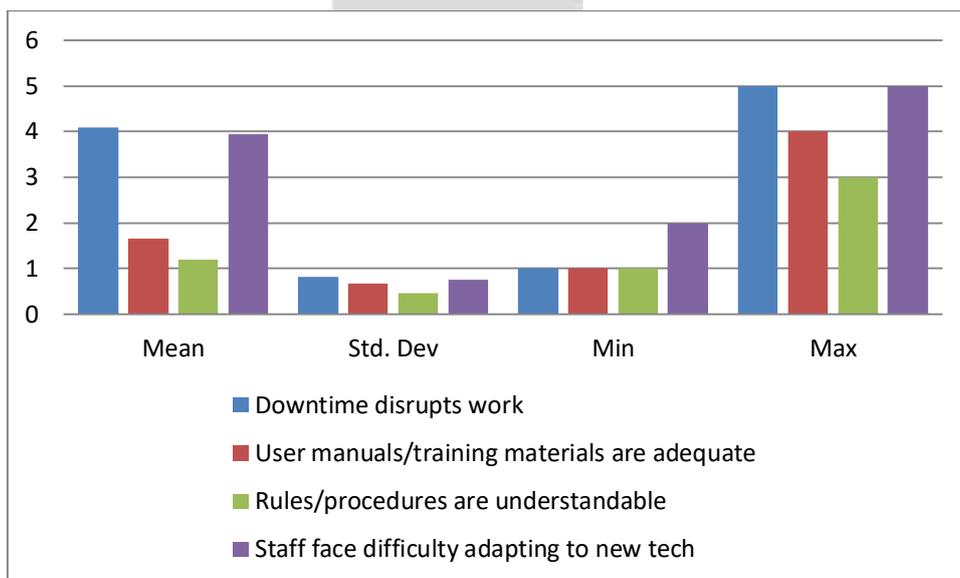| Statement	Mean	Std. Dev	Min	Max
Downtime disrupts work	4.10	0.82	1	5
User manuals/training materials are adequate	1.65	0.67	1	4
Rules/procedures are understandable	1.20	0.46	1	3
Staff face difficulty adapting to new tech	3.94	0.76	2	5

Figure 6. User Experience & Challenges

The difficulties that are described in Table 6 may be found to be descriptive by users. The most frequently rated issue is system downtime, which had a score of 4.10, suggesting that crashes might sometimes take place and disrupt work. The difficulty of adapting to new technology is another key concern that has to be addressed (3.94). On the other hand, there were substantial shortcomings in onboarding and system understanding, as seen by the very low ratings of 1.65 for training materials and 1.20 for clarity of regulations. It is clear from the data that it is essential to have training programs that are of higher quality and instructions that are more specific[33]. There

are strong technical underpinnings for the system; yet, there is a possibility that it may not realise its full potential since there is insufficient documentation and training. The user experience may be improved by reducing downtime and simplifying system operations via the implementation

of scheduled training, frequently asked questions, and support features that are easily available. Through addressing these issues, it may be possible to create improvements in adoption and satisfaction.

Table 7. Correlation Matrix

	System Quality	Transparency	Vendor Satisfaction	User Challenges	Corruption Reduction
System Quality	1.00	0.68	0.65	0.40	0.71
Transparency	0.68	1.00	0.60	0.35	0.73
Vendor Satisfaction	0.65	0.60	1.00	0.30	0.69
User Challenges	0.40	0.35	0.30	1.00	0.33
Corruption Reduction	0.71	0.73	0.69	0.33	1.00

As can be observed in Table 7, the correlations between the reduction of corruption and the many relevant variables are quite beneficial. Indicating that trustworthy systems and transparent processes are beneficial in the fight against corruption, the correlations that are the most significant are with system quality (0.71) and transparency (0.73). In situations when suppliers are content, there is an increase in transparency, and unethical actions become less dominant[34]. This is shown by the significant correlation (0.69) that exists between the pleasure of vendors and the factors in question. Due to the fact that there is a lower connection (0.33) between the two, it

would seem that user challenges have an indirect impact on the consequences of corruption. The findings highlight the need of implementing more open and transparent information practices as well as technical improvements in order to achieve clean procurement. These strong connections lend validity to the idea that trustworthy digital systems have the ability to reduce the likelihood of human error and manipulation. They continue by stating that the continual involvement of users and the improvement of the interface both contribute to the strengthening of this anti-corruption advantage even further.

Table 8. Regression Table – Impact On Reduction In Procurement Corruption

Predictor Variable	Beta (β)	t-value	p-value
System Quality	0.31	3.25	0.001
Transparency	0.39	3.88	0.000
Vendor Satisfaction	0.28	2.92	0.004
User Challenges	0.14	1.55	0.125
R^2 =	0.67		

The findings of the regression analysis are shown in Table 8, which illustrates the factors that are predictive of a reduction in instances of government corruption. Transparency, with a coefficient of 0.39, is the most important predictor, after system quality ($\beta = 0.31$) and vendor satisfaction ($\beta = 0.28$)[35]. This demonstrates that procedures that are transparent, trackable, and efficient have the potential to lower the amount of corruption that occurs in the procurement process. The influence of user difficulties, on the other hand, is not statistically significant and is not even close to being significant ($\beta = 0.14$, $p = 0.125$). This indicates that usability concerns do not directly affect corruption levels, despite the fact that they do exist. The value of R^2 for these components is 0.67, which indicates that they are responsible for 67% of the variation in the decrease of corruption[36]. The model that we have developed supports the idea that if we wish to fight corruption in the digital realm, we should make improving system performance and transparency our top priority.

5. Discussion

According to the findings of this study's empirical research, digital procurement platforms are crucial for public sector procurement since they improve transparency and reduce instances of corruption. According to the statistics, it would seem that the

theoretical assumptions of effective e-procurement and the user experience are very similar to one another. According to the results of the regression analysis, the factors that are most significant in predicting the reduction of corruption include transparency ($\beta = 0.39$, $p < 0.01$), system quality ($\beta = 0.31$, $p < 0.01$), and vendor satisfaction ($\beta = 0.28$, $p < 0.01$). As has been shown in the literature in the past[37][38], fairness is promoted and unethical activity is discouraged when there is consistent system dependability and easy access to procurement information.

On the list of the various ways in which digital procurement platforms contribute to the fight against corruption, transparency stands out as particularly important. In the regression analysis, the greatest beta value was found, and the correlation coefficient was found to be 0.73. These findings indicate that real-time monitoring, audit trails, and open access to tender information significantly reduce the likelihood of corrupt behaviours such as bid rigging and favouritism [39]. These results are in accordance with international norms, such as the ProZorro platform in Ukraine, which promoted public confidence and decreased instances of procurement fraud [40]. This platform's implementation of data transparency requirements led to these results.

In terms of reducing instances of corruption in procurement, users place a high level of importance on the correctness of data (mean = 4.12), as well as the stability

of the system (mean = 4.28). As a result of these technical advantages, it is envisaged that traditional manipulation loopholes, such as delays and human discretion in the processing of bids, would be decreased [41]. The constantly high rates of user satisfaction indicate that well-maintained e-procurement systems not only build trust in the processes, but they also discourage public authorities from interfering with them. According to the positive association between vendor satisfaction and perceived decrease in corruption (correlation = 0.69), the higher the possibility of varied vendor involvement, the lower the likelihood of collusion and monopolistic tactics. This is because easy usage, reliable service, and secure transactions all contribute to the likelihood of diverse vendor participation.

On the other hand, the findings indicate that there are considerable challenges associated with the implementation, particularly with regard to the modifications that users must make. In contrast to the high ratings for system transparency and quality, the low scores for user manuals and procedural clarity (mean = 1.65 and 1.20, respectively) indicate that there is insufficient training and advice. According to the United Nations Conference on Trade and Development (UNCTAD), these gaps may cause adoption to stall out and unintentional procedural blunders to arise, particularly for enterprises that are less tech-savvy or smaller. Despite the fact that the correlation is lower (0.33) and the regression result is modest (p = 0.125), it is impossible to ignore the indirect influence that user issues have. As an example, it is possible that suppliers may be dissuaded from participating owing to the perceived complexity of the system, which would, in turn, affect both the level of competition and the level of openness.

The fact that micro and small companies (MSEs) played a substantial role and accounted for 55.91% of the participants is an interesting discovery. It is typically difficult for micro, small, and medium-sized enterprises (MSEs) to compete in traditional procurement settings due to the presence of prejudice and a lack of transparency; thus, this high level of engagement is promising. As a result of the extensive usage of the internet, electronic procurement has the potential to improve involvement from groups who are under-represented, to promote inclusive policy goals, and to level the playing field when it comes to public contracts [42].

As can be observed in the correlation matrix, each and every independent component was shown to have a favourable association with the diminishment of corruption, which further validates these findings. The regression model has an R^2 value of 0.67, which indicates that the chosen predictors are able to explain two-thirds of the variance in the dependent variable. This indicates that the model fits the data quite well. The assertion that digital procurement integrity is driven by a mix of system performance, information transparency, and stakeholder satisfaction is given more weight as a result of this [43].

In order to combat procurement corruption, it is necessary to have a robust digital infrastructure that is supported by features that enable transparency and has user interfaces that are responsive, as stated in the results. If governments wish to make effective use of these technologies, they should make capacity-building, continuing system updates, and simplified onboarding procedures their top priorities. By implementing more transparent procurement laws, enhancing feedback systems, and providing tailored help to micro, small, and medium-sized enterprises (MSEs), it may be possible to achieve further gains in procurement outcomes and institutional trust. For the purpose of future study on the long-term ramifications of changes to e-procurement, the emphasis should be on analysing contextual factors such as political will and regulatory frameworks that impact digital effectiveness in a variety of contexts.

6. Conclusion

As game-changing tools, digital transparency and e-procurement platforms have emerged in recent years with the purpose of making public procurement systems more honest and transparent. Real-time access to procurement data is provided by these systems, which also automate and digitise activities in order to limit the amount of discretion that is exercised by humans and construct extensive audit trails. The use of digital procurement procedures has the potential to drastically decrease instances of bid rigging, favouritism, and other corrupt behaviours. This is shown by platforms such as ProZorro in Ukraine and GeM, which stands for the Government e-Marketplace in India. As a result of increased transparency, there seems to be a reduction in instances of corruption, as well as an increase in the level of confidence and participation from suppliers. The use of transparent audit trails and standardised evaluation criteria contributes to the further strengthening of the public's trust in the decisions that the government makes regarding procurement. These high mean scores on perceptions of transparency and corruption reduction are evidence that stakeholders feel digital technologies are effective. The findings of the research illustrate that stakeholders believe digital technologies are successful. Moving ahead, it is essential to have solid legal frameworks, continuing capacity training, and public access to procurement data in order to sustain and expand the anti-corruption potential of digital procurement. The advancements that have been made in the field of public administration represent a significant step forward in terms of fostering ethical governance and improving the delivery of services.

7. References

[1] OECD. (2016). Preventing Corruption in Public Procurement. OECD Publishing. https://doi.org/10.1787/9789264265800-en

[2] Open Contracting Partnership. (2020). ProZorro: Building Trust in Government Procurement. https://www.open-contracting.org/impact/prozorro/

[3] World Bank. (2021). Enhancing Public Procurement Transparency Through Digital Solutions. https://www.worldbank.org/en/topic/governance/brief/public-procurement

[4] Ministry of Commerce and Industry. (2023). Annual Report 2022–23. Government of India.

[5] Meijer, A., Curtin, D., & Hillebrandt, M. (2012). Open government: Connecting vision and voice. International Review of Administrative Sciences, 78(1), 10–29. https://doi.org/10.1177/0020852311429533

[6] Bovens, M. (2007). Analysing and Assessing Accountability: A Conceptual Framework. European Law Journal, 13(4), 447–468. https://doi.org/10.1111/j.1468-0386.2007.00378.x

[7] Lindstedt, C., & Naurin, D. (2010). Transparency is not enough: Making transparency effective in reducing corruption. International Political Science Review, 31(3), 301–322. https://doi.org/10.1177/0192512110377602

[8] Fazekas, M., & Tóth, B. (2016). From corruption to state capture: A new analytical framework with empirical applications from Hungary. Political Research Quarterly, 69(2), 320–334. https://doi.org/10.1177/1065912915620048

[9] NITI Aayog. (2020). Assessment of Government e-Marketplace (GeM). Government of India.

[10] World Bank. (2017). ProZorro: The future of public procurement in Ukraine. Retrieved from: https://www.worldbank.org/en/news/feature/2017/10/25/prozorro-public-procurement-ukraine

[11] OECD. (2022). Integrity and Transparency in Public Procurement: A Strategy for the Digital Era. OECD Publishing. https://www.oecd.org/gov/ethics/integrity-and-transparency-in-public-procurement.htm

[12] World Bank. (2020). Enhancing Government Effectiveness and Transparency: The Fight Against Corruption. https://documents.worldbank.org/en/publication/documents-reports/documentdetail/435891606624104972

[13] Celestin, Prof. (2021). THE IMPACT OF DIGITAL PROCUREMENT ON TRANSPARENCY, EFFICIENCY, AND FRAUD PREVENTION IN PUBLIC CONTRACTING: A QUANTITATIVE ANALYSIS. 4. 906-917. 10.5281/zenodo.15057023.

[14] Neupane, Arjun & Soar, Jeffrey & Vaidya, Kishor & Yong, Jianming. (2012). Role of public e-procurement technology to reduce corruption in government procurement.

[15] Alaa, Darwish & Misko, Oleg. (2022). The digitalization and its influence on combating corruption. Public Administration and Civil Service. 183-197. 10.52123/1994-2370-2022-570.

[16] Mynenko, Serhii & Oleksii, Lyulyov. (2022). The Impact of Digitalization on the Transparency of Public Authorities. Business Ethics and Leadership. 6. 103-115. 10.21272/103-115.2022.

[17] Hochstetter, Jorge & Vásquez, Felipe & Diéguez, Mauricio & Bustamante-Mora, Ana & Arango, Jeferson. (2023). Transparency and E-Government in Electronic Public Procurement as Sustainable Development. Sustainability. 15. 4672. 10.3390/su15054672.

[18] Deliversky, Jordan. (2025). THE ROLE OF DIGITALIZATION IN THE FIGHT AGAINST CORRUPTION. ENVIRONMENT. TECHNOLOGY. RESOURCES. Proceedings of the International Scientific and Practical Conference. 5. 69-72. 10.17770/etr2025vol5.8494.

[19] OECD (2016). Preventing Corruption in Public Procurement. https://www.oecd.org/gov/ethics/Corruption-Public-Procurement-Brochure.pdf

[20] World Bank (2018). Enhancing Government Effectiveness and Transparency: The Fight Against Corruption. https://documents.worldbank.org/en/publication/documents-reports/documentdetail/235541600116631095

[21] Neupane, A., Soar, J., Vaidya, K., & Yong, J. (2012). Role of public e-procurement technology to reduce corruption in government procurement. Procurement: an International Journal, 17(3), 252–273. DOI: 10.1108/14635771111137348

[22] OECD (2013). Implementing the OECD Principles for Integrity in Public Procurement. https://www.oecd.org/gov/ethics/implementingtheoecdprinciplesforintegrityinpublicprocurement.htm

[23] Bajari, P., McMillan, R., & Tadelis, S. (2009). Auctions versus negotiations in procurement: An empirical analysis. Journal of Law, Economics, and Organization, 25(2), 372–399. DOI: 10.1093/jleo/ewn002

[24] Williams-Elegbe, S. (2012). Public procurement, corruption and blockchain technology in Africa. African Journal of International and Comparative Law, 20(4), 507–527. DOI: 10.3366/ajicl.2012.0055

[25] Thai, K. V. (2009). International Handbook of Public Procurement. CRC Press.

[26] World Bank (2017). Benchmarking Public Procurement 2017. https://bpp.worldbank.org

[27] Fazekas, M., & Tóth, I. J. (2016). From corruption to state capture: A new analytical framework with empirical applications from Hungary. Political Research Quarterly, 69(2), 320–334. DOI: 10.1177/1065912916639137

[28] Lewis-Faupel, S., Neggers, Y., Olken, B. A., & Pande, R. (2016). Can electronic procurement improve infrastructure provision? Evidence from public works in India and Indonesia. American Economic Journal: Applied Economics, 8(3), 258–283. https://www.aeaweb.org/articles?id=10.1257/app.20150190

[29] UNODC (2020). Combating Corruption in Public Procurement. https://www.unodc.org/documents/corruption/Publications/2020/Public_procurement.pdf

[30] Transparency International (2021). Corruption Fighters' Tool Kit - Procurement. https://www.transparency.org/en/projects/public-procurement

[31] Asian Development Bank (2019). E-Government and Digital Public Services in Asia. https://www.adb.org/sites/default/files/publication/545276/e-govt-asia.pdf

[32] World Economic Forum (2021). Digital Public Infrastructure for Equitable Growth. https://www.weforum.org/reports

[33] Indian Ministry of Finance (2017). Government e-Marketplace (GeM): A Digital Platform for Public Procurement in India. https://gem.gov.in

[34] United Nations ESCAP (2020). Digital Government and Transformation for Sustainable Development. https://www.unescap.org/kp/2020/digital-government

[35] Rose-Ackerman, S., & Palifka, B. J. (2016). Corruption and Government: Causes, Consequences, and Reform. 2nd ed. Cambridge University Press. ISBN: 978-1107435246

[36] OECD (2016). "Preventing Corruption in Public Procurement."

[37] World Bank (2020). "Enhancing Government Procurement through Transparency and Technology."

[38] Transparency International (2018). "Corruption in Public Procurement: Closing the Gaps."

[39] Kostetskyi, O., Tkachenko, V., & Mamonov, A. (2019). "ProZorro: How Ukraine Built a Transparent Procurement System."

[40] Bajari, P., Houghton, S., & Tadelis, S. (2009). "Bidding for Incomplete Contracts."

[41] UNCTAD (2019). "Digital Economy Report: Value Creation and Capture."

[42] European Commission (2019). "Digital Transformation of Public Procurement."

[43] Kukutschka, R. M. B. (2017). "The Role of E-Government in Preventing Corruption."