Optimizing Service Delivery in E-Government from a Quality Management Perspective in Developing Countries: The Case Study of Jordan

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Abstract
The optimization of the Service Delivery in E-Government using Quality Management must be taken into account by most of the researchers in the world because it is the main and hot topic in the present era. The aim of the study is to demonstrate the level of e-government services from a quality management perspective. The study was based on two approaches: descriptive and analytical. The research community consisted of human cadres working in medical hospitals in the city of Amman. The size of the study sample was (394), and a questionnaire tool was designed to collect data. They have shown that the e-government services level was high based on the study members' opinions, and it also indicated that there was statistically significant positive relationship between quality management practices and improving service delivery in the e-government sector in Jordan.
Keywords: Delivery Service, E-Government, Quality Management, Jordan

Introduction
The emergence of E-Government may be observed as a tangible outcome and an inherent progression of the technical advancements that have coincided with the development of the knowledge society (Wirtz et al., 2018). The introduction of E-government has brought forth novel concepts within the field of public administration, including transparency,

accountability, citizen participation in government performance evaluation, and a transformation of political practices towards e-democracy and e-governance (Adnan et al., 2022). E-government, defined as the utilization of government initiatives to facilitate the provision of planning services by local authorities through online platforms and accessible via the internet and email, such as the Planning Portal website, is influenced by a range of expectations encompassing financial cost/benefit attainment, administrative restructuring, citizen service delivery, and addressing past policy shortcomings (Wirtz et al., 2018; Adnan et al., 2022).

There is an alternative definition of e-government refers to the government agencies are using the information technology, which possess the potential to revolutionize interactions with citizens, businesses, and other governmental entities (Malodia et al., 2021). These technologies have the potential to fulfil a range of objectives, such as enhancing the provision of government services to citizens, facilitating better engagement with business and industry, empowering citizens through increased access to information, and improving the efficiency of government management (Grigalashvili et al., 2022). The use of E-government in Jordan can yield several advantages, including but not limited to reduced instances of corruption, enhanced transparency, improved convenience, higher revenue, and decreased costs (Malodia et al., 2021; Grigalashvili et al., 2022).

The primary objectives of e-government include improving service quality, facilitating convenient access to government resources, and fostering increased citizen engagement in democratic institutions and processes (Grigalashvili et al., 2022; Putra et al., 2018). The e-government initiatives implementation has significant potential for progress in the 21st century, facilitating the delivery of government services that are of superior quality and cost-effective. Moreover, it has the capacity to enhance the interaction and connection between citizens and the government (Talab et al., 2019).

The act of supervising various duties and activities within an organization to guarantee that the goods and services provided, along with the methods utilized to deliver them, are consistent is known as quality management (Saihu et al., 2020). It aids in bringing the organization's quality up to and keeping it there. There are four main parts to quality management, and they are as follows: 1. Quality Planning: This is the process of determining which quality standards apply to the project and how to fulfill those criteria. 2. Quality Improvement: The deliberate modification of a procedure to raise the level of assurance or dependability of the result. 3. Quality Control: The ongoing endeavor to maintain the dependability and integrity of a process in producing a result. 4. Quality Assurance: The methodical or premeditated steps required to provide adequate reliability so that a specific service or product will fulfill the standards (Dewi et al., 2019; Gunasekaran et al., 2019).

Quality management aims to guarantee that all of the organization's stakeholders collaborate to improve three things related to the business: products, procedures, services, and culture, which leads to accomplishing success based on customer satisfaction. A group of guidelines is created as part of the quality management process to guarantee that the goods and services produced meet the appropriate requirements or are appropriate for a given use (Gunasekaran et al., 2019). So, the optimization of the Service Delivery in E-Government using Quality Management must be taken into account by most of the researchers in the world because it is the main and hot topic in the present era. For example, the E-Government Program in Jordan is a national initiative led by His Majesty King Abdullah II. Its primary objective is to enhance government efficiency by improving service delivery to users whether investors, and clients across all sectors of society in a seamless, expedient, precise, and

effective manner. The program aims to transform the performance of both two government sides: employees and transactions, ushering in a new era of governance (Gunasekaran et al., 2019; Mohammad et al., 2009).

This study aims to answer two questions
1) What is the level of services in e-government from the perspective of quality management?
2) Is there statistically significant relationship between quality management practices and service delivery optimization in the e-government sector of Jordan?

The rest of this paper is organized as follows: Section 2 presents a summary of the previous works related to the topics. Section 3 describes the proposed methodology used in this paper. Section 4 shows the experimental results that were obtained. Section 5 describes the discussion part. Section 6 concludes the findings and presents some future work.

Literature Review

In this section, we present some previous papers related to this study to know how the delivery services is optimized from the quality management perspective in the e-government in different countries like Jordan.

Bhagat et al. 2022 proposed a G2C-based e-Government model that is grounded in the essential variables for achieving success in the e-Government services implementation. They designed a model that may be adapted for implementation in Nepal, by making necessary modifications to the existing model employed in industrialized nations. In order to accomplish this objective, various research methods have been employed, including a comprehensive examination of existing literature, interviews with key informants, and the administration of a questionnaire survey utilizing a five-point Likert scale. Then, they established a digital sustainability in response to the dynamic and fast-changing digital environment. The implementation of IT services poses challenges for the agencies involved due to the prevalence of poverty among the population and the limited levels of literacy in relation to IT. The Nepalese government have made significant efforts to enhance the provision of services to their citizens in a more sophisticated manner. Nepal has witnessed the successful implementation of various prominent initiatives, such as the citizen app, which have garnered significant achievements. An attempt was made to identify the critical success factors (CSFs) for the e-Administration implementation in Nepal, with the aim of developing a proposed model for e-Government to Consumer (G2C) interactions and enhancing the effectiveness of e-Government initiatives. The researchers have demonstrated that this particular approach has proven effective in establishing a comprehensive framework for the implementation of digitalization in e-Government.

The study conducted by Obaid et al (2022) examined the among user satisfaction and e-government services in the United Arab Emirates (UAE) and various e-government attributes, such as quality of service, system quality, and information quality. Subsequently, a quantitative approach was employed to gather the dataset through the administration of a questionnaire. Of the total of 300 questionnaires distributed, 121 were received, resulting in a response rate of 40.3 percent. Out of the total number of surveys received, a total of 115 surveys were deemed genuine, resulting in a response percentage of 38.3 percent. The data was analyzed using a structural equation model (SEM). The findings of the study also indicated the direct impact of e-government qualities, namely information quality, service quality, and system quality, on user satisfaction. The utilization of research can assist policymakers in

effectively identifying e-government users and then devising and implementing tailored policies that address the specific requirements of the public in relation to e-government services. Moreover, the conclusions derived from the study and the proposed model have the potential to function as a strategic guide for the e-government projects in terms of development and implementation by the United Arab Emirates government.

Mulyadi et al (2023) provided an explanation of the population service quality of e-government in Bandung City. E-government encompassed several activities that leverage information technology capabilities to improve the efficiency and effectiveness of government systems. However, the effectiveness of e-Government implementation remains suboptimal. They utilized the e-Government Quality (e-GovQual) concept and employed a qualitative descriptive research methodology, incorporating both primary and secondary data sources. Furthermore, they employed many methodologies to collect data, including but not limited to documentation, in-depth interviews, and observation. The presence of data breaches, inadequately equipped cybersecurity systems, and services that are limited to Android users. Based on the research outcomes, it is evident that the e-Government population services in Bandung City are currently not functioning optimally when compared to the specific criteria outlined in the e-GovQual framework.

Gainau et al (2023) carried out a study to examine the implementation of e-government in Papua during its time of special autonomy, with the aim of enhancing the public services quality. The applied technique is the library approach. The relevant literature pertaining to the study issue was read in order to gather data, which was subsequently subjected to a series of analytical procedures, including reduction, presentation, conclusion, and verification. The have shown that the e-government implementation has the potential to establish a novel framework for improving public accountability that is done by the Provincial Government of Papua.

Setiawan et al (2023) investigated the e-government programs performance specifically at the two centers: Civil Registration Office and Gowa Regency Population. They used many main metrics in terms of effectiveness: timeliness, true change, program understanding, goal achievement, and target accuracy. They indicated that while the program is well understood by staff members, there is a lack of comprehension within the community regarding the online population services. Target accuracy is achieved by the use of Standard Operating Procedures (SOP), which ensure compliance with predetermined regulations. The timeliness of the program criteria is met by providing one-day service within specified business hours. The attainment of the objective is evidenced by an increase in community contentment resulting from enhanced convenience and reduced bureaucratic obstacles. There has been a notable enhancement in the efficiency, accountability, and transparency of government services.

Sulehat et al (2016) studied at the variables that affect e-Government's information system (IS) interoperability with a particular emphasis on IS. The key to successfully implementing e-Government in Jordan is interoperability. Study factors and their correlations have been investigated through the use of qualitative inquiry methods. A range of published works pertaining to the study's purview have been examined, and Jordan's e-Government plan from 2014 to 2016 has been examined. They addressed the interoperability levels of e-Government IS. Ultimately, important obstacles to IS interoperability have been determined, as well as the elements that can facilitate its effective application. The key components of successful e-Government IS interoperability include technical, semantic, and organizational interoperability. The primary barriers have been identified as information and communication

technology (ICT) infrastructure, business process, data and information, security, human resources, privacy, and top management support. On the other hand, the key success elements that promoted e-Government IS interoperability have been shown to be high-level interoperability goals, government agency commitment, and customer emphasis. To advance towards e-transformation in Jordan, the report recommends that work processes and tactics be coordinated, as well as that knowledge be shared and uniform standards set.

Methodology
Study Approach

In this research, the descriptive analytical method was chosen as the basic method for this study, because it closely matches the goals and objectives of the research. This methodology allows for comprehensive analysis and description of characteristics, trends, and relationships between variables within the scope of the study.

Study Population

The study population included all individuals working in the healthcare sector, specifically in both government-run and privately owned hospitals located within the geographic boundaries of the city of Amman, the capital of Jordan. This includes a diverse group of medical professionals, administrative staff, support staff and other individuals who form an essential part of the work in the healthcare sectors within Amman.

Study Sample

The study sample consisted of a group of individuals who were randomly selected from a wide group of hospital workers in Amman. The study sample included 394 participants, representing a wide range of professionals and staff from a variety of public and private hospitals in the Amman

Table 1 summarized the main characteristics of the study sample and provides insight into demographics, professional roles, and distribution across government and private healthcare institutions within the city of Amman.

Table (1)
Frequencies and percentages of study individuals according to demographic variables

variable	Category	Frequencies	Percentages
Sex	Male	159	40.0%
	Female	235	59.6%
Job Sector	Medical sector	148	37.6%
	Administrative sector	246	62.4%
Hospital type	Governmental	155	39.3%
	Private	239	60.7%
Total		**394**	**100%**

Study Tool

A questionnaire was designed to collect data, in light of previous literature reviews. The evidence consisted of primary data and the study themes.

Validity of the study instrument
Content Validity

To ensure the content validity of the study tool, the questionnaire was presented to 9 specialized arbitrators, and these arbitrators, who have expertise and experience relevant to the subject, verified the linguistic integrity of the questionnaire content. Their feedback was useful in evaluating the clarity, coherence, and appropriateness of the questionnaire items toward the objectives of the study. In addition, the judges provided feedback on the alignment of the questionnaire with the aim of the study, ensuring that the instrument covered the intended dimensions of the study.

Construct Validity

To ensure the construct validity of the study tool, an internal consistency validity analysis was conducted in which correlation coefficients were calculated to examine the relationships between the individual items and the comprehensive constructs identified by the study tool. Through this process, it was clarified the extent to which each item of the scale contributes to achieving the goal of the study, which confirms the tool's ability to accurately measure the target phenomena. By examining the relationships between questionnaire items, the study sought to ensure that the instrument possessed the strength and coherence required to produce meaningful insights into the research field.

Table (2)
Service correlation coefficients in e-governments

Paragraph number	Correlation coefficient with the field	Paragraph number	Correlation coefficient with the field
1	**0.719	14	**0.584
2	**0.714	15	**0.667
3	**0.585	16	**0.635
4	**0.668	17	**0.712
5	**0.636	18	*0.664
6	**0.713	19	**0.726
7	**0.667	20	**0.680
8	*0.717	21	**0.563
9	*0.682	22	**0.650
10	**0.596	23	**0.695
11	**0.572	24	**0.538
12	**0.719	25	**0.544
13	**0.710	26	**0.498

According to what was presented in table 2, all items were accepted because they had statistically significant scores.

Reliability of the Study Tool

To ensure the stability of the study tool, the stability of the tool was evaluated using the Cronbach's alpha reliability coefficient. This statistical measure is considered a reliable indicator of internal consistency within a group of questionnaire items, which confirms the stability of the tool.

The application of Cronbach's alpha coefficient aims to evaluate the degree of consistency shown by the questionnaire items in measuring the basic constructs of interest.

Table (3)
Results of Cronbach's alpha coefficient

the field	(Cronbach alpha)
The tool as a whole	0.95

Table (3) shows the results of Cronbach alpha coefficients to reveal the reliability coefficients for a tool, where the reliability of the tool reached (0.95). These values are considered appropriate for the purposes of the study, which supports the validity of the data collected from individuals. The study is a sample study in this regard.

Limitations of the Study

Objective: It was limited to improving service delivery in e-government from a quality management perspective.
Location: Amman city hospitals.
Temporal and applied in the field in the month of 5/2023 AD.
Human: represented by human cadres working in hospitals.

Statistical Processing

The statistical processing program was relied upon to answer the study questions by applying descriptive and parametric statistics to the research data.

Analysis Scale

A five-point Likert scale was relied upon as follows (strongly agree = 5, agree = 4, neutral = 3, disagree = 2, strongly disagree = 1). The scale scores were approved through the equation upper limit (5) - lower limit (1) / 3 = 1.33, thus adding 1.33 to the end of each category.
1.00 - 2.33 with low degree
2.34 - 3.67 moderately
3.68   - 5 to a high degree

Experimental Results

The first question: What is the level of accuracy and suitability of services in e-government from a quality management perspective?

Table (4)
Arithmetic means and standard deviations for accuracy and suitability of services in e-government

No	Item	Mean	Standard Deviation	Rank	Level
1	The electronic service provides me with correct information.	3.32	1.134	15	Medium
2	The information provided through the electronic service is accurate.	3.49	1.083	11	Medium
3	There are a few errors in the information I get from the online service.	3.33	1.121	14	Medium
4	The electronic service provides me with the full set of data I need.	4.06	0.979	2	High
5	The electronic service generates comprehensive information.	3.83	1.166	5	High
6	The electronic service provides me with all the information I need.	3.58	1.147	9	Medium
7	The service enables me to carry out tasks from home.	3.27	1.129	17	Medium
8	The service is easily available to me.	3.80	1.038	7	High
9	It is easy for me to always access the electronic service.	3.82	1.024	6	High
10	The Service does not collect a lot of personal information about me.	3.92	0.961	3	High
11	The service prevents unauthorized access to my personal information.	4.22	0.899	1	High
12	The government provides me with access to how the electronic service works.	3.36	1.182	13	Medium

13	It provides me with in-depth knowledge about e-service operations.	2.88	1.234	24	Medium
14	You take the time to keep the data accurate	3.15	1.196	20	Medium
15	My use of the service is nothing to worry about.	3.06	1.245	22	Medium
16	The electronic service is a safe service for me.	3.88	1.089	4	High
17	The electronic service uses modern web technologies.	2.89	1.279	23	Medium
18	You can rely on the electronic service.	3.14	1.236	21	Medium
19	The service is interested in resolving any problems you may have.	3.29	1.314	16	Medium
20	The email service tells me exactly where the execution will take place.	3.26	1.257	18	Medium
21	The online service is always ready to help me.	3.65	1.148	8	Medium
22	I feel safe in my transactions with the electronic service.	3.48	1.152	12	Medium
23	The Service provides me with polite comments and content.	2.73	1.354	25	Medium
24	Electronic service is one of my utmost concerns.	2.45	1.361	26	Medium
25	The online service gives me individual attention.	3.20	1.302	19	Medium
26	The appearance of the service matches the type of service provided	3.51	1.303	10	Medium
	Total marks	**3.82**	**1.102**	**High**	

Evaluating the accuracy and suitability of services in e-government from a quality management perspective is an essential aspect of evaluating the effectiveness of digital service delivery. The results presented in Table 4 provide insight into users' perceptions regarding different dimensions of service accuracy, reliability, and accessibility within the e-government framework.

It is noted from Table (4) that the average of the tool's items ranged between (4.22-3.06) with high and medium grades, where paragraph (11) was obtained, which stated "The service prevents unauthorized access to my personal information" and the highest average was obtained, as was the paragraph (15) which stated "My use of the service does not cause me concern" was the lowest average. The arithmetic mean for the tool as a whole was (3.82) with a high degree.

The second question: Are there statistically significant relationship between quality management practices and service delivery optimization in the e-government sector of Jordan?

H ₁: There is a significant relationship between quality management practices and service delivery optimization in the e-government sector of Jordan.

Table (5)
Arithmetic means and standard deviations for the study variables

variable	Category	Mean	Standard Deviation
Sex	Male	89.27	17.568
	Female	88.35	15.956
Job sector	Medical sector	91.38	16.424
	Administrative sector	87.09	16.534
Hospital type	Governmental	87.99	17.803
	Private	89.20	15.808

Table (5) shows that there is a variation in the arithmetic means and standard deviations depending on the variable of gender, job description, and type of hospital.

To test the hypothesis that "**there is no statistically significant relationship between quality management practices and improving service delivery in the e-government sector in Jordan**," regression analysis and one-way analysis of variance using SPSS. The following tables show the results of the analysis:
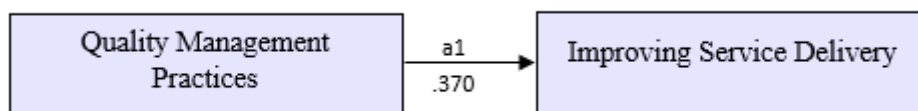
Fig. 1. Test results of the main hypothesis

Table (6)
Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics

1	.370	.137	.135	1.08513	.137

The table shows the fit of the model. The R-square value of 0.137 indicates that about 13.7% of the variance in the dependent variable (service delivery optimization) explained by the independent variable (quality management practices). The adjusted R square adjusts for the number of predictors in the model, providing a slightly lower estimate of the explained variance.

Table (7)
One-Way ANOVA Test Results

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	74.446	1	74.446	63.223	.001
Residual	468.651	392	1.194		
Total	543.098	393			

The table displays the analysis of variance (ANOVA) results based on sample size. A significant F value (63.223) with a p value of less than 0.001 indicates that the regression model is a good fit for the data. The regression model explains a significant portion of the variance in the dependent variable (improving service delivery).

Table (8)
The regression coefficients results

Model					
	B	Std. Error	Standardized Coefficients Beta	t	Sig.
(Constant)	2.065	0.228		9.046	0.00
quality management practices	0.449	0.057	0.370	7.951	0.00

The table displays the regression coefficients for the constant and the independent variable (quality management practices) based on a sample size of 394. The constant (2.065) represents the estimated value of the dependent variable (service delivery optimization) when all independent variables are zero. The coefficient for quality management practices (0.449) indicates that for every one-unit increase in quality management practice, the

dependent variable increases by 0.449 units. Both coefficients are statistically significant with p-values less than 0.001, which indicates a significant relationship between the independent and dependent variables.

Chart (1): Scatter plot between dependent and independent variables
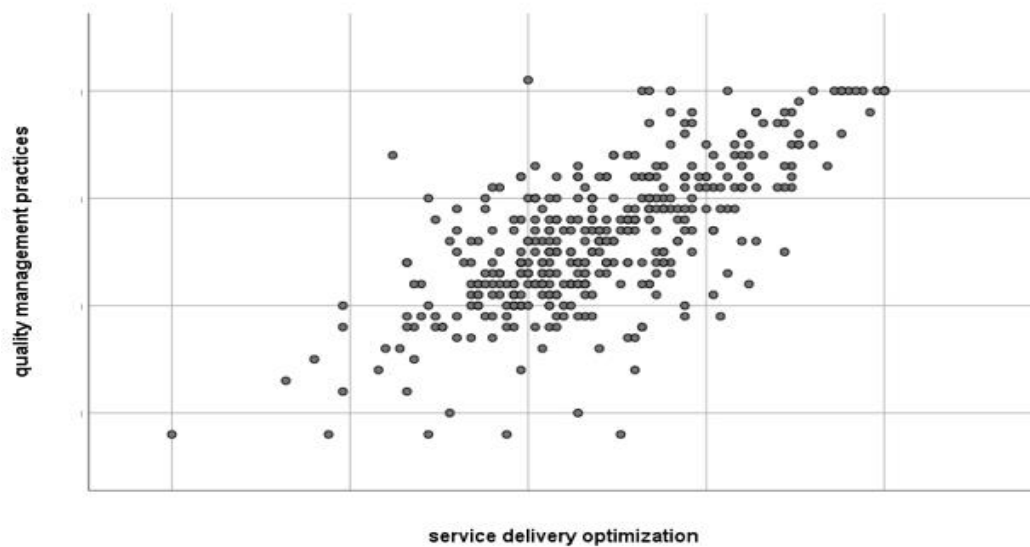
A scatter plot between dependent and independent variables shows a visual representation of the relationship between the two variables.

The figure shows a positive relationship between the variables, with data points clustering in an upward trend from left to right.

Discussion and conclusion
Discussion

Evaluating the accuracy and suitability of e-government services from a quality management perspective is very important in order to evaluate the effectiveness of digital service delivery. Returning to the tables, Table 4 provides insight into users' perceptions regarding service accuracy, reliability and accessibility. The results indicate a generally positive evaluation of e-government services with an average of 3.82, which indicates a high degree of satisfaction in general. It is worth noting that attributes such as preventing unauthorized access to personal information (4.22) received the highest average, while concerns about using the service (3.06) received the lowest average.

As for finding the relationship between quality management practices and improving service delivery in the e-government sector in Jordan, a regression analysis and one-way analysis of variance conducted. The results of the regression analysis (Table 6) revealed that about 13.7% of the variance in improving service delivery explained by quality management practices, indicating a significant relationship between these variables.

The one-way ANOVA test (Table 7) also supported the regression results, as the F value was high (63.223) and the p value was less than 0.001, indicating that the regression model effectively explains a significant portion of the variance in improving service delivery.

Conclusion

The results highlight the accuracy and suitability of e-government services in Jordan and highlight the importance of quality management practices in improving service delivery.

Participants' responses generally referred to e-government services positively, with a particular focus on privacy and security measures. Moreover, the study confirms that there is an important relationship between quality management practices and improved service delivery, which underscores the importance of implementing strong quality management frameworks in the e-government sector.

There are many theoretical and contextual contribution of this research that can be summarized as following points:

Theoretical Contribution

- This research presents a theoretical integration of quality management ideas, such as Quality Management, with e-government service delivery. It offers a framework for evaluating and enhancing service quality in the context of digital government.
- The research aims to analyze the special obstacles encountered by developing nations, such as Jordan, while adopting quality management principles in e-government. It also intends to suggest tailored solutions that are relevant to the situation of Jordan.

Contextual Contribution

- Offers a comprehensive examination of Jordan's e-government activities, providing unique perspectives on the achievements and difficulties faced by a developing nation in this area.
- Examines the impact of socio-political and economic issues in Jordan on the adoption of e-government services and quality management methods.
- Provides insight into the wider framework of e-government implementation in developing nations, where there may be constraints in terms of money, infrastructure, and experience in comparison to rich nations.
- Identifies and emphasizes certain tactics and methodologies that may be duplicated or modified in other developing countries with comparable challenges.

The research is crucial to current knowledge for various reasons. This research enhances the existing knowledge in the areas of e-government and quality management by conducting a detailed analysis in a developing nation. These reasons are:
- Contributes to the understanding of e-government implementation in poor nations, a topic that has received less attention compared to developed ones.
- Offers a thorough analysis of Jordan, providing valuable perspectives that might be relevant to other countries facing comparable socio-economic circumstances.
- Highlights the particular obstacles encountered in delivering e-government services in underdeveloped nations, including restricted infrastructure, digital disparity, and resource limitations.
- Suggests pragmatic ideas and optimal methodologies customized to address these distinctive obstacles.

Recommendations

Policy makers and stakeholders should prioritize initiatives aimed at enhancing service accuracy, reliability and accessibility while investing in total quality management practices. By addressing users' concerns and leveraging effective quality management strategies, Jordan's e-government sector can continue to develop, providing citizens with effective and reliable digital services that meet their needs and expectations in the era of digital progress.

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