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Government Website as a Platform of Data and Information Sharing: A Descriptive Analysis of Citizens' Engagement Level

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Abstract

Open government data (OGD) is essential for a government to become transparent and trustworthy. One of the many methods for disseminating open government data and information is through online services and systems such as a website. In the context of citizen demand, the government website is expected to perform three primary functions for people to visit. These functions are as follows: providing accurate information, allowing individuals to express their opinions and participate in social and political life, and allowing individuals to conduct commerce online. There is no denying the importance of the official government website in providing open and customer-centric governance. People frequently search for information on government websites or social media accounts to stay apprised of the most recent events. This is being done for the purpose of verifying the source of the information. Therefore, this study seeks to determine the level of citizens' engagement with government websites. The analysis was performed on 411 respondents from various socioeconomic backgrounds, aged 18 or older, and residing in the Klang Valley, Malaysia. In addition, respondents must have experience navigating government websites. This study measures information quality (IQ), system quality (SQ), perceived ease of use (PEU), perceived usefulness (PU), relationship quality (RSQ) (satisfaction and trust) to determine the level of citizens' engagement in using government websites.

Keywords: Information Sharing, Government Website, Citizen Engagement, Information Quality, System Quality.

Introduction

Emails, websites, and social media platforms such as Twitter, Facebook, Instagram, and TikTok are all digital government platforms and viable communication channels. Modernly, the researchers observe an increase in the use of social media platforms as a means of communication by government agencies. It would indicate that the data shared via these channels contain additional specifics. Regarding government agencies, particularly European institutions, Twitter and Facebook stand out as clear frontrunners (Sobaci & Karkin, 2013). Meanwhile, the availability of information is a fundamental aspect of citizenship with regard

to the political aspect and the citizen. If voters did not have access to pertinent information, they would be unable to make an informed decision based on informed consideration. Without a system of public access to information, citizens could not effectively participate in the democratic process. Some authorities feel that the official government website represents the pinnacle of eGovernment advancement. Initiatives to make government more transparent and accessible to the public are gaining momentum as a useful tool for making government more accountable and reducing corruption. The technical viability of a government website hinges, to a far greater extent than anybody probably realizes on the level of participation in data exchange by government departments on such platforms. Even though the information is easily accessible through the portal, Bhunia (2017) argues that Malaysia has become a "one-sided country" or supply-side driven approach due to the "government has initiatives to disseminate data, but lack of citizens' engagement." Consequently, it is essential to research citizen engagement and government websites. Therefore, this study uses information quality, system quality, perceived ease of use, perceived usefulness, satisfaction, and trust to determine the level of citizens' engagement in government websites.

Literature Review
Numerous researchers investigate and quantify the use of OGD and/or government websites in terms of adoption and intention to use, but little is known about the circumstances surrounding citizen engagement. Therefore, for public agencies to obtain the benefits of government website initiatives, they must aggressively engage with one another and collaborate with outside groups (Zhenbin et al., 2019). Sharing public data through portals and websites is a primary priority for many countries implementing OGD. If the government can pull off its website, everyone stands to benefit.

Government Website as a Platform for Data and Information Sharing Platform
Countless websites are available nowadays, but only a few care about their users' needs. To consistently produce competitive products and services, every organization needs to assess the efficacy of its various means of disseminating information, including its websites (Ababneh & Alrefaie, 2022). Government agencies produce massive amounts of data and papers; if they are made available in accordance with the principles of open data, we call this "Open Government Data" (OGD) (United Nations, 2013). Government data that is published in machine-readable formats on web portals by governments, public administrations, subsidiaries, or agencies are open data because it can be used, reused, and distributed by anyone without fear of infringement on intellectual property or other legal rights (Yang & Wu, 2016). The term "government data and information" refers to all data and information created, disseminated, authorized, or produced by the government or its agencies. The best way for communities to participate in the public domain, leading to more educated and powerful citizens, is through a government website (Ahmad & Warriach, 2020). Assessing the usage of government websites by citizens can provide insight into the success of initiatives aimed at promoting data and information exchange. The ripple effect of this is an educated, informed, and intelligent citizens as a whole. There is a wealth of information on government websites that citizens can use to make changes in their communities and the world at large. This pertains to individuals utilizing or modifying information to suit their own needs (Bachtiar et al., 2020).

Citizen Engagement

One definition of citizen engagement is the development of a lasting connection between users and a website on a variety of levels, including emotional, cognitive, and behavioural (Attfield et al., 2011). This study suggests that citizen engagement happens when individuals who have previously accessed government websites to gain knowledge about a particular topic continue to do so.

Information Quality

People rely on the accuracy and reliability of government data, but identifying the responsible organization for a specific portal can be a challenge. Even if locals are aware of it, they may not fully trust its credibility. As a result, it is essential that the official government website assess the Information quality for external and independent standards and procedures, and that the results of these adjustments be linked to the applicable OGD datasets. IQ consists of two components: content adequacy (how reliable, adequate, and comprehensive the information is) and content usefulness (how informative and valuable the displayed information is) (Phuong & Trang, 2018). Assuming that the IQ dimension's characteristics, such as its completeness, accuracy, and relevance, will impact the ease of use and usefulness of something seems reasonable. The term "information quality" in this study refers to how well information meets the desires and preferences of individuals, by either meeting or surpassing their expectations. Therefore, in this study, there are three dimensions for IQ to be measured which are completeness, accuracy, and relevance.

Completeness

Complete data is the cornerstone of open data. You won't be able to do anything with the open data you download if it's incomplete. In this research, open data and information shared on the government websites are characterized by its completeness. This refers to the user's perception of how much important information is provided on the government website (Yi, 2019). It's important to have complete and usable data when it comes to open data quality, as emphasized by Yi (2019). Data completeness and formats are key factors in ensuring this.

Accuracy

The definition of accuracy has been defined interchangeably. According to Nelson et al (2005), the accuracy of information obtained from systems is constantly evaluated by users. Meanwhile, Wand & Wang (1996) defined this term as encompass not only accuracy, clarity, and neutrality but also the significance and reliability of information. One's perception of accuracy can be influenced by several factors such as the correctness of the information, their assessment of its believability, and the consistency of their experiences over time (Nelson et al., 2005).

Relevance

In order for information to be useful to a user, it needs to be relevant (Zheng et al., 2013). It is imperative that government websites adhere to the standards of providing practical and applicable data and information. This measure will not only boost the quality of information but also encourage users to engage more frequently with the site. The term SQ relevance, as used in this study, pertains to the essentiality, suitability, pertinence, and significance of the information (Lee et al., 2002; Zheng et al., 2013).

System Quality

SQ pertains to the quality of the information system processing itself, encompassing software and data components (Gorla et al., 2010). It serves as a gauge of the system's technical proficiency. In another hand, SQ, as defined by Phuong & Trang (2018), is the perception of a mobile commerce app's retrieval and transmission of data by its users. The quality of a system is evaluated based on its usability (how much work a user perceives it to be), navigation (how well the links work), interactivity (how simple it is to use the search engine and make it your own, like the shopping cart feature), and availability (how quickly it can be used and how readily it is available). In this study, SQ refers to the effectiveness of government websites and other technological platforms in providing individuals with access to and timely delivery of services. Therefore, the dimensions of SQ in this study are responsiveness, flexibility, and reliability.

Responsiveness

It is imperative to thoroughly evaluate a system's ability to promptly and precisely respond to user inquiries for specific data when assessing its quality (Teo et al., 2008). When it comes to responsiveness, there are multiple critical factors to consider. These include accessibility, response time, duration of assistance, level of detail provided, and consistency with user expectations. It is crucial to take all of these aspects into account to ensure optimal user satisfaction (Shayganmehr & Montazer, 2019).

Flexibility

The effectiveness of a data-providing system for multiple decision-making procedures is determined by its ability to adapt and remain functional over an extended period. This pivotal aspect cannot be overlooked (Nelson et al., 2005). As a user, it is imperative that the information system is capable of meeting users' specific informative demands and functional requests without hesitation. Users deserve the ability to modify existing reports, create new ones, and have your requests fulfilled promptly. A non-negotiable requirement for any system is to be flexible and adaptable to users' needs (Palanisamy & Foshay, 2013).

Reliability

Reliability means being able to trust that the presented information is accurate and truthful (McKinney et al., 2002). The provision of accurate, consistent, and punctual service is essential for ensuring reliability (Papadomichelaki & Mentzas, 2009). It is certain that a reliable system that offers prompt accessibility will ultimately result in users relying on it (Wang et al., 2010).

Perceived Ease of Use

A top-notch system prioritizes its design based on how easy it is for users to operate and enjoy. Shah and Attiq (2015) conducted a study using PEU to determine the impact of technological quality, user experience, and customer satisfaction on the growth of E-learning. PEU is a crucial aspect that determines how effortless it is for an individual to operate a technology without exerting much cognitive effort (Davis, 1989).

Perceived Usefulness

The term PU refers to a worker's belief that using a specific technology will enhance their productivity and effectiveness at work (Davis, 1989). Many scholars have discovered that people are more likely to use official portals when they find them useful. This is strongly

influenced by the perceived usefulness (PU) of these portals (Lean et al., 2009). The service will be utilized only if it provides some value to the users (Alawadhi & Morris, 2009)

Relationship Quality
The elements that are usually being used in relationship quality are trust, satisfaction, and commitment (Liang et al., 2011).

Satisfaction
In the realm of information systems, the concept of "satisfaction" refers to the degree to which specific requirements and wishes have been met (Wang & Wang, 2009). According to Alkraiji & Ameen (2022), citizen satisfaction pertains to the emotions and experiences that individuals undergo while availing of e-Government services.

Trust
The value of trust cannot be understated in our society, as it is an essential component of building lasting connections and fostering a flourishing community (Hill & O'Hara O'Connor, 2011). The trust of the public in their government's collection and distribution of open government data is significantly influenced by both factors (Almuqrin et al., 2022).

Research Methodology
In this study, the researcher will be conducting a descriptive analysis to assess the degree of citizens' engagement level on government websites. The purpose of descriptive analysis is to present factual information in a clear and concise manner. To achieve this, the data collected needs to be organized, evaluated, and summarized. In order to complete the study, every participant was asked to rate each item according to the scales assigned for the dependent and independent variables. The Likert-Scale for the independent variables, i.e., IQ, SQ, PEU, PU, and RSQ goes from 1 (completely disagree) to 5 (completely agree). Each variable and dimension have 5 items to be answered. Minimum, maximum, standard deviation, variance, excess kurtosis, and skewness are the statistics used in Statistical Package for Social Sciences Version 23 (SPSS) descriptive analysis of IQ and SQ (variables with dimensions). Citizens' Engagement, the dependent variable, is measured on a scale from 1 (never true) to 7 (always true). Descriptive analysis is done to address the research question in the investigation which is "What is the level of citizens' engagement in using the government website?"

Respondents
To distribute the questionnaires, the researcher requires three criteria from the respondents. They should be residents of the Klang Valley, at least 21 years old, and have experience using government websites. This study received 413 questionnaires back, which is a response rate of 60.73% out of the total number of people that the researcher contacted. This number of responses (413) is higher than the minimum recommended value of 385 by Raosoft. However, the valid number of respondents is 411.

Instrument Development
The questionnaire was crafted using a systematic review to guide the selection of variables and dimensions, as well as to frame the questions. It is imperative that all sources cited are in English. A group of experts, comprising of three academics and three citizens, will review all of the questionnaires that have been completed.

Data Analysis

This study conducted a descriptive analysis using frequency and percentage values to clarify the characteristics of demographic data, such as gender, age, education level, marital status, employment status, frequency of accessing government websites, Ministry's website visited, and OGD portal.

Results

The next section will thoroughly examine each result based on the research question that has been highlighted earlier.

Demographic Profile

From this study, more than half or 65.7% of the respondents are female and 141 or 34.3% are male. Majority of the respondents are aged between 21-30 years old and only 3.2% or 13 respondents are 61 years old and above. Most of the respondent hold Bachelor's Degree followed by 103 respondents with Master's Degree, 64 respondents with Diploma or Certificate, 24 respondents are PhD holders, and 3.6% or 15 respondents finished at least Primary/ High School Almost half of the respondents are married and 2.2% are divorced. When compared to other respondent categories, such as government and private sector employees, students fare better (125 vs. 108 and 100, respectively). According to the data, the majority of respondents (25.8%) visit ministry websites at least once a month. However, there is only a slight difference of two respondents between those who visit once a year and those who visit almost every week. We are intrigued by this investigation. Out of the 411 people who responded, 72% (296) had no knowledge of www.data.gov.my. This amounts to more than half of the survey participants. Only 115 individuals (28%) knew about the availability of the OGD portal. Among all the ministries, MOH, MOE, and MOHE are the top three most visited websites with 157, 132, and 128 visits respectively.

Table 1.1

Frequency and Percentage of Demographic Profile

No	Demographic variables	Category	Frequency	Percentage (%)
1	Gender	Female	270	65.7
		Male	141	34.3
2	Age	21-30 years	173	42.1
		31-40 years	97	23.6
		41-50 years	91	22.1
		51-60 years	37	9.0
		61 and above	13	3.2
3	Level of Education	PhD	24	5.8
		Master's degree	103	25.1
		Bachelor's degree	199	48.4
		Diploma/ Certificate	64	15.6
		Primary/ High School	15	3.6
		Others	6	1.5
4	Marital Status	Single	194	47.2
		Married	198	48.2
		Divorced	9	2.2

No	Demographic variables	Category	Frequency	Percentage (%)
		Widowed	10	2.4
5	Employment Status	Government Sector	108	26.3
		Private Sector	100	24.3
		Retiree	13	3.2
		Self-employed/ Business Owner	37	9.0
		Unemployed	10	2.4
		Student	125	30.4
		Housewife	12	2.9
		Others	6	1.5
6	How often do you visit Ministry's Website?	Almost every day	34	8.3
		Almost every week	57	13.9
		Almost every month	106	25.8
		Once a year	72	17.5
		Once in 3 months	83	20.2
		Once in 6 months	59	14.4
7	Which Ministry's Website do you frequently visit?	Ministry of Finance (MOF)	90	8.3
		Ministry of Health (MOH)	157	14.4
		Prime Minister Department (JPM)	72	6.6
		Ministry of Foreign Affairs (KLN)	10	0.9
		Ministry of Rural Development (KPLB)	24	2.2
		Ministry of International Trade and Industry (MITI)	32	2.9
		Ministry of Education (MOE)	132	12.1
		Ministry of Human Resource (MOHR)	38	3.5
		Ministry of Higher Education (MOHE)	128	11.8
		Ministry of Home Affairs (KDN)	29	2.7
		Ministry of Tourism & Culture (MOTAC)	31	2.9
		Ministry of Housing and Local Government (KPKT)	26	2.4
		Ministry of Federal Territory (KWP)	19	1.7
		Ministry of Plantation Industries and Commodities (MPIC)	12	1.1
		Ministry of Works (KKR)	30	2.8
		Ministry of Defence (MINDEF)	28	2.6
		Ministry of Science, Technology and Inovation (MOSTI)	24	2.2
		Ministry of Domestic Trade & Consumer Affairs (KPDNHEP)	23	2.1

No	Demographic variables	Category	Frequency	Percentage (%)
		Ministry of Entrepreneur Development and Cooperatives (MEDAC)	18	1.7
		Ministry of Youth & Sports (KBS)	24	2.2
		Ministry of Argicultural and Food Industry (MAFI)	21	1.9
		Ministry of Energy and Natural Resources (KeTSA)	12	1.1
		Ministry of National Unity (PERPADUAN)	5	0.5
		Ministry of Communications and Multimedia (K-KOM)	35	3.2
		Ministry of Women, Family and Community Development (KWPKM)	24	2.2
		Ministry of Environment and Water (KASA)	18	1.7
		Ministry of Transportation (MOT)	25	2.3
8	Do you know about www.data.gov.my?	Yes	115	28
		No	296	72

Descriptive Analysis

Information Quality (Completeness, Accuracy, Relevance) and System Quality (Responsiveness, Flexibility, Reliability)

Table 1.2 describes the descriptive analysis for all variables with dimension are measured. Relevance has the highest mean in IQ, i.e. 3.79. Overall, among the three factors comprising IQ, accuracy has the lowest mean value, i.e. 3.65. Meanwhile, for SQ, the mean for reliability is 3.91. The dimension of System Quality with the highest mean value is reliability, i.e. 3.91, followed by flexibility (3.66), and responsiveness (3.53).

Table 1.2

Descriptive Analysis for Information Quality (Completeness, Accuracy, and Relevance) and System Quality (Responsiveness, Flexibility, and Reliability)

Variables/ Items	Min	Max	Mean Statistic	Std error	Std. deviation	Var. Statistic
Information Quality						
Completeness	1	5	3.67	0.346	0.8554	0.7324
Accuracy	1	5	3.65	0.434	0.8774	0.6473
Relevance	1	5	3.79	0.408	0.8302	0.6898
Overall Average	1	5	3.70	0.396	0.8543	0.6898
System Quality						
Responsiveness	1	5	3.53	0.472	0.9576	0.9178
Flexibility	1	5	3.66	0.456	0.9216	0.8514
Reliability	1	5	3.91	0.418	0.8492	0.7216
Overall Average	1	5	3.70	0.449	0.9094	0.8302

N=411
1=Completely Disagree; 2 = Disagree; 3 = Uncertain; 4= Agree; 5 = Completely Agree

Perceived Ease of Use, Perceived Usefulness, Satisfaction, and Trust
Table 1.3 and 1.4 describe the descriptive analysis for PEU, PU, RSQ (satisfaction and trust). PEU has the highest mean value of 3.79, PU and trust have the same mean value of 3.77 and satisfaction has the lowest mean value.

Table 1.3

Descriptive Analysis for Perceived Ease of Use and Perceived Usefulness

Variables	Min	Max	Mean Statistic	Std error	Std. deviation	Excess Kurtosis
Perceived Ease of Use	1	5	3.79	3.96	0.577	1.047
Perceived Usefulness	1	5	3.77	3.95	0.561	1.088

N=411
1=Completely Disagree; 2 = Disagree; 3 = Uncertain; 4= Agree; 5 = Completely Agree

Table 1.4

Descriptive Analysis for Relationship Quality (Satisfaction and Trust)

Variables	Min	Max	Mean Statistic	Std error	Std. deviation	Excess Kurtosis
Relationship Quality						
Satisfaction	1	5	3.66	3.85	0.649	1.061
Trust	1	5	3.77	3.95	0.584	1.014

N=411
1=Completely Disagree; 2 = Disagree; 3 = Uncertain; 4= Agree; 5 = Completely Agree

Citizens' Engagement

In this section, the respondents were asked to evaluate the items based on 7 points Likert-scale measurement. 1 is never true, 4 is neutral and 7 is always true. The average mean for citizens' engagement is 5.12. In Table 1.4, citizens' engagement scores 5.12 for the mean value.

Table 1.4

Descriptive Analysis for Citizens' Engagement

Variables	Min	Max	Mean		Std. deviation	Excess Kurtosis
			Statistic	Std error		
Citizens' Engagement	1	7	5.12	5.34	0.736	1.070

N=411

1 = Never True; 2 = Rarely True; 3 = Sometimes but Infrequently True; 4= Neutral; 5 = Sometimes True, 6 = Usually True, 7 = Always True

Discussion

Referring to the response given on the awareness about the existence of the OGD portal, it appears that the OGD initiative has yet to gain significant recognition or promotion in Malaysia. More than half are unaware of the OGD portal. Meanwhile, the data unambiguously demonstrates that the independent variables pertaining to IQ and SQ were in agreement with the majority of respondents. In addition, the options for PEU, PU, Satisfaction, and Trust were resoundingly favoured by most respondents. The mean average for each dimension in IQ and SQ is between 3.53-3.91, which indicates "Agree". The findings are consistent with a few studies related to the field. This is in line with the studies done by (Agnihotri et al., 2022; Krismawati & Hidayanto, 2021; Rizvani et al., 2022). With respect to the dependent variable CE, it is abundantly clear that most respondents deemed it to be "Sometimes True."

This study measures three aspects of IQ: completeness, accuracy, and relevance. Completeness is based on factors such as data necessity, availability, extent, and depth, and how well it meets the user's needs. The average score for all items is 3.67, which ranks second highest in Information Quality dimensions. Respondents agree that the government website provides comprehensive and exhaustive data and information. The item with the highest score indicates that the information available meets users' needs. In this study, SQ is measured through three dimensions: responsiveness, flexibility, and reliability. Responsiveness is evaluated by the speed and timeliness of the website's response to user requests for information. This dimension refers to the loading time of website data, files, and documents. A 5-point Likert scale is used, with 1 indicating "completely disagree" and 5 indicating "completely agree". This study confirmed that citizens use government websites based on the IQ and SQ of the websites provided. The mean value of 3.53 to 3.91 for each dimension proves that the respondents agree that those dimension can influence PEU, PU, satisfaction, and trust. Citizens' engagement in using government websites is affected by both PEU and PU as well as satisfaction and trust. In this study's context, PEU means how quick and easy it is to navigate government websites. Table 1.5 is the summary of the findings

Table 1.5
Summary of the Findings

Variables	Dimensions	Mean	Item with highest mean value
Information Quality	Completeness	3.67	"The information on the website meets my needs" (Mean Value= 3.71)
	Accuracy	3.65	"The information on the website is suitable to my needs" (Mean Value= 3.75)
	Relevance	3.79	"The information on the website is useful to my needs" (Mean Value= 3.85)
System Quality	Responsiveness	3.53	"I feel the website provides information in a timely manner" (Mean Value= 3.61)
	Flexibility	3.66	"The website allows me to use any browsers (for example Chrome, Safari)" (Mean Value= 3.92)
	Reliabiity	3.91	"I believe the website is dependable" (Mean Value= 3.97)
Perceived Ease of Use	-	3.79	"Learning to use the website is easy for me" (Mean Value= 3.83)
Perceived Usefulness	-	3.77	"Using the website can enhance my effectiveness in doing my task" (Mean Value= 3.85)
Relationship Quality	Satisfaction	3.66	"My decision to use the website is a wise one" (Mean Value= 3.79)
	Trust	3.77	"Based on my experience, I know the website is trustworthy" (Mean Value= 3.94)
Citizens' Engagement	-	5.12	"I believe searching using this website was worthwhile" (Mean Value= 5.26)

The value of data and information obtained from government websites is determined by various factors, with improved performance, simplified tasks, increased productivity, and enhanced efficacy being the key measures of its perceived usefulness (PU). The research question has been fully addressed through a comprehensive measurement of citizens' engagement level. The findings undeniably indicate that the majority of respondents agree that IQ and SQ can influence PEU, PU, satisfaction, and trust. It is imperative that all respondents recognize the significant impact of a determining factor, which is assessed on a scale of 1 to 7, or "sometimes true", on citizens' engagement of the website.

Conclusion

According to the study's findings, the quality of the ministry's website information and system can increase citizen engagement by putting an emphasis on user-focused characteristics like accuracy, completeness, responsiveness, and flexibility. This illustrates how citizens prefer government websites that are easy to use, require little effort to explore, provide direct access to relevant information, and deliver desired resources (such as links or files) without excessive red tape. The success of a government website in engaging citizens is directly linked to how effectively it fulfills their needs and requirements, how user-friendly and intuitive it is, how informative and insightful the information provided is, and how dependable and flexible its system quality is. This study's finding is consistent with a research conducted by Krismawati

and Hidayanto (2021), where citizens' engagement is impacted by various factors, including IQ, SQ, Trust, Satisfaction, and PU.

The research is significant by identifying the factors that have may lead to citizens' level of engagement with government websites. This study also introduces RSQ as a new variable that may have a significant impact on citizens' use of government websites. According to past research, RSQ is utilised infrequently in the IS field, but is utilised in other disciplines. The research suggests that the produced instrument be reworked into a potential module that might serve as a streamlined set of rules and guidelines for both the website's design and the information and data it presents. The module can potentially suggest a paradigm shift in how the potential to suggest a paradigm shift in the way that aspiring future data providers approach their work by proposing high-quality, relevant, and useful information presented in a straightforward online format, thereby bolstering the OGD and/or government website movement in Malaysia.

Contribution of the Study

It is absolutely essential to recognize the government website as the primary source of government information for Malaysians. This recognition is vital for equipping individuals with the knowledge they need to succeed in the ever-changing world of innovation and for fostering a society of enlightened and informed citizens. To the best of our knowledge, this is the first study in Malaysia that identifying the factors that determine citizens' engagement in using government websites. As a nation that is currently adopting OGD, this discovery has the potential to greatly empower the country in its efforts to achieve open government. Comprehensive and inclusive guidelines and policies are crucial to ensuring that citizens can effectively utilize the government website.

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