

PROCUREMENT MANAGEMENT PRACTICES AND SUPPLY CHAIN PERFORMANCE OF NATIONAL REFERRAL HOSPITALS IN NAIROBI CITY COUNTY, KENYA

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DOI: <https://doi.org/10.5281/zenodo.8412901>

Published Date: 06-October-2023

Abstract: The study aimed at determining the effect of procurements management practices on supply chain performance in public referral hospitals in Nairobi County, Kenya. Specifically, the study determined the impact of competitive tendering, procurement transparency, procurement planning, and supplier approval monitoring on supply chain efficiency in referral hospitals in Nairobi County. The normalization process theory, resource-based view theory and supply chain operations reference model served as the anchored theories for the investigation. The research project used descriptive survey design. The three referral hospitals in Nairobi County, Kenya, were target population of the investigation. The unit of observation for this study were the 327 hospital managers, procurement officers, accountants and staff procurements. Stratified random sampling technique was utilized in picking 187 respondents. The correlation co-efficient (R) indicates level of strength of relationship between variables in a study at 91%. The investigation concluded competitive tendering was positive and significant on supply chain performances ($t= 1.711$, $pvalue > 0.05$), procurement transparency has positive and significant effects on supply chain performances ($t= 14.75$, $pvalue > 0.05$) procurement planning have positive and substantial effects on supply chain performances ($t=5.758$, $pvalue > 0.05$) and supplier qualification managements had significant positive effects on supply chain performances ($t= 3.719$, $p value = 0.05$). The study recommended that governments should provide transparent reasons for the award based on predetermined standards once it has been made. The details of government contracts, including appendices, schedules, and references, must be made public.

Keywords: Competitive Tendering, Procurement Transparency, Procurement Planning, Supplier Qualification Monitoring and Supply Chain Performance.

1. INTRODUCTION

1.1 Background of Study

Organizations now realize that in order to thrive in face of increased global competition, their supply chains must be properly managed. How well a supply chain can differentiate itself from its rivals in terms of inventory management, inventory efficiency, and on-time supplier delivery, among other factors, will influence how well it performs (Satish & Vivek, 2019). Additionally, supply chain efficiency is seen as a key tactic for creating these competitive qualities in any

industry. The expense of setting up and maintaining supply chain performance assessment systems outweighs their advantages. Rajagopal and Zailani (2019) argued that this may be particularly true for relatively small organizations that may not have the time, money, or knowledge necessary to conduct the analysis necessary to improve supply chain operations and green buying methods.

Globally, Dimitri, Dini, and Piga (2016) contended that Europe, the United States, and Southern America all exhibit a strong trend toward effective supply chain performance. However, due to the bureaucracy and rigidity of businesses, it is crucial to assess the inventory management practices, inventory costs and time taken to deliver the supply. In Finland supply chain performance have experienced public procurement productivity, good performance in this area which has help the governments better inventory costs, timely supply and inventory handling thus easing pressure on public finances, and cut expenditures (OECD Finland, 2019). Averting that improving purchasing management techniques have a smooth and efficient performance of supply chains not only worldwide but geographically and locally, Ricarda (2016) warns in Geneva.

In the UK, the effectiveness of supply chains is important for determining pricing and prices of commodities that manufacturing enterprises need. In the U.K. textile business, supply chain performance is mostly evaluated based on price variance, schedule adjustments, and on-time delivery. Price competitiveness and green procurement are often the driving forces behind supplier and product selection, with reliability and quality receiving less attention (Satish & Vivek, 2019). Utilizing an efficient sales and operations planning process, supply chain performance across industries in the U.K. has considered customer service objectives, on-time supplier delivery, material availability, inventory investment, and overall profitability (Walker, 2022).

Regionally, supply chain performance is appalling, with the majority of African nations experiencing severe levels of medication shortages as a result of ineffective procurement procedures. Several significant elements, including transportation, information technology, and others, have been identified as driving supply chain performance in Sub-Saharan African businesses (REO, 2017). The understanding of vital roles that equipment performs in supply chain managements has led to the commencement of a number of significant infrastructure projects in the East African region. For instance, insufficient procurement procedures hindered the provision of healthcare in Malawi, which resulted in frequent and protracted drug shortages and stock outs in public hospitals (Kanyoma & Khomba, 2017). According to Modisakeng, Matlala, Godman and Meyer (2020), persistent medication shortages in public healthcare institutions are a problem in several nations working toward universal health coverage, like South Africa. This is because of difficulties with the procurement process.

In Uganda, supply networks perform poorly when there are either no deliveries at all, late deliveries, or low-quality goods. Given that customers now judge businesses based on the performance of their chain as rivalry has evolved from between firms to between whole supply chains, this subpar supply chain performance has a detrimental influence on their performance (Ntayi *et al.*, 2019). When a company's supply chain underperforms, it gets forced out of the market and is consequently likely to fail. Limited access to information due to restrictions on the Ugandan textile industry's supply chain performance and most of the regional industries (Okello-Obura *et al.*, 2018). In Rwanda, Caritas, Julius, and Zenon (2016) found that good procurement increases construction effectiveness of Bugesra Districtoffice. Buyer-supplier managements, data management, and speed of reaction were crucial supply chain performance measures for industrial enterprises in Sudan (Ibrahim & Hamid, 2016).

Procurement procedures are a key determinant of supply chain efficiency and can either have positive or negative impacts on company performances. Performance in the procurement department directly influences how well an organization accomplishes its goals. Even in industrialized nations, Accenture (2018) shows that it can be difficult to achieve high performance in pharmaceutical procurement, in part because the top management doesn't give it enough attention. Better supply chain procurement performance may not always result from combining tendering methods and procedures (Githinji, 2018). Additionally, competitive tendering improves the effectiveness of the procurement process. Public hospitals constantly deal with issues such rising medical costs, time and money wasted obtaining necessary medical supplies, and a failure to ensure supplies are continuously available. Due to these pervasive issues, healthcare providers are under tremendous political and social pressure. It is clear that these challenges are greatly influenced by the effectiveness and effectiveness of the healthcare systems' procurement processes.

1.2 Statement of the Problem

According to reports by NCPD, KNBS, and ICF (2016), despite having enough medical supplies, Kenya has seen a severe drop in the supply chain performance in the public health institutions throughout time. According to RoK (2016), improving supply chain effectiveness in public health institutions requires healthcare supplies. According to a WHO assessment from 2014, Kenya's public hospitals provide subpar service notwithstanding management initiatives. According to a NACPD (2011) report, poor supply chain performance in Kenya results in subpar health treatment in public hospitals, despite available procurement management. According to Choy (2012), 50% of the costs in public hospitals are attributable to ineffective procurement methods. The public health institutions' supply chains are performing worse as a result of bad procurement management procedures (Areri & Gekara, 2019). Although many hospitals have acknowledged the importance of supply chain performance, implementing methodologies, strategies, and standard procedures that have been extensively established in industrial settings is still a major challenge. This has greatly contributed to the present lack of medications and other key supplies needed for hospitals to efficiently carry out their primary responsibilities (Odero, 2016).

Numerous researches have been conducted on procurements managements practices and supply chain performances. For instance, Erik and Vennston (2018), examined procurement regulations on supply chain performances, explained that deliver the final customer's desired good or service as quickly and affordably as possible. The study conducted in a developed country by Akitonye (2018) focuses on the supply chain performances manufacturing companies in Germany. this study was conducted in developed country and therefore the findings cannot apply for the case of Kenya-a developing country, study showed a contextual gap. While Erik and Vennston's (2018) study focused on procurement policies and operational chain performance, Bartik's (2019) study concentrated on impacts of procurements policies on organizational performances, providing a conceptual gap.

From the aforementioned, it is noted that the studies showed contextual and conceptual gap which this study aims to bridge. Also limited studies have been carried out on procurement management practices on supply chain performances on referral hospitals in Nairobi city county. Therefore, this study aimed at examining effects of procurements managements practices on supply chain performances of referral hospitals in Nairobi, Kenya, this study was carried out.

1.3 Objectives of the Study

1.3.1 General Objective

The general objective of this study was to determine the effect of procurement management practices on supply chain performance in referral hospitals in Nairobi County.

1.3.2 Specific Objectives

- i. To determine the effect of competitive tendering on supply chain performance in referral hospitals in Nairobi County.
- ii. To examine the effect of procurement transparency on supply chain performance in referral hospitals in Nairobi County.
- iii. To establish the effect of procurement planning on supply chain performance in referral hospitals in Nairobi County.
- iv. To investigate the effect of supplier qualification monitoring on supply chain performance in referral hospitals in Nairobi County.

2. LITERATURE REVIEW

2.1 Theoretical Framework

The Normalization Process Theory (NPT) developed by May and Finch (2009) served as the foundation for this study. The theory makes use of a variety of instruments that are crucial for comprehending and elucidating the procedures by which novel or customized ways of thinking, acting, and doing work are operationalized in a given organizational structure. Although the theory was initially restricted to the delivery of health care services, recent advancements have broadened its applicability to include the widespread adoption and absorption of organizational and technical breakthroughs. Further, May & Finch (2009) contend that NPT is currently an essential tool in companies' complex interventions, where they define a complex intervention as an intentional effort to introduce a new rule, principle, or elevate the current patterns (Nyaboke & Muturi, 2017).

The Resource-Based View Theory (RBV), which Penrose (2009) postulated, is a theory that emphasizes the successful operation of a firm's resources, diversity, and economic opportunities. Penrose's book introduced the concept of seeing a corporation as an integrated collection of resources to address and address how it could accomplish its objectives or strategic conduct. RBV began developing into form in the 1980s. The predecessor of RBV was the Theory of the Growth of the Firm. Later, in the 1990s, Jay Barney's work which was essential to the creation of RBT became the predominant paradigm in corporate strategy and planning for strategic success.

2.2 Empirical Review

Torvinen and Ulkuniemi (2016) explores the transparency in public procurement processes in Sweden. The findings imply that the particular procurement procedure under study is regarded as operating effectively and being transparent. It's possible that the procedure contains information asymmetries that could jeopardize its transparency. Both suppliers and purchasers would like to see more openness for discussion and less emphasis on strictly adhering to the rules in order to further improve the procurement process.

Pilcher (2018) notes, however, that product planning necessitates compiling a selection of vendors who are believed to possess the qualifications needed to successfully accomplish the required work. A single vendor is asked to submit a tender for a given project by the client through negotiation or direct bidding. Many different types of businesses prefer competition methods of purchasing because they tend to increase openness, frugality, and effectiveness whilst limiting prejudice (Lynch,2018).

Nzioka (2018) done research to see if KE M SA had the project requirement frameworks and capacities to carry out its purpose. The study's conclusions show that KE M SA's distribution network has matured to the operational perfection level. Although productivity is much more reliable, SCM costs still are high, satisfied customer has increased but remains low, and inter - departmental synergy has not yet been realized. The organisation culture is still conventional. SCM procedures are set up and recorded. While the last examination focused on KE M SA, the present inquiry was carried out in institutions.

In order to get the most value for your money, Ocharo (2019) defines procurement procedures as the process of choosing the best vendor to complete a specific project. In his study on the determinants impacting project outcomes: an example of both the ministry ofenergy in Kenya, he offers this finding. One of the essential planning processes is to use procurement methods, and the main methods used to choose a vendor are bid evaluation methods. According to Ocharo (2019), one of the clients' primary decisions is planning. The client must choose the best contractor if they want to make sure the project can be finished properly. Ocharo (2019) defined procurement system as the procedures the procuring body use to get goods, resources, and labor.

In Kenya's Nakuru county, Njoki and Kmiti (2018) evaluated the impacts of competition procurements methods on the delivery of public hospitals. To encompass all of the target respondent, the investigation used the census approach. The study comprised 63 heads of department from government agencies, 12 medical officials in charge of the health institutions, and 5 procurement managers. Results indicate a positive connection between service performance and bid submission ($R = 0.758$), assessment standards ($R = 0.477$), provider capacity ($R = 0.478$), and innovation ($R = 0.649$). Therefore, the study concludes that technology, supplier capability, evaluation criteria, and bid putting have a favorable impact on service delivery. The study however focused on service delivery unlike the current study which is focused on procurement performances.

In order to determine the impacts of strategic sourcing management on level five hospitals' effectiveness of level five hospitals in Kenya, Oliech and Mwangangi (2019) conducted a study. The findings show a strong correlation between strategic sourcing, material procurement, e-procurement, and supplier relations and the effectiveness of level Five hospitals. According to the numerous correlation coefficients R , they were crucial to the overall effectiveness of the hospitals. In fact, the results demonstrate that the regression model's predicted and actual values had a rather high correlation. Furthermore, it was discovered that the strategic outsourcing, procurement planning, and supplier relationships could all be used to account for the variation in performance of level 5 hospitals, according to the coefficients of determination R^2 . However, unlike in the case of the present study, the study did not show a connection between selective bidding and contract management.

3. RESEARCH METHODOLOGY

The research utilized descriptive survey design. National Spinal Injury Referral, Mathare National Teaching and Referral, and Kenyatta National Hospitals are the referral hospitals that made up the study's target population in Nairobi County, Kenya. The unit of population for this study was the Hospital Manager, Procurement officer, Accountants and procurement staff. Therefore, the study's target population were 357 Hospital Manager, procurement officer, Accountants and procurement staff from the three referral hospitals (Respective Hospital Data, 2021).

Online sample size calculator (<http://www.raosoft.com/samplesize.html>) was used to arrive at the sample size. Calculation was based on the total sample size of 186 to arrive at the individual category sample size for instance managers sample size were $23 \times 186 / 357 = 12$

Table 3.1: Sample Size

Category	Population	Sample Size
Managers	23	12
Procurement Officers	33	17
Accountants	17	09
Procurement staff	284	148
Total	357	186

Source: Researcher (2023)

Quantitative data was gathered for this investigation. To ensure that the data collected from the respondents was complete, the questionnaires reviewed and sanitized. Utilizing SPSS, descriptive statistics was used to analyze data (SPSS V 25). In descriptive statistics, the mean, mode, standard deviation, and variance was employed. Therefore, frequency tables, charts, and graphs were used to display the findings.

Regression analysis and Pearson correlation coefficient analysis was used to undertake inferential data analysis. To assess the likelihood that an observation in the study occurred by chance or is dependable, inferential statistics was utilized. How strongly and in what direction the variables are correlated linearly was assessed using Pearson R correlation. A high correlation suggests that the variables had a significant relationship. Correlation analysis was used to examine how strongly two variables were associated (Levin & Rubin, 2018). The correlation coefficient indicated whether or not two variables are related if it is zero; if it is negative one, the variables are strongly related (Hair *et al.*, 2010). Values between 0.1 and 0.29 suggested a small association, 0.30 to 0.49 showed a medium association, and 0.5 and above indicated a high association.

To ascertain how predictor/independent factors affects response/dependent variable, regression models was fitted to the data. Because multiple regression analysis uses the predictor variables to forecast the response variable, it was applied in this investigation. It is a statistical method that aimed to determine whether certain variables can be used in conjunction to predict a specific variable (Mugenda & Mugenda, 2018). If the p value is less than 0.05, the independent variable had a significant impact on the dependent variable using a 95% confidence level and a 0.05 significance level.

The impacts of procurements managements methods on performances in public referral hospitals in Nairobi County, Kenya, was evaluated using multiple regression models. Regression models was employed, including;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$$

Where: Y= Supply Chain performance

X₁ = Competitive Tendering

X₂ = Procurement Transparency

X₃ = Procurement Planning

X₄ = Supplier qualification monitoring

β₀ is the constant (Coefficient of intercept)

β₁, β₂, β₃, and β₄ are the beta coefficients; and ε is a random error

4. RESEARCH FINDINGS AND DISCUSSION

4.1 Response Rate

Only 153 of the 186 surveys that were received back had all of the required data filled out. This led to an 82% response rate being attained. The statistically relevant rate of responses for analyses should be at least fifty (50) percent, according to Mugenda and Mugenda's (2003) research.

4.2 Reliability Results

Cronbach Alpha score was used to test the reliability of the research instruments. The threshold was 0.7. The value above 0.7 was termed as reliable and verse versa.

Table 4.1: Reliability Results

Constructs	No. of Items	Alpha scores	Comments
Competitive Tendering	7	0.778	Reliable
Procurement Transparency	7	0.734	Reliable
Procurement Planning	7	0.723	Reliable
Supplier Qualification Monitoring	7	0.743	Reliable
Supply Chain Performance	7	0.747	Reliable
Aggregate Score		0.745	Reliable

Source: Researcher (2023)

The data collection tool for the study was deemed to be credible since all Alpha scores were more than set threshold of 0.7. A score of 0.778 for competitive tendering, a score of 0.734 for procurement transparency, a score of 0.723 for procurement planning, a score of 0.743 for supplier qualification monitoring, and a score of 0.747 for supply chain performance evidenced reliability of research instruments.

4.3 Regression Analysis

This section presents the linear relationship between variables in the study.

Table 4.2 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.915 ^a	.837	.833	1.45078

a. Predictors: (Constant), Competitive Tendering, Procurement Transparency, Procurement Planning, Supply Qualification Management

Source: Researcher (2023)

The correlation coefficient (R) shows the degree of relationship strength between the study's variables. The R-Square value explains the variations in the dependent variable brought on by the independent factors. The modified R-squared is a variant of R-squared that considers factors in a regression model that are not significant. Table 4.13 makes it clear that R = 0.915 indicates a high level of prediction. The supply chain performance changes were anticipated by procurement management practices 83.3% of the time, according to the R² coefficient of determination, which was 0.833. The remaining 16.7% of the changes in supply chain performances were accounted for by other factors not included in the model.

Table 4.3 ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1603.725	4	400.931	190.488	.000 ^b
	Residual	311.504	148	2.105		
	Total	1915.229	152			

a. Dependent Variable: Supply Chain Performance

b. Predictors: (Constant), Competitive Tendering, Procurement Transparency, Procurement Planning, Supply Qualification Management

Source: Researcher (2023)

The level of model fitness at a 95% level of confidence is shown in the analysis of variance. The F Statistic, or F value (without the "critical" part), is the value determined from the data. In contrast to F-value, the F critical value is a particular value. As a result, the null hypothesis was rejected since the computed F value in the test exceeded the F critical value, according to the result.

Table 4.4 Coefficients^a

Model	Unstandardized Coefficients B	Standardized Coefficients Beta	T	Sig.
(Constant)	11.763		4.891	.000
1 CT	.321	.068	1.711	.009
PT	1.480	.570	14.751	.000
PP	3.303	1.849	5.758	.000
SQM	2.071	1.190	3.719	.000

a. Dependent Variable: Supply Chain Performance

Source: Researcher (2023)

$$Y = 11.763 + 0.321X_1 + 1.480X_2 + 3.303X_3 - 2.071X_4 + \varepsilon$$

The study's findings showed that, while controlling for other variables, supply chain performance was 11.763 units. Competitive tendering significantly improved the performances of the supply chain when considering the study factors included in the model. Supply chain performances changed by 0.321 units for every unit change in competitive tendering. Githinji and Moronge's (2018) conclusions that competitive tendering has an enormous effect on supply chain performance are supported by the findings. Furthermore, Njoki and Kmiti (2018) have shown that competitive tendering has considerable impacts on the effectiveness of the supply chain. Additionally, research by Oliech and Mwangangi (2019) showed that competitive tendering has immense effect on supply chain performances.

The results in Table 4.4 presents that procurement had a notable beneficial impact on supply chain performances. A unit change in procurement transparency resulted in 1.48 units changes in supply chain performance. The study agrees with Torvinen and Ulkuniemi (2016) that procurement transparency significantly affects supply chain performance. Further, Chesseto, Gudda and Mbuchi (2019) agrees that procurement transparency has impacts on supply chain performances that are of statistical significance. According to Mohamed (2018), efficient procurement procedure guarantees constant supply chain performance.

The results in Table 4.4 presents procurement planning to have significant positive effects on supply chain performances. A unit change in procurement planning resulted in 3.33-unit changes in supply chain performance. Kamuru (2018) findings agrees that procurements planning has a significant positive effect on supply chain performances. Sabiti, Basheka, and Muhumuza (2017) supported that procurement planning significantly affects supply chain performance. Ocharo (2019) further indicated that procurement plans have positive impacts on supply chain performance.

Table 4.4 findings show that supplier qualification managements significantly improved supply chain performances. Supply chain performances changed by 2.071 units for every unit change in supplier qualification management. The claim that supplier qualification management has major impacts on supply chain performances was supported by Nzioka (2018). Munyimi (2019) provided evidence to support the study's conclusion that supplier qualification managements profoundly influenced supply chain performance. According to Giunipero's (2018) research, supplier qualification management significantly affects the effectiveness of the supply chain.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The study concluded that the performance of the supply chain was significantly improved through competitive tendering. From the outcomes, competitive tendering indicated that to a large extent the cost of the tender, the supplier years of experience, technology advancement and marketability of supplier were well implemented. Competitive tendering led to improved procurement performance. This was often accomplished through an affordable pricing and other advantages for the contracting authority. A government contract must be publicly announced, made available to all, and have free and easily accessible information in order to comply with the legislation.

The study concluded that procurement transparency had a significant positive effect on supply chain performance. The study results on procurement transparency scores indicates that the procurement process was moderately accountable, poor procurement records were kept, moderate open office relationship was experienced and moderate work ethics practiced. The respondents further opined that dialogue in procurement process and frequent meetings between buyer and supplier moderately settled procurement transparency issues. It was clearly identified that internal data transmission occurs when a procurement strategy is communicated to all personnel. Transparency has moderately assisted in the production of the moderate quality service feasible within established budgetary and timeframe constraints.

The study concluded that procurement planning had a significant positive effect on supply chain performance. The result indicated that procurement planning in the referral hospitals targeted in the study was fairly executed. The methods used in procurement, cash forecast planning, efficiency within procurement and identification and evaluation of needs determined the success of procurement. Procurement had a constant and significant challenge from supply risk and acquisitions that are performed outside of the formal procurement procedure.

The study concluded that that supplier qualification management had a significant positive effect on supply chain performance. The results on supplier qualification monitoring indicated that the referral hospitals moderately had monitoring systems set. Central aspects of supplier qualification monitoring aspects such as supplier selection, supply management, financial status, procurement policy and organizational efficiency in the referral hospital were moderately considered. Successful supplier quality management adds value to business operations by enhancing productivity, lessening vulnerability, and bolstering security and quality.

5.2 Recommendations of the Study

Based on the findings, the study recommends that competitive tendering, procurement transparency, procurement planning and supplier qualification management should be well incorporated into the procurement system of the national referral hospitals in Nairobi city county, Kenya. Management ought to continue working to increase competitive tendering since it gives them a greater chance to negotiate bids and more bargaining leverage given that they can draw in a larger pool of providers. Additionally, competitive tendering would improve the efficiency of national referral hospitals by fostering public confidence in the hospitals and giving the public an equal opportunity to receive quality service and accountability.

Management and policy makers should ensure that there is absolute transparency in procurement. The management should be accountable and all records should be kept. Good dialogue in procurement process and frequent meetings between buyer and supplier should be encouraged. All internal data transmission on new or old strategy should be effectively communicated to all personnel. Procedures and choices should be monitored and evaluated, ensuring that decision-makers may be held responsible, and facilitate the expansion of competition in public procurement.

Management should support procurement planning because it improves efficiency and cuts down on supplier late payments. Policies should be created to prevent payment delays, purchase of products and amenities in accordance with the budgetary permissions of the funding sources of referral hospitals. In order to use the precise decisions as the basis for generating the essential commodities, functions, as well as amenities, procurement planning processes should be always be evaluated. As policies that a geared towards procurement planning are in place, there will also be appropriate application of resources, creativity, and problem-solving strategies. Planning also makes ensuring that purchasing organizations use public resources effectively and abide by the procurement legislation when carrying out their duties.

Central aspects of supplier qualification monitoring aspects such as supplier selection, supply management, financial status, procurement policy should be in encourage in the referral hospitals. Successful supplier quality management adds value to business operations by enhancing productivity, lessening vulnerability, and bolstering security and quality, therefore it is important that the management of referral hospitals should encourage supplier monitoring practices..

5.3 Suggestions for Further Study

The study concentrated on the procurement management practices and focused on competitive tendering, procurement transparency, procurement planning, supply qualification management as some of the indicators. Further study recommends other indicators on procurement management practices. Further, the study suggests similar study on other sectors such as state corporations which will help in comparing the findings with the current results.

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