

Total Quality Management as a Tool for Competitive Advantage in Nigerian Construction industry

Alintah-Abel, U.V¹, Iheama, N.B² and Emoh, F.I³

¹Lecturer, Department of Quantity Surveying, Faculty of Environmental Sciences, Nnamdi Azikiwe University, PMB 5025, Awka, Anambra State, Nigeria.

²Lecturer, Department of Building, Faculty of Environmental Sciences, Nnamdi Azikiwe University, PMB 5025, Awka, Anambra State, Nigeria.

³Professor, Department of Estate Management, Faculty of Environmental Sciences, Nnamdi Azikiwe University, PMB 5025, Awka, Anambra State, Nigeria.

Abstract: Total Quality Management (TQM) has an important role in any company, since its implementation can continuously improve company's performance. Higher quality service as a strategy for achieving competitive advantage has become a strategic imperative for organizations and senior managements around the world. Hence, the aim of this study was to investigate total quality management as a tool for competitive advantage in Nigerian construction industry. The conceptual framework focuses on total quality management as an independent variable and competitive advantage as dependent variable and examine the effect of total quality management on the three constructs of competitive advantage, which include Profit, Market Share and Quality Service. Primary data with the aid of a structured questionnaire was used to elicit information from respondents. The data collected were analyzed using both descriptive such as percentages, mean and standard deviation and inferential statistics of regression analysis using ordinary least square techniques (OLS) to test the hypotheses. The findings revealed that there is a positive and significant relationship between implementation of TQM and profitability, market shares and quality service. A unit increase in total quality management will lead to 1.764478 increase in the profitability, 2.911140 increase in the market share and 3.077131 increase in the quality of service of the project on the average. In conclusion, all construction firms who value profitability, effectiveness, sustainable growth and development as well as continued existence and relevance must adopt TQM as an improvement and competitive tool.

Key words: Total Quality Management; Competitive Advantage; Profit, Market Share, Quality Service

1. INTRODUCTION

There has been a significant changes in the way companies conduct their business as a result of intensity of global competition . Competition is one of the most important factors of running business in the world economy now. For almost every product or service ever designed, there is more than one organization trying to make a sale. Quality therefore has become a strategic tool for measuring business performance in today's dynamic environment [1]. Product quality is an important factor a customer considers. [2] stated that competitiveness of an organization in general based on its ability to perform well in several dimensions such as cost, quality, speed, delivery and innovation, based on that organizations can differentiate themselves.

Companies must have the ability to adapt to the needs and changes in the external environment known as dynamic capabilities. This rapidly changing consumer and external environment makes quality and innovation practices have an important role in the company to have a competitive advantage and to survive in the long term [3]. It is becoming increasingly important for companies (organisations) to gain competitive advantage by being able to manage and survive change. Providing a higher quality service as a strategy for achieving competitive advantage has become a strategic imperative for organizations and senior managements around the world. Quality therefore has become a strategic tool for measuring business performance in today's dynamic environment [4]. Several quality tools and techniques have been employed to achieve this management objective and Total Quality Management (TQM) has proved to be among the most effective quality techniques that have been applied in companies and so as telecommunication companies as well to create competitive advantage. [Mansour, as cited by 5].

Total Quality Management (TQM) has an important role in any company, since its implementation can continuously improve company's performance [6]. Implementing all TQM elements (top management commitment, employee training, employee involvement and empowerment, employee rewarding and recognizing, customer focus and continuous improvement) can create competitive priorities (cost, quality, time/speed, flexibility and innovation). Total quality management and innovation have the same goal, especially in service companies, which is to unify the purpose and function of the company to satisfy the consumers and improve the company's competitive advantage by optimizing the role of employees in the management and business process [7]. TQM is defined as an action plan to produce and deliver commodities or services, which are consistent with customers' needs or requirements by better, cheaper, faster, safer, easier processing than competitors with the participation of all employees under top management leadership [8]. As a result, the focus of construction companies should be on quality. Attention to quality generates positive impact to business performance. There has been research work on total quality management practices and competitive advantage for construction firms in other parts of Nigeria and outside Nigeria, however none has been carried out in Enugu state and the variables that were used for competitive advantage were limited to cost, market shares and quality of service. Hence, this study covered the gap by identifying total quality management as a tool for competitive advantage in Nigerian construction industry. In addition, the study identified the relationships between TQM practices and competitive advantage in Nigerian construction industry.

1.1 The concept of Competitive Advantage

Competitive advantage has been defined in many different ways based on different goals of study. [9] defines competitive advantage as the ability of an organization to produce goods or services more effectively than competitors do, thereby outperforming them. Competitive advantage is the implementation of strategies that cannot be applied directly by other companies that can affect cost reduction, increase market opportunities, reduce competition levels, so as to improve the performance of the company [10]. Improving company's performance and producing company advantages consisting of differentiation, cost and focus are achieved by competitive strategy.

Competitive advantage means managing costs/cost leadership involving efficiency, time management, reduced wastage and differentiation (engage in numerous activities; develop new products) to increase income [11]. Porter (as cited by [12] said, in order to gain a unique competitive advantage, it must increase its service systems and offer more valuable products for its consumers. The best way for a company to introduce more valuable products is to improve the quality of these products and provide them at the lowest possible prices. Porter sees low cost and differentiation as two basic strategies for companies wanting to create value and gain competitive advantage. According to [13] competitive advantage refers to that differentiating factor that drives customers to buy from a specific business rather than from their competitors. The key to business success, however, is to develop a unique competitive advantage that creates value for customers and is difficult to duplicate. Koufteros *et al.* [as cited by [14] describe the following five dimensions of competitive capabilities: competitive pricing, premium pricing, and value to customer quality, dependable delivery, and production innovation

Generally, competitive advantage suggests that each organization have one or more of the following capabilities when compared to its competitors, such as lower prices, higher quality, higher dependability, and shorter delivery time. These capabilities will enhance the organization's overall performance [Mentzer *et al.*, as cited by [14]. Organization can charge premium prices and increase its profit margin on sales and return on investment (ROI), if they can able to offer the high quality products consistently.

Consumer awareness has increased with the high standards of quality of goods and services sourced from competitive trends, which led to higher expectations, so that meeting the needs of customers is still considered something competitive in economic terms, although the automation of processes can affect the way of providing services.

Companies are faced with an increasingly competitive environment in which it is difficult to maintain a sustained competitive advantage [15]. [16] state that competitive advantage can be understood as seeking unique opportunities that will give the enterprise a strong competitive position. According to [15], in order to sustain a competitive position, managers should prepare to respond promptly to changes in customer preferences, competitor strategies and technological advancements. For these reasons, many enterprises – whether public or private, and small or large – initiate their own competitive intelligence services to advise their decision makers [17]. There is need for every company must have at least one advantage to successfully compete in the market. If a company cannot identify one or just does not possess it, competitors soon outperform it and force the business to leave the market.

[18] have evaluated competitive advantage by four dimensions, reduced dependency, knowledge transfer, technology development, and technology transfer. According to [19], in the coming years, the competitive advantage may have its sources based on: Quick answers; Continuous improvement of the product and services; Services added in products; distinctive Competences and Skilled and trained staff for the long run. Rindova and Fomburn in their developed model "Systematic model of competitive advantage" look at the company's competitive advantage development as logical outcome of six processes. These six processes are: strategic investments, industry paradigms, resource allocations, strategic plots, strategic projections, and definitions of success. [Rindova and Fomburn, as cited by [20]

Adams states that companies develop their competitive advantages through bundling and synergistic merging of various company resources. Its main idea is that organisations achieve competitive advantage through the systematic application of learning, knowledge acquisition, and knowledge application via product, service, and process innovation [21]. Daugherty *et al.* [as cited by [22]]describes competitiveness as a comparison between a firm's performance and standard performance, specifically standard performance in the industry, in terms of quality, flexibility, delivery, innovation, cost and learning. [22] presented competitive advantage using five indicators: price, quality, delivery, dependability, lead-time and product innovation.

There is need for every company to have at least one competitive advantage in other to compete successfully in the market. If a company cannot identify one or just does not possess it, competitors soon outperform it and force the business to leave the market. Therefore, competitive advantage is thus when an organization outperform its competitors from a wide range time to gain its productivity, which can be from cost and differentiation. Based on the description above, the competitive advantage constructs used in this study consists of price or cost, delivery dependability, product innovation, and time to market.

1.2 TQM in Nigerian construction industry

Construction industry is an important part of the economy in many countries and often seen as a driver of economic growth especially in developing countries. The construction activity in Nigeria represents a significant share of the country's economy in terms of its contribution to GDP and total employment. The competition among all the organizations has increased in very speedy manner. [23] said that the increase of global competition has driven the companies to change their approach of running business. The industry face many challenges on how to adopt a strategy for higher quality at a reduced cost without affecting their profit margin and the clients' requirement. Hence, due to the above challenges, construction firms in Nigeria must adapt to business improvement programs one of them being TQM. A study by [24] on barriers and benefits of TQM in the Nigerian construction industry: A review, recommends TQM as the only ways of solving these challenges in the construction industry.

The success of Total quality management (TQM) adoption in manufacturing and other industries has been forcing the construction industry to implement the TQM philosophy in order to cope with the rapid changes in the business environment [25]. [26] stated that TQM is a systematic quality improvement method that aims to enhancing firm's performance in terms of quality, productivity, profitability, and customer satisfaction. [27], and [28] stated that TQM is a way to perform business that aims to maximize an organization's competitiveness by the continual improvement of the quality of its services, products, processes, employees, and environments. No wonder [29] stated that companies that do not practice TQM lose their competitive priorities.

According to [6], total quality management is a "management philosophy" that includes different core values. The values of TQM are "customer focus", "continuous improvement", "process orientation", "everybody's commitment", "result orientation" and "learning from each other. Hence TQM needs to be learned and understood by both the managers and employees in the construction industry.

The desire of all parties or elements in the organization to make the continuous improvement is founded on the foundation of TQM. It aims to manage the quality of product and services provided by the companies to make customers satisfied. [30] stated that TQM has become progressively predominant as one of the strategies to ensure improving products and service quality, customer satisfaction and promote continuous improvement. [31] agreed that TQM is the main approach for top management to gain and maintain competitive priorities which leading to sustainable competitive advantage. [32] stated that competitive priorities help the organizations to overcome competition.

Total Quality Management is very imperative for the success of the business. TQM practices will improve innovation performance by means of companies having a system that should be able to bring new ideas and companies running with continuous improvement [26]. Likewise with the support of the management that encourages the emergence of new products in accordance with the needs of consumers will increase employee participation in the innovation process. TQM is not only based on philosophy of providing customer satisfaction and quality goods and services but it is concentrating on future requirements. Total quality management (TQM) principles and techniques are now a well accepted part of almost every manager's tool kit.

Quality management practice is one of the important activities that will improve product quality, production process, efficiency, profit and corporate advantage so that the company is expected to focus more on designing strategies that guarantee the improvement of quality [3]. TQM takes a holistic view of all quality measures employed by an organization including managing quality design and development, quality control and maintenance, quality improvement, and quality assurance. The application of TQM and its tools & techniques within a construction industry not only improves its processes and Quality of products, but also adds a new step towards the overall improvement of the whole organization.

[33] show that firms could achieve competitive advantage, when they have improved financial performance, improved customer satisfaction, faster response to competitive environment and improved product quality. Several quality tools and techniques have been employed to achieve this management objective and TQM has proved to be among the most effective quality techniques that have been applied. Since the introduction of TQM in the early 1980s, it has contributed immensely to management practice around the world. Firms cannot overemphasize its importance as a source of competitive advantage.

1.3 Conceptual Framework

The concept of competitive advantage has been discussed in details in the literature. The variable that constitutes competitive advantage varies from author to author. The present study adopts three (3) variables, which include price, market share and quality service. Figure 1 displays the proposed relationships between the constructs of this research and considers total quality management as independent variable and competitive advantage as dependent variable and examine the effect of total quality management on the three constructs of competitive advantage.

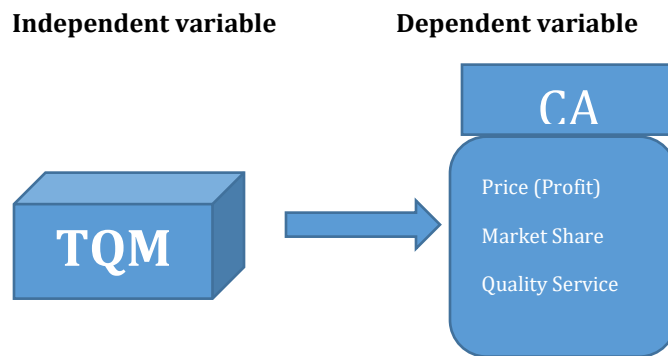


Figure -1: Conceptual framework

Cost advantage requires extremely low overhead, a plentiful source of low-cost labor, and efficient training procedures because of high turnover. At equivalent or lower prices than its rivals, a cost leader's low-cost position translates into higher returns. Subsequently, leads to revenue growth.

Quality. Higher levels of service quality lead to higher sale revenues and productivity [34]. High quality products are those products and services that are reliable, meaning that they perform well the task they were designed for, and create distinctive properties for enhancing its value for customers. When customers learn that products from one company (regarding form, properties, performance, sustainability, reliability, design, style, etc.) provide a higher value for them compared to those offered by competitors, then these products are said to be of high quality. High-quality products enhance a product's value before the customers and make it distinctive. This high perception of value lets the firm set higher prices for its products. [35] showed that high-quality services created positive emotions in customers. Moreover, higher efficiency and lower price are achieved by high-quality products.

Quality improvement has grown to become one of the most fundamental strategies for gaining competitive over rival firms. Attention to quality generates positive impact to business performance through the impact on production costs and earnings [Gaspersz, as cited by [36]]According to Deming, competitive advantage can be built by improving quality because it can reduce costs and improve customer satisfaction making it more efficient than other companies [33]. Customers are getting increasingly conscious about the quality of a product in addition to its price. By ensuring higher quality standards, a company can increase its market share. A company's market share is its total sales in relation to the overall industry sales of the industry in which it operates. An increase in a company's market share can allow the company to operate on a greater scale and increase profitability. It also helps the company develop a cost advantage compared to its competitors.

2.0. RESEARCH METHOD

This study uses a quantitative approach. Quantitative approach is an approach that emphasizes testing theories or concepts through the variable metric measurements and performing data analysis procedure with statistical tools and aims to test the hypothesis [37].

To meet the objectives of our study, a survey design was used. A questionnaire was developed. All the variables of the research model were measured using Likert type scale. All the utilized scales exhibited an adequate level of reliability exceeding the value of 0.7 in all the studies that the scales were taken from. A convenient sample size of 300 respondent from the different construction firms in Enugu state was used. Respondents were professionals in the construction industry who have the best knowledge about the total quality management. However, 283 respondents returned their questionnaires showing a response rate of 94%.

Towards establishing relationships between the variable of interest, there was need to formulate and test appropriate hypotheses. The underlying concepts were translated into measurable forms to facilitate testing of the formulated hypotheses. The statistical tool used for the test of hypothesis is ordinary least square techniques (OLS) and the data was analyzed using Econometrics views (Eviews).

3.0 RESULTS, FINDINGS, AND DISCUSSION

3.1 Demographic profile

Table 1: Demographic profile

	Variables	Frequency	Percentage
Gender	Male	182	64
	Female	101	36
Total		283	100%
Age	20-29yrs	34	12
	30-39yrs	65	23
	40-49yrs	88	31
	50 & above	96	34
Total		283	100%
Professional Qualification	Architect	40	14
	Builders	65	23
	Engineers	130	46
	Quantity surveyor	48	17
Total			100%
Working Experience	Below 9	42	15

	10-19	57	20.
	20-29	105	37
	30-39	79	28
Total		283	100%

Source: Researcher’s field survey (2021)

In table 1 above, there are 283 respondents. According to the Table 1, there are 64% Male and 36% female. Under the age of respondents, 12 % was between the ages of 20-29 years. 23% was between the ages of 30-39 years. 31% were between the ages of 40-49 years. 34.% was above 50 years old. Under professional qualification, 14% were Architects, 23% were Builders, 46% were Engineers and 17% were Quantity Surveyors. While the working experience of less than 9 years is 15%. 20% had 10-19 years worked experience. 37% had 20-29 years worked experience. 28% had 30-39

Deduction: the above analysis showed that the respondents were both male and female from various construction professions that are within the ages of 20 to 50 years and have also acquired reasonable number of experience, hence their capability to analysis the subject matter.

3.2 Addressing the objective of this study.

To evaluate the benefits of total quality management to competitive advantage, the respondents were provided with a table that had a list of benefits and were told to rate the extent to which they agree on a five point Likert-type scale (1=Strongly Disagree, 2= Disagree, 3=Neutral, 4=Agree, and 5= Strongly Agree). Participants’ responses were analysed using results are presented in Table 2:

Table 2 Benefits of Total Quantity Management to Competitive Advantage

	Profitability	Mean	SDev
1	Financial performance will be outstanding	3.9736	1.26044
2	Revenue (sales) growth will be outstanding	4.0000	1.30206
3	Financial performance will exceed competitors	3.8317	1.19660
4	Revenue growth will exceed competitors	3.5743	1.31984
	Market share		
5	Firm’s market share improve on implementation of TQM	3.7921	1.38093
6	Market share will be higher than competitors after implementation	3.5908	1.30873
7	Volume of sales will increase	3.5347	1.36584
8	Customers are more satisfied with the products	3.9406	1.28791
9	Share of distribution is more than the competitors	3.3333	1.47083
10	Enter new Market, improve image of your company	3.5875	1.38276
	Quality Service (Product Quality)		
10	Demand for the product will increase rapidly	4.0759	1.19499
11	Firm’s level of product quality is higher compared with competitors’	4.0000	1.30206
12	Competition will be based on product or service differentiation and not price	3.8086	1.19449
13	Improve Quality of Product/Service	4.1617	1.14087
14	Increase your ability to innovate	3.7261	1.29475

Source: Researcher’s field survey (2021)

3.3 Test of hypothesis

H₀₁: There is no significant relationship between implementation of TQM and Profitability

H₀₂: There is no significant relationship between implementation of TQM and Market Shares.

H₀₃: There is no significant relationship between implementation of TQM and Quality Service

Data Used: Table 2

Statistical tool: Ordinary least square techniques (OLS)

Data analysis software used: Econometrics views (Eviews v.8.0)

Decision Rule: Reject the null hypothesis if p-value is less than or equal to 0.05 [Level of significance (α)]; otherwise do not reject.

Note:

TQM = (independent variable)

Competitive Advantage (Profitability, Market share and Quality of service) = (dependent variable)

Model specification

Model one

$$\text{Profitability} = F(\text{TQM})$$

$$\text{Profitability} = \beta_0 + \beta_1 \text{TQM}$$

$$\text{Profitability} = \beta_0 + \beta_1 \text{TQM} + \mu$$

Where,

TQM = Total Quality Management

Model Two

$$\text{MKTS} = F(\text{TQM})$$

$$\text{MKTS} = \beta_0 + \beta_1 \text{TQM}$$

$$\text{MKTS} = \beta_0 + \beta_1 \text{TQM} + \mu$$

Where,

MKTS = Market Share

Model Three

$$\text{QS} = F(\text{TQM})$$

$$\text{QS} = \beta_0 + \beta_1 \text{TQM}$$

$$\text{QS} = \beta_0 + \beta_1 \text{TQM} + \mu$$

Where,

QS = Quality of service

Analysis for model one

Dependent Variable: D(PROFITABILITY)
 Method: Least Squares
 Date: 03/18/21 Time: 11:20
 Sample (adjusted): 2000 2018
 Included observations: 17 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	758.6474	237.0775	3.199998	0.0030
D(TQM)	1.764478	0.376866	4.681971	0.0000
ECM(-1)	-0.281636	0.084634	-3.327675	0.0021
R-squared	0.503050	Mean dependent var		1474.379
Adjusted R-squared	0.473817	S.D. dependent var		1506.158
S.E. of regression	1092.544	Akaike info criterion		16.90801
Sum squared resid	40584174	Schwarz criterion		17.03863
Log likelihood	-309.7982	Hannan-Quinn criter.		16.95406
F-statistic	17.20865	Durbin-Watson stat		0.890284
Prob(F-statistic)	0.000007			

The regression result above shows that total quality management has positive and significant relationship on profitability, hence, as the total quality management is increasing the profitability of the project simultaneously increases alongside. More so, the result further indicates that a unit increase in total quality management will lead to 1.764478 increase in the profitability of the project on the average. More so, since the probability value of the observed variable is less than 0.05 level of significance, hence, we reject the null hypothesis and conclude that total quality management has significant relationship on profitability of a project.

Analysis for model two

Dependent Variable: D(D(MKTS))
 Method: Least Squares
 Date: 03/18/21 Time: 06:57
 Sample (adjusted): 2000 2018
 Included observations: 17 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	13.02559	465.2166	0.027999	0.9778
D(TQM)	2.911140	0.640190	1.423233	0.0050
U(-1)	-0.492548	17.58830	-0.227000	0.8220
R-squared	0.067626	Mean dependent var		359.2389
Adjusted R-squared	-0.025612	S.D. dependent var		1684.857
S.E. of regression	1706.297	Akaike info criterion		17.83217
Sum squared resid	87343492	Schwarz criterion		18.01174
Log likelihood	-299.1469	Hannan-Quinn criter.		17.89341
F-statistic	0.725307	Durbin-Watson stat		2.362493
Prob(F-statistic)	0.544873			

The regression result above shows that total quality management has positive and significant relationship on market share, hence, as the total quality management is increasing the market share of the project simultaneously increases alongside. More so, the result further indicates that a unit increase in total quality management will lead to 2.911140 increase in the market share of the project on the average. More so, since the probability value of the observed variable is less than 0.05 level of significance, hence, we reject the null hypothesis and conclude that total quality management has significant relationship on market share of a project.

Analysis for model three

Dependent Variable: D(QS)

Method: Least Squares

Date: 03/18/21 Time: 02:11

Sample (adjusted): 2000 2018

Included observations: 17 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1390.828	226.6921	6.135316	0.0000
D(TQM)	3.077131	0.538193	0.143316	0.0369
ECT(-1)	-0.608940	0.145460	-4.186291	0.0002
R-squared	0.473901	Mean dependent var		1522.915
Adjusted R-squared	0.424579	S.D. dependent var		1497.890
S.E. of regression	1136.246	Akaike info criterion		17.01329
Sum squared resid	41313790	Schwarz criterion		17.18923
Log likelihood	-302.2392	Hannan-Quinn criter.		17.07470
F-statistic	9.608356	Durbin-Watson stat		2.005560
Prob(F-statistic)	0.000113			

The regression result above shows that total quality management has positive and significant relationship on quality of service, hence, as the total quality management is increasing the quality of service of the project simultaneously increases alongside. More so, the result further indicates that a unit increase in total quality management will lead to 3.077131 increase in the quality of service of the project on the average. More so, since the probability value of the observed variable is less than 0.05 level of significance, hence, we reject the null hypothesis and conclude that total quality management has significant relationship on quality of service of a project.

3.4 Findings

From the analysis above, it showed that there is a positive and significant relationship between implementation of TQM and profitability, market shares and quality service. A unit increase in total quality management will lead to 1.764478 increase in the profitability, 2.911140 increase in the market share and 3.077131 increase in the quality of service of the project on the average. Since the three variables are what was used to measure competitive advantage, then it means that there is a significant relationship between TQM and competitive advantage. This indicates that when the total quality management are implemented the competitive advantage will increase. The competitive advantage which include profitability, market shares and quality service. This finding clearly supports what [38] stated that TQM is essential for today's emerging global competitive markets.

4. CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusion

This study identified total quality management as a tool for competitive advantage in Nigerian construction industry. The study identified a positive and significant relationship between TQM and competitive advantage. Based on the findings it is

concluded that every construction organisation that implement TQM in all the stages of the construction is more likely to compete and perform better in the globalized economies than their counter-part who do not implement it.

4.2 Recommendations

From the above findings and conclusion, the following were recommended

1. Construction firms should embrace a degree of transformational change by adopting a customer focus strategy instead of a price focus strategy. The change should be driven by shifts in organisational strategy and redefining the organisational mission and core-values.
2. Adequate training should be given to all employees to improve their proficiencies in their tasks. If employees are trained on producing reliable and high quality products and/or services, their full participation in the production stage would be more fruitful. Thus, customer satisfaction will increase.
3. Finally, all construction firms who value profitability, effectiveness, sustainable growth and development as well as continued existence and relevance must adopt TQM as an improvement and competitive tool.

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