

# Information Systems (IS) Strategy: Antecedents and pursuit in organizations in Ghana

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## To cite this article:

Okpattah, Bernard Kofi, Chisenga, Justin, Addo, Hilla. Information Systems (IS) Strategy: Antecedents and Pursuit in Organizations in Ghana. *International Journal of Intelligent Information Systems*. Vol. 3, No. 3, 2014, pp. 27-33. doi: 10.11648/j.ijiis.20140303.12

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**Abstract:** The relevance of Information Systems (IS) in organizations is evidenced by its increasing adoption and usage to shape and drive business goals. The pursuit of appropriate IS Strategy is therefore imperative for the effective utilization and management of the enterprise IS and related infrastructure. But what perceptions and understanding do organizations in Ghana have about IS Strategy and how do these antecedents (organizational understanding and perceptions) influence the choice and pursuit of a particular IS Strategy? The study adopts a quantitative design and a cross-sectional approach with responses from senior IT executives of Ghana Club 100 companies in Accra to examine the above phenomenon from an IS Strategy Conceptions perspective investigating the antecedents of IS Strategy in organizations. Results suggest that the choice of particular IS Strategy is greatly influenced by the organizational understanding and perceived role of IS Strategy. The conception of IS Strategy as a shared view of IS role in the organization drives organizations to adopt more definite IS Strategy (IS Innovator and IS Conservative). It is noted further that, organizations in their quest to stay competitive while maintaining operational efficiency tend to be ambidextrous - adopting a blend of innovative and conservative strategies.

**Keywords:** Antecedents, Information Systems (IS) Strategy, IS Innovator, IS Conservative, IS Ambidextrous, Typology

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## 1. Introduction

The relevant role of IS/IT in organizations has been highlighted by several authors; [1] [2] [3] [4]. As noted by [2], in many sectors, IS is not only used to support business as was the case before, but also taking centre stage in shaping new business strategies. The level of IS sophistication in organizations is essential in leveraging the full potentials presented by the enterprise IS. It is imperative, therefore, that organizations pursue appropriate IS Strategies for the effective utilization and management of the enterprise IS in order to deliver the needed business value for competitive advantage towards improved performance. But what perspectives and understanding do organizations have about IS Strategy and to what extent do these antecedents influence the adoption and pursuit of particular IS Strategy by organizations to prosecute the enterprise-IS agenda?

Mintzberg [4] defines strategy as “an organizational perspective on setting and meeting organizational goals”.

This is coherent with the recognition that strategy comprises both the formulation and implementation processes [2]. Generally, the IS Strategy is a resultant of the Strategic Information Systems Planning (SISP) process, and often presents a holistic view and direction for long term approach to deploying and managing the enterprise IS. However, IS Strategy has attracted very little attention from researchers and practitioners with no harmonized definition and typology. Interestingly, [4] notes the three dominant streams of research in the IS domain: Business-IS Planning alignment, Strategic IS Planning process and IS for competitive advantage all hinge closely on IS Strategy but with little focus on IS Strategy itself. Their extensive review of literature further revealed three dominant conceptions of IS Strategy in organizations as i) IS Strategy as use of IS to support the business strategy, ii) IS Strategy as the master plan for the IS function, and iii) IS Strategy as the shared view of the IS role in the organization [4, p.1].

From the foregoing, it is prudent to investigate the antecedents of IS Strategy; revealing how organizations in

Ghana understand and perceive IS Strategy, and how this influences their pursuit of particular IS strategy towards the effective and efficient utilization and management of the enterprise IS to deliver the desired business value for improved performance from the IS Conceptions perspective.

Specifically, it seeks:

- i. to investigate the antecedents - (organizational understanding and perceptions) of IS Strategy in Ghana
- ii. to identify influence of antecedents on the adoption and pursuit of IS Strategy
- iii. to ascertain the IS Strategies adopted and pursued in organizations in Ghana

## 2. Literature Review

### 2.1 The Conceptions of IS Strategy

A study by [4] identified three (3) main conceptions of IS Strategy namely:

- i. IS Strategy as use of IS to support the business strategy
- ii. IS Strategy as the master plan for the IS function, and
- iii. IS Strategy as the shared view of the IS role in the organization

The three conceptions of IS Strategy reveal how organizations perceive and understand IS Strategy. From this perspective, the study investigates the antecedents of IS Strategy in organizations with emphasis on Ghana.

The first conception - IS Strategy as the use of IS to support the business strategy - assumes Mintzberg's fourth P – “position” paradigm of strategy which seeks to answer in what ways IS could enable the organization gain and sustain competitive edge over competitors in the industry. It indicates the resolve of the organization to use IS to drive business goals primarily stemming from the business strategy, hence considered “business centric” [4, p. 240]. Further, [5] notes that not only does this rely on the existence of a formal business strategy but also the resultant IS Strategy is contingent on the quality of the underpinning business strategy. Whereas not all organizations have formal business strategy, the quality of existing ones cannot be guaranteed either [5, 4]

The second conception – IS Strategy as master plan for the IS function in the organization assumes Mintzberg's second P – “plan” paradigm of strategy which “focuses on how to run the IS function effectively and efficiently by identifying assets, personnel, structures, monetary resources and technologies required to implement the strategy” [5, p. 9]. As such, it is considered “IS-centric” with long term plan for the IS function. This implies the IS function is considered a business/functional unit deserving an independent strategy, making the resultant IS Strategy is this case more of a “functional strategy” than an “organizational strategy” [4, p. 240]. The independence of IS Strategy from the business strategy is clear and distinctive with the resultant IS strategy giving much

attention to the IS function with guidelines for decision making and structures for planning and execution.

The third conception – IS Strategy as the shared view of the IS role in the organization assumes Mintzberg's fifth P – “perspective” paradigm of strategy which presents an “organizational perspective that guides future IS-related business decisions and activities rather than of a concrete plan or position” [4, p. 241]. This reflects the views and attitudes of senior management regarding IS in the organization and somewhat, is based on prior experiences, personal preferences or industry requirements [6]. Considered “organization-centric”, this conception seeks to bridge the two extremes of “business-strategy driven” and “IS-function driven” reasoning of the other two conceptions of IS Strategy. In essence, the third conception reflects the organizational view and belief shared among senior management of how to invest in, deploy, use and manage the enterprise IS.

### 2.2. IS Strategy Typology

Further to defining IS Strategy from the perspective paradigm and consistent with the third conception of IS Strategy as an organizational perspective of IS, [4] developed and operationalized typology of IS Strategy. Collectively, the typology comprised three types of IS Strategy; two of which are categorized as defined strategy (i.e. IS Innovator and IS Conservative) and the other one categorized as undefined strategy (i.e. IS Undefined).

The IS Innovator Strategy is considered an organizational perspective or understanding that continuously endeavours to be innovative through new initiatives i.e. by exploring IS; experimenting with new and uncertain alternatives [4, 5]. The primary goal of the IS Innovator is to be the IS leader in its industry thus aims to quickly react to opportunities in which it could discover and make the most of IS innovations to gain business value for the organization. For example, by introducing its electronic book (e-book) store and launching the lending library for its Kindle devices, Amazon, according to [5] is an example of an IS Innovator in its industry by capitalizing on the e-book market to create a competitive edge for its Kindle devices over other players in the same industry.

The IS Conservative Strategy is considered an organizational perspective that seeks to create value through efficiency by carefully scrutinizing and improving IS practices and related technologies i.e. by exploiting the potentials of IS with a reduced risk approach to adopting initiatives [4, 5, 7]. By not aspiring to be the industry leader with regards to IS innovations and initiatives, the IS conservative strategy ensures that the organization avoids the imminent risks associated with new technologies and initiatives through stable and careful exploitation of IS strategically. The core of the IS conservative strategy, according to [5] is the focus on process efficiency and cost reduction and often, it is the default strategy type in many organizations due largely to regulations which tend to stifle

innovation, to most extent, in many IT departments.

Lastly, the IS Undefined Strategy is one that does not have a clear well-articulated long-term goals regarding the exploitation or exploration of IS for strategic purposes in the organization [4, 5]. By viewing IS Strategy more as an afterthought, the organization does not exhibit consistent patterns of behaviour towards the investment in, deployment, use and management of IS. Although it may be far-fetched to think organizations may not have well-articulated IS strategies, in reality, recent work by [7] corroborates that indeed many firms fall in this category.

### **2.3. Propositions of the Study**

From the foregoing, the study contends that:

H1a: IS Strategy as use of IS to achieve business strategy is more positively associated with IS Innovator Strategy than IS Conservative Strategy

H1b: IS Strategy as master plan for the IS function is more positively associated with IS Conservative Strategy than IS Innovator Strategy

H1c: IS Strategy as shared view of IS role in the organization is positively associated with defined IS Strategy (IS Innovator and IS Conservative)

H1d: IS Strategy as shared view of IS role in the organization is negatively associated with undefined IS Strategy (IS Undefined)

## **3. Methodology**

### **3.1. Research Design**

The study adopts the cross-sectional survey design paradigm which enables data to be gathered about a population at a single point in time from a representative sample ensuring that the same data is collected from the respondents and gives an unbiased representation of the population of interest.

### **3.2. Study Population**

The study population was corporate organizations in Ghana. These are organizations characterized by limited liability, implying a separated legal entity from the owners which offers such owners protection. Corporate organizations are the most common form of business entities in Ghana. Collectively making up the private sector, they operate in a wide spectrum of sectors and industry including agriculture, banking and finance, recreation, manufacturing, petroleum and mining among many others.

### **3.3. Target Size, Sample and Sampling Technique**

The target for this study is the Ghana Club 100 companies. The Ghana Club 100 (GC100) is an annual compilation of the top 100 companies in Ghana by the Ghana Investment Promotion Centre (GIPC) encompassing a wide range of sectors – agriculture and agribusiness, education, financial services, ICT, manufacturing,

petroleum and mining services, services and health. The G100 initiative was launched in 1998 by GIPC to give due recognition to enterprise building and corporate excellence in Ghana [8]. The study adopts purposive sampling technique also known as non-random sampling where the researcher arbitrarily selects a sample considered relevant for the study and believed to be as typical and representative as the population [9]. The GC 100 companies purposively selected for the study is typical of corporate organizations in Ghana and comprises organizations from varied sectors or industries. As such, it provides a point to assess and ascertain how their perception of IS Strategy influences their strategic approach to leveraging the potentials presented by the IS and related tools for competitive advantage and determine their varied levels of utilization, planning and management of the organizational IS/IT.

### **3.4. Data Collection Instrument and Measures**

The study used questionnaires to collect data pertaining to the concepts, constructs and items of relevance to the research. The questionnaires were administered to the organizations identified in the Ghana Club 100 rankings. The measures for the variables modeled as reflective constructs were either adopted or adapted from prior literature [4, 5, 10] hence their reliability and validity are considered tested and proven.

### **3.5. Framework of Data Analysis**

The Partial Least Squares (PLS) approach was used to analyze the research model. The choice of this approach is rooted in the ability of PLS to maximize explained variance prediction of the constructs [11] consistent with the objective of the study. PLS is also suitable for small samples - 30 to 60 and more flexible for complex problems [11]. The guidelines and rules for preparing data for analysis: missing data, outliers and assumptions for multivariate analysis recommended by [11] were followed.

## **4. Data Analysis and Results**

### **4.1. Response Rate**

The target sample for the study was the 100 organizations in the Ghana Club 100 rankings of 2011. However, the survey comprised only such organizations located within the Accra metropolis, thereby, reducing the number of sampled organizations to sixty-two (62). Questionnaires were administered to these organizations and a total of forty-four (44) responses were received representing a response rate of 70.97%. All 44 responses were used in the analysis as they were deemed to be valid with missing data within acceptable ranges. It is noted that with respondents being the highest ranking or senior IT executives (79.5%) the respondents provide a good representation of the target sample for the study.

## 4.2. Data Validations

Composite Reliability (CR) and Average Variance Extracted (AVE) were used to validate the reliability and convergent reliability of the reflective measures in the PLS structural model (Chin, 1998). Composite Reliability (CR) measures were greater than 0.70 providing support for internal consistency and Average Variance Extracted (AVE) for each factor was greater than 0.50, indicating acceptable reliability and convergent reliability.

Further, discriminate validity for the reflective measures was validated in two ways: square root of the AVE for each factor was higher than the correlation with other factors indicating each factor shares higher variance with items in its own factor than with items in other factors whereas cross-loadings of items load higher on its own construct than on other constructs [12]. The descriptive statistics for the constructs are presented in Table 4.1 below as well as their validations in Tables 4.2 and 4.3.

**Table 4.1.** Descriptive Statistics

Construct	Min	Max	Mean	Std Dev
IS Conception I	2	5	4.14	0.75
IS Conception II	1	5	3.48	1.10
IS Conception III	2	5	4.07	0.72
IS Innovator	1	5	3.67	1.00
IS Conservative	2	5	4.06	0.70
IS Undefined	1	5	2.50	1.16

**Table 4.2.** Measurement Validation for Reflective Measures

Construct	AVE	Composite Reliability
IS Conception_I	0.819	0.931
IS Conception_II	1.000	1.000
IS Conception_III	0.677	0.863
IS Innovator	0.602	0.819
IS Conservative	0.680	0.862
IS Undefined	0.675	0.925

**Table 4.3.** Additional Validations and Correlations for the Latent Variables (Reflective Measures)

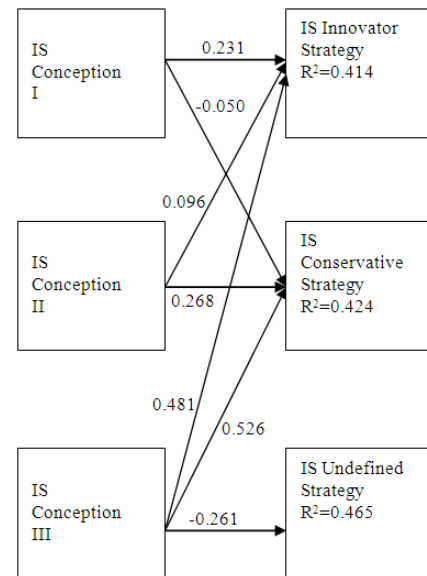
Construct	IS Comp I	IS Comp. II	IS Comp. III	IS Conv	IS Innv	IS Undf
IS Comp. I	1					
IS Comp. II	0.16	1				
IS Comp. III	0.78	0.24	1			
IS Conv	0.43	0.36	0.6	1		
IS Innv	0.57	0.21	0.62	0.57	1	
IS Undf	-0.65	-0.15	-0.62	-0.2	-0.46	1

## 4.3. Results of the Study

### 4.3.1. The PLS Structural Model

To test the significance of the structural research model,

the standard boot-strap resampling procedure [5] was used. The overall model result is depicted in Figure 4.1 with explanatory powers  $R^2$  and standard path coefficients ( $\beta$ ). Results from the analysis show support for 6 of the 7 hypothesis with the one hypothesis receiving partial support. Partly, negative relations rather than positive, as hypothesized were found for H2a (defined IS strategies are positively associated with IT Maturity). Only one (IS innovator) of the defined IS strategies showed positive relation to IT Maturity with the other (IS conservative) showing a negative relation. The antecedents (organizational understanding of IS Strategy) explained 41.4% of the variance for IS Innovator, 42.4% for IS Conservative and 46.5% for IS Undefined.



**Figure 4.1.** Overall Research Model

### 4.3.2. Post-Hoc Analysis

The study analyzed organizations that have implemented their current IS Strategy for more than two years ( $n=27$ ) to further confirm the overall validity of the research model. The results remained stable or more supported the original hypothesis as depicted in Figure 4.2. For instance, the model indicated positive relationships between defined IS Strategy (IS Innovator and IS Conservative) and IT Maturity, thereby supporting hypothesis H2a (with  $\beta=0.260$  and  $\beta=0.060$  respectively). Also, it is noted that the model for organizations with stable IS strategies of two or more years show higher explanatory factors for all constructs in the model; where, IS Strategy explains over 50% of the variance for IT Maturity. The IS Conceptions also explain close to 60% variance for all the IS Strategies (IS Innovator, IS Conservative and IS Undefined).

The study sought to ascertain the types of IS Strategy adopted and pursued in the organizations surveyed. The proceeding classification scheme was used. Organizations ranking highest on the IS Undefined items were categorized as IS Undefined. Organizations were categorized as IS Ambidextrous if their ratings for both IS Innovator and IS

Conservative were, on average above the sample means for IS Innovator and IS Conservative. If not, they were categorized as either innovators or conservatives depending on which they had higher ratings. The results are depicted in Table 4.4 below.

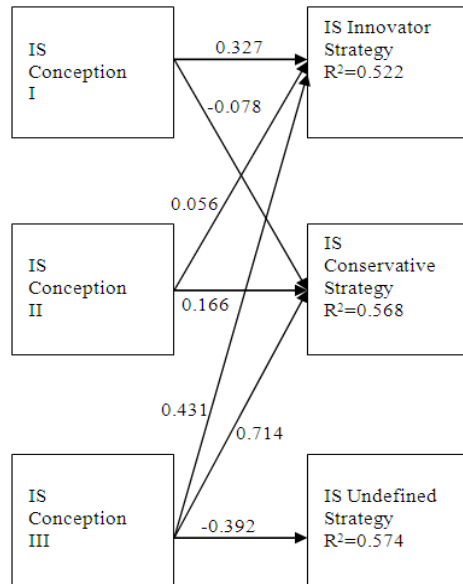


Figure 4.2. Model Results for Stable IS Strategy for 2/more years

Table 4.4. Extended IS Typology

IS Strategy	Count	% of sample	Mean	Std. Dev
IS Innovator	7	15.90%	4.38	0.40
IS Conservative	15	34.10%	3.98	0.44
IS Undefined	6	13.60%	4.44	0.46
IS Ambidextrous	16	36.40%	4.38	0.30

Table 4.5. Summary of Proposition Results

Proposition	Result
H1a: IS Strategy as use of IS to achieve business strategy is more positively associated with IS Innovator Strategy than IS Conservative Strategy	Supported
H1b: IS Strategy as master plan for the IS function is more positively associated with IS Conservative Strategy than IS Innovator Strategy	Supported
H1c: IS Strategy as shared view of IS role in the organization is positively associated with defined IS Strategy (IS Innovator and IS Conservative)	Supported
H1d: IS Strategy as shared view of IS role in the organization is negatively associated with undefined IS Strategy (IS Undefined)	Supported

## 5. Discussion of Results

### 5.1. Main Findings

- Antecedents (organizational understanding and perception) of IS Strategy influences the choice and pursuit of particular strategies.

- IS Strategy as a shared view of IS role in the organization influences organizations to pursue more definitive IS Strategies (IS Innovator or IS Conservative).
- Organizations largely exhibit ambidextrous tendencies combining both innovator and conservative strategies to gain competitive advantage while maintaining high operational efficiency.

### 5.2. Antecedents: How Organizations Understand and Pursue IS Strategy

From the IS Strategy Conception perspective, the study contended that the understanding gained by organizations of IS Strategy influences significantly the choice and pursuit of the particular IS Strategy. To this, all four hypotheses posited were supported empirically from the sample data.

By understanding IS Strategy as the use of IS to support the business strategy, the study posited would lead organizations to adopt a more innovative (exploitative) approach to IS Strategy (H1a). Results support this hypothesis with path coefficient  $\beta=0.231$  higher than  $\beta=-0.050$  for relation with IS Conservative Strategy in the original model and  $\beta=0.327$  over  $\beta=0.078$  in the post-hoc analysis. This is consistent with [4] asserting that by being considered “business centric”, this conception drives organizations to use IT/IS to position itself for competitive advantage; thus quick to respond to IS opportunities and implements IS innovations.

Further, H1b postulated that by considering IS Strategy as a master plan for the IS/IT function, organizations would rather take a more conservative approach to IS by pursuing IS Conservative Strategy. This assertion was again supported from the results of the PLS structural model with path coefficient  $\beta=0.268$ , higher than  $\beta=0.096$  for the relation with IS Innovator Strategy in the original model and  $\beta=0.116$  over  $\beta=0.056$  in the post-hoc analysis. By seeking to run the IT/IS function more efficiently by identifying all assets and related resources [5], this conception is more in line with IS Conservative: seeking efficiency gains from IT/IS usage.

The third and fourth hypothesis hinged on the understanding of IS Strategy as a shared view of the role of IS in the organization - IS Conception III. By contending that this understanding of IS Strategy takes a rather holistic approach to IS in the organization, the study hypothesized that it would lead organizations towards the pursuit of defined IS Strategy (IS Innovator or IS Conservative) in hypothesis H1c and relate negatively to IS Undefined Strategy in hypothesis H1d. These were supported suggesting that by understanding IS Strategy as shared view of IS role in organizations, well-articulated and defined strategies are pursued but not undefined ( $\beta=-0.261$ ) approach to IS. The choice to adopt innovative ( $\beta=0.481$ ) or conservative ( $\beta=0.526$ ) approaches then lies on the particular role the organization wants IS to play for the business. Further, the findings suggest that by considering

IS Strategy as a shared view of the role of IS, organizations formulate and implement IS strategies to manage the entire IT/IS infrastructure relevant to delivering business value. Considered “organization centric”, the third conception reflects views and attitudes of senior management and the choice between innovator or conservative strategy is based on their past experiences, personal preferences or industry requirements dictating the overall role of IS [4,6].

### 5.3. Extended IS Typology: IS Strategies Adopted by Organizations

In ascertaining the type of IS Strategy pursued in organizations in Ghana, the study found that a fourth category of IS Strategy – the IS Ambidextrous, where organizations simultaneously adopt both innovative (exploitative) and conservative (explorative) approaches to IS Strategy [5] is dominant in the study sample accounting for the about 36.4% of the total.

The strategies in the traditional typology: Conservative, Innovator and Undefined accounted for 34.10%; 15.90%; and 13.60% respectively. It is clear that organizations are devising means to be competitive while running as efficiently as possible by exhibiting this ambidextrous tendency as noted by [5]. Further, the dominant strategy in Ghana on the traditional model is IS Conservative consistent with [5] as the default strategy type in most organizations.

## 6. Conclusion and Recommendation

The underlying antecedent to pursuing particular IS strategies stems from the organization’s understanding or perception of IS Strategy for which the study implores the IS Conception perspective adapted from Chen *et al.* (2010) to investigate. By considering IS Strategy as the use of IS to support business strategy (i.e. IS Conception I), organizations tend to be more innovative than conservative in their approach to IS but not necessarily exhibiting higher levels of maturity with regards utilization and management of the organizational IT/IS. Organizations that perceive IS Strategy as the master plan for the IT/IS function (i.e. IS conception II) also tend to adopt more conservative than innovative approach to IS with the limited focus on IT/IS resource allocation. The bigger picture of an enterprise-IT platform to serve as a launch pad for IT/IS-rich service deployments to promote operational efficiency, improve service delivery, and increase productivity is ignored. This, is the edge organizations with a shared view of IS role (i.e. IS Conception III) have over those with the other two conceptions.

With an organizational shared view of IS role, IS/IT is approached with an enterprise-mindset of leveraging the opportunities presented to deliver business value. The decision to either adopt innovative or conservative approaches lies in the core role the organization wants IS to play – to exploit technologies for aggressive marketing

drive or to support business processes to deliver efficiency respectively. Invariably, the resulting strategies with the underlying antecedent of IS Strategy as shared view of IS role in the organization adopts a more holistic and comprehensive approach to addressing the IS/IT needs of the organization as a whole. As such, the biased concentration of efforts (e.g. applications portfolio by Conception I or resource allocation by Conception II) is mitigated.

The relevant role of IT/IS in organizations has been recognized giving the impetus to shift focus from using IS as a business support tool to shaping new business strategies. As strategy sets the tone for organizational activities towards success, so does IS Strategy seek to define the organizational path for the adoption and pursuit of the enterprise IS. Recognizing the significant role of IT/IS in delivering business value and performance improvements, organizations are seeking more definitive approaches to the utilization and management of the enterprise IT/IS. This has become relevant as organizations are edging closer to the understanding of IS Strategy as the shared view of the role of IS in the organization rather than the other conceptions of IS Strategy as the use of IS to support the business strategy or as the master plan for the IT/IS function. This gives the impetus to take a more holistic and comprehensive approach to IS through defined IS Strategy. The decision to implore innovative or conservative strategies then lies in the organizations’ shared view of IS as either for competitive drive or efficiency gains. Further, organizations were noted to not only adopt and pursue the traditional IS strategies of Innovator, Conservative or their absence (i.e. Undefined) but rather combining both into Ambidextrous Strategy which allows them to be competitive but not at the expense of operational efficiency.

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