

INTERNET RETAIL IN A DEVELOPING COUNTRY: PERFORMANCE MEASUREMENT AND BUSINESS OPERATIONS

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ABSTRACT

This study investigates Internet retailers in a developing country. It aims to investigate the characteristic of business profiles and operations, and to describe performance measurement implemented and its use. Internet-based research was adopted by combining a questionnaire email survey with web content analysis to study Indonesian Internet retailers. The results show that the majority of Indonesian Internet retailers are immature, small size, and without store-presence. The business operation practices, such as ordering, payment, and communication, indicate some differences from those in developed economies. Though Indonesian Internet retailers are still immature, they have measured various aspects of business performance. Those measured more performance indicators are likely to use the information more intensively to support decision making. This study has limitations such as the small number of responses, which might prevent the generalization of the results. The findings could be used by local Internet retailers to improve the business operations and performance measurement, as well as global Internet retailers entering Indonesian market to adopt some local operation practices.

KEYWORDS

Internet retail, performance measurement, e-commerce, e-business, online store, Indonesia

1. INTRODUCTION

Internet retailing in developed countries has become one of the fast growing business sectors, but its current state in many developing countries is still lag behind (Aladwani, 2003). Internet retailers in developing countries face some challenges, such as the lack of reliable systems for the delivery, low credit card penetration, and low Internet penetration (Hawk, 2004). Though some studies about e-commerce took place in developing countries (e.g. Molla and Heeks, 2007), the knowledge available is still limited to cover many variations. Among many important issues in this business, this study explores business operations and performance measurement, which are likely to be influenced by the country-specific environment.

1.1 Internet Retail Operations

Internet retail operations could be classified into five activities: sourcing, warehousing, online sales, handling-and-shipment, and service (Enders and Jelassi, 2000). Sourcing products from suppliers and warehousing are similar with those in store-based retailing. In the online sales process, online merchandising is critical because retailers should translate the complexity of store and product characteristics into web pages (Burt and Sparks, 2003). In this online sales process, retailers should provide one or more methods how a customer places an order and makes a payment. In developed economies, online shopping cart for ordering, and debit or credit card for payment are widely accepted practices for online shopping. The next activity, handling-and-shipment, is known as a fulfillment process. Internet retailers perform this process through the following options: (1) from store, (2) from central warehouse, (3) from own dedicated picking centre, (4) drop-ship from manufacturers or distributors, and (5) outsourced to a dedicated fulfillment service, such as UPS and FedEx (Nicholls and Watson, 2005; Vargas, 2004). Finally, the service function mainly refers to

after-sales service, handling of product returns, refunds, and other communication with customers. The Retail Industry reported that about 22% of pure-plays and 13% of clicks-and-mortar retailers used a third party service to perform this function (Vargas, 2004).

1.2 Performance Measurement in Internet Retailing Business

Performance measurement in e-commerce firms is still immature in comparison to that in traditional firms. During their early development (dotcom era), e-commerce firms had paid less attention to performance measurement because their business was evaluated on an expectation basis such as potential growth and potential efficiencies rather than actual outcome (e.g. Agrawal et al., 2001; Ring and Tigert, 2001). The evolution of performance measurement in Internet retail could be classified into three stages based on the focus of measurement. The first stage is focused on measuring a site's popularity, which is an indicator of marketing success in introducing the virtual store to potential customers. Web traffic measures or web metrics have been employed to evaluate the site's popularity (Karagozoglu and Lindell, 2004). The second stage is focused on measuring a customer's online shopping experience (e.g. Huang, 2005; Tamimi et al., 2003). It comes from the need to satisfy customers and to make them loyal. Measuring a customer's shopping experience is parallel with measuring service quality in the traditional retailing context. Measuring service quality from a customer's view is important to evaluate the Internet retailer's performance. However, the success in the site's popularity and customers' shopping experience is not necessarily a business success (Betts, 2001). The third stage is focused on measuring business performance (e.g. Rayport and Jaworski, 2003). The pursuit for a more comprehensive framework emerged following dotcoms' failure. This attempt is based on a paradigm that, like other traditional businesses, Internet retail business should be evaluated more rationally than before.

1.3 Research Objectives

This study is aimed to explore Internet retailing in Indonesia. Firstly, it is to describe the characteristics of business profiles and operations. The result could indicate if the profiles and operations affected by the country-specific business environment. Secondly, this study is to investigate the implementation of performance measurement and its use. The result could indicate how internet retailers behave in the current e-commerce context.

In general, e-commerce in Indonesia is still in the early development. The number of Internet users is approximately 25 million people representing only about 10% of the population, which is lower than 23.4% of the world average and 17.1% of the Asia, as reported by the Internet World Stats (www.internetworldstats.com). People are likely to use Internet for more entertainment than business purposes. It is reflected, for example, that Indonesian facebook users were ranked seventh in the world with more than 11.7 million users in 2010 (www.checkfacebook.com). The Economist Intelligence Unit has ranked Indonesia at 65th in the E-readiness Ranking 2009, which covers the issues of the connectivity environment, government investment and policy, and the underlying social and cultural attitudes surrounding Internet adoption. This implies that a lot of works and cooperation between business and government are required to foster e-business growth (www.eiu.com).

The rest of the paper is organized into three sections. Section 2 presents the development of the research instrument and the explanation of research method used. Section 3 presents the results of data analysis. The last section draws the discussions of the findings, implications for practice, research limitations, and future research directions.

2. METHOD

Along with the research objectives, this study concerns with business profiles, operations, performance measurement, and use of performance measurement. First, business profile was investigated through three variables suggested by the literature: (1) business size in terms of turnover (e.g. Grewal et al., 2004), (2) business format e.g. pure online store (e.g. Oinas, 2002), and (3) maturity of Internet retail operation (Rayport and Jaworski, 2003). Second, business operations refer to methods used in ordering, payment, delivery, and customer service processes, based on the Internet retailing process proposed by Enders and

Jelassi (2000). Methods or options available in these four activities are essential because they are related to the challenges faced by Internet retailers in developing countries.

Third, the variable of performance measurement refers to a range of multidimensional performance indicators measured by an Internet retailer to evaluate its business performance. It comprises 30 performance indicators, as shown in Table 1, which were developed through the literature (Agrawal et al., 2001; Bailey and Rabinovich, 2004; Barnes and Vidgen, 2002; Barsh et al., 2000; Bughin, 2001; Chaffey et al., 2006; Cotter, 2002; Janenko, 2002; Neely et al., 2002; Rayport and Jaworski, 2003; Srinivasan et al., 2002; Szymanski and Hise, 2000; Tamimi et al., 2003; Vargas, 2004), and pre-tested with academics and practitioners. The indicators are classified into five dimensions: financial, market-sales, customers, web, and process. The framework has been used in a study among UK Internet retailers (Gunawan et al., 2008).

Table 1. Performance indicators

Financial	Market-sales	Customer	Web	Process
Profit margin	Total sales	Conversion rate visitor to purchase	Number of visits	On-time delivery
Revenue per transaction	Number of orders	Number of newsletter subscribers	Page views	Percentage of error in goods picked and delivered to customer
Fulfilment cost	Number of customers	Repeated sales per each customer	Unique visitors	Percentage of error in delivery destination
Revenue per customer	Sales value per transaction	Conversion rate visitor to registration	Website's usability	Online enquiry-to-response time
Acquisition cost	Ratio of sales from overseas	Customer churn rate	Website's information quality	Return notification-to-refund time
Customer maintenance cost	Market share	Customer extension	Website's service-interaction quality	Percentage of error in charge made to customer

Fourth, the use of performance measurement could be viewed from its support in various types of decision made. Henri (2006) highlighted the use of performance measurement to support decision-making and to justify the decisions or actions taken. This research investigates five types of decision: (1) strategy decisions, (2) top level management decisions, (3) operational decisions, (4) pay-reward decisions, and (5) other personnel decisions. By measuring performance, a retailer will obtain information about the business progress. The more information available, the higher possibility it could support decision-making. Therefore, Internet retailers measuring more performance indicators might use the information more intensively to support decision making.

This study adopted two methods of Internet-based research: email survey and web content analysis. A cross-sectional survey method was conducted among Internet retailers selling tangible products, not services or digital products, in order to produce a homogenous set of retailers, which were likely to encounter the similar type of operational issues. The sampling frame was generated from indonesia.com, as the current most comprehensive online directory of online shopping, and Google Directory. In this survey, an email or online contact form was sent for asking participation in this research. If the recipient was willing to participate, a questionnaire in an attached MS Word file would be sent. After the respondent sent the completed questionnaire, then an email saying thanks would be sent.

In the questionnaire, performance measurement is operationalised by asking respondents whether each performance indicator is measured or not. Furthermore, the use of performance measurement to support decision-making is operationalised by asking the extent to which the information obtained from measuring performance indicators is used in those five types of decision. A Likert scale is adopted with the following descriptors: not at all – a few – about half – most – all. Business profile is investigated in three attributes: (1) business format measured by the existence of other retail channel(s), (2) maturity by years of establishment, and (3) size by annual sales turnover.

The email survey produced 55 usable responses from 97 recipients who were likely to participate in this survey. Among the respondents, 91% were the owners, who also manage the business operation. Running the business operation by themselves, those entrepreneurs could maintain good customer service, friendliness, and honesty to customers, which are considered as a key success for small businesses (Benzing et al., 2009).

The web content analysis was applied to identify methods used in retail operations covering ordering, payment, delivery, and customer service. Data were collected by examining the web content of 55 web stores participated in the email survey. To keep the privacy of responses, the findings are reported statistically and no individual response is revealed. This data collection is similar to Hawk's study (2004). Most of the information is obtained from web menus: how to order, payment, delivery, and contact us. Some websites do not supply detail information about payment and delivery methods, in which those will be disclosed to customers in the email of order confirmation.

3. RESULTS

Data was analyzed using SPSS v.16 especially with descriptive statistics, factor analysis, reliability analysis, and bivariate correlations. The results are presented in three parts: (1) the descriptive presentation of Internet retail profiles and operations, (2) the percentage and rank of performance indicators measured, and (3) the relationship between performance measurement and its use.

3.1 Internet Retail Profiles and Operations

Table 2 presents the descriptive profile of responding companies obtained from the email survey. These retailers sell varieties of goods such as clothing, book, computer things, flower, and toys. The results show that around two-third of Internet retailers operate without a physical store presence. The majority of retailers are new business, as about three-quarter are established within the last three years. Based on the amount of annual sales, these retailers are small and medium sized-businesses. The small annual sales of each firm might reflect the small amount of e-commerce sales in the country.

Table 2. Descriptive profile of responding companies

Business profile	Category	Frequency	Percentage
Business format	Without-store presence	34	62%
	With-store presence	21	38%
Maturity	< 3 years	41	75%
	>= 3 years	14	25%
Business size (annual sales)	< EUR 10,000 ^{a)}	27	55%
	EUR 10,000 – 50,000	16	33%
	> EUR 50,000	9	12%

Note: ^{a)} sales amount in IDR was converted into EUR. EUR 1 = IDR 13,500 (www.bi.go.id, Feb 12th, 2010)

Table 3 shows the most frequently methods used in ordering, payment, delivery, and communication processes. The percentage data is not presented to accompany the frequency data because some websites do not explicitly display the required information such as alternative payment methods and the names of shipping company. The table indicates that online shopping cart is not the sole ordering method. Indonesian internet retailers utilize various communication channels for ordering, including email, mobile phone for text messaging, phone for voice communication, and even live chat using Yahoo Messenger. These ordering options are uncommon for Internet retailers in the advanced economies. While an e-commerce shopping cart application for Internet retailers in develop economies is able to provide a direct confirmation, only a part in Indonesian web stores has the same capability, shown as 'web direct' confirmation in Table 3. In this case, retailers need to check the stock availability; it means that the inventory database is not linked to the online ordering process. Therefore, retailers will send an order confirmation via email, SMS, or phone.

In developed economies, the most widely accepted payment methods are credit card and debit card. This study found that the most frequently payment method used is bank transfer, which could be done by a customer through Internet banking, ATM machine, or even mobile banking. The top most frequently commercial banks used are Bank Central Asia (BCA), Mandiri, and Bank Nasional Indonesia (BNI). Only some Internet retailers could accept overseas orders, and they use the Western Union payment service. Some retailers have already accepted PayPal payment. Indonesian PayPal service has been improved as since 2008 merchants have been able to withdraw money into local bank accounts. Cash-on-delivery (COD) is normally used for orders from the same town/ city of the retailer location.

Table 3. Internet retail operations

Ordering method	Freq.	Confirmation method	Freq.	Payment method	Freq.
Shopping cart	45	E-mail	26	Transfer - Bank BCA	43
E-mail	27	SMS	17	Transfer - Bank Mandiri	32
SMS	21	Web direct	14	Transfer - Bank BNI	15
Phone	16	Phone	7	Transfer - Western Union	10
Yahoo Messenger	9	Communication method	Freq.	Paypal (with credit card)	9
Web form	7	Email	43	Cash on delivery	8
Fax	4	YM	41		
Courier firms	Freq.	Phone	39		
TIKI JNE	15	Form	33		
TIKI	11	HP	28		
Pos	9	Fax	11		

The delivery is normally conducted by a third party courier company. The table shows the top three most frequently courier companies used: TIKI and TIKI JNE, both private companies, and Pos Indonesia, a government-owned company. It is also an interesting finding as Pos Indonesia dominated the mail and package delivery services in the past. The communication between retailer and customers is needed for product enquiry, ordering, order confirmation, payment confirmation, and shipping information. The most frequently communication channel used is email (as it is the reason why email survey used in this study), followed by Yahoo Messenger, phone, online form, mobile phone, and fax. These various channels are provided to make customers easy to reach retailers and then to place an order.

3.2 Performance Indicators Measured

Table 4 presents a list of performance indicators measured by Internet retailers sorted in the descending order of frequency. The top 5 indicators are measured by nearly all (over 95%) of Internet retailers. Two of them which are on-time delivery and unique visitors are specific measures for online retailers. The other three are expected to be measured by offline retailers as well. These five indicators come from four dimensions: market, financial, web, and process.

Table 4. Performance measurement

Rank	Performance Indicator	Pct.	Rank	Performance Indicator	Pct.
1	(M) Number of orders	98%	16	(P) Return notification-to-refund time	71%
2	(M) Total sales	96%	17	(C) Conversion rate visitor to purchase	65%
2	(P) On-time delivery (promise vs. actual)	96%	18	(P) Percentage of error in charge made to customer	64%
4	(W) Unique visitors	95%	19	(P) Percentage of error in delivery destination	60%
4	(F) Profit margin	95%	19	(P) Percentage of error in goods picked and delivered to customer	60%
6	(W) Number of visits	93%	21	(F) Fulfilment cost	58%
7	(M) Number of customers	87%	22	(M) Market share	56%
8	(W) Website's usability	85%	23	(F) Revenue per customer	49%
9	(W) Website's information quality	84%	24	(C) Customer extension (buy another product category)	47%
10	(W) Website's service-interaction quality	80%	25	(C) Conversion rate visitor to registration	44%
10	(P) Online enquiry-to-response time	80%	25	(F) Acquisition cost	44%
12	(F) Revenue per transaction	78%	27	(C) Customer churn (withdrawal) rate	42%
12	(M) Sales value per transaction	78%	28	(M) Ratio of sales overseas	40%
12	(W) Page views	78%	29	(C) Number of newsletter subscribers	36%
15	(C) Repeated sales per customer	76%	29	(F) Customer maintenance cost	36%

M: Market, F: Financial, C: Customer, W: Web, P: Process

The next five places (6th to 10th) are dominated by web traffic measures, which indicate that Internet retailers emphasize the importance of website-related performance. The table also shows that performance indicators measured by less than 50% of retailers consists of 4 customer related indicators, 3 financial, and 1 market. The majority of Internet retailers do not give emphasis to various indicators related to customer acquisition (conversion rate visitor to registration, acquisition cost, number of newsletter subscribers) and customer retention (customer extension, revenue per customer, customer churn rate, customer maintenance cost). They focus more on repeated sales per customer (76%) for the customer retention performance and conversion rate visitor-to-purchase (65%) for the customer acquisition. Other findings could be interpreted from the table.

3.3 Relationship between Performance Measurement and its Use

The relationship between performance measurement and the use of performance measurement is analysed using bivariate Pearson correlation. Firstly, the variable of performance measurement is represented by the total number of performance indicators measured by an Internet retailer. The descriptive statistic of this variable is as follows: mean = 21, S.D.= 5, minimum = 7, maximum = 30. Secondly, factor analysis using Principal Component Analysis technique is performed for the five items composing the use of performance measurement. The determinant of the correlation matrix has value 0.056, which is greater than the required minimum value 0.00001; Kaiser-Meyer-Olkin test of sampling adequacy has a score 0.654, which is greater than the required minimum value 0.5; and Bartlett's test of sphericity output is highly significant ($\chi^2 = 148.9$, $df = 10$, $p < 0.001$). Based on those criteria, there should be confidence that the data are appropriate for factor analysis. Table 5 presents factor loadings and reliability score of each factor.

Table 5. Factor analysis - type of decision

Variable	Pattern matrix - Factor loadings ^{a)}	
	Factor 1 ^{a)}	Factor 2 ^{a)}
TD-strategy	0.948	
TD-top level management	0.852	
TD-operational	0.892	
TD-pay reward		0.990
TD-other personnel		0.901
Cronbach's α	0.869	0.896

Note: ^{a)} direct oblimin, as two components are correlated ($r=0.318$)

Factor loadings less than 0.4 are not presented to improve readability

These two components account for 84% of variance. The first dimension contains strategy, top-level management, and operational decisions; it is named strategic decision (TD-strategy). The second dimension contains pay-reward and personnel decisions; it is named personnel decision (TD-personnel). The summated mean score of each dimension is calculated. The examination of mean score reveals that Internet retailers use the information more on strategic decisions (mean = 3.988) than personnel decisions (mean = 3.0). The output of bivariate Pearson correlation shows that PI is correlated positively and significantly with TD strategy ($r = 0.336$, $p = 0.012$) and with TD personnel ($r = 0.284$, $p = 0.035$). The findings suggest that the more performance indicators measured, the more the information obtained is used to support strategic as well as personnel decisions.

4. DISCUSSION AND CONCLUSION

The majority of Indonesian retailers were established within the last 3 years. This might indicate that most online business entrepreneurs play a "hit and see strategy" to explore the potential of online market rather than seriously enter the business with a substantial amount of investment. This online business is still volatile; some Internet retail sites recorded from the directory during this research have disappeared a year after (2008 to 2009) or their domain names were listed for sale as they were out of business.

The business size, as measured by the amount of annual sales, is quite low. This finding might reflect a

low adoption rate of online purchase among Indonesian customers. In the low e-readiness environment presented earlier, customers are rather to do purchases for small-in-value goods such as clothing and books, which are the most popular product categories provided by Indonesian Internet retailers. Various factors such as national culture (Gong, 2009), perceived trust to online vendors (Berthon et al., 2008), individual shopping experience, and other socio-demographics variables could affect this condition (Broekhuizen and Huizingh, 2009).

In the less sophisticated e-commerce infrastructure, Indonesian retailers have creatively used the variety of available technologies to provide customers with alternative methods in ordering, payment, delivery, and order confirmation processes. The various methods for ordering (e.g. email, SMS, YM) and payment (e.g. bank transfer) are different from those in developed countries. However, this finding supports the similar study in some developing countries (Hawk, 2004). Further improvement to these current business operations is required to meet the global e-commerce practices because those retailers will face the global e-commerce market.

Though Indonesian Internet retailers are still young, they have been rational in their performance measurement as they monitor various aspects of business performance. The indicators measured reveal the important factors perceived by retailers. For example, on-time delivery is found as the top online retail specific indicator among Indonesian Internet retailers, but it is less important, for example, among UK Internet retailers (Gunawan et al., 2008). This indicator is critical in Indonesia possibly because of the limitation in the availability of timely and widespread network of delivery services.

This study has provided Internet retail practitioners with insights to measure performance in various aspects including financial, market, customer, process, and web, as the information obtained will support their decision making. The practitioners are also suggested to give more attention to customer acquisition and retention measures, which currently considered less important, as those are critical for the Internet retail success. They are also suggested to improve business operations to meet the world operational practices in ordering and payment. Additionally, global internet retailers who intend entering the Indonesian online market might also provide some alternatives for ordering and payment methods to suit the local customers.

The first limitation of this study is the small number of responses which might limit the generalisation of the result to Indonesia or even developing countries. Second, the results of web analysis show how often an option was provided not how much it was used. Further research could be directed to study, for example (1) Internet retail in other developing countries, and (2) the use and effectiveness of different ordering, payment, and communication options.

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Appendix: Some parts of the questionnaire

Please indicate for the following performance indicators which ones are measured for your online business.

Performance indicators	Measured?		Performance indicators	Measured?	
Number of orders (transactions)	No	Yes	Website's usability	No	Yes
Number of customers	No	Yes	Website's information quality	No	Yes
Total sales	No	Yes	Website's service-interaction quality	No	Yes
.....

Please indicate the extent to which the information obtained from measuring performance indicators is used in the following types of decision. Please select the appropriate number (1 – 5) for each item.

Types of decision	Not at all	A few decisions	About half	Most decisions	All decisions
In strategy decisions	1	2	3	4	5
In top level management decisions	1	2	3	4	5
In operational decisions	1	2	3	4	5
In pay reward decisions	1	2	3	4	5
In other personnel decisions	1	2	3	4	5



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FOREWORD

These proceedings contain the papers of the IADIS International Conference e-Commerce 2010, which was organised by the International Association for Development of the Information Society and co-organised by Albert-Ludwigs-Universität Freiburg, Germany, 28 – 30 July, 2010. This conference is part of the Multi Conference on Computer Science and Information Systems 2010, 26 - 31 July 2010, which had a total of 1237 submissions.

The IADIS e-Commerce 2010 conference is a major international event for researchers, academics, industry specialists, practitioners & students interested in the advances in, and applications of, e-Commerce. The participants will have an opportunity to present and observe the latest research results, and ideas in these areas. This conference aims to cover both technological as well as non-technological issues related to this new business paradigm.

The Conference invited proposals from the introductory through advanced level on all topics related to e-Commerce. Proposals which address the theory, research and applications as well as describe innovative projects were encouraged.

The following five main areas have been the object of paper and poster submissions within specific topics:

- e-Commerce Technology;
- Global e-Commerce;
- Online Management;
- Online Business Models;
- Regulatory/Policy Issues.

The IADIS e-Commerce 2010 received 69 submissions from more than 18 countries. Each submission has been anonymously reviewed by an average of four independent reviewers, to ensure that accepted submissions were of a high standard. Consequently only 12 full papers were approved which means an acceptance rate below 18 %. A few more papers were accepted as short papers, reflection papers, doctoral consortium and posters. An extended version of the best papers will be published in the IADIS International Journal on Computer Science and Information Systems (ISSN: 1646-3692) and/or in the IADIS International Journal on WWW/Internet (ISSN: 1645-7641) and also in other selected journals, including journals from Inderscience.

Besides the presentation of full papers, short papers, reflection papers and posters, the conference also included one keynote presentation from an internationally distinguished researcher. We would therefore like to express our gratitude to Dr. Manuel Arriaga, New York University - Leonard N. Stern School of Business, USA.

As we all know, organising a conference requires the effort of many individuals. We would like to thank all members of the Program Committee, for their hard work in reviewing and selecting the papers that appear in the proceedings.

This volume has taken shape as a result of the contributions from a number of individuals. We are grateful to all authors who have submitted their papers to enrich the conference proceedings. We wish to thank all members of the organizing committee, delegates, invitees and guests whose contribution and involvement are crucial for the success of the conference.

Last but not the least, we hope that everybody will have a good time in Freiburg, and we invite all participants for the next year edition of the IADIS International Conference e-Commerce, that will be held in Rome, Italy.

Sandeep Krishnamurthy,
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e-Commerce 2010 Conference Program Chair

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Conference Paper

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Gunawan, G.

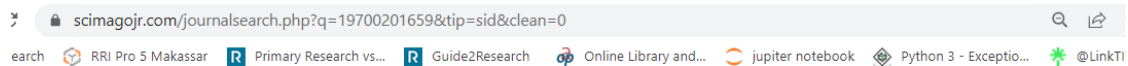
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