

## Consumers' awareness towards organic rice in Malaysia

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### Abstract

Not many attempts have been made in previous studies to understand consumers' socio-demographic characteristics and their awareness towards organic rice. Knowledge towards organic rice among consumers is fundamental to induce demand and market for organic rice. This study seeks to understand consumers' awareness towards organic rice in Malaysia. The survey is exploratory in nature and was conducted at major supermarkets in Klang Valley. Data were analysed using descriptive analysis and chi-square analysis using cross-classification techniques, and correlation to determine their relationship, strength and direction of their relationship. The findings showed majority of the respondents (85.6%) have some level of awareness towards organic rice, while only 64.7% planned to consume organic rice in the future. This indicates that awareness of consumers towards organic rice does not necessarily translate to their planning to consume organic rice. Thus, achieving awareness and understanding the linkage between awareness and consumption is fundamental to impacting demand and market for organic rice. The study also showed that the younger respondents have more concern towards organic rice. These findings if well responded to, would definitely have positive implications for the Malaysian organic rice industry.

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### Introduction

The advancement of science and technology has exposed humans more to information technology, knowledge, and education than ever before with consumers all over the world having increasing concerns about their health as well as the environment's sustainability. They are now worried about the presence of the negative consequences of chemical residues on their health and on the environment in conventional production methods. As a result, markets for "green" or "eco-friendly" products are rapidly increasing (Canavari *et al.*, 2007) as its consumption is recognized as one of the contributors to a healthy and sustainable lifestyle. Organic foods are food products that are marketed as being healthy for the body and environment, which are produced without the use of inputs like synthetic fertilizers, pesticides, genetically modified organisms (GMOs), food additives, sewage sludge and others (Allen and Albala, 2007). Organic products are perceived by consumers as safer and healthier, and expected to have greater nutritional value (Anderson *et al.*, 2006).

More and more organic food products are being showcased in our supermarkets as they tend to gain publicity with the presence of the organic label on them. The information being passed around with this label is that organic food products are healthier and safer to consume than foods produced using the

conventional methods of agricultural production. Thus, the fear of consuming chemical residues has catalysed the choices for organic food consumption (Sun, 2007). With this belief, demand for organic food products has increased globally despite its premium price rise of about 10-15% or much more doubling or tripling compared to the price of non-organic products (Zhen, 2013). It has been reported that demand for organic rice is on the rise, especially in the Philippines, Malaysia and Singapore such that local production cannot meet the increasing demand (Renzenbrink, 2012). Hence, the market is growing because more people are willing to consume organic food products (Aryal *et al.*, 2009). Organic rice being one of the organic food products, is a product of a production process that has not used any chemical or synthetic fertilizer or any pesticide in any of its growth phase (Davis, 2005).

Data about organic food consumption and their market sizes in Malaysia are not yet been officially recorded by the government and food industries. Hence, no secondary data are readily available on the organic food market size in Malaysia. Nevertheless, the sector experienced a rapid growth of about 20% per annum, which is valued at around RM150 million at retail in the past few years (Stanton *et al.*, 2011). With this estimate, the market is only a niche less than a per cent of its total food and beverage market, while about 65% of this organic market size is concentrated in the Klang Valley area, 15% and 10%

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around the Johor Bahru conurbation (Singaporean shoppers inclusive) and Penang respectively (Stanton *et al.*, 2011). Even demand still remains relatively low in Malaysia however, it is likewise strengthening as report suggests that the domestic market is developing well with the current demand surpassing supply (Zhen, 2013).

## Literature Review

Increasing awareness on health, food safety and environmental concerns significantly increased the demand for environmentally friendly products (Kumar and Ali, 2011). Awareness means knowledge or perception of a situation or fact. Knowledge and awareness about organic food in creating demand for organic food is probably the first step. It is important to note that this may not invariably translate to purchasing or consuming it as certain barriers could limit the ability of such knowledge and perceived demand to be transformed into actual demand by the consumers. This is because several potential consumers in the developed countries have distrust for organic labels (Giannakas, 2002) as a result of confusing conventionally produced food for organic (Agres, 2010) and reports about mislabeling (Landay, 1996). The theoretical framework of this study is anchored based on the consumer behaviour theory as discussed by Barnett (2003). According to this theory, consumers make decision to balance the marginal utility and marginal price of one unit of commodity consumed. The marginal utility lies on the awareness and perception of risks, which are determined by the socio-demographic characteristics of consumers, learning ability and exposure levels to the commodity hazards (Eom, 1994; Blend and Ravenswaay, 1999).

According to Gracia and Magistris (2007) knowledge, attitude and intention are three important factors that influence consumers' decision to buy a product or not. The quality and type of information available to consumers affect their knowledge and benefits to be derived from consuming a product, which in turn have direct and indirect influences respectively on their choice for the product (Aryal *et al.*, 2009). Knowledge about products and their benefits are also enriched through the pivotal roles played by certification, labelling, advertisement and quality packaging (Aryal *et al.*, 2009). Consumers nutritional knowledge, their food buying behaviour and their socio-demographic profiles have been investigated empirically as having influence on their purchase decisions and level of awareness of organic food (Briz and Ward, 2009). Education, stream of

education and use of ICTs have been found to strongly and significantly influence consumer's awareness of organic food, while gender and income only slightly affect their awareness of organic food (Kumar and Ali, 2011).

The future of organic rice to a large extent will depend on consumers' awareness and demand for organically grown rice. Thus, a consumer-oriented approach will be important to understanding the market for pursuing better management of organic rice farming in Malaysia and to seek strategies about how consumption can be enhanced. In developing demand for organic products, awareness of organic food is the first step among consumers, yet it does not necessarily equate with its consumption (Briz and Ward, 2009). Strategies for production and marketing can be determined by consumers' knowledge and their perceived response to organically grown rice. This is because organic products are credence goods thus, consumers may not know whether a product is produced using conventional or organic methods unless they are told so (Giannakas, 2002). Therefore, knowledge and awareness about organically produced rice will be critical to consumers' behavioural attitude and their choice of organic rice. Nonetheless, on the consumers' side in Malaysia, there is not much information as regards organic rice products, which is viewed as a new product. Thus, the aim of this study is to understand consumers' awareness towards organic rice in Malaysia as their knowledge about organic rice is fundamental to inducing demand and drive for growth in the market for organic rice industry. For this purpose, the following hypotheses referring to consumers' awareness towards organic rice were postulated:

H1: Consumers' awareness towards organic rice has a significant relationship with their socio-demographic characteristics.

H2: Consumers' plan to consume organic rice in the near future is significantly dependent on their awareness towards organic rice.

## Materials and Methods

### *Study area and data collection*

The study is primarily investigatory in nature. The focus is on gaining insights and familiarity as it concerns consumers' awareness towards organic rice for future investigation. It was conducted in August and September 2013, through a primary survey of 350 respondents in Klang Valley area, Malaysia. According to Sekaran (2003), sample sizes of 350 respondents are appropriate for market research. Klang Valley was chosen as the study area because

consumers from all walks of life do their shopping there while most supermarkets and shopping malls are located there. More so, about 65% of organic market sizes are located in Klang Valley (Stanton *et al.*, 2011). A structured questionnaire was designed to explore consumers' level of awareness towards organic rice. The questionnaire was developed by adapting questions from other researchers that have done similar study obtained from the literature. Personal interview was granted through systematic random sampling of respondents at shopping malls that were earlier identified to be selling organic food products.

A pre-test survey was first carried out on 50 respondents to ensure the questionnaire was easy to comprehend and acceptable by the respondents and suggested questions were improved upon. Before the data collection, four enumerators were briefed on the purpose of the survey and trained on how to conduct the survey. The respondents were made to understand that their participation in the interview was totally voluntary. They were informed about their rights while answering the questions and about the purpose and usefulness of the interview session. About 15 minutes was spent to interview each respondent and a total of 334 (95%) questionnaires were thoroughly and completely filled out of 350 questionnaires that were collected. The remaining 16 copies of the questionnaires were not used because they were not adequately filled.

*Data analysis*

Descriptive analysis and chi-square analysis using cross-tabulation technique and point biserial correlation, a special type of Pearson Product Moment Correlation (PPMC) were employed. Descriptive analysis was used to have the quantitative data simplified so that it would be easy to measure and comprehend. Chi-square analysis using cross-tabulation technique was used to examine for statistical independence. Point biserial correlation coefficient was used to estimate the degree of relationship and it is used when one variable is measured on the interval or ratio scale while the other variable is on the nominal or dichotomous scale (Yount, 2006). In this study, consumers' awareness was measured on an interval scale while plan to consume in the near future was measured on a nominal, dichotomous scale.

**Results and Discussion**

*Respondents' socio-demographic characteristics*

The study population is described using descriptive analysis to analyze the data values to

Table 1. Respondent's awareness towards organic rice

Statements	Frequency	Percentage
Know about it very well	48	14.4
Heard about it but know a little	170	50.9
Heard about it but not sure	68	20.4
Never heard about it	48	14.4
<b>Total</b>	<b>334</b>	<b>100.0</b>

Table 2. Responses to consume organic rice in the future if readily available in the market

Responses	Frequency	Percentage
Yes	216	64.7
No	118	35.3
<b>Total</b>	<b>334</b>	<b>100.0</b>

Table 3. Relationship between Consumers' awareness towards organic rice and their socio-demographic characteristics (n = 334)

Socio-Demographic	Never heard		Heard about it but not sure		Heard about it but know little		Know very well		Total	
	n	%	n	%	n	%	n	%	n	%
<b>Age</b>										
20-29	16	33.3	32	47.1	82	48.2	17	35.4	147	44.0
30-39	20	41.7	13	14.1	48	28.2	13	27.1	94	28.1
40-49	5	10.4	12	17.6	21	12.4	6	12.5	44	13.2
50-59	5	10.4	10	14.7	13	7.6	9	18.8	37	11.1
≥60	2	4.2	1	1.5	6	3.5	3	6.3	12	3.6
<b>Gender</b>										
Male	32	66.7	24	35.3	77	45.3	23	47.9	156	46.7
Female	16	33.3	44	64.7	93	54.7	25	52.1	178	53.3
<b>Race</b>										
Malay	7	14.6	24	35.3	72	42.4	19	39.6	122	36.5
Chinese	24	50.0	34	50.0	61	35.9	24	50.0	143	42.8
Indian	9	18.8	9	13.2	24	14.1	1	2.1	43	12.9
Others	8	16.7	1	1.5	13	7.6	4	8.3	26	7.8
<b>Education</b>										
No schooling	2	4.2	3	4.4	4	2.4	1	2.1	10	3.0
Primary school	3	6.3	8	11.8	7	4.1	5	10.4	23	6.9
Secondary school	12	25.0	10	14.7	18	10.6	6	12.5	46	13.8
University	31	64.6	47	69.1	141	82.9	36	75.0	255	76.3
<b>Income</b>										
≤2,000	3	6.3	2	2.9	14	8.2	1	2.1	20	6.0
2,100-4,000	8	16.7	21	30.9	33	19.4	16	33.3	78	23.4
4,100-6,000	12	25.0	18	26.5	52	30.6	7	14.6	89	26.6
6,100-8,000	14	29.2	14	20.6	35	20.6	14	29.2	77	23.1
8,100-10,000	4	8.3	10	14.7	18	10.6	4	8.3	36	10.8
10,001-12,000	3	6.3	0	0	6	3.5	3	6.3	12	3.6
>12,000	4	8.3	3	4.4	12	7.1	3	6.3	22	6.6

show how they affect the variables of the study (refer to Table 3). The majority of respondents 147 (44%) in this study were below the age of 30 years old, followed by the age between 30 to 39 years old 94 (28.1%) and the least were aged 60 years and above 12 (3.6%). The average age of the study sample is about 32.5 years. It should be noted that 46.6% of the general population of Malaysians are below the age of 25 years old (CIA World Factbook, 2013). Most of these respondents were females 178 (53.3%) as compared to males 156 (46.7%). In terms of race, the majority of the respondent is Chinese 143 (42.8%) followed by Malays 122 (36.5%), Indians 43 (12.9%) and 26 (7.8%) accounting for other races. About 89 (26.6%) of the respondents received a household monthly income in the range of RM4,001 to RM6,000, while 22 (6.6%) received above RM12,000 and 20 (6.0%) received RM2,000 and below. Most of these respondents had a university education 255 (76.3%), about 46 (13.8%) had finished secondary school, and 23 (6.9%) of the respondents had completed only primary school while 10 (3%) had never been to school.

*Awareness towards organic rice*

This section describes the frequencies and

percentages of respondents' awareness and their responses to consume organic rice if readily available. Table 1 shows respondents' awareness towards organic rice. About 50.9% of the respondents had heard about organic rice but know a little about it, 20.4% had heard about it but not sure, while respondents that know about organic rice very well and those that had never heard about organic rice were 14.4%, respectively. The result of the descriptive frequencies and percentages revealed that majority (85.6%) of the respondents in this study had heard about organic rice with varying levels of knowledge and awareness. Result in Table 2 shows responses to consume organic rice by the respondents if the rice is readily available in the market. According to the survey, most of the respondents (64.7%) were interested to consume or purchase organic rice if it is readily available in the market.

#### *Relationship between consumers' awareness towards organic rice and their socio-demographic characteristics (H1)*

The results from crosstab analysis revealed that majority 147 (44.0%) of the respondents were aged between 20 to 29 years of age. From this group of respondents, most of them indicated they have heard about but know a little of organic rice as shown in Table 3. In terms of gender, the respondents comprised of 178 (53.3%) females as against 156 (46.7%) males. This is expected since females are the major decision makers in terms of food purchase in the household (Sangkumchaliang and Huang, 2012). For gender, from the total sample size of 334 respondents, those that claimed to have never heard about organic rice and those that claimed to know very well about organic rice were both 48 (14.4%) respectively. For those that claimed never heard about organic rice, 16 were females while males were 32. Of the 48 that claimed to know very well about organic rice, 25 were females while 23 were males. Of the 170 (50.9%) respondents that have heard but know a little about organic rice, 93 were females as compared to males (77). From the total of 68 (20.4%) respondents that have heard about organic rice but not sure about it, 44 were females as compared to males (24).

For race, of the 48 (14.4%) respondents that said they have never heard about organic rice, 24 were Chinese, 9 Indians, 7 Malays, while 8 belong to other races. Of those that claimed to know about organic rice very well, 24 were Chinese, 19 Malays, 1 India and 4 belong to other races. The study also showed that 72 Malays, 61 Chinese, 24 Indians and 13 respondents from other races have heard but know a little about organic rice. Those that have heard about organic rice

Table 4. Relationship between consumers' awareness towards organic rice and their socio-demographic characteristics

Socio-Demographic	$\chi^2$	df	Significant	Decision
Age	16.427 <sup>a</sup>	12	.172	Fail to Reject H <sub>0</sub>
Gender	11.405 <sup>a</sup>	3	.010*	Reject H <sub>0</sub>
Race	26.154 <sup>a</sup>	9	.002*	Reject H <sub>0</sub>
Income	21.929 <sup>a</sup>	18	.235	Fail to Reject H <sub>0</sub>
Education	14.242 <sup>a</sup>	9	.114	Fail to Reject H <sub>0</sub>

<sup>a</sup>Significant at 5% level of significance

but not sure were 34 Chinese, 24 Malays, 9 Indians and 1 respondent from other race not captured in the questionnaire.

As regards to education, majority (141) of the respondents (170) that said they have heard about but know a little of organic rice have university education, while only 4 of them that never went to school had heard but know a little about organic rice. 31 of the 48 respondents that never heard about organic rice had university education. It is interesting to know that 36 of the 48 respondents that know very well about organic rice have university education. For income, out of the 48 respondents that know very well about organic rice, 14 have household income between the range RM6,100-RM8,000 and less than or equal to RM2,000 respectively, while only 3 respondents are in the income range above RM12,000. Looking through the income row, it is observed that as the income increases, the number of respondents with awareness towards organic rice decreases.

Result of Chi-square analysis for the relationship between consumers' awareness towards organic rice and their socio-demographic characteristics is presented in Table 4. The Chi-square analysis indicates that some of the socio-demographic characteristics selected showed a significant relationship with consumers' awareness towards organic rice in terms of their knowledge or information about organic rice. Result in Table 4 showed that out of five variables only two have shown a significant relationship with awareness at 5% significant level ( $\alpha = .05$ ). The two variables are gender ( $\chi^2 = 11.405a$ ,  $p = .010$ ) and race ( $\chi^2 = 26.154a$ ,  $p = .002$ ) indicating there is a significant interaction between gender and awareness, and between race and awareness, respectively.

This showed that female consumers were more aware about organic rice in Malaysia than the male consumers. This finding is similar to that of Olivas and Bernabeu (2012); Altarawneh (2013) in their studies found out that females are comparatively more aware towards organic food consumption than males. On the contrary, Kumar and Ali (2011) in their study found out that males are comparatively more aware towards organic food than females, which they interpreted as males having higher literacy as compared to female literacy as well as country of

Table 5. Chi-square tests for the relationship between awareness and plan to consume organic rice in the future

	Value	df	Asymp. Sig. (2-sided)
Pearson chi-square	6.603 <sup>a</sup>	3	.086
Likelihood ratio	6.649	3	.084
Linear-by-linear	1.966	1	.161
Association			
N of Valid cases	334		

<sup>a</sup>Significant at 5% level of significance

Table 6. Correlation between consumers' awareness towards organic rice and their plan to consume in the future

Awareness	r-value	Sig-value
Never heard	-.019	.734
Heard about but not sure	.109	.046*
Heard about but know a little	.001	.989
Know very well	-.108	.049*

\*Significant at 5% level of significance

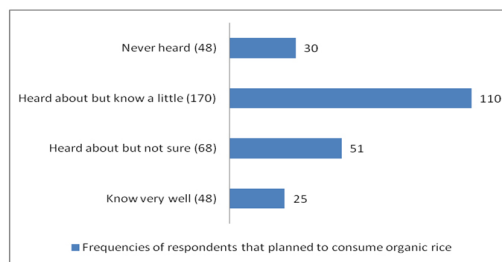


Figure 1. Crosstab between awareness and plan to consume organic rice in the future (n = 334)

concern. As regards race, Chinese consumers were more aware about organic rice as compared to the other races in Malaysia. This finding is supported by Stanton *et al.* (2011). In their study, about 80% of Malaysian Chinese were aware of organic food consumption and were usually concerned about the presence of inorganic fertilizer, pesticides and toxins in food products.

As regards age ( $\chi^2 = 16.427a$ ,  $p = .172$ ), the p-value shows there is no significant relationship between consumer's awareness towards organic rice and their age. This finding is supported by the studies of Altarawneh (2013), stating that awareness is not affected by age of the consumers. On the contrary, awareness is stated to be affected by age in the works of Gomathi and Kalyani (2013). For income ( $\chi^2 = 21.929a$ ,  $p = .235$ ), the p-value shows that there is no significant relationship between consumers' awareness towards organic rice and their income. This chi-square result is supported by the report that income does not seem to be relevant with increasing awareness of organic products (Mutlu, 2007). Contrary to this findings, high income consumers are the people that know more about organic production (Valerian *et al.*, 2011).

For education ( $\chi^2 = 14.242a$ ,  $p = .114$ ), the p-value indicates no significant relationship between consumers' awareness towards organic rice and their level of education attained. This is supported by the findings that higher education level of an individual does not necessarily translate directly into a potential

for organic food consumption as it relates also to the individual's income level (Suharjo *et al.*, 2013). On the contrary, according to Sadek and Oktarani (2009) in their work, education has been reported as a factor important in influencing awareness towards organic food consumption as the higher the educational attainment of an individual, the higher his level of awareness towards organic food consumption.

*Consumers' plan to consume organic rice in the near future is significantly dependent on their awareness towards organic rice (H2)*

A crosstab analysis showed the relationship between consumers' level of awareness and their plan to consume organic rice in future (Figure 1). From the total respondents (334) studied, majority of them 216 (64.7%) planned to consume organic rice in the future. Of the 48 respondents that said they have never heard about organic rice, 30 planned to consume organic rice in future, while only 25 out of 48 respondents that said they know about organic rice very well planned to consume organic rice in future. This finding is in consonant with Briz and Ward (2009) that awareness of organic food might not necessarily translate into its actual plan to consume it. More so, of the 68 respondents that had heard but not sure about organic rice, 51 planned to consume organic rice in future. Out of 170 respondents that had heard but know a little about organic rice, 110 planned to consume organic rice in future.

The chi-square result ( $p = .086$ ) showed that respondents plan to consume organic rice in future is not significantly dependent on their awareness towards organic rice where the significant level is at 5% level of significance (Table 5). This could explain why only 25 respondents planned to consume organic rice in the future out of 48 that know about organic rice very well, 30 respondents planned to consume out of the 48 that had never heard about organic rice.

To get further insights into the relationship or association between respondent's plan to consume organic rice in future and their awareness towards organic rice, point biserial correlation were employed in the study. Table 6 showed the correlation between consumers' awareness and their plan to consume organic rice in the future. The result showed there is a significant relationship between know very well about organic rice and plan to consume organic rice in future as the p-value (.049) is less than  $\alpha = .05$ . This implies association between the two variables has a 95% confidence that it is not due to chance and therefore is likely to be a reliable and true relationship. In the result, there is also a significant relationship between heard about organic rice but not sure and

plan to consume as the p-value (.046) is less than  $\alpha = .05$ . This also implies association between the two variables has a 95% confidence that it is not due to chance and therefore is likely to be a reliable and true relationship. In the rule of thumb for interpreting size of correlation coefficient, .00 to .30 and .00 to -.30 are interpreted as little or very weak correlation (Hinkle *et al.*, 2003).

The result showed the point biserial correlation coefficient ( $r = -.108$ ) indicates there is a little negative correlation (weak negative relationship) between the variables know very well about organic rice and plan to consume organic rice in future. This means as the values for awareness increases, values for consumption decreases. This could imply that awareness towards organic rice was not pro-organic for respondents that said they know very well about organic rice, thus may have created a negative influence on their choice and demand for organic rice. This finding may be explained by Briz and Ward (2009) that not all respondents that are aware of organic food actually plan to consume it. This suggests that values of the variable awareness may not at all be predictive of the values of the variable plan to consume organic rice in future. This could explain why not all that said they know very well about organic rice signified plan to consume in future. The point biserial correlation coefficient ( $r = .109$ ) for heard about organic rice but know a little indicates there is a little positive correlation (positive relationship) between the variables heard about organic rice but know a little and plan to consume organic rice in future, meaning as the values for awareness increases, values for consumption also increases. This finding contrasts with Briz and Ward (2009) but is supported by Shah and Jain (2012) that found a significant positive correlation between awareness level and consumption plan for functional foods. This could explain why some of the respondents that had said they have never heard about organic rice eventually signified their plan to consume organic rice in future.

## Conclusion

Consumers concern on environmental friendly, quality, food safety and healthy food are becoming of world interest increasingly, which provides growing markets for organic foods including organic rice. It is then important for the food industries to know the consumers' knowledge and perception towards consuming organic rice so that they can produce organic rice products which can meet and satisfy needs and wants of potential consumers. The influence

of consumers' knowledge towards organic rice can impact on their awareness and consciousness about organic rice. This study seeks to estimate consumers' awareness toward organic rice in Malaysia. In the results of the study, there are indications that external variables such as the selected socio-demographic variables like gender and race have significant relationship that influence consumers' awareness towards organic. Results from the study suggests that achieving awareness and understanding the linkage between awareness and consumption is fundamental to impacting demand and market for organic rice. Thus, understanding consumers' awareness towards organic rice consumption is very important for any organic rice industry or organic rice marketers. More so, organic rice marketers should develop marketing strategies that will target and capture these segments that have more positive awareness towards organic rice as revealed by the study.

The Malaysian government needs to play a huge role in enhancing enabling market environment for organic rice industry and planning strategies that would promote organic rice knowledge and awareness among demographic characteristics as identified in the study. Such awareness raising programmes in the area of advertisement, information dissemination through campaign, demonstration, and educating the public about organic rice and its benefits should be undertaken. These could help improve the awareness of consumers toward organic rice in Malaysia. Hence, the results of this study will have great implication for promoting organic rice markets domestically as well as globally.

Since this study was carried out only in the Klang Valley areas due to paucity of funds, interpretation of the results on consumers' awareness and their consumption of organic rice lies within the Klang Valley population. Expanding the study to more cities and areas in Malaysia may help present a more representative overview of consumers' awareness towards organic rice in Malaysia. Besides looking at consumers' point of view, a study on paddy farmers' willingness to adopt organic rice farming should also be considered for the future research.

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