Survey of Wine Preferences
in Beijing and Hong Kong

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Summary

We found differences between implementers in Beijing and Hong Kong. The implementers from Beijing and Hong Kong differed, respectively, in the number of wine certifications/qualifications (4% vs 36%), interest in learning more about wine service (78% vs. 44%), and preference in learning more about wine via leisure reading (81% vs. 52%). Also, Hong Kong had a higher median number of years working in the industry (10.0 vs. 3.0) and the total score on the wine knowledge quiz (5.0 vs. 3.0), when compared to Beijing.

I.   Introduction

In the Summer of 2008, implementers and decision-makers in the wine business in the Beijing and Hong Kong markets completed a survey on wine. The survey included questions about the types of wines sold in the respective markets, length and quality of wine education, specific areas of knowledge relating to wine, areas for further learning about wine, and other industry related questions.

In this report, we compare the overall level of education related to, and interest in, wine between the implementers in the Beijing and Hong Kong markets. There were nine survey items which seemed to best capture the level of education (both formal and informal) of wine knowledge and interest in learning more about wine.   Of the nine survey questions, some contained sub-categorical questions These include: Source of knowledge on wine (1st mention), satisfaction with formal wine course, have wine certification/qualification, level of interest in learning more about wine, areas of wine that would like to learn more, and preferred format to learn more about wine. These categorical questions were analyzed on each of the sub items by a Fisher's exact test to determine if the markets differed significantly. The number of responses question were small enough that a Fisher's exact test, rather than a Chi-square test, is the prefered evaluation method.

The remaining survey items in our analysis were numerical ranks: Number of years working in the industry, confidence with wine knowledge, and total score of wine knowledge quiz. These questions were analyzed using a Wilcoxon rank-sum test to determine differences in medians between the markets as differences between observation were not necessarily normally distributed.

Results were deemed significant at $p < .05$.

II.   Results

A. Fischer's Exact Test: Questions with Sub-categorical Answers.

A number of survey answers were composed of non-numerical responses to questions. These questions were analyzed using Fischer's exact test. For each sub-question, a contingency table was created in SAS that mapped Hong Kong and Beijing to their respective yes/agree or no/disagree responses. Then, SAS was used for the analysis with results output for a Fischer's Exact Test. We used a null hypothesis that implementers in Hong Kong and Beijing would have equal response counts for each sub-question. The null hypothesis would be proven wrong if our results from Fischer's Exact Test were significant at $p<0.05$.

Respondents to the survey were asked to name a "source of knowledge on wine" and their first mention was recorded. We calculated p-values using Fischer's Exact Test. Results are summarized in Table 1 in the appendix. Resulting p-values ranged from 0.24 to 1.00 (a p-value of 1 was due to rounding in SAS output). Therefore, the null hypothesis was not rejected for any sub question.

Respondents were also asked about their "satisfaction with formal wine courses" in their respective countries. Results are summarized in Table 2. Resulting p-values range from 0.36 to 0.58. Again, our null hypothesis was not rejected.

Another question asked of implementers in the survey was whether they had any wine certifications or qualifications. Results are summarized in Table 3 in the appendix. With a calculated p-value of 0.0042, we can reject our null hypothesis. Implementers in Hong Kong have statistically significant more certifications/qualifications than implementers in Beijing.

Respondents were asked to rate their level of interest in learning more about wine. Overall, there was only one response of "Low" and, thus, this response was not considered for comparison. There were responses of "Medium" and "High", but with p-values of 0.28 for each Fischer's Exact test, there was not a statistically significant difference in responses between Beijing and Hong Kong. Respondent answers are summarized in Table 4.

Implementers were also asked about areas of wine that they'd like to learn more about. Results are included in Table 5. Fischer's Exact Test resulted in our null hypothesis holding true for all answers except "Wine service- how to serve wine", where, with a p-value of 0.02, we were able to reject the null hypothesis with more respondents in Beijing answering yes to this question.

Respondents were asked about their preferred format for learning more about wine. Results are summarized in Table 6. There was no statistically significant difference for most of the answers and our null hypothesis held, except for when asked about "learning via leisure reading", where we were able to reject our null hypothesis with a p-value of 0.0379.

B. Wilcoxon Rank-Sum Test: Numerical Rank Responses.

Two of the survey items in our analysis were composed of interval scales: the number of years working in the industry and total score of a wine knowledge quiz. One survey item was composed on an ordinal scale: confidence with wine knowledge. These survey items were analyzed using the Wilcoxon rank-sum test (also known as Mann-Whitney U test), since we could not assume the populations are normally distributed. We used a null hypothesis that implementers in Hong Kong and Beijing would have equal medians. The null hypothesis would be proven wrong if our results from Wilcoxon rank-sum test were significant at $p<0.05$.

Respondents to the survey were asked their "number of years working in the industry". The median for the implementers in Beijing was 3.0 years compared to 10.0 years for the implementers in Hong Kong. The Wilcoxon rank-sum test gave a p-value of 1.374e-06. Therefore, the null hypothesis was rejected. Results are summarized in Table 7. We conclude that the median was significantly higher for the Hong Kong implementers compared to the Beijing implementers.

Respondents were also given a wine knowledge quiz and a total score was computed (higher score is better). The median for the implementers in Beijing was 3.0 compared to 5.0 for the

implementers in Hong Kong. The Wilcoxon rank-sum test gave a p-value of 0.000249. Therefore, the null hypothesis was rejected. Results are summarized in Table 8. We conclude that the median was significantly higher for the Hong Kong implementers compared to the Beijing implementers.

Respondents were also asked about their "confidence with wine knowledge". The response was rated from 1 ("need to know a lot more to feel confident") to 10 ("enough to feel very confident") in increments of 1. The median for the implementers in Beijing was 6.0 compared to 7.0 for the implementers in Hong Kong. The Wilcoxon rank-sum test gave a p-value of 0.2316. Results are summarized in Table 9. The null hypothesis was not rejected.

iii.   Conclusions

We found that the implementers in the wine business did not differ significantly between the Hong Kong and Beijing markets in the following survey items: source of knowledge on wine, satisfaction with formal wine courses, confidence with wine knowledge, and level of interest in learning more about wine.

There were significant differences in the number of wine certifications/qualifications (4% vs 36%), interest in learning more about wine service (78% vs. 44%), and preference in learning more about wine via leisure reading (81% vs. 52%), for the implementers in the Beijing and Hong Kong markets, respectively. In addition, the median was significantly different for the number of years working in the industry (3.0 vs. 10.0) and the total score of the wine knowledge quiz (3.0 vs. 5.0).

Appendix

Table 1. Contingency Table and Fischer's Exact Test Results for "Source of knowledge on wine"

A. Formal wine courses in the respective market

Frequency Percent Row Pct Col Pct	Table of Formal by location					Fisher's Exact Test	
		location				Cell (1,1) Frequency (F)	18
	Formal	HongKong-IMPLEMENTERS	China-IMPLEMENTERS	Total		Left-sided Pr <= F	0.2054
	Not Formal wine courses in	18 34.62 43.90 72.00	23 44.23 56.10 85.19	41 78.85		Right-sided Pr >= F	0.9342
	Formal wine courses in	7 13.46 63.64 28.00	4 7.69 36.36 14.81	11 21.15		Table Probability (P)	0.1397
	Total	25 48.08	27 51.92	52 100.00		Two-sided Pr <= P	0.3170

B. Formal wine courses overseas

Frequency Percent Row Pct Col Pct	Table of Formal by location					Fisher's Exact Test	
		location				Cell (1,1) Frequency (F)	25
	Formal	HongKong-IMPLEMENTERS	China-IMPLEMENTERS	Total		Left-sided Pr <= F	1.0000
	Not Formal wine courses overseas	25 48.08 51.02 100.00	24 46.15 48.98 88.89	49 94.23		Right-sided Pr >= F	0.1324
	Formal wine courses overseas	0 0.00 0.00 0.00	3 5.77 100.00 11.11	3 5.77		Table Probability (P)	0.1324
	Total	25 48.08	27 51.92	52 100.00		Two-sided Pr <= P	0.2364

C. Colleagues or supervisors

Frequency Percent Row Pct Col Pct	Table of Colleagues by location					Fisher's Exact Test	
		location				Cell (1,1) Frequency (F)	16
	Colleagues	HongKong-IMPLEMENTERS	China-IMPLEMENTERS	Total		Left-sided Pr <= F	0.8785
	Not Colleagues or supervisors	16 30.77 53.33 64.00	14 26.92 46.67 51.85	30 57.69		Right-sided Pr >= F	0.2730
	Colleagues or supervisors	9 17.31 40.91 36.00	13 25.00 59.09 48.15	22 42.31		Table Probability (P)	0.1515
	Total	25 48.08	27 51.92	52 100.00		Two-sided Pr <= P	0.4130

D. Books and publications

Frequency Percent Row Pct Col Pct		Table of Books by location		
		location		
	Books	HongKong-IMPLEMENTERS	China-IMPLEMENTERS	Total
	Not Books and publications	21 40.38 45.65 84.00	25 48.08 54.35 92.59	46 88.46
	Books and publications	4 7.69 66.67 16.00	2 3.85 33.33 7.41	6 11.54
	Total	25 48.08	27 51.92	52 100.00

Fisher's Exact Test	
Cell (1,1) Frequency (F)	21
Left-sided Pr <= F	0.2973
Right-sided Pr >= F	0.9208
Table Probability (P)	0.2181
Two-sided Pr <= P	0.4109

E. Winery brand representatives

Frequency Percent Row Pct Col Pct		Table of Winery by location		
		location		
	Winery	HongKong-IMPLEMENTERS	China-IMPLEMENTERS	Total
	Not Winery brand representatives	21 40.38 48.84 84.00	22 42.31 51.16 81.48	43 82.69
	Winery brand representatives	4 7.69 44.44 16.00	5 9.62 55.56 18.52	9 17.31
	Total	25 48.08	27 51.92	52 100.00

Fisher's Exact Test	
Cell (1,1) Frequency (F)	21
Left-sided Pr <= F	0.7262
Right-sided Pr >= F	0.5514
Table Probability (P)	0.2776
Two-sided Pr <= P	1.0000

F. Wine tasting events

Frequency Percent Row Pct Col Pct		Table of Wine by location		
		location		
	Wine	HongKong-IMPLEMENTERS	China-IMPLEMENTERS	Total
	Not Wine tasting events	24 46.15 47.06 96.00	27 51.92 52.94 100.00	51 98.08
	Wine tasting events	1 1.92 100.00 4.00	0 0.00 0.00 0.00	1 1.92
	Total	25 48.08	27 51.92	52 100.00

Fisher's Exact Test	
Cell (1,1) Frequency (F)	24
Left-sided Pr <= F	0.4808
Right-sided Pr >= F	1.0000
Table Probability (P)	0.4808
Two-sided Pr <= P	0.4808

Table 2. Contingency Table and Fischer's Exact Test Results for "Satisfaction with formal wine courses"

A. Very dissatisfied

Frequency Percent Row Pct Col Pct	Table of Very by location			Fisher's Exact Test	
	location				
Very	HongKong-IMPLEMENTERS	China-IMPLEMENTERS	Total	Cell (1,1) Frequency (F)	9
Not Very dissatisfied	9 64.29 69.23 100.00	4 28.57 30.77 80.00	13 92.86	Left-sided Pr <= F	1.0000
				Right-sided Pr >= F	0.3571
Very dissatisfied	0 0.00 0.00 0.00	1 7.14 100.00 20.00	1 7.14		
				Table Probability (P)	0.3571
Total	9 64.29	5 35.71	14 100.00	Two-sided Pr <= P	0.3571

B. Neither

Frequency Percent Row Pct Col Pct	Table of Neither by location			Fisher's Exact Test	
	location				
Neither	HongKong-IMPLEMENTERS	China-IMPLEMENTERS	Total	Cell (1,1) Frequency (F)	7
Not Neither satisfied nor dissatisfied	7 50.00 58.33 77.78	5 35.71 41.67 100.00	12 85.71	Left-sided Pr <= F	0.3956
				Right-sided Pr >= F	1.0000
Neither satisfied nor dissatisfied	2 14.29 100.00 22.22	0 0.00 0.00 0.00	2 14.29		
				Table Probability (P)	0.3956
Total	9 64.29	5 35.71	14 100.00	Two-sided Pr <= P	0.5055

C. Quite

Frequency Percent Row Pct Col Pct	Table of Quite by location			Fisher's Exact Test	
	location				
Quite	HongKong-IMPLEMENTERS	China-IMPLEMENTERS	Total	Cell (1,1) Frequency (F)	2
Not Quite satisfied	2 14.29 50.00 22.22	2 14.29 50.00 40.00	4 28.57	Left-sided Pr <= F	0.4545
				Right-sided Pr >= F	0.9051
Quite satisfied	7 50.00 70.00 77.78	3 21.43 30.00 60.00	10 71.43		
				Table Probability (P)	0.3596
Total	9 64.29	5 35.71	14 100.00	Two-sided Pr <= P	0.5804

D. Very satisfied

Frequency / Percent / Row Pct / Col Pct	Table of Very by location			
		location		
Very		HongKong-IMPLEMENTERS	China-IMPLEMENTERS	Total
Not Very satisfied		9 / 64.29 / 69.23 / 100.00	4 / 28.57 / 30.77 / 80.00	13 / 92.86
Very satisfied		0 / 0.00 / 0.00 / 0.00	1 / 7.14 / 100.00 / 20.00	1 / 7.14
Total		9 / 64.29	5 / 35.71	14 / 100.00

Fisher's Exact Test	
Cell (1,1) Frequency (F)	9
Left-sided Pr <= F	1.0000
Right-sided Pr >= F	0.3571
Table Probability (P)	0.3571
Two-sided Pr <= P	0.3571

Table 3. Contingency Table and Fischer's Exact Test Results for wine certifications or qualifications

Frequency / Percent / Row Pct / Col Pct	Table of Yes by location			
		location		
Yes		HongKong-IMPLEMENTERS	China-IMPLEMENTERS	Total
Not Yes		16 / 30.77 / 38.10 / 64.00	26 / 50.00 / 61.90 / 96.30	42 / 80.77
Yes		9 / 17.31 / 90.00 / 36.00	1 / 1.92 / 10.00 / 3.70	10 / 19.23
Total		25 / 48.08	27 / 51.92	52 / 100.00

Fisher's Exact Test	
Cell (1,1) Frequency (F)	16
Left-sided Pr <= F	0.0037
Right-sided Pr >= F	0.9998
Table Probability (P)	0.0035
Two-sided Pr <= P	0.0042

Table 4. Contingency Table and Fischer's Exact Test Results for "Interest in learning more about wine"

A. **High**

Frequency Percent Row Pct Col Pct	Table of High by location			Fisher's Exact Test	
	location			Cell (1,1) Frequency (F)	9
High	HongKong-IMPLEMENTERS	China-IMPLEMENTERS	Total	Left-sided Pr <= F	0.1922
Not High	9 17.31 39.13 36.00	14 26.92 60.87 51.85	23 44.23	Right-sided Pr >= F	0.9239
High	16 30.77 55.17 64.00	13 25.00 44.83 48.15	29 55.77	Table Probability (P)	0.1161
Total	25 48.08	27 51.92	52 100.00	Two-sided Pr <= P	0.2781

B. **Medium**

Frequency Percent Row Pct Col Pct	Table of Medium by location			Fisher's Exact Test	
	location			Cell (1,1) Frequency (F)	16
Medium	HongKong-IMPLEMENTERS	China-IMPLEMENTERS	Total	Left-sided Pr <= F	0.9239
Not Medium	16 30.77 55.17 64.00	13 25.00 44.83 48.15	29 55.77	Right-sided Pr >= F	0.1922
Medium	9 17.31 39.13 36.00	14 26.92 60.87 51.85	23 44.23	Table Probability (P)	0.1161
Total	25 48.08	27 51.92	52 100.00	Two-sided Pr <= P	0.2781

Table 5. Contingency Table and Fischer's Exact Test Results for "Areas of wine they would like to learn more"

A. Wine regions

Frequency Percent Row Pct Col Pct	Table of Wine by location				Fisher's Exact Test	
		location			Cell (1,1) Frequency (F)	9
	Wine	HongKong-IMPLEMENTERS	China-IMPLEMENTERS	Total		
	Not Wine regions - characteristics of wine from different regions	9 17.31 60.00 36.00	6 11.54 40.00 22.22	15 28.85	Left-sided Pr <= F	0.9198
					Right-sided Pr >= F	0.2151
	Wine regions - characteristics of wine from different regions	16 30.77 43.24 64.00	21 40.38 56.76 77.78	37 71.15		
					Table Probability (P)	0.1349
	Total	25 48.08	27 51.92	52 100.00	Two-sided Pr <= P	0.3623

B. Wine tasting skills

Frequency Percent Row Pct Col Pct	Table of Wine by location				Fisher's Exact Test	
		location			Cell (1,1) Frequency (F)	17
	Wine	HongKong-IMPLEMENTERS	China-IMPLEMENTERS	Total		
	Not Wine tasting skills	17 32.69 58.62 68.00	12 23.08 41.38 44.44	29 55.77	Left-sided Pr <= F	0.9772
					Right-sided Pr >= F	0.0761
	Wine tasting skills	8 15.38 34.78 32.00	15 28.85 65.22 55.56	23 44.23		
					Table Probability (P)	0.0533
	Total	25 48.08	27 51.92	52 100.00	Two-sided Pr <= P	0.1028

C. How to serve wine

Frequency Percent Row Pct Col Pct	Table of Wine by location				Fisher's Exact Test	
		location			Cell (1,1) Frequency (F)	14
	Wine	HongKong-IMPLEMENTERS	China-IMPLEMENTERS	Total		
	Not Wine service - how to serve wine	14 26.92 70.00 56.00	6 11.54 30.00 22.22	20 38.46	Left-sided Pr <= F	0.9976
					Right-sided Pr >= F	0.0129
	Wine service - how to serve wine	11 21.15 34.38 44.00	21 40.38 65.63 77.78	32 61.54		
					Table Probability (P)	0.0105
	Total	25 48.08	27 51.92	52 100.00	Two-sided Pr <= P	0.0217

D. Food and wine matching

Frequency Percent Row Pct Col Pct	Table of Food by location			
		location		
Food	HongKong-IMPLEMENTERS	China-IMPLEMENTERS	Total	
Not Food and wine matching	8 15.38 61.54 32.00	5 9.62 38.46 18.52	13 25.00	
Food and wine matching	17 32.69 43.59 68.00	22 42.31 56.41 81.48	39 75.00	
Total	25 48.08	27 51.92	52 100.00	

Fisher's Exact Test	
Cell (1,1) Frequency (F)	8
Left-sided Pr <= F	0.9258
Right-sided Pr >= F	0.2117
Table Probability (P)	0.1375
Two-sided Pr <= P	0.3425

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Table 6. Contingency Table and Fischer's Exact Test Results for "preferred format for learning more about wine"

A. Courses at school

Frequency Percent Row Pct Col Pct	Table of Attend by location			
	location			
Attend	HongKong-IMPLEMENTERS	China-IMPLEMENTERS	Total	
Not Attend courses at school	12 23.08 38.71 48.00	19 36.54 61.29 70.37	31 59.62	
Attend courses at school	13 25.00 61.90 52.00	8 15.38 38.10 29.63	21 40.38	
Total	25 48.08	27 51.92	52 100.00	

Fisher's Exact Test	
Cell (1,1) Frequency (F)	12
Left-sided Pr <= F	0.0868
Right-sided Pr >= F	0.9734
Table Probability (P)	0.0601
Two-sided Pr <= P	0.1572

B. Online courses

Frequency Percent Row Pct Col Pct	Table of Attend by location			
	location			
Attend	HongKong-IMPLEMENTERS	China-IMPLEMENTERS	Total	
Not Attend online courses	23 44.23 52.27 92.00	21 40.38 47.73 77.78	44 84.62	
Attend online courses	2 3.85 25.00 8.00	6 11.54 75.00 22.22	8 15.38	
Total	25 48.08	27 51.92	52 100.00	

Fisher's Exact Test	
Cell (1,1) Frequency (F)	23
Left-sided Pr <= F	0.9675
Right-sided Pr >= F	0.1505
Table Probability (P)	0.1180
Two-sided Pr <= P	0.2517

C. Leisure reading

Frequency Percent Row Pct Col Pct	Table of Learn by location			
	location			
Learn	HongKong-IMPLEMENTERS	China-IMPLEMENTERS	Total	
Not Learn via leisure reading	12 23.08 70.59 48.00	5 9.62 29.41 18.52	17 32.69	
Learn via leisure reading	13 25.00 37.14 52.00	22 42.31 62.86 81.48	35 67.31	
Total	25 48.08	27 51.92	52 100.00	

Fisher's Exact Test	
Cell (1,1) Frequency (F)	12
Left-sided Pr <= F	0.9952
Right-sided Pr >= F	0.0239
Table Probability (P)	0.0191
Two-sided Pr <= P	0.0379

D. Wine tasting events

Frequency Percent Row Pct Col Pct	Table of Attend by location		
	location		
Attend	HongKong-IMPLEMENTERS	China-IMPLEMENTERS	Total
Not Attend wine tasting events	8 15.38 40.00 32.00	12 23.08 60.00 44.44	20 38.46
Attend wine tasting events	17 32.69 53.13 68.00	15 28.85 46.88 55.56	32 61.54
Total	25 48.08	27 51.92	52 100.00

Fisher's Exact Test	
Cell (1,1) Frequency (F)	8
Left-sided Pr <= F	0.2628
Right-sided Pr >= F	0.8865
Table Probability (P)	0.1492
Two-sided Pr <= P	0.4039

Table 7. Exact Wilcoxon Rank-Sum Test Results for "Number of years working in the industry"

	Median	Mean	Wilcoxon W	Z-value	p-value
Beijing	3.00	4.67	86	-4.52	1.37e-06
Hong Kong	10.00	10.92			

Table 8. Exact Wilcoxon Rank-Sum Test Results for Total Score of "Wine Knowledge Quiz"

	Median	Mean	Wilcoxon W	Z-value	p-value
Beijing	3.00	3.22	146	-3.55	0.000249
Hong Kong	5.00	5.00			

Table 9. Exact Wilcoxon Rank-Sum Test Results for "Confidence with wine knowledge"

	Median	Mean	Wilcoxon W	Z-value	p-value
Beijing	6.00	5.74	273	-1.21	0.23
Hong Kong	7.00	6.76			